The Impact of Professional Training on the Floriculture Sub-Sector in Uganda

A Research project Submitted to Larenstein University of Applied Sciences in Partial Fulfilment of the Requirements for the Degree of Master of Agricultural Production Chain Management, specialization Postharvest Technology and Logistics

By

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Wageningen

The Netherlands

Photo of a woman harvesting Kalanchoe cuttings in Xclusive Cutting limited.

Photo of sweetheart rose production in UgaRose Flowers limited.

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Abbreviations

BAC	Bukalasa Agricultural College
CBFU	Capacity Building in the Floriculture Sub-sector of Uganda
CBL	Competence Based Learning
CV	Credit Values
ECS	Education and Competence Studies
FHL	Fresh Handling Limited
GLOBAL G.A.P	GLOBAL Good Agricultural Practices
IDEA	Investment in Developing Export Agriculture
IIRR	International Institute of Rural Re-construction
KIT	Royal Tropical Institute
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MMU	Mountains of the Moon University
MOES	Ministry of Education and Sports
MPS	Milieu Programma Sierteelt
NCDC	National Curriculum Development Centre
NCHE	National Council of Higher Education
PTC+	Practical Training Centre
RvA	Dutch Council of Accreditation
StdDev	Standard deviation
ToT	Training of Trainers
UEPB	Uganda Export Promotions' Board
UFEA	Uganda Flower Exporters Association
UIA	Uganda Investment Authority
WUR	Wageningen University and Research Centre
X	Mean

Key terms

Competence

Competence Based Education

Effective

Efficiency

Flower farms

Job profile

Tasks

Training institutions

Training of Trainers

Abstract

In 2006, the capacity building of the floriculture subsector in Uganda commenced through training competent personnel to work in the flower farms. During the last four years, the project worked hard towards implementing competence based learning approach in MMU and BAC as well as putting all requirements in place such as training materials, facility building, cold storage facility, and the greenhouse. Furthermore three groups of students graduated from the diploma programme and a number of them were employed by the farms. The objective of this thesis is to assess how competence based learning approach has transformed the learning trajectory at MMU and BAC into producing competent farm managers and supervisors as well as identifying appropriate interventions for the existing gaps. In order to achieve this, a qualitative and quantitative survey was done in which lecturers and farm managers and supervisors were interviewed. In total, the respondents were 30 consisting of 6 lecturers and 24 farm managers and supervisors.

Two questionnaires were prepared that were used to gather quantitative data, while the qualitative data was gather through asking the respondents to explain their choices in the questionnaires. The questions focused on: the job profiles in the farms, the competencies needed for performing the job profiles, the tasks performed in the job profiles, the training and assessing methods used at the training institutions, the graduates' attitude, their creativity, their ability to cope with change, their effectiveness to communicate, as well as their ability to plan and participate in decision making. The results were analyzed with SPSS tools of legacy dialogs and 123 frequency.

The results showed that graduates were more competent at communicating effectively, and measuring performance and quality, while they were relatively less competent at managing time and stress as well as analyzing core processes at work. The graduates were also least expected to perform accounting, logistics, and procurement in the farm as compared to auditing, producing, and reporting. Furthermore, the results showed that case studies, excursions and oral exams were least used in the training and assessing methods. Considering the outcome of the other variables: attitude, creativeness, coping with change, communicating effectively, planning and decision making; the results showed that graduates were average at performing effectively and efficiently.

Chapter One Introduction

This chapter justifies the purpose of the thesis. It therefore includes: floriculture background, the significance of professional floriculture, context of the research study, the research problem, the research objective, the research issue, and finally the concept definitions.

1.1 Floriculture

Uganda is located in East Africa and has a population of about 30 million with per capita income of about US$300. Agriculture is the main stay of the economy with more than 76% of the population employed in the sector (Asifiwe 2008).

Commercial floriculture in Uganda started in the early 1990s and developed based on two products, which are sweetheart roses and chrysanthemum cuttings. The floriculture exports have been more important than other horticultural products such as fruits and vegetables. In 2002, the flower exports were valued at US$21.1 million compared to US$4.2 billion for fresh produce (Gabre-Madhin and de Vette 2004)

Over 192 hectares of flower were cultivated in 2009 on 19 farms and floriculture accounted for about 2% of Uganda's exports in 2008. It was estimated that 6000 people were employed in floriculture industry by 2006. Employers highlight that labor intensity of this sector, suggesting that each hectare cultivated requires about 6 fieldworkers (Sender and Von Uexkull 2009). About 80% of the floricultural workforce is females, the majority employed on a causal basis as "bed attendants" or fieldworkers (Lumumba 2005).

According Sender and Von Uexkull (2009), the trade data for flowers provided by the Uganda Bureau of Statistics shows that there has been a substantial fluctuation since 2003 despite increasing total flower exports to EU, which is virtually the market of all Uganda's flower exports.

Sender and Von Uexkull (2009) attributed the fluctuations to the global financial crisis, which has had a very significant impact on African flower exporters in 2009 because of declines in demands and prices in the major importing markets. On the other hand, Oyelaran-Oyeyinka and Sampath (2007) say that the fluctuations are because of the Uganda's under performance in health, primary education, higher education and training, which affect its competitiveness in global business.

1.2 Significance of professional floriculture

Considering Uganda's under performance in health, primary education, higher education and training, which affects its competitiveness in global business (Oyelaran-Oyeyinka and Sampath 2007); is partly the reason why the capacity building project in the floriculture sub-sector of Uganda was started in 2006 to train and produce practical hands-on workers for the floriculture sub sector.

The project that ended in May 2010 was run in partnership of Mountains of the Moon University (MMU), Bukalasa Agricultural College (BAC), Uganda Flower Exporters Association (UFEA), Practical Training Center, Ede (PTC+), and Wageningen University and Research Center (WUR) according to CBFU (2010).

MMU and BAC were responsible for equipping the students with knowledge, skills and attitude at certificate and diploma levels. The two learning institutions designed curricula for certificate and diploma programmes with support from UFEA, PTC+ and WUR. The certificate programme was aimed at equipping graduates with competencies for supervising, while the diploma programme equips graduates with competencies of managing the farms as shown in figure 1. The certificate programme takes one year an equivalent of two semesters to complete, while the diploma takes two years an equivalent of four semesters. From the figure, managers and supervisors represent flower farms, the floriculture certificate and diploma represent MMU and BAC, agricultural certificates represent the recognized agricultural vocation colleges, and finally upper and lower secondary schools.

The objective of the project was 'to develop a curriculum for education and train floriculture at BAC and MMU in order to get competent people at certificate and diploma levels who can work as supervisors and managers on commercial flower farms, according to the project website (CBFU 2010).

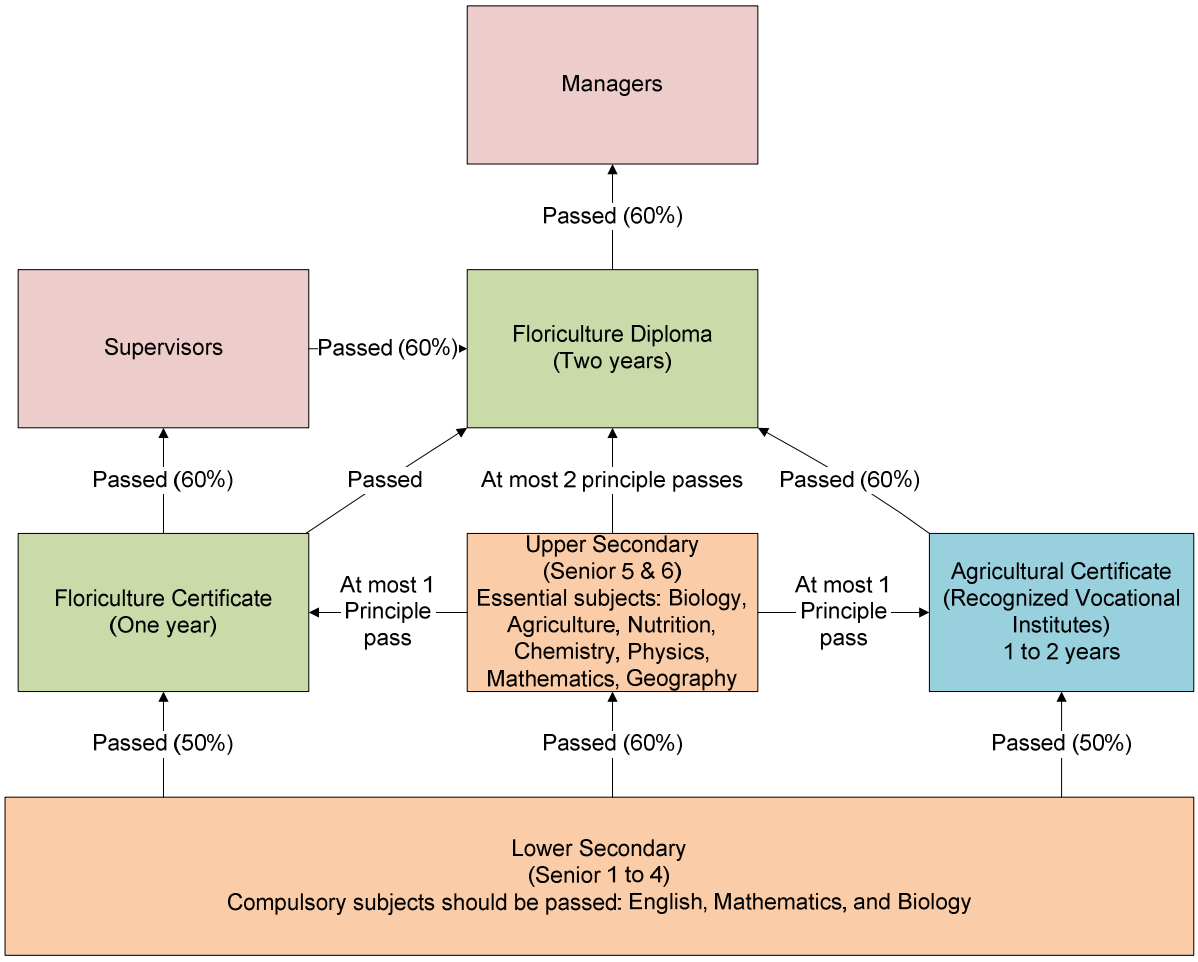

Figure 1 Proposed programme structure for floriculture at the MMU and BAC

CBFU (2010) further divides the objective of the project into specific objectives, which are:

a) To obtain an overview of the floriculture sector in Uganda and the related education and training programs/projects.

b) To obtain a picture of the competences needed and the current job structures in the floricultural sector.

c) To develop three types of course programs based on the sector needs, discerned from sector analysis, including the current training and education programs, the competences needed, and the current job structures.

d) To test the designed curriculum and the developed materials by means of pilots in the involved education institutes.

e) To implement the curriculum on both education institutes (MMU and BAC) based on the reviewed pilots.

f) To evaluate and, if necessary, to revise the implemented curriculum to meet the desires and demands from the involved parties.

