A SURVEY OF OPERATIONS STRATEGY PRACTICES OF SMALL-SCALE EXPORT MARKET FARMERS IN KENYA: THE CASE OF FRENCH BEAN FARMERS.

by

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A Management project submitted in partial fulfillment of the requirements for the award of Degree of Master of Business Administration in the Faculty of commerce, University of Nairobi.

DECLARATION

This research project is my own original work and has not been represented for a degree in any other college, institution or university for academic credit.

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This project has been submitted for examination with my approval as University Supervisor.

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DEDICATION

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ABSTRACT

Small-scale farmers growing for the export market are faced with greater challenges today due to economic upheavals and the strict European Union regulations. In order for them to stay in business, they must take several important operations strategies into account. Small-scale farmers growing for the export market seek to maximize profit by selecting those strategies that will help them operate most efficiently and effectively. Previous research has shown that operations strategy is an important issue to all organizations and as a key for organizational success.

This study sought to document the operations strategy practices used by the small-scale french bean farmers growing for the export market and to fit these operations strategy practices in the Johnston generic operations strategies and the Hayes and Wheelwright Framework.

Data was collected using a semi-structured questionnaire and analyzed using narrative, frequencies, matrix tables, graphs and charts. The main findings were as follows: quality and flexibility were the most important dimensions of the operations strategies especially amongst the farmers with a much smaller french bean acreage.

Cost and dependability were the most important dimensions in the operations strategies of farmers with a much larger french bean acreage while innovativeness was the least important dimension amongst all farmers. Based on all the respondents, quality and cost were seen to be the most commonly used dimensions. These two dimensions carried a more significant weight than all the other dimensions. There was a significant difference amongst all the five dimensions.

Previous research has shown that firms should aim to achieve the Stage IV of the Hayes and Wheelwright and/or the innovator strategy of the Johnston model. However, 84% of the farmers' practices fell in the first stage of both the Hayes and Wheelwright and the Johnston model, 4% fell in the second stage, another 4% in third stage while only 1% fell in the fourth stage.

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1.0 INTRODUCTION

1.1 Background

Kenya was fortunate in inheriting from its colonial past a relatively open and export-oriented trading system in agricultural commodities and a favorable macro-economic environment in which horticulture could develop. Kenya's economy is highly dependent on horticulture, which is one of the biggest foreign exchange earners. Kenyan horticultural sub sector has grown tremendously over the last three decades and has the potential to grow into an important wealth creation enterprise due to it's labour intensive nature and high value (Thimm, 1998).

According to the Horticultural Crops Development Authority-HCDA (2001), the history of the export of fresh horticultural produce from Kenya dates back to World War II when Kenya, then a British colony, was required to contribute to the task of feeding the allied forces. During this period, the overall exports to the European Union were worth US $500, with the Netherlands being the largest importer, taking a 71 per cent share by volume, with most distributed through the auction system. Next came the United Kingdom on 20 per cent, followed by Germany on 6 per cent and South Africa with 2 per cent. Horticultural Crop Development Authority (2004) points out that Kenya has a long tradition of growing horticultural crops for both domestic and export markets. Success to date can be attributed to Kenya's ability to provide high quality products on a year-round basis, backed by daily airfreight departures to key destinations. The country is able, from its agro-ecological zones to grow a very wide range of horticultural produce, from french beans, exotic fruits to cut flowers.

Horticulture is one of the most important sub sectors in Kenya. Horticulture is important in that it acts as a source of food, generates income, provides employment, acts as a source of income for the Manufacturing industries such as Pump Manufacturers, Manufacturers of Land Preparation equipment, the Agrochemical Industries and many others. The horticulture sub sector also provides input for the processing industries (Kamau, 2001; Murage, 1999; Ndung'u, 1999).

A report made by the Horticultural Crop Development Authority in the Year 2004 shows that in the Year 2002, the value of the horticultural export was 28.33bn. In the Year 2003, the horticultural sub sector generated over Ksh.70bn of which Ksh.36.49bn was in foreign exchange. In the Year 2003, 133,232 tons of fresh horticultural produce was exported. Fresh vegetables accounted for approximately 29% of total value of horticultural exports. French beans accounted for approximately 5.5bn. The horticulture sub sector provides employment to about 2m people. The sector is mainly private-driven with the government and its agencies playing a facilitating role. The horticultural sub sector has grown in the last decade to become a major foreign exchange earner and a major contributor to food needs. The sector has consistently recorded an average annual growth rate of 20%. In the Year 2003, horticulture was the leading foreign exchange earner.

A tremendous diversity in terms of farm sizes, variety of produce, and geographical area of production characterize this sector (Jaffee, 1995; Wanzala, 1997). The Horticultural Crops Development Authority-HCDA (2001) notes that the Kenyan market is open and competitive; hence prices are determined by supply and demand factors. The domestic market has concentrated on vegetables and fruits, such as: cabbages, kale, bananas (cooking and table), avocadoes, coconuts, citrus, mangoes (local), pineapples, plums and paw paws and many others. Nyoro et al (2001) note that some cut flowers are also sold locally in main urban centers by street vendors and floricultural shops in high/medium class shopping centers. Unlike the export market, storage facilities and preservation technologies in the local market are not required to stabilize production. Proper packaging is not a priority for the local market. For the export market, the storage facilities and proper packaging are necessary. Standard packaging is necessary to avoid losses because of damages. Packaging constitutes a major item of cost for an exporter of horticulture.

The dynamic nature of markets is characterized by fluctuations in supply, demand and prices. However, the majority of the small-scale farmers do not have access to such information due to remoteness, inadequate communication facilities including telephones,

newspapers, (Jaffee, 1995; Kamau, 2001; Nyoro et al, 2001) and Internet services (Kavoi et al, 2004; Okado, 2004). This leads to a distribution pattern where some markets are oversupplied and others are undersupplied. Farmers therefore lose out to the more organized and informed wholesalers who get a superior bargaining power (Kavoi et al, 2004).

Small-scale farmers produce more than half the exports, and small-scale farmers gain from producing for the export market (Horticultural Crops Development Authority, 2001). According to Ndung'u (1999), small-scale businesses are characterized by easy entry and exit, low capital requirement for establishment and operation, dependence on local resources employment of simple technologies that are easy to adopt, labour intensive production techniques, low cost skill acquisition mainly from outside the formal school system and the ability to operate under a highly competitive market condition. Mumo (2001) describes small businesses as those firms that have management independence, usually need a small business firm capital, ownership is by an individual or a small group of individuals and the area of operation is mainly local though markets need not be local.

French beans are one of the most important horticultural exports produced by small-scale farmers. Small-scale farmers involved in growing fresh produce for export accounted for more than 50 percent of the supplies of french bean export in the year 2003 (Horticultural Crops Development Authority, 2004). French beans are the most popular cash crop amongst small-scale farmers. Their relatively short growing period allows the crop to be the basis of a regular cash income. There are constraints in input availability and marketing which prevents the wider cultivation of french beans (Export Promotion Council, 2004; Gathura, 2003; McCulloch and Ota, 2003; Murage, 1999; Wanzala, 1997), there are also constraints of water availability because of the unreliable climate/rainfall pattern (McCulloch and Ota, 2003). Small-scale farmers growing for the export market often encounter rejection of produce due to poor quality and erratic prices due to overproduction and underproduction (Gathura, 2003). Generally, farmers will plant as much as they can sell and those with contracts or a firm commitment from an

exporter may have up to 100 per cent of their land dedicated to french beans (Okado, 2004). Without irrigation, small-scale farmers are not able to produce a steady supply of vegetables throughout the year, making them less interesting to full-time exporters (McCulloch and Ota, 2003).

According to McCulloch and Ota (2003), in terms of farm sizes, they range from large-scale estates with substantial investments in irrigation and high level use of inputs, hired labour and skilled management to small-scale farms, usually under one acre. Both small and large farms grow french beans. McCulloch and Ota (2003) distinguish three categories of french bean grower. Large commercial farms have 50-100 hectares and grow various types of vegetables for export using hired labor and modern technology. They are either owned by exporters or have formal contracts with large exporters. Small- and medium-scale contract growers may have as little as 0.25 hectares of french beans, but the exporter provides seed and sometimes chemicals on credit. They hire about 15 laborers per hectare of french beans planted. The third category is independent small-scale farmers who have 1-5 hectares but only plant a fraction of this with french beans. Without a contract, they use less purchased inputs, often recycle seed, and sell at lower prices due to differences in quality and/or variety.

With the majority of Kenyans living in the rural area, agriculture remains the backbone of the economy (Thimm, 1998). Small-scale farming provides the bulk of the fastest growing sector yet farmers lack adequate experience and knowledge to operate on an even footing in the market place. However small-scale farmers may switch producing for the export market to produce for the local urban markets (Okado, 2004).

The Kenyan horticultural sub sector has not been without set backs, recently it has been depressed through a combination of internal and external cost-price squeeze factors, exogenous factors, most notably unfavorable weather, complex political developments and a deteriorating macroeconomic and fiscal situation. In addition, strict European Union market restrictions on use of pesticide, the ignorance and lack of accurate information on foreign market requirements and lack of strategies have also been the

sectors' setbacks (Gathura, 2003; Okado, 2004). With the continued decline on the condition of roads, transportation and distribution of perishable horticultural produce has become expensive and difficult. Unreliable and inefficient railway services, expensive and inadequate telecommunication services and insufficient supply of electricity have exacerbated the problems (Okado, 2004).

Gathura (2003) notes that in the 1980's and early 1990's Kenya occupied an unrivaled prime position with regard to exports of horticultural (tropical) produce into the European Union. In fact at that period french beans were known as Kenya beans in Europe. 1990's saw the emergence of other suppliers from Africa (Zimbabwe, Zambia, Tanzania, Senegal, Gambia), Central America (Guatemala) and Asia (Thailand). Kenya needs to invent new strategies to enhance their competitiveness; otherwise they stand the risk of being edged out by the new suppliers (countries).

Small-scale horticultural farmers do not have the capacity to meet the requirements hence the need for awareness, capital and training. Small-scale farmers lack a unifying forum to discuss their activities. A sizeable percentage of these are small-scale farmers whose production and profitability is constrained by the limited access to reliable markets and lack of business knowledge. Improved rural road networks that reduce these costs could abate motives to meet food needs through domestic production and promote specialization that raises farm incomes (Okado, 2004).