After having followed the envisaged education or training program the students and/or graduates should have (CBFU 2010):

a) Developed a basic theoretical knowledge level of relevant, flower business-related subjects, both at certificate and diploma level. (knowledge)

b) Developed relevant and up-to-date mentality, skills and attitude (skills, attitude)

c) Developed specific competencies related to human resource management and communication, being able to lead a team of workers (supervisors) or supervisors (managers). (knowledge, skills, attitude)

d) Experienced the daily working practice on a commercial flower farm. (knowledge, skills, attitude)

1.3 Context of the research study

Sterling (2001), says higher education provided in the 19th Century is inadequate for the very different conditions and challenges of the 21st Century. He added that the 21st Century is essentially systemic characterized by multiple causation and complex feedback, and yet the dominant educational structures are based on fragmentation rather than connection, relationship and synergy.

According to Kibwika (2006), today's challenges include issues of poverty, sustainability and democracy arising from the complex interaction of many social, political and technological elements. These challenges fundamentally question the relevance of education offered in universities today. He adds that education in universities today should be oriented towards developing a change maker or professional.

Opio-Odong (1993) concurs with Sterling (2001) and Kibwika (2006) that he attributes the lack of professionalism in today's learning trajectory in Uganda to the history of education. He says that formal education in Uganda was introduced by European missionaries with the aim of turning the supposedly 'ignorant savage' into a good Christian and eventually a good tool for the colonial government. Tiberondwa (1998) adds that the missionaries were concerned with converting indigenous people, but critical examination of their activities reveals that they were often highly meshed with European colonial projects in Africa.

Ssekamwa (2000) says that education was looked at as skills to be used in the white man's employment, and connected to office work. He adds that parents sent their boys to high school

not to learn to drive bullock wagons and to look after cattle, but to learn to be fitted for posts of high standing. Kibwika (2006) concurs that the purpose of education then was to get people out of the community, cleanse them of their traditional values, indoctrinate them with Christian values, and give them formal education fitted for 'white collar' jobs.

Kibwika (2006) believes that the challenges mentioned above require systemic education, which ensures adaptive capacity for current challenges and future uncertainties. As Harvey and Knight (1996) put it that higher education is about more than just producing skilled acolytes, important though these undoubtedly are; it is also about producing people who can lead, who can produce new knowledge, who can see new problems and imagine new ways of approaching old problems. Although this requires continuous engagement in the learning process between the institutions and other actors or stakeholders (Kibwika 2006), he stresses that this creates a capacity for co-learning, making higher leaning institutes joint learning organizations. Kibwika (2006) asserts and agrees with the project objectives (section 1.2) above that the outcome of this approach is learning, innovation and change for all stakeholders.

1.4 Research problem

In 2006, twelve flower farms were visited and the managers and supervisors of these farms were interviewed about the performance of graduates they employed. The results showed that the graduates did not have a practical hands-on mentality or perceptual framework (CBFU 2009).

The managers and supervisors attributed this problem to the training institutions for failing to integrate practical skills and a desired professional attitude relevant to working conditions of flower farms into the learning trajectory.

The effect of this problem was that the managers were forced to retrain the employed graduates for a period of one to two years which is costly and time consuming, and/or employ experienced people from abroad who are expensive for the farm.

1.5 Research objective

This thesis seeks to evaluate how competence based learning approach has transformed the learning trajectory at MMU and BAC into producing competent farm managers and supervisors as well as identifying appropriate interventions for the existing gaps.

1.6 Research issue

Main questions

1. In what way is competence based learning strategy equipping students with practical skills?
2. What is the impact of the learning trajectory on the graduates' effectiveness and efficiency in performing the tasks?

Sub questions

1. In which way is competence based learning strategy equipping students with practical skills?
    a) What competencies were integrated into the learning trajectory to meet desired practical skills?

b) What components are used in the learning trajectory to ensure students learn these competencies?

2. What is the impact of the learning trajectory on the graduates' effectiveness and efficiency in performing the tasks?
    a) What tasks are expected to be done by graduates in the flower farms?
    b) How effective and efficient are graduates at performing these tasks in the flower farms?

1.7 Concept definition

Competence Based Learning is a comprehensive analysis of the context of use that would precede a situated learning task in which a balanced attention would be paid to knowledge, skill and attitude components of the respective competency (Mulder, Guliker, Biemans, and Wesselink 2009).

Competence is the ability of a person or an organization to reach specific achievements. Personal competencies comprise: integrated performance oriented capabilities, which consists of clusters of knowledge structures and also cognitive, interactive, affective and where necessary psychomotor capabilities, and attitudes and values, which are conditional for carrying out tasks, solving problems and more generally in a certain profession, organization, position or role (Mulder and Collins 2007).

Task is a piece of work that somebody is given to do, usually quite short in duration or with a deadline. A number of tasks require specific competencies to effectively and efficiently perform them in order to fulfill the overall job profile (Microsoft 2007).

Effectiveness is making the right decisions on how to use resources in order to get the best result from the task (Rollinson 2005).

Efficiency is a measure of resource usage, usually expressed as a ratio of inputs used to produce a given level of outputs (Rollinson 2005).

Learning trajectory is a process involving a relatively permanent change in behavior, or potential behavior that results from experience (Rollinson 2005; Hulse, Deese and Egeth 1980).

Manager is a person formally appointed to a role in the organizational hierarchy, associated with which is the formal authority (within prescribed limits) to direct the actions of subordinates. Among other things the role of a manager is concerned with some combination of planning, organizing, directing, and controlling the activities of human resources towards the achievement of set organizational objectives (Rollinson 2005).

Supervisor is somebody whose job is to oversee and guide the work or activities of a group of other people (Microsoft 2007). In flower farms the supervisors work under managers.

A *value chain* refers to the entire system of production, processing, and marketing of a particular product, from inception to the finished product; and consists of a series of actors, linked together by flows of products, finance, information and services (KIT and IIRR 2010).

Chapter Two Literature Review

This chapter spotlights the floriculture subsector in Uganda, the value chain, the job profiles, competences required for these job profiles, and the tasks performed under these job profiles.

2.1 Uganda flower subsector

Okello and Petrova (2007) concur with Gabre-Madhin and de Vette (2004) that commercial floriculture in Uganda started in 1992 with the cultivation of tea hybrid and intermediate roses on two hectares of land. They assert that the idea of cultivating flowers on a commercial scale was adopted from Kenya. Okello and Petrova say that the first production was poor because the warm and humid climate around Lake Victoria Basin was unfavorable for tea hybrid and intermediate roses. After researching on the variety the suits Uganda's climate, Okello and Petrova say that the sweetheart roses were chosen.

Uganda Export Promotions' Board, UEPB (2005) listed a number of sweetheart rose varieties cultivated in Uganda such as: Amore, Baronesse, Escimo, First Rose, Dream, Lambada, Sacha, Cream Propyta, Rumba, Vanilla, Escada, and Golden Gate among others. Meanwhile UFEA (2008) attributes 65% market share of the rose market in Europe to sweetheart roses.

Figure 2 Showing the districts involved in commercial floriculture and training institutes

UFEA (2008) agrees with Sender and Von Uexkull (2009) that the entire sector is on approximately 200 hectares of land, that it breaks down as: 142 hectares under roses, 32 hectares under chrysanthemums, and finally 7 hectares under pot plants. The association further stresses that there are 19 farms; 18 farms are located around the Lake Victoria basin, these are: Wagagai limited, Fiduga, Aurum Rose, Chrysanthemum Uganda limited, Xpression, Jambo Roses, JP Cuttings, Kajjansi Roses, Xclusive Cuttings, Mairye Estates, Malissa Flowers, Oasis Nurseries, Rosebud Limited, Uganda Hortect, Ugarose Flowers limited, Royal Van Zanten limited, Sai Farm limited, and Venus Farm Uganda limited, while the nineteenth farm that is Pearl Flowers is located in Southern Uganda in Ntungamo District (figure 2).

Uganda's flower industry is not entirely dependent on roses, UFEA (2005) asserts that Uganda attributes 60% of Chrysanthemum, summer, and pot plant cuttings imported into the Netherlands. UFEA (2008) ranks Uganda as the fifth exporter of flowers in Africa with 6,799 metric tons per year at a value of US$30 million. IDEA (2005) observes that Uganda has become competitive in the global floriculture market by supplying its sweetheart roses to the fast growing supermarket sector.

According to figure 3 below, there is a steady increase from 2002 to 2005 that is followed by a decline in 2006; UFEA (2008) attributes these fluctuations in value and volumes to increase in cost of production and change in consumer behavior. They assert that the financial recession has caused consumers to spend more on basic needs than luxuries (flowers among others), which reduces profits made by flower sector vis-à-vis the increased costs of production.

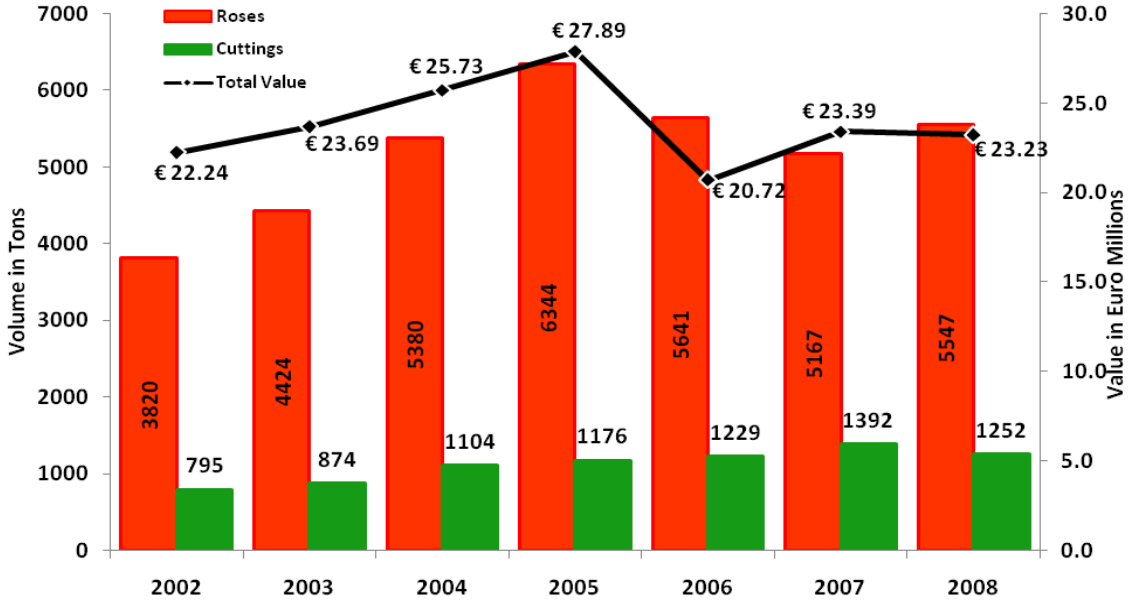

Figure 3 Estimated volume and value of flower exports from Uganda 2002-2008 (*Source: UFEA, FHL, FloraHolland, and Growers 2008*)

2.2 Chain

KIT and IIRR (2010) assert that despite the unpredictable weather, dodgy infrastructure, volatile prices, low status, and little support; millions of farmers, traders, service providers and micro-entrepreneurs still manage to export produces to distant markets and stay in business. They say that this reflects their resilience, creativity, and huge entrepreneurial potential.