According to the Fresh Produce Exporters Association of Kenya –FPEAK (2004), for Kenyan horticultural produce to sustain and improve its market share internationally the sector has to demonstrate and maintain high standards of production, processing, packaging and handling to meet market quality requirements set by the European Union. The regulations, which apply to all stages of production, processing and distribution, provide the basis for assurance of a high level of protection of human health and consumers' interest in relation to food taking into account in particular the diversity in the supply of food. Where the exporting country has met conditions laid down by the European Commission and has been granted approved status, the exporting country can

issue the certificate. The conformity criteria among others include the inspection standards, technical competence, inspection, infrastructure and points of inspection. FPEAK continues to note that large-scale farmers like Homegrown Limited who export to EU supermarkets have implemented most requirements of normal pesticide use due to pressures of their clients. They have also the ability to do so as they employ knowledgeable managers and have a large amount of capital.

According to Dilworth (1996), the Operations of a firm are often responsible for the largest part of the firm's human and capital assets. Thus, much of a product's cost is incurred within the Operations and this cost affects the price that must be charged and the profit margin that can be achieved. It is the operations function that establishes the level of quality as a product is manufactured or as a service is provided. The Operations function determines to a great extent the ability of the company to deliver goods or services within lead times that enhance customer service. It is clear that the Operations function has an important influence on the cost, quality and availability of Company's goods and services. According Slack and Lewis (2002), organizations must take up the operations strategy to gain a greater competitive leverage.

"High quality products offered at the right time in the right quantities attracts international press coverage and any problems associated with products from any global companies are immediately published, therefore, it is all the more important that quality is maintained. The fact that the Quality Assurance Agencies publish its reviews openly "sends a powerful global signal about the EU commitment to quality". It is for this one reason that large horticultural firms like Homegrown (K) Ltd, are keen on the dimensions of quality, fast delivery and proper survey of the market" (Bill and Tom, 2004). The cost of compliance with the market standards is difficult to state precisely but Homegrown (K) Ltd takes all measures necessary in the cost of production. (Riungu and Mbaria, 2004).

Hayes and Wheelwright (1984) note that firms should work to achieve the Stage IV (Externally supportive) of the Hayes and Wheelwright framework. Stage IV firms regard

their manufacturing organization as externally supportive, that is, playing a key role in helping the whole company achieve an edge over its competitors. Such companies are not content simply to copy their competitors, or even to be the "toughest kid on the block" in their own neighborhood. They seek to be as good as anybody in the world at the things they have chosen to be good at - that is, world-class.

Johnston et al (1997) note that firms should aim at taking up the innovator strategy. The innovator strategy enhances the adoption of a better approach to designing a firm's operations and from this there is enhanced customer service. This way, a firm aims to be the top in the world. All workers should be knowledge workers who contribute more with minds than hands, understand the business and the job and have a mastery of all quality tools sought after by competitors.

1.2 Problem statement

In 1969 Skinner in a seminal article, stressed the importance of manufacturing strategy as the missing link between manufacturing and business strategy. Since, the emergence of this article, there have been a multitude of views and approaches put forward by various researchers regarding the content of operations strategy and process of strategy development and implementation (Swink and Way, 1995). There has been a lot of work done on the application of operations strategy in the service and manufacturing sectors. Empirical researches into the way companies formulate and implement their strategies and results of the implementation in the marketplace are relatively scarce (Draaijer and Boer, 1995; Minor et al, 1994; Orr, 1996). Many authors have over and over again emphasized on operations strategy as an important issue to all organizations and as a key for organizational success (Hayes and Wheelwright, 1984; Hill, 1994; Kim and Lee, 1993; Minor et al, 1994; Slack et al, 1995 and Swink and Way, 1995).

As earlier noted, Kenya's economy is highly dependent on horticulture and small-scale farming provides the bulk of the fastest growing sub sector in Kenya. As exhibited earlier, small-scale french bean farmers face a number of problems and with all these

setbacks in the horticulture sector, it is important to incorporate the operations strategy in the small-scale farms in order to gain a greater competitive leverage.

Large horticultural firms like Homegrown (K) Ltd have already implemented most requirements by the European Union due to pressure from their customers (FPEAK, 2004). It is for this one reason that large horticultural firms like Homegrown (K) Ltd, are keen on the dimensions of quality, fast delivery and proper survey of the market (Bill and Tom, 2004). The cost of compliance with the market standards is difficult to state precisely but Homegrown (K) Ltd takes all measures necessary in the cost of production (Riungu and Mbaria, 2004).

Firms must device ways of utilizing their resources to attain a competitive leverage in today's business world. The firms must continually improve to stay ahead of the global competition (Gathura, 2003). Skinner (1969) is often credited with founding the extensive strategy on manufacturing on competitive priorities. Other writers have extended his work but the core ideas have remained unchanged. There has been little emphasis on the use of operations strategy on competitive priorities in small-scale horticultural farming. Studies on competitiveness include but are not limited to the following: Kamau (2001), Regional competitiveness in the marketing of the horticultural crops for the domestic market. Nyamwange (2001), The application of operations strategy to increase the competitiveness of large manufacturing firms in Kenya. Studies on training include but are not limited to the following: Kessio (1981), A study of the problems facing the small businesses and the effect of management training on their performance. Studies on marketing include but are not limited to the following: Kimwomi (1998), Horticultural marketing problems facing the small-scale farmers in Kenya. Mumo (2001), The services offered by the small-scale exporter in Kenya.

None of the studies has focused on operations strategy for competitiveness in horticulture. Given the set backs in the horticulture sub sector and the EU regulations that must be met, action has to be taken to avoid the closure of the small-scale french bean farms in Kenya growing for the export market. This study sought to establish the extent

to which small-scale french bean farmers growing for the export market have embraced operations strategy?

1.3 Research objectives

i To document operations strategy practices used by the small-scale french bean farmers growing for the export market.

ii To fit the operations strategy practices used by the small-scale french bean farmers growing for the export market in the Johnston generic operations strategies and the Hayes and Wheelwright Framework.

1.4 Importance of the study

The findings may be used by the small-scale farmers producing french beans for the export market to design better strategies, implement and monitor them for competitiveness at present and in future. The paper could also impress on the management of Fresh Produce Exporters who outsource their produce from the small-scale farmer, potential businessmen and women who want to join the horticultural export business and the Non Governmental Organizations working with the small scale horticultural businesses in the rural areas. Lastly, the paper could form a basis for research by Scholars and Researchers in other areas related to the Operations Strategy and Competitiveness.

2.0 LITERATURE REVIEW

2.1 Operations Strategy

Operations strategy is the effective utilization of production capabilities to achieve business and corporate goals (Kim and Lee, 1993). It is the decisions, which shape the long-term capabilities of the company's operations and their contributions to overall strategy through the ongoing reconciliation of market requirements and operation resources (Flynn et al, 1994). According to Lowson (2001), operations strategy is the strategic management of core competencies, capabilities, processes, technologies, resources and key tactical activities necessary in any supply network, in order to create the value demanded by a customer. Slack and Lewis (2002) describe operations strategies as the total pattern of decisions, which shape the long-term capabilities of an operation and their contribution to strategy. Shaffer and Meredith (1997) describe competitiveness as the long-term viability of a firm; it may be seen in a short-term context such as the current success of a firm in the market place as measured by its market share or profitability.

Operations strategy is the total pattern of decisions and actions, which set the role, objectives, and activities of the operation (Hill, 1994). Hayes and Wheelwright (1984) point out that the strategy of any organization is the total pattern of decisions and actions, which position the organization in its business environment. Within this definition of strategy, they identify different levels, which make up the strategy hierarchy:

- The Corporate strategy,
- The Business strategy and
- The Functional strategy.

Corporate strategy sets the objectives for its different businesses. It is often developed after evaluating the internal and external conditions of the organization. Business strategy sets the objectives for its various functions or parts. Functional strategy sets the objectives for the individual function's contribution to the business strategy.

In the operations function there may also be several units or "micro" operations. Each of these could have a micro operations strategy, which identifies how the micro operation is going to contribute to the business (macro) operations strategy. Starr (1996) describes operations strategy as a statement of how the operations function will contribute effectively to the achievement of corporate goals and objectives.

Slack et al (1995) describe operations strategy as the total pattern of decisions and actions, which set the role, objectives, and activities of the operation so that they contribute to and support the organizations business strategy. Slack et al (1995) also state that a credible operations strategy reinforces the centrality of competitiveness in an organization. It does this by concentrating decisions and individual resources of the operation. An effective operations strategy should bring the concept and feeling of competitiveness or at least "strategic direction" right to the operating personnel themselves who is very heart of the organization.

2.2 Operations strategy formulation

Starr (1996) also notes that the top-down approach where an approach is initiated, undertaken and monitored by a firm from the top, and the bottom-up approach, where an approach is initiated by people from below should be incorporated while formulating the operations strategy. According to Hayes and Wheelwright (1984), the level of the (macro) operations strategy, decisions can be divided into: those, which define the content of the strategy, and those, which indicate the process of how it is to be formulated. The content of an operations strategy deals with the relative importance of the performance objectives to the operation. The organization's specific customer groups, the activities of the organization's competitors, and the stage of its products and services influence this on their life cycle. The content of an operations strategy is also concerned with giving general guidance to the decision-making activities within the operations. It does this by formulating a number of strategies dealing with design strategy, planning and control strategy and improvement strategy.

Hayes and Wheelwright (1984) continue to highlight that the operations strategy itself is made up of three Levels: (1) mission, (2) objectives, and (3) management. The operations mission defines a direction for the operations function. A mission statement should incorporate some of the excitement of top management and should communicate to employees, investors, and customers that this is an excellent firm. The second level of an operations strategy, operations objectives, provides carefully defined, measurable goals that help the firm achieve its mission. These objectives should be specific, measurable, achievable, realistic and time bound.

The third level of operations strategy describes how the objectives are put in plan, controlled and organized. Although the operations objectives provide measurable goals, they do not indicate how a firm should pursue those goals. Management of the operation resources involves planning, controlling and organizing in order to realize these goals (De Meyer, 1990; Hayes and Wheelwright 1984).

De Meyer (1990) notes that operations strategy should fit into the corporate strategy. The operations strategy involves decisions that relate to the design of a process. This strategy should be flexible enough to change with the future needs of the firm. According to Johnston et al (1997), an effective operations strategy should clarify the links between overall competitive strategy and the development of the company's operations resources. More specifically, an operations strategy should be:

- Appropriate: it should support the company's competitive strategy
- Comprehensive: It should indicate how all parts of the operations functions are expected to reform.
- Coherent: The policies recommended for each micro-operations must lead all roughly in the same direction, and interrelate positively with other functional strategies.
- Consistent over time: The lead-time of operations improvement means that consistency must be maintained over a reasonable time period.
- Credible: The strategies and associated improvements targets should be seen as feasible and realistic.

At broader level operations strategies must be ethical, international, creative and implemented.

2.3 Capability and Maturity - Hayes and Wheelwright's Four Stages

Below is a summary of a four-stage framework proposed by Hayes and Wheelwright (1984).

2.3.1 Stage I (Internally neutral)

Stage I companies consider their manufacturing organization to be internally neutral, in that its role is simply to "make the stuff", without any surprises. Such companies believe that their product designs are so unusual or their marketing organization so powerful that if the product can simply be delivered to customers, as advertised, the company will be successful.

2.3.2 Stage II (Externally neutral)

Stage II companies look outward and ask their manufacturing organization to be externally neutral, that is, able to meet the standards imposed by their major competitors. Such companies tend to adhere to industry practice and industry standards. They buy their parts, materials and production equipment from the same suppliers that their competitors use, follow similar approaches to quality and inventory control, establish similar relationships with their workforce, and regard technicians and managers as interchangeable parts - hiring both, as needed, from other companies in the industry.

2.3.3 Stage III (Internally supportive)

Stage III companies have a manufacturing organization that is internally supportive of other parts of the company, with a coordinated set of manufacturing structural and infrastructural decisions tailored to their specific competitive strategy.

2.3.4 Stage IV (Externally supportive)

Stage IV companies regard their manufacturing organization as externally supportive, that is, playing a key role in helping the whole company achieve an edge over its competitors. Such companies are not content simply to copy their competitors, or even to

be the "toughest kid on the block" in their own neighbourhood. They seek to be as good as anybody in the world at the things they have chosen to be good at - that is, world-class.

2.4 Generic operations strategies

Below are the generic operations strategies proposed by Johnston et al (1997).

2.4.1 The caretaker strategy.

This strategy is often employed when an organization believes that there is little competitive advantage to be gained by differentiating itself from its competitors. Managers are expected to make sure that nothing goes wrong rather than to provide much in the way of innovation or creativity. Firms taking up this strategy try to minimize the "negative effect" of manufacturing. Manufacturing is not expected to make a positive contribution. Controls are put into place to closely monitor each process. If any strategic considerations do arise, outside experts are called in since manufacturing personnel are not perceived as strategic thinkers. Reasons for adopting the this view of strategy include perceived simplicity of manufacturing processes and/or perceived lack of manufacturing's ability to impact competitive position.

2.4.2 The marketeer strategy.

The strategy is often used when the firm experiences increased competition and respond by enhancing the level of customer service, which they offer. This might include such things as broadening the range of their products and services, increasing quality levels or giving delivery guarantees. Firms try to achieve parity with competitors. Capital investment is used to achieve scale advantages. Organizations benchmark competitors' process capabilities. Processes are then improved to reach competitors' capabilities.

2.4.3 The reorganizer strategy.

This strategy implies a change in the way an organization designs and manages its processes. This could mean investment in new technology and a different way of organizing its method of producing goods and services. The firms provide support to the

Business Strategy. The goal is to support of corporate strategy with a formulated manufacturing strategy. Organizations expect manufacturing to support corporate goals.

2.4.4 The innovator strategy.

This strategy is a combination of the marketeer and reorganizer strategy. Not only has the organization adopted an enhanced approach to designing its operations but also expects enhanced customer service from is operations function. In other words it has enhanced not only its structure but also the infrastructure. The Manufacturing contributes significantly to competitive advantage. 100% of people are knowledge workers and contribute more with minds than hands, understand the business and the job and have a mastery of all quality tools sought after by competitors. The goal is provision of strategic manufacturing capabilities

2.5 Operation objectives/priorities

A common theme in operations strategy research has been describing manufacturers' choices of emphasis among key capabilities or competitive priorities. The manufacturing strategy literature suggests four competitive priorities: low cost, quality, delivery, and flexibility (Hayes and Wheelwright, 1984; Van Dierdonck and Miller, 1980; Wheelwright, 1984). It should be noted that other priorities could be included, notably innovation (Hayes, Wheelwright, and Clark, 1988). For over 20 years, firms have used different operational objectives: cost, quality, delivery, and flexibility. The objectives must be defined carefully, clearly measurable, and ranked. They must be defined carefully because these terms are often used loosely (Johnston et al, 1997).

Skinner (1969) is often credited with founding the extensive manufacturing strategy literature on competitive priorities or operation objectives. Despite many writers extending his work the core ideas remain relatively unchanged. Krajewski and Ritzman (1993) define competitive priorities as "the dimension that a firm's production system must possess to support the demands of the market that the firm wishes to compete in". They specify eight dimensions, which fall into four groups: cost, quality, time and

flexibility. Chase and Aquilano (1992) refer to this group of four; cost, lead-time, quality and flexibility.

According to De Meyer (1990), Operations competitiveness has been linked to an increasingly complex set of capabilities. Nowadays, companies must deal not only with quality, cost, and flexibility requirements, but also with demands on wider aspects such as: delivery speed and reliability, customer services, and innovation in products and processes.

2.5.1 Quality

The quality advantage comes in by ensuring that the operation does things right, by not making mistakes or creating defective products or poor service, the operation can provide a quality advantage to the organization (Johnston et al 1997). Garvin (1987) points out that quality is multidimensional and that each of its dimensions can be used strategically to gain competitive advantage. Chase (1998) argues that the level of quality in a product's design will vary with the market segment to which it is aimed. Firms therefore focus on customer requirements and cost implications. Garvin (1987) has suggested eight aspects of a product to consider so as seeing if it satisfies one's needs. These are: performance, features, reliability, conformance, durability, serviceability, aesthetics and perceived quality.

The quality scale that used includes items related to the important quality aspect of process control and process management (Flynn, Schroeder, and Sakabara, 1994; White, 1996). Chase et al (1998) suggest that measures of quality include the number of defects produced and the cost of quality. According to Garvin (1987), quality scale measures organizational emphasis on statistical process control, real time process control systems, updating process equipment, and developing new processes for new and old products.

2.5.2 Dependability

The dependability advantage comes in by doing things on time, and keeping delivery promises, which have been made to customers, the operations can provide the organization with a dependability advantage (Johnston et al 1997). Hayes and Wheelwright (1984) identify a slightly different group of competitive dimensions with dependability in place of time. Dependability covers typical aspects such as delivery dependability but also covers less precisely specified aspects such as functioning of the product, speed in correcting product failures and the customers "peace of mind". Delivery measures include emphasis on customer service as indicated by either delivery reliability or delivery speed.

Time/speed: Stalk (1988) says that time is the source of competitive advantage currently exploited by world-class organizations. The speed advantage comes in by doing things fast, an organization can minimize the time between a customer asking for goods and services and the customer receiving them, in full. In so doing, it increases the availability of its goods and services to customers thereby giving it a speed advantage (Johnston et al., 1997; Tunc and Gupta, 1993).

Time-related in innovations will prove popular and performance will improve on dimensions associated with time. If firms emphasizing the priority of time come to dominate the competitive landscape the good process performance of time-related dimensions of such firms should be connected to good performance on measures of competitiveness such as volume of sales and market share. Stalk and Hout (1990) suggest that the time or speed may be measured in terms of lead-time or cycle time, throughput, accounting systems and so on.

2.5.3 Flexibility

At a broad level, flexibility can be understood as an absorber of environmental uncertainty and variability. Flexibility is regarded as a positive feature since it contributes to the firm's ability to absorb or even benefit from variations in its environment (Gerwin, 1993). In his extensive review, Gerwin (1993) advances two general perspectives on

flexibility: 1) Flexibility as a filter and uncertainty absorber, shielding the firm from external disturbances; 2) Flexibility as a homeostatic mechanism, preserving internal stability in the face of exogenous changes. Johnston et al (1997 note that the flexibility advantage comes in by being able to change what is done, that is being able to vary or adapt the operation's activities to provide individual treatment to customers or cope with unexpected circumstances, the operation can gain a flexibility advantage.

Flexibility can be divided into three dimensions: volume, new product and product mix (Dilworth, 1996; Hayes and Wheelwright, 1984). Product flexibility embraces the ability to handle non-standard orders and to take the lead in new product introduction. Apart from ability to deal with volume, fluctuation, Hayes and Wheelwright (1984) see volume flexibility resulting in rapid delivery response. Volume flexibility is the ability to adjust for seasonal variations and fluctuations. They also note that new product flexibility is the speed, and frequency, with which new products are brought from concept to market. Specifically, the scale measures the relative emphasis placed on lead-time reductions, set-up time reductions, the ability to change priority of jobs on the shop floor, and the ability to change machine assignments on the shop floor (Gerwin, 1993).

2.5.4 Cost

The cost advantage comes in by doing things cheaply, that is giving good value to customers while keeping to budget or providing the right level of return for an organization, the operation can provide a cost advantage. The cost objective can be considered in one of three categories: low, competitive, or premium (Johnston et al 1997). Chase et al (1998) argue that products may be bought strictly on the basis of low cost. In such cases, customers cannot distinguish the products of one firm from those of another. To successfully compete in these markets, a firm must be a low cost producer. This does not mean profitability and success because in most cases can only be one or a few low cost producers, who, usually establishes the selling price in the market.

Measurement of cost is considered to be the most developed of all the competitive priorities, perhaps because of the management accounting systems that were mainly

concerned with cost (Chase et al, 1998; De Meyer et al, 1989; White, 1996). Low Cost measurement instruments capture the competitive priority of low cost by measuring the emphasis placed on reducing production costs, reducing inventory, increasing equipment utilization, and increasing capacity utilization (Gerwin, 1993).