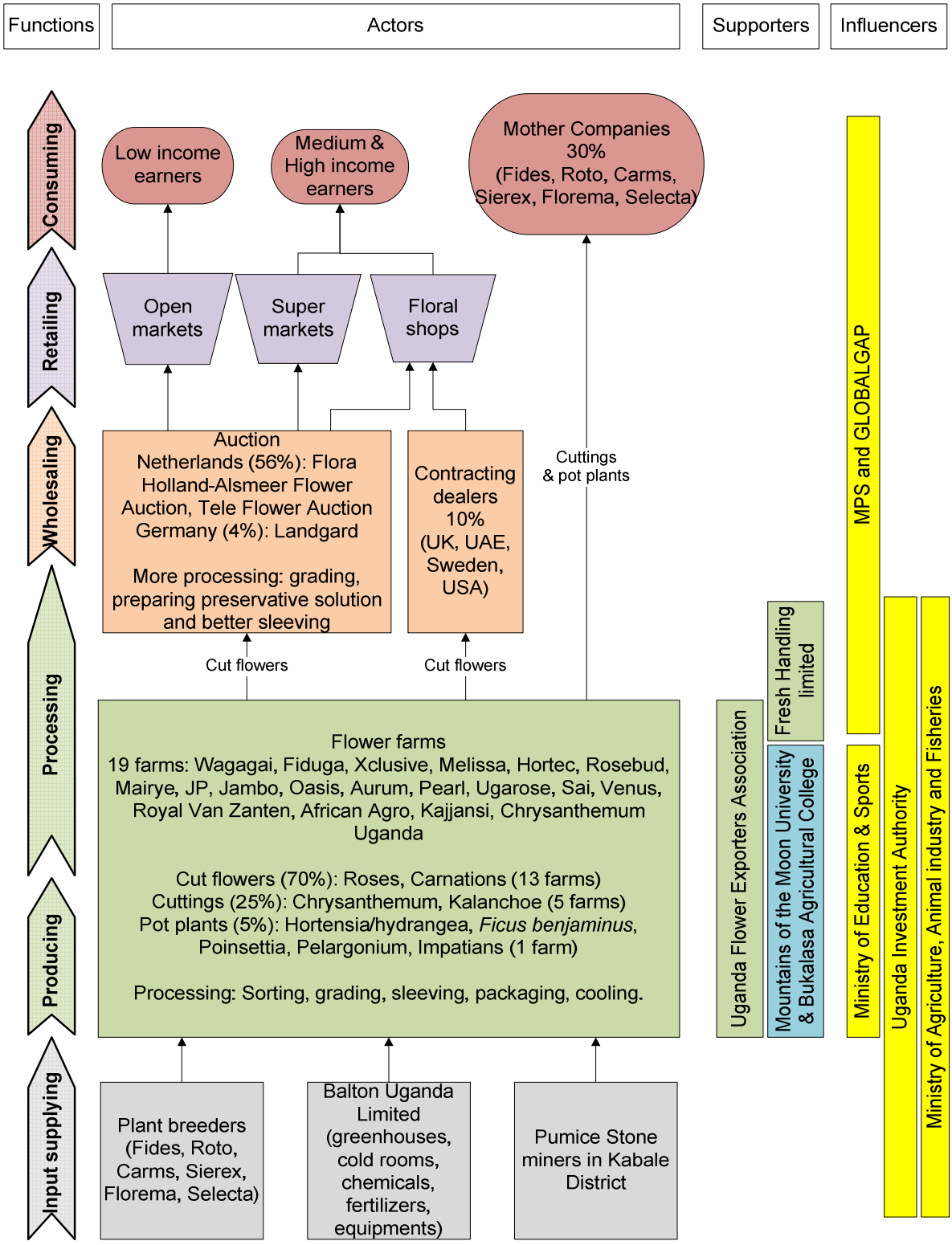

Figure 4 The value chain of Uganda's flowers

2.2.1 Chain actors

These are individuals or organizations that produce the product, or buy and sell it hence they actually own the product at some stage in the chain (KIT and IIRR 2010). According to the floriculture chain (figure 4), the actors are described in detail below:

Plant breeders or mother companies are institutions that are responsible for developing new plant varieties normally in small amounts. The new varieties are then multiplied by flower farms before exporting them back to the breeders.

Balton Uganda limited is the largest stockiest of agricultural inputs in Uganda such as agro chemicals, and fertilizers; fertigation and fumigation equipment; greenhouse and cold store structures and materials among others. They supply over 70% of all commercial agricultural farms at medium and large scale levels (Balton Uganda 2010).

Kabale pumice stone quarry is in a volcanic area, and commercial flower farms that are producing on hydroponic system purchase the substrate from the quarry. Most of these farms are involved in pot plants and cuttings.

Commercial flower farms are 19 in total as earlier stated in sections 1.1 and 2.1, the farms are mainly involved in producing cut flowers, cuttings, and pot plants. But they are also involved in processing or conditioning of the flowers, which includes sorting, grading, pre-cooling, packaging and cooling. This type of conditioning is also regarded as dry conditioning or processing because the flowers are kept dry. This reduces the weight of flowers during transportation and flight costs (Chain of life network 2010).

Auctions are sales of goods (cut flowers) at which intending buyers bid against one another for individual items, each of which is sold to the bidder offering the highest price (Microsoft 2007). The auctions[1] also process or condition the flowers, but this is wet processing compared to dry processing of the flower farms. Wet processing is done by adding a preservative solution to the cut flowers, which are then transported to floral shops, supermarkets, as well as exported to other countries.

Contracting dealers are individuals or organizations that buy cut flowers from the flower farms in the United Kingdom, United Arabs Emirates, Sweden, and the United States of America. After which the dealers sell the cut flowers to floral shops and supermarkets.

The open markets, floral shops, and supermarkets are institutes that sell the cut flowers, cuttings, and pot plants to consumers. The open markets target main the low earning consumers, while the supermarkets and floral shops target the medium and high earning consumers.

[1] Tele Flower Auction (TFA) located in Amstelveen, the Netherlands source their flowers from Kenya, Uganda, Zambia, and the Netherlands. The suppliers of TFA are accredited by MPS, Max Havelaar and Kenya flower Council for Kenya flower. The TFA operates according to the same rules as traditional auctions, but the only difference is that auction is done through the internet (FloraCulture International 2010). Flora Holland and Alsmeer merged in 2006; they are in the Netherlands and have 5 auction locations, 26 auction clocks, and a nationally operating Intermediary Office handling direct sales away from the clocks and 3,000 employees (FloraCulture International 2010). Landgard is Germany´s leading horticultural marketing organization and they operates four auctions as well as marketing the produce to the specialist retail trade via 29 Cash & Carry stores in Germany, one in Vienna, Austria and one in Prague, Czech Republic (FloraCulture International 2010).

2.2.2 Chain supporters

These are individuals or institutions involved and surrounding the chain actors and responsible for the providing financial such as loans, pre-financing, shareholdings, factoring, and leasing arrangements among others, and non-financial services such as input supplies, farm labor, transport, grading, processing, storage, packaging, advertising, research, training, advice, and organization among others (KIT and IIRR 2010). From figure 4, the chain supporters are described in detail below:

Uganda Flowers Exporters Association (UFEA) was established in 1995 and has evolved into a strong Association consisting of 19 flower farms. The association is internationally recognized and accessing funds from Development Partners for capacity building and Industry development. UFEA lobbies for a better enabling environment for industry growth, which has led to the rapid expansion of the flower sector in Uganda. The member farms contribute towards the running costs of the Association. All members benefit from training programmes so as to improve management at the farms. (UFEA 2010)

Fresh Handling Limited (FHL) specializes in handling exports of cut flowers, horticultural and agricultural products from Uganda. It has been in existence since 1999 when it was formed by flower and vegetable growers in conjunction with the Uganda Flower Exporters Association (UFEA) and other horticultural exporters. FHL sources air freight uplift of goods to be exported from Uganda to various parts of the world on both passenger and cargo flights. FHL provides ground handling services, maintains cold chain management, and co-ordinates product delivery to the final destination. FHL was certified by Uganda Investment Authority to provide these services. (FHL 2010)

MMU and BAC are training institutes as stated earlier under section 1.2 that provide training services to the flower farm workers with the aim of making them competent. The two training institutes were actively involved in developing the curricular for the floriculture diploma, which was accredited by Ministry of Education and Sport through National Council of Higher Education and National Curriculum Development Centre.

2.2.3 Chain influencers

Chain influencers are also regarded as chain context because chain actors and supporters operate within a context that includes the larger economy, currency exchange rates, government economic policy, and governance, tax, regulatory and legal framework. The influencers may enable the chain to perform by promoting transparency and stable macroeconomic policy or hinder the chain from performing by imposing restriction and allowing corruption to flourish (KIT and IIRR 2010). From figure 4, the chain influencers are described in detail below:

Uganda Investment Authority (UIA) is mandated to attract, promote and facilitate investment. Apart from offering quality investor services, UIA advises government on the best practice policies regarding investment in Uganda. As its main role, the UIA markets Uganda's investment opportunities to potential and well-targeted investors worldwide, coordinates the national investment marketing program, monitors international investment trends and serves as the first and most comprehensive point of contact for investors in Uganda. (UIA 2010)

Ministry of Education and Sports (MOES) is mandated to plan, formulate, analyze, monitor, evaluate and review policies, provide technical support and guidance, and set national standards for the Education Sector through providing technical support, guiding, coordinating, regulating and promoting quality education and training to all persons in Uganda for national integration, development and individual advancement. MOES has put in place institutes to help coordinate curricular development and execution in training institutes, these are National Council of High Education (NCHE) and National Curriculum Development Centre (NCDC). (MOES 2010; NCHE 2010; and NCDC 2010) The NCDC and NCHE were responsible for accrediting the floriculture curricular at BAC and MMU respectively.

Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is mandated to formulate and review the national policies, plans, legislation, standards and programmes relating to the agricultural sector. In addition, the Ministry also acts as the supervisory body to control and manage crop and animal epidemics diseases and pests affecting production and for controlling the use of agricultural chemicals, enforcing zoo sanitary and phytosanitary regulations including seed quality standards (MAAIF 2010). The ministry is responsible for giving phytosanitary certificate and import permits for agrochemicals.

MPS and GLOBALGAP: MPS consists of MPS-ECAS for certifying and MPS-HCS for consultancy. MPS-ECAS, as a certifying body, has received accreditation by the Dutch Council of Accreditation (RvA) for GLOBALGAP. MPS-ECAS performs audits in the Netherlands and other countries to establish compliance with the GLOBALGAP criteria. Based on the certification scheme, which is designed by the supermarkets, growers are being audited. After approval the companies receive a registration number and they will be included in a public register. (MPS 2010)

2.3 Job profile

A job profile essentially consist of a description of the content and structure of the profession (Mulder, Wesselink, and Bruijstens 2004). They add that job profiles provide management of sectoral organisations in the field of training and examination with a framework on which to base their programmes and, in doing so, allow these organisations to better align training and testing programs with the learning needs within the profession hence job training profiles. Therefore job training profiles consist of overviews of general training objectives, curriculum content descriptions, and references to educational material and other sources of information, structured by the job profile of a certain job in this case farm manager and supervisor (Mulder *et al*. 2004).

In total six different jobs were identified in the flower farms in 2006. These six jobs are divided over two levels, a managerial level and a supervisory level. At managerial level there are two different kinds of jobs: the farm manager and production manager, while at supervisory level there are four different jobs: the greenhouse supervisor, the fertigation supervisor, the spraying supervisor, and the post-harvest supervisor. From the need assessment interviews carried out in 2006, this is how the job profiles were described:

A *farm manager* can be seen as the replacement of the owner. He/she manages and/or coordinates the whole farm, covering the areas of finances, human resources, public relations, and strategic development. And he/she should control all departments these are production via production manager, administration, accountancy, and maintenance.

A *production manager* is in charge of the whole production process of the flowers. (S)he steers all supervisors and has regular meetings with them. Moreover he is responsible for the training programs of both the supervisors and indirectly the workers. Furthermore he/she should continuously follow the development of new varieties, research/developments on new production processes, know the export market and, when to set up on-farm trials.

A *greenhouse supervisor* is in charge of one or more greenhouses. Within each greenhouse, he/she is responsible for the flower production and the people working there. The main tasks of a greenhouse supervisor are to supervise the workers, to control the whole flower production from the nursery till the flowers are sent to the grading hall, and to maintain a proper administration on everything that occurs in the greenhouses.

A *fertigation supervisor* is responsible for the irrigation and fertilizer application to the flowers. He/she ensures the right amount of the right fertilizer to be applied at the right time. Besides that he supervises the workers that are within the fertigation department as well as maintaining proper administration on the fertilizer usage.

A *spraying supervisor* is responsible for monitoring and controlling pests and diseases. Furthermore he/she is responsible for the health and safe work environment of his workers, and has to prevent any damage that could be brought to the environment.

The working area of the *post-harvest supervisor* consists of the grading hall and the cold store. The post-harvest supervisor is responsible for ensuring correct packaging of the cut flowers, cuttings, and/or pot plants as well as ensuring that the flowers are ready for export in time. He/she should supervise the post-harvest workers and take care of proper hygiene and temperatures of grading hall and cold store.

The *trial supervisor* is responsible for the correct execution of the trial protocol. He/she ensures that the trial is set up according to the specifications, the crops are correctly taken care of, the data is reliably collected and documented, and takes care of the data analysis and interpretation. Furthermore he/she supervises the workers that care for the crops used in the trials, with special emphasis on the specific evaluation parameters of the trial (spraying, post-harvest, production among others). He/she reports the results to the production manager.

2.4 Competencies

Competence is the ability of a person or an organization to reach specific achievements. Personal competencies comprise: integrated performance oriented capabilities, which consists of clusters of knowledge structures and also cognitive, interactive, affective and where necessary psychomotor capabilities, and attitudes and values, which are conditional for carrying out tasks, solving problems and more generally in a certain profession, organization, position or role (Mulder and Collins, 2007). Therefore in the thesis; competence is regarded as a general ability and competencies as components of competence, while competency is more oriented to behaviorism. These competencies are: able to communicate effectively, able to analyze core processes at work, able to design work design through setting goals and objectives, able to work productively, able to foster a productive work environment, able to manage time and stress, able to build and organize teams, and able to measure performance and quality.

2.4.1 Able to communicate effectively

Communication is the exchange of information, facts, ideas, and meanings. The communication process is important for informing, coordinating and motivating people. But good communication is not easy because it is hard to recognize one's own problem in communication (Quinn, Faerman, Thompson, Mcgrath, and St. Clair 2009). According to Zey (1990), knowing when and how to share information requires a very complex understanding of people and situation.

Poor communication skills results in both interpersonal and organizational problems. When interpersonal problems arise, people begin to experience conflict, resist change, and avoid contact with others. Organizationally, poor communication often results in low morale and low productivity. People in organization have to communicate in order to develop goals, channel energy, and identify and solve problems. Learning to communicate effectively is vital to improving work unit and organizational effectiveness (Quinn *et al*. 2009).

Shannon and Weaver (1948) say that the information exchanged may take a variety of forms, including ideas, facts, and feelings. They designed a general model through which communication process is viewed.

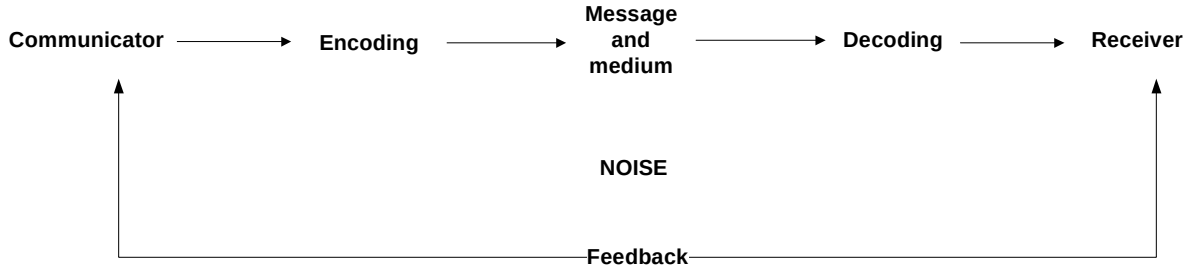

Figure 5 The Mathematical Theory of Communication

The model begins with the communicator encoding a message through translating a set of ideas into a system of symbols, such as words or numbers. There are although factors affecting the encoding process, including the urgency of the message, the experience and skills of the sender, and the sender's perception of the receiver. The message is transmitted through a medium such as documents, presentations or even nonverbal. Once the message is received, then it is decoded through interpretation by the receiver (Quinn *et al*. 2007).

The feedback involves a feedback loop connecting the receiver to the communicator, which takes three forms of that are informational, corrective, or reinforcement. Informational is a non-evaluative response that simply provides additional facts to the sender. Corrective feedback involves a challenge to, or correction of, the original message. Reinforcement feedback is a clear acknowledgement of the message that was sent, which may be positive or negative (Quinn *et al*. 2007).

On the other hand, noise is anything that distorts the message in the communication process, which can occur at any point of the process. Noise may include a sender being unable to articulate the ideas to be sent, or a document lacking a key word, or the receiver making wrong assumptions about the motive of the message (Quinn *et al*. 2007).

According to Samovar and Mills (1998), effective interpersonal communication comprises two elements these are: individuals must be able to express themselves, and individuals must be good listeners.

2.4.2 Able to analyze core processes at work

According to Quinn *et al.* (2007), core processes have to be analyzed to ensure that they are linked directly to the outcomes that we value. In other words, defining a clear connection between what you do and what you want to achieve.

Kerr (1975) perceived analyzing core processes to the folly of rewarding A, while hoping for B. He stressed this point that behaviors that get rewarded tend to be the ones that are repeated. Managers and supervisors often create reward systems that actually discourage behavior that should be encouraged. Thus faulty reward systems cause the core processes of an organization to shift away from getting right objectives. Kerr believes effective monitors can ensure that reward systems encourage effective performance of the core processes required to accomplish critical outcomes of the organization.

Grove (1995) supports Kerr's argument by pointing out that organizations monitor activities instead of outcomes. He agrees that some activities are vital in achieving outcomes, but when we focus too much on activities, we lose sight of the outcomes. Grove believes that systems should monitor outcomes efficiently than activities, although he also believes that it is equally important to know how activities add value to desired outcomes.

Porter (1985) helps distinguish between activities that add value and those that do not, using his model of value chain. He defined a value chain as all activities a business uses to produce and deliver commodities its customers and consumers value. Porter identified nine value creating activities, five of which are primary and four support activities. The five primary activities include inbound logistics, operations, outbound logistics, marketing and sales, and services, while the four support activities are firm infrastructure, human resource management, technology development, and procurement, figure 6 (Visser and Van Goor 2006; Quinn *et al*. 2007).