2.5.5 Innovation:

Stalk (1988) suggests that innovation can either relate to the product or the process. It means the ability to translate needs and opportunities in the environment into satisfied needs and fulfilled opportunities. Krajewski and Ritzman (1993) suggest that in terms of processes, it relates to improving or acquiring new processes altogether and innovation may be measured in terms of the rate of introduction of new products, failure rates of prototypes, major programme milestones and so on.

Stalk and Hout (1990) note that the link between competitive priorities and the relevant process configuration features strongly in strategy literature in essence competitive priorities indicate which areas of process performance mangers must emphasize to obtain successful competitive performance. As a consequence, in addition to the operations strategy, managers must take action to improve process performance through the adoption of process innovations.

2.6 Trade offs

Believing that prioritizing operations performance objectives and improvements in one area will lead to a natural and consequential deterioration in another, for example, an increase in quality will have a consequent increase in costs (Johnston et al 1997; Mapes and New, 1997). Dilworth (1996) notes that each of the major performance capabilities includes a cluster of sub dimensions, each of which might be given different amounts of emphasis in company's strategy. However, most companies usually cannot be all things to all customers, regardless of how appealing they may seem. If a company maintains inventory at many convenient locations and provides great service during and after the sale, some other company may probably have lower cost. Likewise, a company that is low-cost operator will probably not spend as much as its competitors on cross-training

workers and maintaining extra capacity, so it probably will not be the most flexible business in its market.

Some trade-offs usually have to be made, and they are expressed when the company decides which performance characteristics have higher relative priority. Businesses can work to broaden the capabilities they have (Heskett et al, 1994). Leaving aside the imprecision surrounding the definitions of the priorities, the relationship between priorities is of interest. According to Dilworth (1996) " a company usually cannot be all things to all customers. Some trade offs usually have to be made". Chase and Aquilano (1992) state that not all four criteria can be achieved with the same level of success. Cost is seen in many cases as tradable against product flexibility or alternatively against delivery speed. Similarly quality is described as sometimes capable of being offset against delivery speed.

There has been confusion between trade-offs among alternative criteria on which to improve over current performance, and trade-offs between theoretically optimized performance among alternative criteria. However, it has been possible to improve many operational priorities simultaneously on, say, cost and quality because so much of the potential of the operation has been realized (Heskett et al, 1994).

2.7 Order winners and order qualifiers

Hill (1994) suggests that order qualifiers are those characteristics that must be present for the product to be considered for purchase by the consumer. They are those things that we have to do if we are to be even considered for the business. Qualifiers are those criteria that a company needs to provide in order to be considered or short-listed as a potential supplier. He also suggests that the order winner is the final factor on which the consumer bases the purchasing decision. They are those things that separate us from the rest of the Qualifying competitors. Order winners and order qualifiers are sometimes determined by individual customers, but they could also be signaled by the whole market to an industry. Furthermore they could change over time.

Hill (1994) adds that losing qualifiers are the failure results in a rapid loss of business while the less important factors, are those, which take a lot of effort for little competitive advantage. Order winners and Order qualifiers are equally important.

2.8 Horticulture business practices

According to Peter (2004), the Australian horticulturalists are amongst the most efficient in the world and they are still searching for productivity and process improvement gains. More often than not the improvement focus has been towards breeding more productive plant varieties, better soil management, the introduction of sustainable agricultural practices, improved mechanization and the development and more efficient use of farm chemicals. However, there has been little focus on the business itself. It is thought that the excellence framework might provide a useful vehicle for these enterprises to focus on their business fundamentals.

Many small horticultural enterprises are searching for ways of improving what they do. Farmers in Australia have been keen on improving their operational processes and dealing with other aspects of their business, particularly those that which might lead to improved bottom line performance. They are also interested in comparing their business management functions with small businesses in other sectors without going through a formal benchmarking process (Peter, 2004).

Most crops are harvested within 24 hours of Market; many are harvested the morning of Market. Most of the harvesting takes place in cool parts of the day, early morning and evening, as heat can compromise quality (Murage, 1999). Horticulture is about fresh produce, and the produce being highly perishable it has to be well preserved after harvesting and taken care of before it reaches the consumer. There is no point of having a good marketing system in place if the quality of product is poor. If farmers cannot get the best product to the world market in time then they will be out of business (Bill and Tom, 2004).

Farmers should always aim at delivering the right amount of the right quality of product at the right time. Farmers require flexibility to modify current practice so that non-transient changes in the environment can be adapted to. This means that the farmers must detect changes and retain a sufficient pool of novel responses to accommodate to these changes. Thus farmers should see flexibility as a type of response to environmental variations that enables a measure of adaptability without causing undue disruption to farm operations. Farmers should focus on the ability to change "the nature, volume and timing of the product" (FPEAK, 2004).

Production activities associated with horticulture are extremely demanding in terms of labor and inputs (HCDA, 2004). Small-scale french bean farmers buy their materials and production equipment from the same suppliers as their competitors. The farmers follow similar approaches to planting, weeding, spraying, harvesting and quality control Measures of proper budgeting and planning have to be well taken care of because these costs all go to production and have to be attached to the product price. High quality products are charged a premium; hence, cost becomes less important (Kamau, 2001).

Horticulture, being an agricultural technology, and technology, being applied science, depend on advances made in our scientific understanding of plants, their environment and their uses. The interaction of plants, animals, microbes and the physical environment (that is, ecosystems) must be as thoroughly understood in scientific terms as possible. This is especially so in pest and disease control. The level of pest and diseases has to be kept low to avoid losses (Ndung'u, 1999).

Keen supervision of cultural and harvest practices; shipping and handling to avoid any losses is paramount. General maintenance and other practices such as proper irrigation, pruning, transplanting, harvesting and pest control have to be well laid out to avoid losses (Ndung'u, 1999). According to the Fresh Produce Exporters Association of Kenya – FPEAK (2004), for Kenyan horticultural produce to sustain and improve its market share internationally the sector has to demonstrate and maintain high standards of production, processing, packaging and handling to meet market quality requirements set by the

European Union. The regulations, which apply to all stages of production, processing and distribution, provide the basis for assurance of a high level of protection of human health and consumers' interest in relation to food taking into account in particular the diversity in the supply of food. Where the exporting country has met conditions laid down by the European Commission and has been granted approved status, the exporting country can issue the certificate. The conformity criteria among others include the inspection standards, technical competence, inspection, infrastructure and points of inspection.

The European Union is committed to encouraging responsible business practices along the value chain, but given its unfamiliarity with smallholder production and the fact that it is ultimately not dependent on smallholder producers there are a few setbacks. Smallholders are the largest agricultural producers in Kenya, and important suppliers to the export industry. However, as standards in importing countries rise and buying practices favour dealing with a smaller number of producers, so smallholders are at a disadvantage when it comes to knowing the requirements of major overseas buyers. Overseas buyers and commercial producers (not least because of a commitment to ethical sourcing/trading) do not want to exclude smallholders from export markets, but at the same time are unwilling to lower their social, environmental, food safety and other requirements. However, they are prepared to work with smallholders to make sure these requirements can be met, but there is lack information on how requirements can be applied in the smallholder context (HCDA, 2004).

3.0 RESEARCH METHODOLOGY

3.1 Research Design

The study used the survey research method. This particular research design was selected because it provides the best data for statistical analysis.

3.2 Population

The target population of the study comprised all the small-scale french bean farmers growing for the export market in Kenya. According to McCulloch and Ota (2003), Small- and medium-scale contract growers may have as little as 0.25 hectares of french beans and the independent small-scale farmers may have 1-5 hectares but only plant a fraction of this with french beans. According to the HCDA (2004), East African Growers Ltd. and Homegrown K. Ltd have the largest number of contracted small-scale farmers unlike the rest of the firms who have few or no contracted small-scale farmers. East African Growers Ltd outsources from about 56% of the contracted small-scale french bean farmers whereas Homegrown K. Ltd outsources from about 14% of contracted small-scale french bean farmers. The other export firms try to emulate these two largest export firms in the Kenya horticulture industry.

3.3 The sample and the sampling technique

Rosco in 1975 proposed a rule of thumb, a sample size ranging from 30 to 500 is appropriate for most researches (Cooper and Schindler, 1998). The survey sample comprised of 150 small-scale farmers growing french beans for the export market. The figure of 150 was chosen because it was way above the recommended minimum. Several Researchers have used a sample size ranging between 100 and 150 and from this they were able to gather enough data for their statistical analysis. Some of the Researchers who have used a sample size of between 100 and 150 to achieve their research objectives are; Osiemo (2001), Ndung'u (1999), Wanzala (1997), Gathura (2003), Maina (2000) and Kamene (2000).

A list of all the small-scale farmers growing french beans for export was compiled from East African Growers Ltd. and Homegrown (K) Ltd. The list of the farmers was then fed in the computer and a random sample of 150 was picked from this list of the farmers by use of random numbers. The 150 samples were picked proportionately from each group or District. Cooper and Schindler (1998) suggest that purposive sampling is one of the best techniques used to gather qualitative data especially where the population is homogenous and/or in groups, where variation exists and where comparisons are required.

Table 3.1 The Survey Sample

District	Total number of contracted small-scale farmers	Sample size
Machakos	300	12
Kirinyaga	250	10
Baricho	375	15
Embu	600	25
Thika	30	1
Nyahururu	1500	62
Meru	600	25
Total	**3,655**	**150**

Note: All the 3,655 small-scale farmers are in groups

3.4 Data Collection

The study relied on primary data, which was collected by way of semi-structured questionnaire that had both open ended and closed questions. The open-ended questions aimed at obtaining qualitative data on the general view of operations strategy in small-scale french bean farming from the respondent. The closed questions were aimed at obtaining quantitative data for statistical analysis. The questionnaire was divided into two

parts. Part I gathered information on the respondent's profile while Part II collected information on operations strategy.

The respondents were the small-scale farmers growing french beans for export. The questionnaire was first piloted among five farmers so as to identify any errors of omission or commission that may not have been foreseen by the researcher. The necessary changes were made before the questionnaire was distributed. The drop-and-pick-later method was used and where necessary personal interviews were done to clarify questions that were not clear to the respondent.

3.5 Data Analysis

Data collected was edited for accuracy, consistency, uniformity, and completeness and arranged to simplify coding and tabulation. Descriptive statistics was used to analyze data for example percentages, proportions and frequency distribution. The SPSS statistical computer package was used to analyze the responses that were secured. Factor Analysis was used to compute correlations of various important variables. By use of the latest SPSS package, the researcher was able to use Discriminant Analysis to fit the operations strategy practices used by small-scale french bean farmers into the different stages of Generic operations strategies and the Hayes and Wheelwright model.

4.0 DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter presents the research findings and analysis. Responses were received for 100 small-scale farmers growing french beans for the export market. This figure represents a 67% response rate.

The results are divided into two areas in line with the two research objectives. The two categories are: (1) To document operations strategy practices used by the small-scale french bean farmers growing for the export market; and (2) To fit the operations strategy practices used by the small-scale french bean farmers growing for the export market in the Johnston generic operations strategies and the Hayes and Wheelwright Framework.

4.2 Operations strategy practices of the small-scale french bean farmers growing for the export market

4.2.1 Acreage of frenchbeans

Of all the respondents interviewed, 42% had less than 0.4 acres of french beans, another 36% had between 0.5 and 0.9 acres of frenchbean, another 14% had between 1 and 1.4 acres while 8% had between 1.5 and 1.9 acres on french beans (see Figure 4.1, Pg. 28).

4.2.2 Use of operations strategy in production

Farmers were asked to give their opinion as to whether or not they use operations strategy, 51 % were sure of using the operations strategies in their production, another 45% were not sure whether they implemented operations strategies and 4% thought that they had never used operations strategy (see Figure 4.2, Pg. 28).

4.2.3 Importance of the different dimensions in their operations strategy

Farmers were asked to rank the importance of the various operations strategy dimensions on a 5-point likert scale where 1 represented least important, 2 represented not so important, 3 was somewhat important, 4 was important and 5 represented most important.

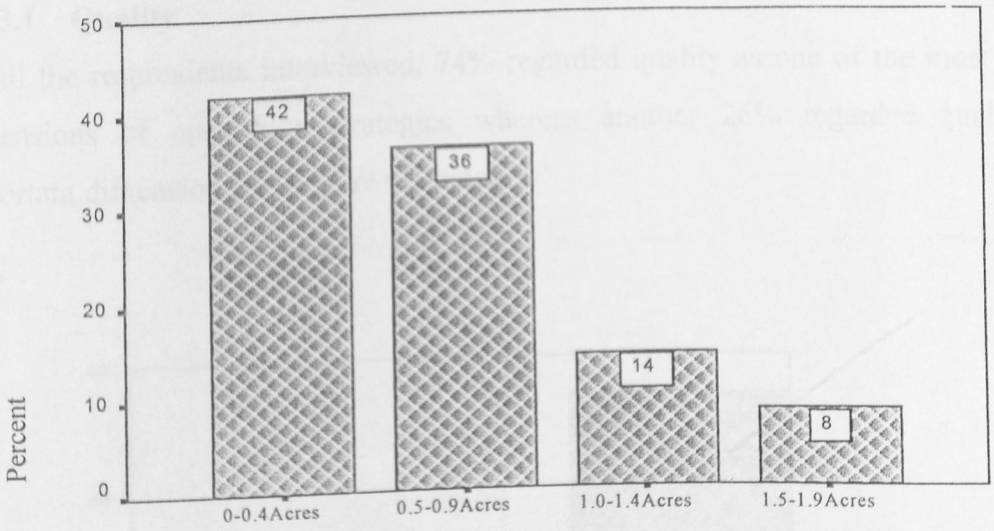

Figure 4.1: French bean acreage amongst the respondents

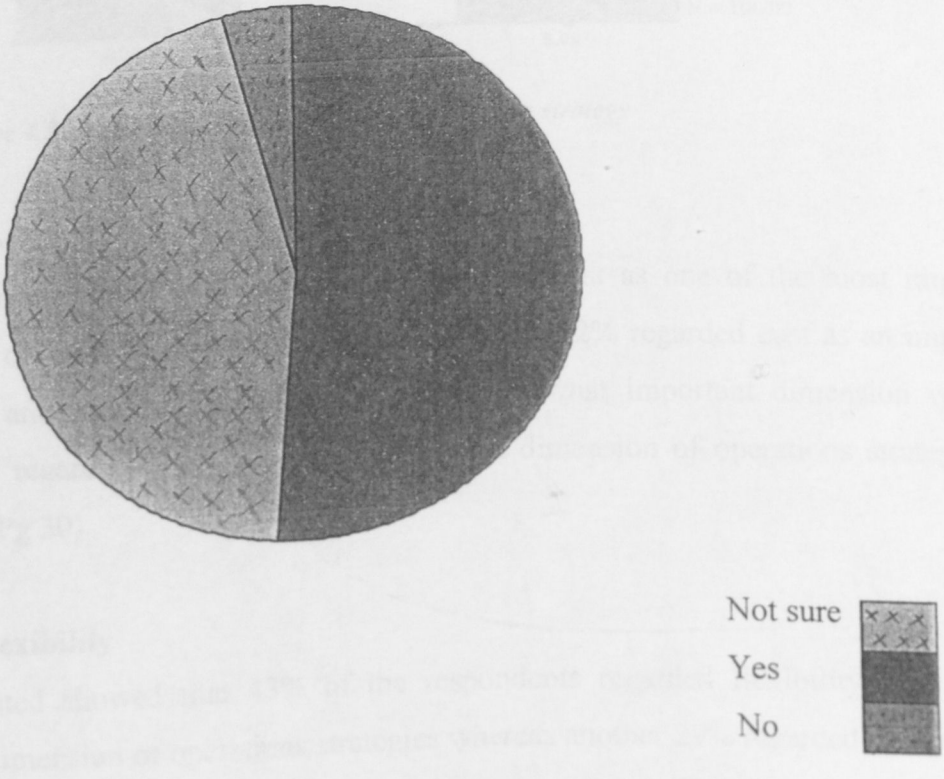

Figure 4.2: Use of the operations strategies by the respondents

The findings were as follows:

4.2.3.1 Quality

Of all the respondents interviewed, 74% regarded quality as one of the most important dimensions of operations strategies whereas another 26% regarded quality as an important dimension (see Figure 4.3 below).

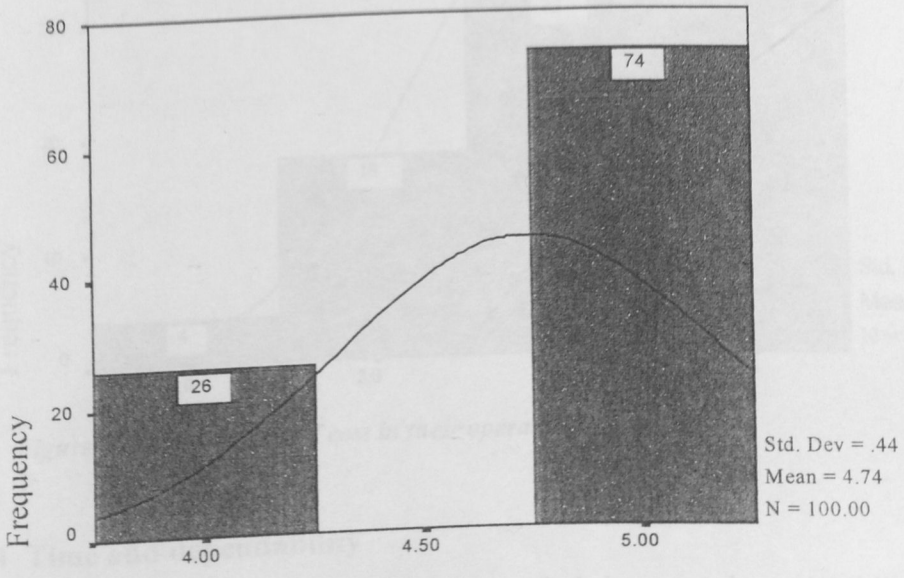

Figure 4.3: Importance of quality in their operations strategy

4.2.3.2 Cost

Of all the respondents interviewed, 46% regarded cost as one of the most important dimensions of operations strategies whereas another 32% regarded cost as an important dimension, another 18% regarded cost as a somewhat important dimension whereas another 4% regarded cost as a not so important dimension of operations strategy (see Figure 4.4, Pg 30).

4.2.3.3 Flexibility

Data collected showed that 43% of the respondents regarded flexibility as a not so important dimension of operations strategies whereas another 29% regarded flexibility as a somewhat important dimension, another 13% regarded flexibility as an important dimension, another 8% regarded flexibility as a very important dimension of operations

strategy whereas another 7% regarded flexibility as not important at all (see Figure 4.5, Pg. 31).

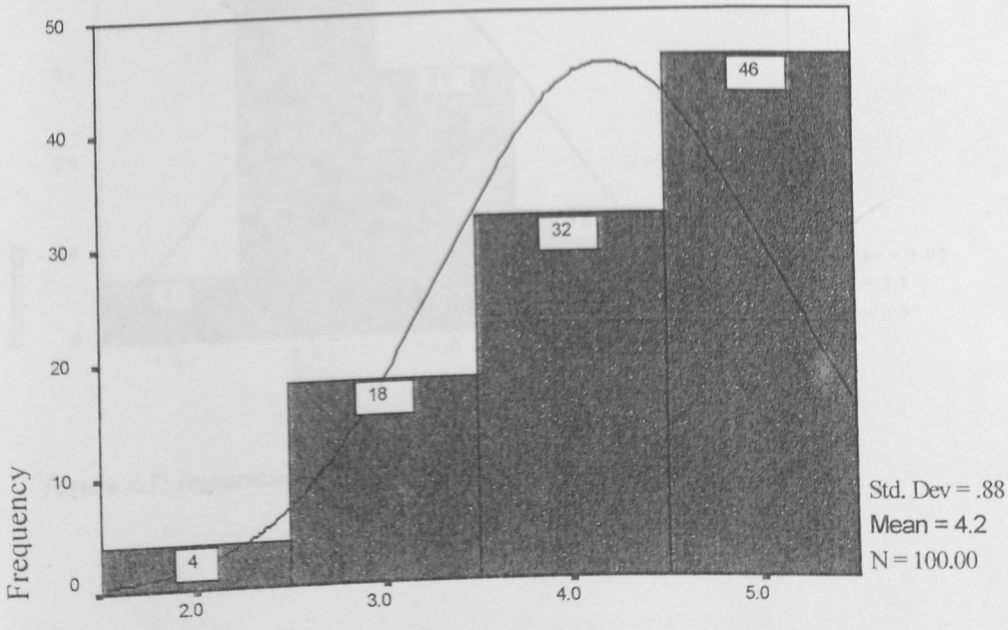

Figure 4.4: Importance of cost in their operations strategy

4.2.3.4 Time and dependability

Of all the respondents interviewed, 42% regarded time and dependabibility as one of the most important dimensions of operations strategies whereas another 41% regarded time and dependability as an important dimension, whereas another 17% regarded time and dependability as a somewhat important dimension in operations strategies (see Figure 4.6, Pg. 31).