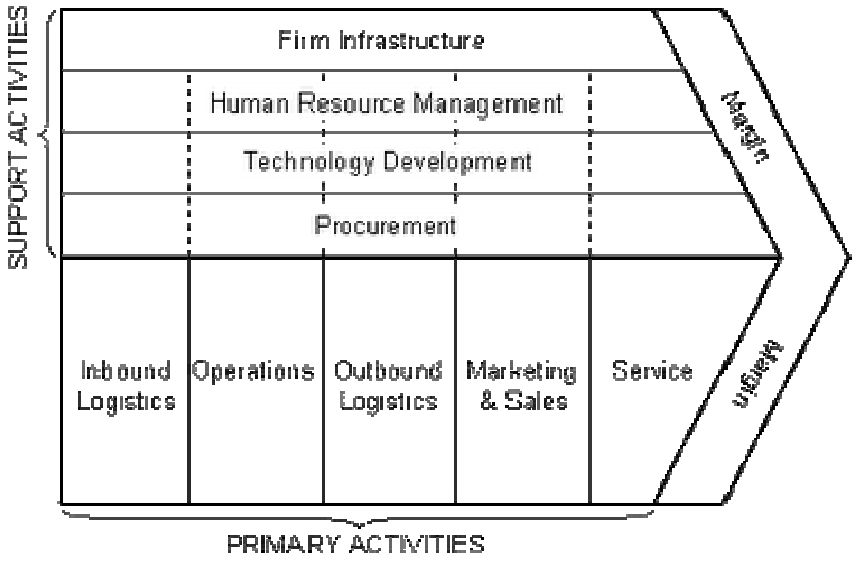

Figure 6 Value chain model by Porter

Grove (1995) says a good place to start in improving a process is to understand it in its present form. He adds that the things we do every day are loaded with inefficiencies that we may not notice. Therefore the first thing we must do is to pin down the step in the flow that will determine

the overall shape of our operation, which he calls limiting step. Grove believes that limiting step and time offsets are difficult and relatively expensive processes compared to ones in which they are not applied because they are effective and efficient.

2.4.3 Able to design work through setting goals and objectives

Quinn *et al.* (2007), while in the past most people would have considered the terms work and job to be virtually synonymous, the world of work is changing. Whether or not the notion of job is dead it certainly is experiencing some profound changes. Because of changes in the economy and technology, they have led to think differently about the nature of work and the relationship between the organization and the employees. Cabana and Purser (1998) believe that in the twenty-first century we can expect workers to be given greater autonomy and more opportunities to design and manage their own work.

Adam Smith set forth the notions that work could be accomplished more efficiently if it were divided into its component tasks and workers were specialized so that each individual had responsibility for completing only one of the tasks (Quinn *et al*. 2007). According to Lawler (1992), since the 1930s, the notion of dividing up work into specialized task has been questioned whether it's the most efficient way to do work. In the 1950s and 1960s, various approaches to job design were tried in an effort to improve work motivation, performance, and satisfaction. Herzberg (1968) suggested that what motivated people at work was different from what demotivated them. He and his associates argued that while the absence of such factor as good pay, supervisory competence, and good working condition could demotivate employees, their presence would not necessarily motivate them. They instead believed that jobs should be enriched to motivate employees through creating individual opportunities for achievement, recognition, responsibility, and advancement. Quinn *et al.* (2007) indicate that Herzberg's theory of motivation was criticized on methodological ground and yet laid the foundation for further improvement on work designing.

Lawler (1992) asserts that research on job design has shown that Smith's notion of dividing up work into tasks can instead lead to inefficiencies. Lawler argues that when organizations control the design of work processes, there is a tendency to assume that "work should be simplified, standardized, and specialized, and that supervision and pay incentives should be used to motivate individuals to perform their tasks well. In essence, the thinking and controlling part of the work is separated from the doing of the work." When thinking and doing of work are separated, workers become inflexible and unable to do any work outside their job description thus resulting into loss of productivity when the worker is not available (Quinn *et al*. 2007).

Quinn and his associates believe that when employees have greater control over how work is organized and managed, the work tends to be more challenging, interesting, and motivating. This is because it gives them an opportunity to think and do work, thus taking ownership of the whole process and they are more likely to invest in finding ways to make the process more efficient. Peters (1994) notes that "an average employee can deliver far more than his or her current job demands", "if bosses could appreciate the responsibility and pride people take in doing things most of us would be tempted to dismiss as mundane, we'd know how to tap a very profound power".

Goal setting goes back to the earliest attempts at directing the efforts of individuals and sets of individuals toward common end, which was an idea of assigning employees a specific amount of work to be accomplished, a specific task, a quota, a performance standard, an objective, or a deadline can be found as far back as the turn of the twentieth century (Quinn *et al*. 2007). Quinn

and his associate explain goal setting history using Fredrick W. Taylor's approach when he defined the appropriate amount of pig iron to be handled by a single man in a single day by engaging the classic goal setting for blue-collar workers. This process clearly defined and delineated every aspect of the task: how it was to be performed, expected outcomes, and rewards for accomplishing it.

Of the many research studies done on goal setting, 90 percent reported positive benefits (Locke and Latham 1985). Latham and Wexley (1994) conclude that whenever one group of employees is required to set and pursue specific goals, members of that group invariably increase their productivity substantially over that of groups that do not set goals. They assert that at higher levels of the organization goal setting is focused on the superordinate goal or vision hence strategic, while at the lower level of the organization goal setting is tactical with a primary emphasis of implementing.

2.4.4 Able to work productively

Productivity is a key measure of individual, group, and organizational effectiveness. This is because the nature of organizations and the competitive environment within which they operate have made high productivity and superior performance at all levels of endeavor imperative (Quinn *et al*. 2007). And yet productivity is of imperative endeavor, it is easy to evaluate according to accounting and economic metrics for tangible assets like factories, while it present a challenge for human capital evaluation.

Considering personal peak performance that Garfield (1986) used to examine individual performance in an attempt to understand what contributes to superior productivity. The results of the study showed that personal peak performance is not dependent on specific innate talent or trait nor from a particular set of behaviors. Garfield concluded that peak performers were results oriented because they had a sense of personal mission, and displayed capabilities of self-management and team mastery as well as capable of making course corrections and managing change. He assert that peak performers valued most internal goals and intrinsic rewards and that they paid a lot of attention to the tasks they performed.

On the other hand Csikszentmihalyi (1990) examined optimal performance of individuals using the flow in which he integrated four key practices, which are:

> *Setting goals*: this defines a direction or course of action and in the process suggest skills required for the accomplishment of the goals. He says that goals should be under the control of an individual and not externally imposed, thus this creates personal ownership.
>
> *Becoming totally engaged in and immersed by the activity*: He asserts that once one experiences the flow state and optimal performance, he or she becomes completely engrossed in the activity. In other words, he or she becomes preoccupied, fascinated, and engaged by the focus of his or her effort. This intense involvement is aided by the ability to focus and concentrate.
>
> *Being hypersensitive and aware of the activity as it is occurring*: Under this practice, Csikszentmihalyi believes that individuals with a flow state of optimal performance are not easily distracted. The intense focus enables these individuals to overcome self-consciousness that is the source of distraction.

Becoming adept at enjoying the immediate experience in real time: the combination of goal setting, deep involvement, and strict focus and attention allows individuals to enjoy the activity regardless the circumstances.

2.4.5 Able to foster a productive work environment

Bolye (2006) asserts that there is a paradox with companies, which are rated as best for working because these companies also have pressure-packed, grueling jobs. He explains this paradox in accordance with providing excellent rewards to employees who are high achievers and secondly by selecting the right employees who strive under stress created by a high performance work place. Boyle notes, “At the best companies to work for, pressure is in the eye of the beholder.”

Quinn *et al.* (2007) say that the competitive challenges confronting organization today such as increased: customer demands, competition, and employee expectations, make it more difficult to maintain a productive work environment with motivated people in it. Lawler (2000) attributes this to psychological contract between employer and employee, which he says that it has changed from paternalistic contracts (that provides job security, steady pay increases, and financial security) to employability contracts (that provides challenging work environment, support for one’s development, and rewards commensurate with one’s contribution) if one’s a high performer.

Colvin (2006) asserts that these types of extrinsic benefits do not foster the best productive work environment because they do not win employee’s hearts and enthusiasm that depends on trusting them, recognizing their accomplishments and efforts, and helping them find meaning in their work.

2.4.6 Able to manage time and stress

Mackenzie (1997) observes that after all the years and innovations, we are still caught in the time trap. With the mountain of information and new tools there is still not enough time. He asserts that the reason is simple and yet very complex: human nature. Mackenzie agree with Thomas (2000) and Kelley (1998) that time management is essentially self-management.

Kelley (1998) asserts that the initiatives, which are crucial to the success of the organization are those that improve the company’s flow on its “critical path,” which he defines as “the line that moves all the efforts of workers and managers towards a delighted customer, where, in turn, profitability and increased shareholder value are sent back down the path”. By adapting Kelley’s notion of critical path, it’s easy to maintain your line of sight. Thus maintaining your personal line of sight involves aligning your personal purpose, vision, values, and goals with the critical path your organization is pursuing.

Thomas (2000), Kelley (1998), and Mackenzie (1997) agree that everyone of us has the same 24 hours each day. Quinn *et al.* (2007) assert that as an organizations pursue their critical path by constantly trying to wisely manage their critical resources of human and physical capital, information, and time, so must we constantly try to manage our critical resources, the most critical being time. Therefore we must manage ourselves on how we use the time we have because once time is spent or wasted its gone forever.

Sawi (2000) observes that the prioritization process of activities is a critical one on the way to balance. She asserts that it clarifies the fact that rather than trying to do everything and finding

our schedules and lives overburdened with commitments, we need to focus and concentrate on our own priorities – that is, our personal critical path. Sawi's clarification and prioritization processes support Thomas' second step of self-management as well as his fifth and last one of monitoring progress towards the purpose.

Research over the past thirty years has linked stress to a vast array of illnesses, including tension headaches, various forms of heart disease, cancer, ulcers, and arthritis (McGee-Cooper 1994; Dossey 1982). Quinn and his associates concur with McGee-Cooper and Dossey that apart from affecting physical health, stress can also affect employees' ability and willingness to do their jobs by reducing their cognitive abilities, levels of energy and motivation as well as their ability to relate interpersonally with coworkers. They further stress that the cost of stress is measured through increased absenteeism, turnover, and accident rates; low quality performance and low rate of performance; and stress related disability claims.

Metcalf and Felible (1992) quote Tetsunojo Uehata's observation towards stress that he regards as *karoshi*, which literally means death from overwork, that is: "condition in which psychologically unsound work practices are allowed to continue in a way that disrupts the worker's normal work and life rhythms, leading to a buildup of fatigue in the body and chronic condition of overwork accompanied by a worsening of pre-existent high blood pressure and hardening of the arteries and finally resulting in fatal breakdown".

Selye (1976) argued that stress is a nonspecific response to demands placed on the body. Where nonspecific response is used to differentiate reactions to specific stimuli as such of a restoring equilibrium when the body shivers or sweats due to change of external temperature. Selye therefore concludes that stress is within the persons and it's his or her reaction to a change in the external environment. He posited a general adaptation system showing how a body reacts to a stressor, it includes three stages of the body's reaction to environmental demands.