4.2.3.5 Innovation

Data collected showed that, 63% regarded innovation as a not important at all dimension of operations strategies, another 26% regarded innovation as a not so important dimension, another 7% regarded innovation as a somewhat important dimension in operations strategies, whereas another 4% regarded innovation as an important dimension of operations strategies (see Figure 4.7, Pg. 32).

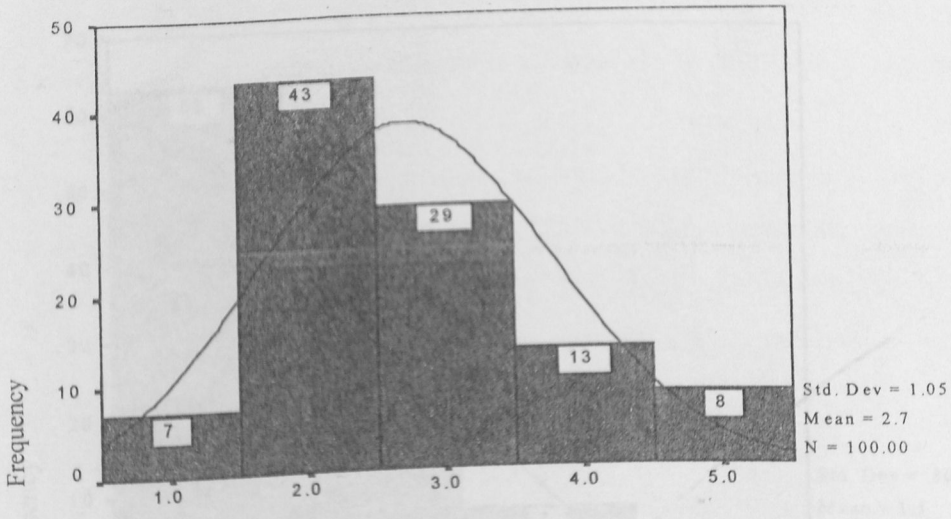

Figure 4.5: Importance of flexibility in their operations strategy

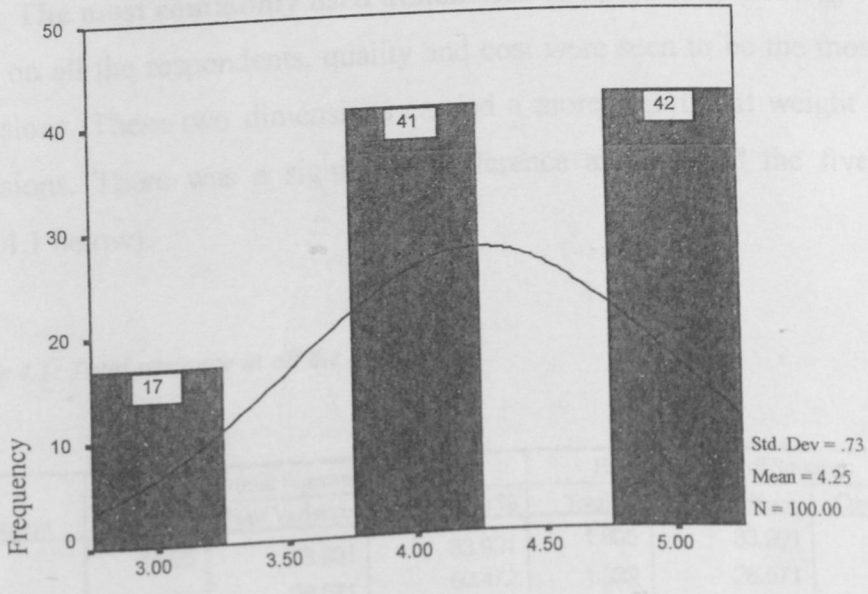

Figure 4.6: Importance of time and dependability in their operations strategy

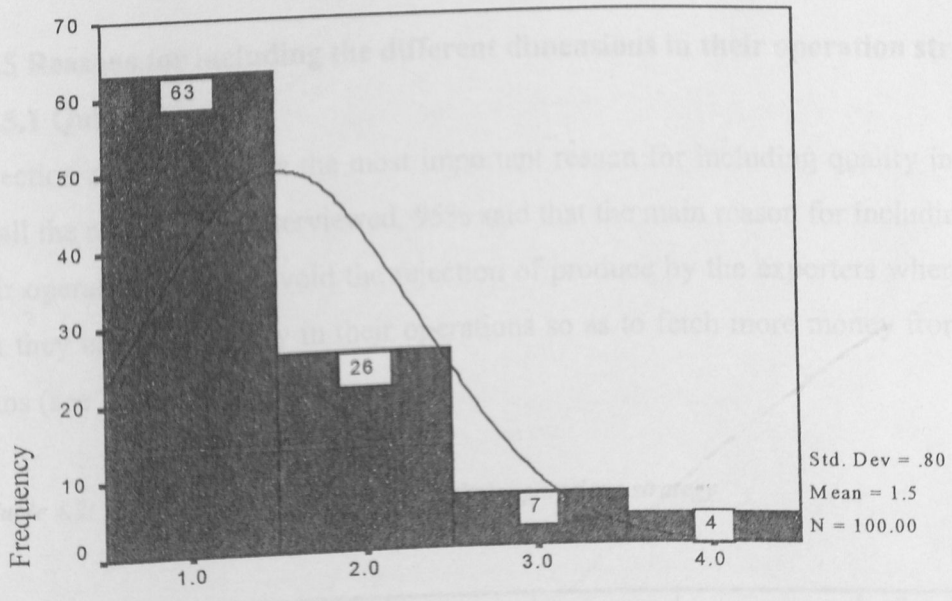

Figure 4.7: Importance of innovation in their operations strategy

4.2.4 The most commonly used dimensions of operations strategy

Based on all the respondents, quality and cost were seen to be the most commonly used dimensions. These two dimensions carried a more significant weight than all the other dimensions. There was a significant difference amongst all the five dimensions (see Table 4.1 below).

Table 4.1: Total variance in all the strategies

* Component	Initial Eigenvalues			Extraction Sums of Squared			Rotation
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	1.695	33.901	33.901	1.695	33.901	33.901	1.695
2	1.329	26.571	60.472	1.329	26.571	60.472	1.330
3	.869	17.378	77.850				
4	.695	13.898	91.749				
5	.413	8.251	100.000				

Extraction Method: Principal Component Analysis.
a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.
* Component 1 is quality, 2 is cost, 3 is flexibility, 4 is dependability and 5 is innovation.

4.2.5 Reasons for including the different dimensions in their operation strategy

4.2.5.1 Quality

Rejection of produce was the most important reason for including quality in operations. Of all the respondents interviewed, 95% said that the main reason for including quality in their operations was to avoid the rejection of produce by the exporters whereas 5% said that they included quality in their operations so as to fetch more money from the french beans (see Table 4.2 below).

Table 4.2: Reason for including quality in their operations strategy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	To avoid rejection of produce	95	95.0	95.0	95.0
	To fetch more money	5	5.0	5.0	100.0
	Total	100	100.0	100.0	

4.2. 5.2 Cost

Of all the respondents interviewed, 54% said that the main reason for including the cost dimension in their operations was to fetch more profit, another 42% said that the cost dimension was important in order to continue being in business whereas another 4% said that the cost dimension enabled them to sell their beans cheaply (see Table 4.3 below).

Table 4.3: Reason for including cost in their operations strategy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	To continue being in business	42	42.0	42.0	42.0
	To be able to sell cheaply	4	4.0	4.0	46.0
	To fetch more profit	54	54.0	54.0	100.0
	Total	100	100.0	100.0	

4.2.5.3 Flexibility

From the study, 50% of the respondents said that flexibility was important to maximise on profits when demand is high, another 49% said that flexibility is important to avoid making losses when demand was low, whereas 1% said that flexibility enabled them to make money throughout the Year (see Table 4.4 below).

Table 4.4: Reason for including flexibility in their operations strategy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	To avoid making losses	49	49.0	49.0	49.0
	To be able to fetch more money	50	50.0	50.0	99.0
	To be able to make money throughout the year	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

4.2.5.4 Time and dependability

From the study, 88% of the respondents said that time and dependability were important to avoid rejection of produce by the exporter, another 8% said that time and dependability were important to maintain a good relationship with the exporters, whereas 4% said that time and dependability were important in order to fetch more profit (see Table 4.5 below).

Table 4.5: Reason for including time and dependability in their operations strategy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	To avoid rejection produce	88	88.0	88.0	88.0
	To fetch more profit	4	4.0	4.0	92.0
	To keep a good relation	8	8.0	8.0	100.0
	Total	100	100.0	100.0	

4.2.5.5 Innovation

From the study, 76% of the respondents said that they had nothing to say about innovation as they were not sure whether they included it in their operations, another 16% said that innovation was important in order fetch more profit, another 8% said that innovation was important to avoid the rejection of produce (see Table 4.6 below).

Table 4.6: Reason for including innovation in their operations strategy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	76.0	76.0	76.0	76.0
	To fetch more profit	16.0	16.0	16.0	92.0
	To avoid rejection produce	8.0	8.0	8.0	100.0
	Total	100	100.0	100.0	

4.2.6 Relationship between acreage of french beans and the operations strategies

A Pearsonian correlation matrix was used to deduce the relationship between acreage of the french beans and the various operations strategies dimensions. Below are the findings:

4.2.6.1 Acreage of french beans and quality

There exists a negative linear relationship of 15% between quality and acreage of the french beans (see Table 4.7, Pg. 37) . Farmers with a greater acreage of beans were found to be less keen on quality whereas farmers with a less acreage were found to be more keen on quality.

4.2.6.2 Acreage of french beans and cost

There exists a strong positive linear relationship of 67% between cost and the acreage of french beans (see Table 4.7, Pg. 37). Farmers with a greater acreage of beans were found

to be more keen on cost whereas farmers with less acreage were found to be less keen on cost.

4.2.6.3 Acreage of french beans and flexibility

There exists a negative linear relationship of 26.2% between flexibility and acreage of the french beans (see Table 4.7, Pg 37) . Farmers with a greater acreage of beans were found to be less keen on flexibility whereas farmers with a less acreage were found to be more keen on flexibility.

4.2.6.4 Acreage of french beans and time or dependability

There exists a positive linear relationship of 11.8% between time or dependability and acreage of the french beans (see Table 4.7, Pg. 37) . Farmers with a greater acreage of beans were found to be more keen on time and dependability whereas farmers with a less acreage were found to be less keen on about time and dependadility.

4.2.6.5 Relationship between acreage of french beans and innovation

There exists a positive linear relationship of 27.7% between innovation and acreage of the french beans (see Table 4.7, Pg. 37). Farmers with a greater acreage of beans were found to be more keen on innovation whereas farmers with a less acreage were found to be less keen on innovation.

4.3 Johnston generic operations strategies and the Hayes and Wheelwright Framework.

To classify the business practices of the respondents in the Johnston generic operations strategies and the Hayes and Wheelwright Framework, the following categorical statements were used in a dichotomy form; differentiating practices, competition, changes in their production systems, innovativeness and customer services. To fall in Stage I, respondents had to show that they did not differentiate at all, Stage II described respondents who experienced competition and hence saw the need to differentiate from the other players, Stage III described respondents who did differentiate, experienced high competition from the rest of the players and made frequent changes to enhance

efficiency. Stage IV respondents showed that they practised what was in Stage III and took innovativeness seriously in order to enhance customer service as well.

Table 4.7: Correlation matrix

		Acreage of frenchbeans	Importance of quality their operation	Importance of cost in their operations	Importance of flexibility in their operations	Importance of time and dependability in operations	Importance of innovation in their operations
Acreage of frenchbeans	Pearson	1.000	-.150	.671 **	-.262 **	.118	.277 **
	Sig. (2-tailed)	.	.136	.000	.008	.241	.005
	N	100	100	100	100	100	100
Importance of quality their operations	Pearson	-.150	1.000	.058	.147	.110	.263 **
	Sig. (2-tailed)	.136	.	.570	.144	.277	.008
	N	100	100	100	100	100	100
Importance of cost in their operations	Pearson	.671 **	.058	1.000	-.302 **	.142	.270 **
	Sig. (2-tailed)	.000	.570	.	.002	.158	.007
	N	100	100	100	100	100	100
Importance of flexibility their operations	Pearson	-.262 **	.147	-.302 **	1.000	.013	.339 **
	Sig. (2-tailed)	.008	.144	.002	.	.896	.001
	N	100	100	100	100	100	100
Importance of time dependability in operations	Pearson	.118	.110	.142	.013	1.000	.161
	Sig. (2-tailed)	.241	.277	.158	.896	.	.109
	N	100	100	100	100	100	100
Importance of in their operations	Pearson	.277 **	.263 **	.270 **	.339 **	.161	1.000
	Sig. (2-tailed)	.005	.008	.007	.001	.109	.
	N	100	100	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

4.3.1 The internally neutral farmers and/or caretaker strategists

Of all the respondents interviewed, 84% did not find the need to differentiate from the rest of the players. The farmers believed that there was no need to differentiate as they were on a contract to supply the french beans as agreed with the exporter . Their role was to simply "grow the stuff" without any surprises (see Table 4.8 below).

Table 4.8: Differentiation amongst the farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Missing system	16	16.0	16.0	16.0
	Do not differentiate	84	84.0	84.0	100.0
	Total	100	100.0	100.0	

4.3.2 The externally neutral farmers and/or marketeer strategists

From the data collected, only 4% experienced high competition and therefore saw the need to differentiate from the rest of the players however this 4% did not make frequent changes in their operations as such. (see Table 4.9 below).

Table 4.9: Differentiation and competition amongst the farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Differentiate due to high Competition	4	4.0	4.0	4.0
	Missing System	96	96.0	96.0	100.0
Total		100	100.0	100.0	

4.3.3 The internally supportive farmers and/or reorganiser strategists

Of all the respondents interviewed, only 4% experienced high competition, saw the need to differentiate from the rest of the players and made frequent changes in their operations in order to fit into their competitive strategy such as cost (see Table 4.10 below).

Table 4.10: Differentiation, competition and frequent changes amongst the farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Differentiate due to high competetion and make frequent changes	4.0	4.0	4.0	4.0
	Missing System	96.0	96.0	96.0	100.0
Total		100	100.0		

4.3.4 The externally supportive farmers and/or innovator strategists

Of all the respondents interviewed, only 1% experienced high competition, saw the need to differentiate from the rest of the players, made frequent changes in their operations, and regarded innovativeness as important in order to enhance customer service and

increase efficiency. This respondent was simply not content with copying the other players but also aimed at being ahead in the production system (see Table 4.11 below).

Table 4.11: Differentiation, competition, frequent changes and innovativeness amongst the farmers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	1.0	1.0	1.0	1.0
	Missing System	99.0	99.0	99.0	
Total		**100**	**100.0**		

Key: 1.00 represents respondents who, due to high competition differentiated their products, made frequent changes in their operations and incorporated innovativeness in their operations strategy.

5.0 SUMMARY AND CONCLUSIONS

5.1 Introduction

The population of the study consisted of small-scale farmers who grow french beans for the export market. Primary data was obtained using a semi-structured questionnaire administered through personal interviews and the drop-and-pick-later method. The questionnaire was divided into sections according to the research objectives. There were 100 respondents which translated to a 67% response rate.

5.2 Summary

5.2.1 The use of operations strategy

Some important observations were made from the findings of this study. Majority of the respondents were sure of having used operations strategy in their production and were keen on the dimensions of operations strategies. However a portion of the respondents were not sure of having used operations strategy in their production, these could have been attributed to the lack of proper explanation about the term operations strategy. This means that although all respondents were seen to implement operations strategy dimensions, a number of these respondents do not take the operations strategy seriously.

5.2.2 The use of the different dimensions of operations strategy

Based on all the respondents, quality and cost were seen to be the most commonly used dimensions. These two dimensions carried a more significant weight than all the other dimensions. There was a significant difference amongst all the five dimensions. Quality came first while cost came second. Flexibility, dependability and innovativeness were third, fourth and fifth respectively. This means that due to the high quality product required for the export market, cost has become a less important dimension of the operations strategy Moreover, inputs are costly and hence cost becomes less relevant. This is because high quality products are labour intensive and need much more input in terms of irrigation, pest control and handling during harvest. However, the farmers take flexibility and time or dependability less seriously than the quality and cost dimensions. Innovativeness is absent amongst majority of the farmers. This means that although the

farmers implement some of the dimensions of the operations strategy, they need to be trained more about operations strategy and it's benefits .

5.2.3 Reasons for implementing operations strategy

Majority of respondents include quality and time or dependability in their operations to avoid rejection of produce. The major reason for including cost and flexibility in their operations is to fetch more profit from their output while the majority of the respondents had nothing to say about innovativeness.

The findings also show that farmers with a larger acreage of french beans are more keen on cost, time or dependability and innovativeness whereas farmers with smaller acreage of french beans are more keen on quality and flexibility. This could be due to the fact that farmers with a greater acreage often employ more labour and material inputs and have therefore to be concerned with the cost unlike farmers with a smaller acreage of french beans who often use family labour and use minimal input materials.

The findings also show that farmers with a greater acreage of french beans are concerned with time and dependability because they cannot afford to lose their much more tonnage of produce if they do not deliver on time. Unlike this farmer, the farmer with a smaller acreage of french beans can sell his much less tonnage of produce in the local market or side sell to the other exporters with ease.

Also seen is that the farmer with a larger acreage of french beans is more financially stable and can afford to come up with new creations every other time (innovativeness) unlike the farmer with a smaller acreage. However, the farmer with a larger acreage is less keen to excel in quality because the attention to detail is less. Moreover, this farmer is less keen to excel in flexibility because a change of the volume or variety of the product will mean a more financial commitment or loss. The farmer with a smaller french bean acreage can afford to be flexible because based on the size of his french bean acreage it will not involve too much money and he can stand the losses during the transition period.

5.2.4 Operations strategy practices of the small-scale farmers vis-a-vis the Hayes and Wheelwright model and the Johnston generic strategies

Amongst the respondents, 84% of the small-scale farmers did not find the need to differentiate from the rest of the players. The farmers believed that there was no need to differentiate as they had a ready market for their product. Their role was to simply "grow the stuff" without any surprises.

Also seen is that 4% of the respondents experienced high competition and therefore saw the need to differentiate from the rest of the players however this 4% did not make frequent changes in their operations as such.

Another 4% experienced high competition, saw the need to differentiate from the rest of the players and made frequent changes in their operations in order to fit into their competitive strategy such as cost.

Only 1% of the respondents experienced high competition, saw the need to differentiate from the rest of the players, made frequent changes in their operations, and regarded innovativeness as important in order to enhance customer service and increase efficiency. This respondent was simply not content with copying the other players but also aimed at being ahead in the production system.

One can therefore conclude that a large percentage of the operation practices of the small-scale farmers growing for the export market are in the first stage of the Hayes and Wheelwright and Johnston's generic strategies. This could be attributed to the fact that the product is natural and no differentiation except packaging is possible. Moreover, the exporters who buy the produce do not need any special packages at this point and all produce is placed in crates or perforated packages. The rest of the farmers who differentiate their products could be due to the fact that they sell to other exporters other than their contracted buyer (side selling). The product is the same but they present the product in different packages to these buyers.