According Selye (1974), the first stage that is *alarm stage*, the body's defense mechanism is triggered through releasing adrenaline and increasing the blood pressure also referred to as fight or flight. If the stress subsides then the body returns to equilibrium, but if the demand continues then the person enter the second stage called *resistance stage*. During this stage the body tries to return to equilibrium, essentially focusing full attention on the stressor and yet decreasing attention on other stressors. This results into development of illnesses such as colds among others. When this occurs, exhaustion stage in which a person experiences prolonged stress where the body can no longer resist or return to normal state. Selye argues that not all stress is negative in its source or its consequences, but solution to *complete freedom from stress is death*.

2.4.7 Able to build and organize teams

According to Quinn *et al.* (2007) there are many reasons why managers do not team build. The major two reasons are: first they simply do not understand the potential benefits of having a work unit function as a team; and secondly they do not have the knowledge and skills required to turn a working group into a team. They assert that while there is no common definition of a team, there is consistency in the characteristics used to differentiate a team from other types of groups. These characteristics are:

> *The group must be committed to a common goal or purpose*: Katzenbach and Smith (1993) say that what glues the team together is its focus on having a meaningful purpose, because the purpose motivates people to contribute at their maximum ability.

Dahle (1999) concurs that having an overarching sense of the goals of a project is what allows a team to agree on technical specifications without becoming bogged down with personal disputes and opinions.

Members of the group must have clear roles and responsibilities that are independent: Van der Vegt, Emans, and Van de Vliert (1998) say that the key reason of having people work in a team is to be able to draw on the different knowledge, skills, and abilities each brings to the workplace. Team building requires members' understanding on how the can draw on each other's experience and ability in order to arrive at a mutual goal. Fishman (2000) says that the most important task in a team is for workers to share information about how they are doing their individual jobs.

There is a communication structure that fosters the sharing of information: Larson and La Fasto (1989) concur with Fishman (2000) but asserts that the sharing of information can only occur if people are willing to share their own ideas and listen carefully to the ideas of others. They therefore identify four traits of an effective communication structure, which are: information is easily accessible; the information that is available must come from credible source; during meetings, people must raise issues of concern that were not included on the formal agenda; and finally there must be a system of documenting issues discussed and decisions made. This communication structure has to be supported by trust so that every member feels safe to raise controversial and difficult issues without being accused of attacking another member (Quinn *et al*. 2007). Sittenfeld (1999) says that such arrangement encourages people to ask many more questions, no matter how sensitive.

The group must have a sense of mutual accountability: Quinn *et al.* (2007) suggest that this characteristic is founded on the first three characteristics, and not until the team has the first three than the team member can show a sense of commitment to one another. They further stressed that team members see themselves as an integral part of the whole, with each person performing in order for the whole to excel. And in case one needs help, others are willingly ready to provide the help in order to accomplish their goal as a team. Lipman-Blumen and Leavitt (1999) call the extreme form of the integration *hot groups*, regarding them as groups of people who care about the work and center their efforts around accomplishing their goal. They say that hot groups protect the members of the group through thick and thin.

2.4.8 Able to measure performance and quality

Considering Kerr's words of rewarding A while hoping for B, this is most likely to occur when organizations fail to monitor the right outcomes and processes. Kerr argues that the reward system is an inappropriate performance measure because it uses an objective criterion and overemphasis on high visible behavior. His implication is that we often measure what is easy to measure, rather than what is important. Walsh (2005) concurs with Kerr noting that companies often substitute surrogate measures for exact measures of achievement because of the costs associated with the measurement process.

Walsh (2005) outlines a measurement of hierarchy as a comprehensive set of indicators that measure progress and achievement. He classified the measures based on the characteristics of objectivity, completeness, and responsiveness, that is:

Objective measures can be verified independently, in contrast to subjective measures that are dependent on personal judgment.

Complete measures are those that capture all the attributes that are relevant in defining performance; it's important to note that fewer attributes captured result into a less complete measure.

Responsive measures are those that are influenced by authority; the more direct and powerful that influence, the more responsive the measure.

Quinn *et al.* (2007) say that organizations would ideally define whether the measures are objective, complete, and/or responsive. Though in reality, objective measures are not complete because the fail to capture important information, particularly for intangible commodities such as service quality. Instead subjective measures would perform better than objective measure in case of service quality for example carrying out a customer satisfaction survey.

Walsh (2005) endeavors to distinguish between objectivity, completeness, and responsiveness with regard to whether they focus on outcomes, processes, or initiatives. He therefore came up with a hierarchy of measures these are: exact measures of outcomes, proxy measures of outcomes, process measures, and measures of initiative progress.

Exact measures of outcomes are complete measures covering all the key attributes of the outcomes under consideration, and they are also objective, subjective, and having different levels of responsiveness.

Proxy measures of outcomes are used to make inferences about exact measures. Even though they are incomplete, they are often used because they are easier and less expensive to obtain.

Walsh (2005) notes that exact and proxy measures of outcomes are intended to reflect achievement of strategic objectives, though measuring achievements/outcomes is not sufficient. Therefore for an organization to improve outcomes, it has to understand and measure the processes and initiatives that lead to the outcomes, hence:

Process measures are mainly used for outputs, activities and inputs; they reflect the degree of effort being exerted because effort is an important lever to improvement.

Measures of initiative progress provide information on the changes made by the organization.

Quinn *et al.* (2007) assert that the identification of specific measures that should be collected and analyzed will depend on the mission and strategic objective of the organization.

2.5 Tasks

A task is a piece of work that somebody is given to do, usually quite short in duration or with a deadline. A number of tasks require specific competencies to effectively and efficiently perform them in order to fulfill the overall job profile (Microsoft 2007). Considering value addition to the product in the chain by using Porter's model (figure 6), six key tasks were selected these are accounting, logistics, procurement, quality assurance, producing and reporting.

Accounting or balancing of books is a system of recording and summarizing business and financial transactions and analyzing, verifying, and reporting the results. The systematic recording and analysis of the costs of material, labor, and overhead incident to production. (Microsoft 2007)

Logistics entails the organization, planning, control and execution of the flow of goods from development and purchasing, through manufacturing and distribution to the consumer (end

user), up to and including the reverse flow. The aim is to meet market demands at lowest cost and best use of capital, and build long-term relationship with customers. (Visser and Van Goor 2006)

Purchasing or procurement is the activity and/or the function that makes sure that the right amounts of product are made available to the applicant at the right price (Visser and Van Goor 2006). They stress that purchasing is:

> An active, market-oriented business activity that goes much further than purely executive and administrative activity.
>
> An activity of strategic importance to the company.
>
> An activity aimed at the development and preservation of enduring relationships with reliable suppliers.

Auditing or quality assurance is to guarantee that quality requirements, such as product: safety, quality, reliability, and service are realized by the quality management system (Luning and Marcelis 2009). They assert that quality assurance should provide confidence to the government, customers, consumers, and other stakeholders that quality requirements will be met. It is important for agribusiness and food industry because acts a criteria to judge the industry's performance. Luning and Marcelis (2009) define quality as meeting and exceeding customer and consumer expectations. Thus it attracts much attention in agribusiness and food industry due to raised consumer concerns and increased demands of stakeholders.

Production is an act of manufacturing or producing something (Bateman, Curtis, and McAdam 2006). In agricultural production, efficiency has become a key issue by considering: production per hectare, production per unit of fix and/or working capital investment, cost per unit of production, and cost per unit of key production input. This is because the cost of production per unit produced increases with farm size (Clay 2004). Clay further asserts that this applies when a farm uses family labor and excludes it from the costs. On the other hand, bigger farms that use hired labor reduce costs of production per unit produced through purchasing inputs in bulk through long term contracts (such as chemicals and fertilizers from Balton Uganda limited), obtaining lower interest charges on loans from financial institution, increased mechanization (automated irrigation systems, mist blowers for pest and disease control, and tractors for tilling), and increasing the employment of competent personnel.

2.6 Relationship between job profile and CBL curriculum

Table 1 shows how the managerial job profile that is trained through the floriculture diploma relates with the competencies, curriculum, and the tasks. The modules are weighted through Credit Values (CV). 1 CV is equivalent to 15 contact hours, therefore 2CV are equivalent to 30 contact hours and 3CV are equivalent to 45 contact hours. A student studies 78CV in a two years diploma programme before graduating. Each academic year consists of two semesters. For purposes of keeping the table below short, the competencies are ascribed alphabetic letters (A-H) as follows: A – able to communicate effectively, B – able to analyze core processes at work, C – able design work through setting goals and objectives, D – able to manage time and stress, E – able to work productively, F – able to foster a productive work environment, G – able to build and organize team, H – able to measure performance and quality.

Table 1 Relationship between job profiles, competencies, tasks, and CBL

Competencies	Curriculum					Tasks
	Year 1	Weight	Modules	Training approach	Assessment methods	
B	Semester One	3CV	Botany and Ecology	Excursion Lecture Practical Presentation	Practical Class exercise Written exam	Production
D, H		2CV	Agro Microbiology	Case study Lecture Practical Presentation	Practical Written exam Take home assignment	Auditing
D, G		3CV	Applied entomology	Case study Lecture Practical Presentation	Practical Class exercise Written exam	Reporting Auditing Production
B, E, B		2CV	Soil and soil-less culture	Case study Excursion Lecture Practical Presentation	Practical Class exercise Written exam	Production Auditing
D, E, F, G, H		2CV	Ethics	Case study Lecture Play roles Presentation	Class exercise Excursion Written exam Case study	Auditing Production
B, C, E		2CV	Statistics	Case study Lecture Presentation	Take home assignment Class exercise Case study Written exam	Reporting Accounting Production
F, G, H		2CV	Communication skills	Case study Debates Lecture Presentation Simulation	Class exercise Take home assignment Case study Written exam	Reporting Auditing
A, C		2CV	Information Communication and Technology	Lecture Presentation Practical	Class exercise Case study Written exam Take home assignment	Accounting Auditing Reporting Logistics Production Procurement
B, D, E		3CV	Production economics	Lecture Presentation Case study Simulation	Case study Class exercise Take home assignment Written exam	Procurement Accounting Logistics
E, F, G	Semester Two	3CV	Principles and practices of management	Lecture Presentation Case study Simulation	Take home assignment Class exercise Case study Written exam	Reporting Production Auditing