5.3 Conclusions

Based on the research objectives and the study findings one can therefore conclude that although *all* respondents were seen to implement operations strategy dimensions, a number of these respondents do not take the operations strategy seriously. The findings also show that farmers with a larger acreage of french beans are more concerned with cost, time or dependability and innovativeness whereas farmers with smaller acreage of french beans are more concerned with quality and flexibility. This could be due to the fact that farmers with a greater acreage often employ more labour and material inputs and have therefore to be concerned about the cost unlike farmers with a smaller acreage of french beans who often use family labour and use minimal input materials.

One can also conclude that farmers with a greater acreage of french beans are concerned with time and dependability because they cannot afford to lose their much more tonnage of produce if they do not deliver on time. Unlike this farmer, the farmer with a smaller acreage of french beans can sell his much less tonnage of produce in the local market or side sell to the other exporters with ease. Farmers with a larger acreage of french beans are more financially stable and can afford to come up with new creations every other time (innovativeness) unlike the farmer with a smaller acreage. However, the farmer with a larger acreage is less keen to excel in quality because the attention to detail is less. Moreover, this farmer is less keen to excel in flexibility because a change of the volume or variety of the product will mean a more financial commitment or loss. The farmer with a smaller french bean acreage can afford to be flexible because based on the size of his french bean acreage it will not involve too much money and he can stand the losses during the transition period.

From the foregoing it can be concluded that the operations practices of the small-scale farmers growing for the export market fall in the first stage of the Hayes and Wheelwright and Johnston's generic strategies. This could be attributed to the fact that the product is natural and no differentiation except packaging is possible. Moreover, the exporters who buy the produce do not need any special packages at this point and all produce is placed in crates or perforated packages. The rest of the farmers who

differentiate their products could be due to the fact that they sell to other exporters other than their contracted buyer (side selling). The product is the same but they present the product in different packages to these buyers.

5.4 Recommendations

From this study it is clear that the following recommendations are necessary:

- The small-scale farmers growing french beans for the export market should be trained thoroughly about operations strategy and it's benefits. This will enable them manage their businesses better and hence earn a higher income. Operations strategy is key for organizational success and should therefore be taken much more seriously for a business to succeed. All dimensions should be taken seriously and the issue of quality and cost being more important than the rest of the dimensions should not be there because all the dimensions are equally important especially when dealing with a sensitive market where quality, prices, correct timing and volumes are paramount.
- The small-scale french bean farmer should be made to understand clearly all the aspects of cost, quality, flexibility, dependability and innovativeness the way the exporter understands them to avoid clashing in their operations.
- The exporters who outsource produce from the small-scale french bean farmers should be trained on how to achieve the world-class status. This is because the strategies have to tickle down from the top (the exporter) as well.
- Lastly, this document should be made available to the farmer and also exporters who out source and manage these farmers for a more efficiently and effectively managed system.

5.5 Limitations of the study

The farmers were sparsely and unevenly distributed and hence during data collection one had to walk or drive for long to get to the different farmers. This involved a lot of time and cost.

This research found that the application of the different dimensions of operations strategies in all Districts depended the on the acreage of french beans. This means that if the researcher surveyed operations strategies of the large-scale farmers growing for the export market the study would have given a clearer picture of the operations strategies.

This research found that 74% of the farmers considered quality as most important whereas 46% found cost to be most important. Perhaps if the researcher surveyed operations strategies of these farmers over a period of a year so as to capture all details during the dry and the wet periods the study would have given a clearer picture of the operations strategies.

Working with farmers picked from groups as opposed to individual farmers may have given the researcher a different picture from the reality. Though it is very hard to sample independent farmers it would have been better if the research had gone into detail of interviewing the independent farmers in order to gather more information. This would for instance cover cases of group thinking.

Some of the farmers sampled for the survey did not respond and could have helped give a more comparative view of the operations strategies and make a better deduction of the classification in the models.

5.6 Suggestions for further Research

Future researchers in the area of horticulture may consider investigating the econometrics of how the farmers can apply the operations strategies in order to reach the fourth stages of the Hayes and Wheelwright and the Generic strategies, that is world class.

Future researchers may also delve deeper into the variations of the operations strategies between the small-scale farmers, the large-scale farmers and the exporters. Lastly, one may also study the impact of operations strategies applied by the exporters who outsource from these small-scale farmers on the farmers.

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APPENDIX I – Cover Letter

Faculty of Commerce,
Department of Management Science,
University of Nairobi,
P .O. Box 30197,
Nairobi.

Date

Dear Sir/ Madam,

RE: MBA RESEARCH PROJECT QUESTIONNAIRE

The undersigned is a student at the University of Nairobi, pursuing a Master of Business Administration (MBA) Degree in Operations Management. As part of her coursework assessment, she is required to submit a research project report on an area of management.

As one of the small-scale farmers growing french beans for the export market, you have been selected for a survey on operations strategy practices of small-scale french bean farmers growing for the export market. You are kindly requested to complete the attached questionnaire, which is designed to gather information on operations strategies.

All the information you disclose will be used only for this academic exercise and will be treated in the strictest of confidence. Your cooperation will be highly appreciated.

Yours faithfully,

Pauline M. Mbugua
MBA student
Tel: 0722309780

Nyamwange S. O.
Supervisor

Appendix II -Questionnaire

PART I

1. Name of the respondent (optional) _____

2. Age of the respondent _____

3. Gender of the Respondent; Male( ) Female( )

4. Location of the farm (district, division and location) _____

5. Education background of the respondent _____

6. Training of the respondent _____

7. Experience of the respondent in years_____

8. How large is your farm in acres? _____

9. What acreage is the french bean covering? _____

10. Variety or varities of french beans grown in your farm_____

11. Give reason for growing the particular variety_____

_____

12. Your annual turnover (please tick one)

Less than KSh. 150,000 ( )

KSh 150,000 to 300,000 ( )

Over KSh 300,000 ( )

Other (please specify)_____

1 Do you plant french beans through out the year? Yes( ) No( )

12. Give reason for your answer above

_____

_____

_____

_____

PART II

1. Do you consider operation strategy (the implementation of cost, quality, dependability, flexibility and innovativeness in your production.)? (Please tick one)

Yes ( )

Not sure ( )

No ( )

2. Using the 1 as the least important and 5 as the most important. Please indicate the importance of the following factors of operations strategy in your business.

	1	2	3	4	5
Factor	( )	( )	( )	( )	( )
	Least important				Most important

	1	2	3	4	5
Quality	( )	( )	( )	( )	( )
Cost	( )	( )	( )	( )	( )
Flexibility	( )	( )	( )	( )	( )
Time/dependability	( )	( )	( )	( )	( )
Innovativeness	( )	( )	( )	( )	( )

Others (please specify)_____

_____

3. For each of the following attributes please indicate the reason of its inclusion in your operations.

Quality (Please tick your answer or answers)

A. To avoid rejection of produce

B. To fetch more money for your frenchbeans

C. To create a good name for yourself

D. To be a famous farmer in Kenya

Others please specify_____

_____

Cost

A. To continue being in business

B. To be a famous farmer in Kenya

C. To create a good name for yourself

D. To fetch more profit from your french beans

Others please specify_____

_____

Flexibility

A. To avoid making losses when the demand is low in the market

B. To fetch more money when the demand is high in the market

C. To make a lot of money through out the year from unique french beans.

D. To create a good name for yourself

Others please specify_____

_____

Time/dependability

A. To avoid rejection of produce

B. To be a famous farmer in Kenya

C. To fetch more money for your frenchbeans

D. To create a good name for yourself

Others please specify_____

_____

Innovativeness

A. To be a famous farmer in Kenya

B. To fetch more money for your frenchbeans

C. To me more competitive than the rest of the farmers

E. To avoid rejection of produce

Others please specify_____

4. Using the 1 as the least important and 5 as the most important. Please indicate the problems you have encountered when trying to implement quality, cost, innovativeness, dependability and flexibility in your operation strategy in your business.

	1	2	3	4	5
Factor	( )	( )	( )	( )	( )
	Least important				Most important

	1	2	3	4	5
1. Insufficient irrigation pumps	( )	( )	( )	( )	( )
2. Inefficient irrigation pumps	( )	( )	( )	( )	( )
3. Expensive fuel for irrigation pumps	( )	( )	( )	( )	( )
4. Expensive labour	( )	( )	( )	( )	( )
5. Bean varieties that are prone to diseases yet in the absence of disease provide the best quality	( )	( )	( )	( )	( )
6. High cost of farm inputs, including seed, fertilizer and chemicals.	( )	( )	( )	( )	( )
7. Insufficient knowledge on pest control and french bean growing.	( )	( )	( )	( )	( )
8. Poor post-harvest handling practices by other workers assisting you leading to post harvest loss.	( )	( )	( )	( )	( )
9. Unacceptably high pesticide use and ignorance of environmental concerns as demanded by importing countries.	( )	( )	( )	( )	( )
10. Lack of cooling facilities in the farms.	( )	( )	( )	( )	( )
11. Lack of formation about the market requirements in terms of demand	( )	( )	( )	( )	( )
12. Lack of information about the market requirements in terms of product features	( )	( )	( )	( )	( )
13. Lack of adequate funds to buy new and efficient equipment	( )	( )	( )	( )	( )

Others please specify_____

_____

5. With regards to quality, cost, innovativeness, dependability and flexibility, please tick the benefits that you have encountered?

A. More profit margins ( )

B. Minimal loss of produce ( )

C. More efficiency in management of the farm ( )

D. Ability to expand business. ( )

E. No benefit at all ( )

Others please specify_____

_____

6. Do you differentiate yourself from your competitors? Yes( ) No( )

7. Please give reason for your answer above_____

_____

_____

8. What kind of competition do you experience? High ( ) Low ( ) None ( )

9. Please explain your answer above _____

_____

10 How often change the way you design and manage the processes?

(Please tick one)

After every three months ( )

After every six months ( )

Every year ( )

After every five years ( )

Not at all ( )

11. Why do you make the changes?

(Please tick one)

To enhance efficiency ( )

To make more money ( )

To enhance customer service ( )

No reason at all ( )

Others please specify_____

_____

12. Who decides on the operation strategy to use_____

13. What do you expect by improving your operations?

(Please tick one)

Enhanced customer service ( )

More money ( )

Nothing ( )

Others please specify_____

_____

14. Please give any more information and comments that you consider useful in this study

_____

_____

_____

THANK YOU