B, C		3CV	Ornamental Propagation and nursery management	Lecture Case study Presentation Simulation	Class exercise Take home assignment Practical Written exam	Production Reporting Accounting
B, E, F, G		3CV	Plant pathology	Lecture Presentation	Practical Class exercise Written exam	Reporting Auditing
B, E, F, H		3CV	Greenhouse construction and maintenance	Lecture Presentation Case study Simulation	Case study Take home assignment Practical Written	Production Auditing
B, E, F, H		3CV	Irrigation and fertigation	Lecture Presentation Case study	Class exercise Case study Practical Written exam	Production Auditing
B, H		3CV	Crop physiology	Lecture Case study Presentation	Practical Take home assignment Class exercise Written exam	Production
B, C, E		3CV	Biometry	Lecture Presentation Case study	Practical Class exercise Written exam Case study Project report	Reporting Auditing
Competencies	**Year 2**	**Weight**	**Modules**	**Training approach**	**Assessment method**	**Tasks**
A, C, D	Semester Three	3CV	Research methods	Lecture Field trips Practical Case study	Class exercise Project proposal Written exam Case study	Reporting Auditing Production
A, B, C		2CV	Final project one	Lecture Case study Simulation	Proposal Presentation	Reporting
C, E, F		2CV	Environmental issues in floriculture	Lecture Case study Simulation Presentation	Class exercise Case study Practical Written exam	Production Auditing
A, E, F, G		2CV	HIV/AIDS	Lecture Presentation Practical Field trips Videos Symposium	Practical Written exam	Production Auditing
B, C, D, E		3CV	Market and entrepreneurship	Critical incident Case study Role play Simulation Lecture	Class exercise Project paper Written exam Case study	Procurement Accounting

				Symposium		
B, C, E, F, G		3CV	Integrated Pest Management	Lecture Practical Excursion Case study	Practical Class exercise Written exam Case study	Auditing Production
B, C, E, G		3CV	Climate control	Lecture Field trips Practical	Class exercise Take home assignment Practical Written exam	Production Auditing
B, D, E		3CV	Ornamental plant production	Lecture Presentation Practical	Practical Presentation Class exercise Written exam	Accounting Production Auditing
B, C, E	Semester Four	3CV	Farm management	Lecture Role play	Class exercise Case study Written exam	Accounting Production Auditing Procurement
A, D, F, G		3CV	Human resource management	Lecture Case study Presentation	Class exercise Case study Written exams	Production Auditing Reporting
A, B, C, D		3CV	Final project two	Tutorial Practical	Thesis	Production Reporting
A, D, F, G		2CV	Business law	Lecture Case study Role play Debate	Class exercise Case study Written exam	Production Auditing Reporting
A, C, E, F, H		3CV	Chain management	Lecture Presentation Case study	Practical Class exercise Case study Written exam	Logistics Procurement Accounting Production Reporting Auditing
A, B, C, D, E, F, G, H		3CV	Harvest and post harvest handling techniques	Presentation Lecture Case study Practical	Case study Class exercise Written exam Practical	Auditing Production Logistics Reporting

2.7 Competence Based Learning (CBL)

Competence based learning is a comprehensive analysis of the context of use that would precede a situated learning task in which a balanced attention would be paid to knowledge, skill and attitude components of the respective competency (Mulder, Guliker, Biemans, and Wesselink 2009).

CBL is able to facilitate learning in an economy characterized by rapid changes and complexity (Velde 1999). Many countries have adopted the CBL approach and it has become a trend because of the expected decrease of problems in the transition from school to work (Biemans, Nieuwenhuis, Poell, Mulder and Wesselink 2004). Nowadays many countries experience problems with the transition from graduated students to labor markets because the graduates

still have to learn a lot before they can perform as expected from employers (Wessenlink, Beimans, Mulder and Elsen 2006).

In traditional learning, academic disciplines were the starting point for curricula development, but with CBL, the starting point is competencies needed for working in practice (Wesselink *et al.* 2006). Therefore the expectations of the labor market is to have graduates trained on the basis of the competencies it needs (Wesselink *et al.* 2006). CBL's focus on competencies creates pitfalls and these are:

> The first one concerns the definition of the concept of competence because if it's not well defined, then designing a competence based curricula, learning processes, and assessment procedure become hard (Wesselink *et al.* 2006).
>
> The second pitfall concerns assessment of the competencies, which is time consuming and labor intensive (Biemans *et al.* 2004)

In the holistic approach of competence, learning is seen from a social constructivist perspective (Wesselink *et al.* 2006). The basic assumption for this originally social psychological approach is that humans construct their (social) reality by interacting with others (Simons 2000). Constructivism arose out of dissatisfaction with the theories of knowledge in the tradition of Western philosophy (Wesselink *et al.* 2006). Central assumption in constructivism is that knowledge and skills are not products that can be transferred from one person to another. Knowledge and skills are results of learning activities of learners (Glaser 1991).

Learning should no longer be seen as a stimulus-response phenomenon because of social constructivist approach (Wesselink *et al.* 2006). They assert that social constructivist approach influences the thoughts about CBL that is, every individual constructs his or her own truth and knowledge. In addition, most of the time knowledge construction takes place in a social setting; so a group of persons construct their own truth or social reality. Learning requires self-regulation and the building of conceptual structures through reflection and abstraction (Von Glaserfield 1995).

The holistic and social constructivist view of learning has been of major influence on the approach of CBL. Besides the pitfalls mentioned earlier in this section, ten principles mentioned below make CBL useful in connecting schools and the labor market (Mulder 2004).

> Principle 1: Verify in which jobs and roles the students end up after they completed their studies and determine which vocational core problems are critical in those jobs and roles.
>
> Principle 2: Vocational core problems are identified, which are leading for curriculum development.
>
> Principle 3: Rewarding of competence developments should be done by means of assessment and by means of different assessors.
>
> Principle 4: Before the learning trajectory the competencies that are already developed have to be assessed.
>
> Principle 5: Learning has to be situated in a recognizable and meaningful context.
>
> Principle 6: Connecting theory and practice is necessary. Let students acquire experience and let them reflect on these experiences.
>
> Principle 7: Knowledge, skills and attitudes should be offered integrated in learning trajectories.

Principle 8: Make it possible that students are increasingly responsible for their own learning process and let them steer their own learning process.

Principle 9: Teachers have to be stimulated to fulfill their role as coaches.

Principle 10: In a curriculum, the basis must be realized to develop competencies for the future career, with specific attention for learning of competencies.

2.8 Conceptual framework

Figure 7 shows the relationship between the training institutions, service provider (UFEA) and flower farms. Through this arrangement, professional training of competent personnel for the floriculture sub-sector is ensured. Most of the communication and activities done between the farms and the training institutions are through UFEA. This arrangement was designed because UFEA was the local coordinator of the capacity building project of floriculture sub-sector in Uganda. Implying that they were responsible for coordinating all project activities in Uganda as well as linking the experts from PTC+ and WUR with the training institutions and farms. Apart from coordinating, UFEA is also responsible for archiving project documents, auditing accounts, and maintaining the project website.

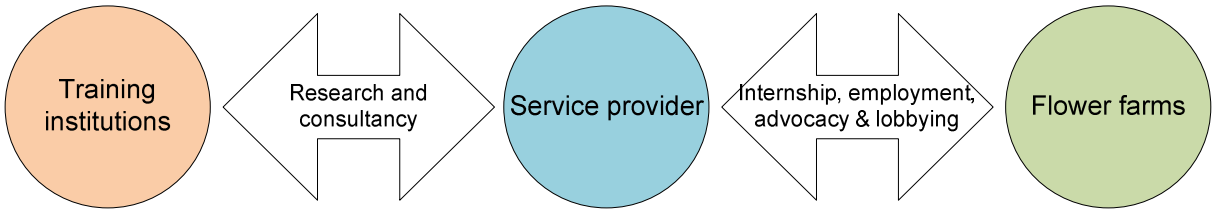

Figure 7 Current relationship between training institutions, service provider and flower farms

Chapter Three Methodology

This chapter explains the design used in this study to select the respondents, collect data, and how to analyze the data.

3.1 Participants and setting

The research population consisted of 30 respondents; 24 respondents were managers and supervisors from the flower farms, while 6 correspondents were from the training institutes. The respondents were selected with a bias of only using stakeholders or participants that were actively involved in the floriculture project from 2006 to 2010. When selecting the flower farms to visit, two factors were considered, these are:

First, the farm should have actively participated in the implementation of the floriculture project in one way or another such as employed floriculture graduates and/or even supervised floriculture interns.

Second, the farm should easily be accessible, therefore the farms visited were those closely located to Kampala in Wakiso, Mpigi, Mukono, and Jinja Districts (green stars, figure 2). This factor was important because 18 farms of the total 19 farms are in these districts therefore focusing on these districts reduced costs and utilized the limited time appropriately.

Considering the two reasons, twelve flower farms were visited, these were: Fiduga in Mpigi district; Royal Van Zanten limited in Mukono district; Uganda Hortec limited in Jinja district; Rosebud limited, Xclusive Cutting, Mairye Estates, Kajjansi Roses, Ugarose Flowers limited, Wagagai limited, Jambo Roses limited, Melissa Flowers, and Aurum Roses in Wakiso district.

The managers and supervisors scheduled for interviews were those closely monitoring the interns and/or graduates' performance in the farm. The farms were to be visited during working days between 10 am and 5 pm. On the hand, 6 trainers from Mountains of the Moon University and Bukalasa Agricultural College were scheduled for interviews. The training institutions were to be visited first because of their location from Kampala that is Kabalore district (311km) for Mountains of the Moon University and Luwero district (57km) for Bukalasa Agricultural College (yellow stars, figure 2).

3.2 Data collection

The data to be collected consisted of both quantitative and qualitative. The quantitative data was collected using the questionnaires in the appendix, while the qualitative data was collected through asking the respondents to explain their choices in the questionnaires.

Two questionnaires were developed from the research issue (section 1.6) that were used to gather quantitative data in the training institutes and the flower farms. Reconsidering the research issue: the first main question and its sub-questions were used to develop the questionnaire for the trainers while the second main question and its sub-questions were used to develop the questionnaire for the farm managers and supervisors.

The soft copies of the prepared questionnaires were e-mailed in advance to the respondents, specifically by the farm managers and supervisors because it enabled them to plan their time

appropriately as it was also a peak season for many flower farms. Out of the 24 respondents only one respondent answered the questionnaire and e-mailed his results back. For the remaining 23 respondents, I went to the farms and guided them on how to answer the questionnaires. The same was done for the lecturers in the training institutes, although the lecturers were hardly guided on how to answer the questionnaires.

Each questionnaire consisted of two sections that were derived from the sub-questions and under each section were several questions under different categories to be answered. The lecturer's questionnaire focused on the job profiles, competencies, and tasks in the first section, while the second section focused on training methods, training materials, and assessing methods. On the other hand, the manager and supervisor's questionnaire focused on job hired for, employment criteria, tasks, and attitude in the first section, while the second section focused on creativity, managing change, communication, planning, supervision and decision making.

The responses for each variable in the questionnaires ranged from scores of 1 (very low) to 5 (very high).

3.3 Data analysis

To determine the similarities and/or differences in the data collected, tools of Statistical Package for Social Sciences (SPSS) were used that is legacy dialogs, and 123 frequency.

The legacy dialog with a pie chart was used for variables consisting nominal data such as the job profile(s) trained at training institutes and the job profile(s) assigned to the employed floriculture graduates.

Using a 123 frequency, the comparison between variables under given variable lists were compared in order to determine their measures of central tendency and measures of dispersion. These variables consisted of ordinal data and were categorized under variable lists of competencies, tasks, training methods, assessing methods, employment criteria, attitude, creativity, managing change, communication, planning, supervision, and decision making as shown in the next chapter. The mean was used to determine the measures of central tendency of the variables, which ranged from 2.25 (that is: procuring under tasks) to 4.83 (that is: auditing and producing under task as well as internship under training methods) overall. Meanwhile the standard deviation was used to determine the measures of dispersion of the variables, which ranged from 0.408 (that is: auditing and producing under tasks) to 1.602 (that is: presentation under training methods) overall.

Chapter Four Results

The data of 24 of the 30 respondents that is the farm managers and supervisors was more suitable for the analysis. When analyzed, the other six cases of the lecturers did not account for 100%, but accounted for 54.5% with a 45.5% missing because of the small sample size. Despite the 45.5% missing data, the results of the six respondents were still used for purposes of creating a balanced discussion and conclusion.

4.1 Job profiles

What job profiles are considered in the learning trajectory?

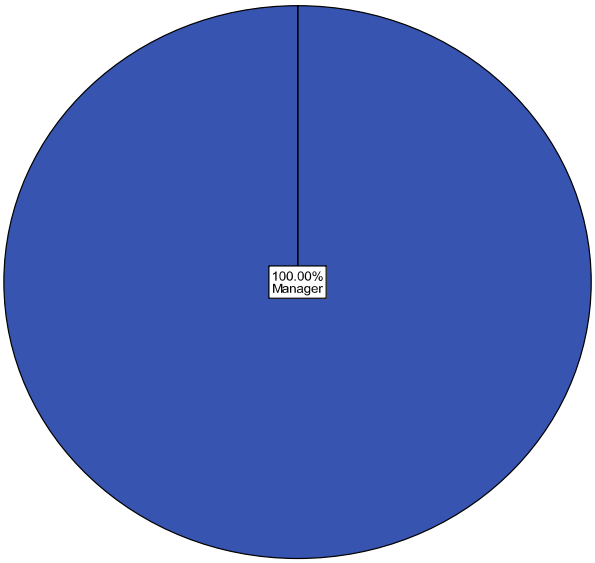

Figure 8 The job profile trained

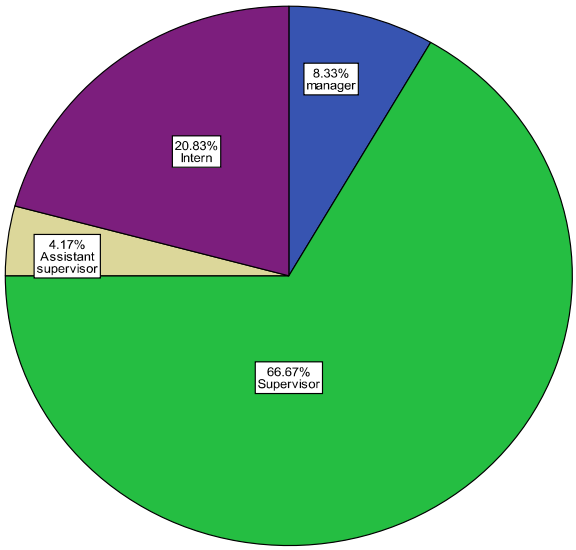

Figure 9 The job profile assigned

Figure 8 shows that lecturers are training managers at the diploma level (100%) while figure 9 shows that the floricultural graduates from the diploma programme are most suited for the supervisor profile (66.67%) and that only (8.33%) are employed for the manager profile.

4.2 Competencies

What competencies are needed for these job profiles? (scale of 1 – 5)

Table 2 presents the average scores for the variables of competencies. Overall, the average score of competencies was the high (above 4.00). Though being able to analyze core processes at work scored exactly a mean of 4.00 and standard deviation of 0.894.

Table 2 Competencies needed to perform the tasks

Competencies	Mean	Standard deviation
Able to communicate effectively	4.83	0.408
Able to analyze core processes at work	4.00	0.894
Able to design work through setting goals and objective	4.67	0.516
Able to manage time and stress	4.17	1.169
Able to work productively	4.33	0.516
Able to foster a productive work environment	4.50	0.837
Able to build and organize team	4.50	0.548
Able to measure performance and quality	4.83	0.408

4.3 Tasks

What tasks are met by these competencies? (Scale of 1 – 5)

Table 3 presents the average scores for the variables of tasks expected to be performed. The table compares the results of lecturers with farm managers and supervisors on tasks. There is a tendency for all respondents to have scored accounting, logistics, procuring lower than auditing, producing, and reporting. Another observation is that the overall mean for lecturers is higher than that of farm managers and supervisors. Procuring under managers and supervisors scored the lowest mean (2.25) with a standard deviation of 1.152, there were also low means scored for accounting (2.83) and logistics (2.88) at standard deviations of 1.373 and 1.191 respectively.

Table 3 Tasks performed under the job profile

Tasks	Mean		Standard deviation	
Respondents	Lecturers	Managers	Lecturers	Managers
Accounting	3.50	2.83	1.378	1.373
Logistics	3.50	2.88	1.378	1.191
Procuring	3.67	2.25	1.506	1.152
Auditing	4.83	4.25	0.408	0.897
Producing	4.83	4.21	0.408	0.932
Reporting	4.67	4.25	0.816	0.794

4.4 Training methods

What training components are used in learning trajectory? (Scale of 1 – 5)

Table 4 presents the average scores for the variables of training approaches that should be used in the training trajectory. Three variables that is lecturing, practicals, and internships scored high means (4.17 to 4.83), while the other three variables that is case studies, presentations, and excursions scored average means (3.17 to 3.83). Of the six variables, the lowest means were from case studies and excursion at 3.17 with standard deviations of 0.753 and 1.472 respectively.

Table 4 Approaches used for equipping students with competencies

Criteria	Mean	Standard deviation
Lectures	4.50	0.837
Case studies	3.17	0.753
Practicals	4.17	0.753
Presentations	3.83	1.602
Excursions	3.17	1.472
Internships	4.83	0.408

4.5 Assessment

How do you assess the competencies in the training components? (Scale of 1 – 5)

Table 5 presents the average scores for the variables of assessments. From the table, written exams, practical exams, take home assignments and class exercise had high means (4.00 to 4.50). But oral exams scored a low mean (2.83) with a standard deviation of 0.983.

Table 5 Approaches used in assessing competencies learned

Criteria	Mean	Standard deviation
Written exams	4.50	0.837
Oral exams	2.83	0.983
Practical reports	4.33	0.816
Take home assignments	4.00	1.095
Class exercises	4.17	0.983

4.6 Attitude

What is their attitude to the job? (Scale of 1 – 5)

Table 6 presents the average scores for the variables of attitude. The variables scored an average mean overall, with opinionative have the lowest mean (3.50) of the four variables, and at a standard deviation of 0.780.

Table 6 Attitude of the floriculture graduates

Criteria	Mean	Standard deviation
Self-initiative	3.58	0.830
Assertive	3.63	0.875
Opinionative	3.50	0.780
Confident	3.67	0.963

4.7 Creative

How creative are the graduates? (Scale of 1 – 5)

Table 7 presents the average scores for the variables of creativity. There was an overall average mean score for the variables of creativity. The lowest mean was recorded under analytical at 3.17 with a standard deviation of 0.816.

Table 7 Creativeness of the floriculture graduates

Criteria	Mean	Standard deviation
Critical	3.29	0.806
Analytical	3.17	0.816
Reflective	3.38	0.824

4.8 Cope with change

To what extent graduates manage change? (Scale of 1 – 5)

Table 8 presents the average scores for the variables of ability to cope with change. Only comply to regulations of the seven variables scored a mean higher that 4.00, the other variables scored an overall average mean. Improving cost effectiveness had the lowest mean (3.46) with a standard deviation of 1.141.

Table 8 Capacity of floriculture graduates to cope with change

Criteria	Mean	Standard deviation
Social	3.88	0.741
Technological advance	3.67	0.917
Resource and money competition	3.33	1.167
Comply to regulation	4.08	0.974
Farm expansion	3.71	1.083
Improved efficiency	3.71	1.083
Improved effectiveness	3.46	1.141

4.9 Communication effectiveness

Can graduates communicate effectively? (Scale of 1 – 5)

Table 9 presents the average scores for the variables of effective communication. Tangible communication scored a high mean while the optimistic, motional, and resulted oriented communication scored an overall average mean. Result oriented communication though scored the lowest mean (3.54) with a standard deviation of 0.932.

Table 9 Effectiveness of floriculture graduates to communicate

Criteria	Mean	Standard deviation
Tangible	4.00	0.978
Optimistic	3.88	0.797
Motional	3.88	0.947
Result oriented	3.54	0.932

4.10 Planning

Can they design work plans? (Scale of 1 – 5) Able to define:

Table 10 presents the average scores for the variables of work planning. There was an overall average mean for the variables, although the lowest mean score was recorded under working with people at 3.38 with a standard deviation of 1.056.

Table 10 Capacity of floriculture graduates to plan effectively

Criteria	Mean	Standard deviation
Strategy	3.67	1.090
Defining structure	3.88	1.035
Result awareness	3.25	1.073
Working with people	3.38	1.056

4.11 Decision making

To what level are graduates involved in decision making? (Scale of 1 – 5)

Table 11 presents the average scores for the variables of decision making. The results reflect that permitting graduates to function freely within defined limits scored the lowest mean at 3.38 with a standard deviation of 1.056.

Table 11 Capacity of floriculture graduates to make decisions

Criteria	Mean	Standard deviation
Making decisions and announcing them	3.54	1.141
Present ideas and inviting questions	3.75	0.897
Present problems, get suggestions and make decision	3.42	0.974
Permit graduates to function within defined limits	3.38	1.056

Chapter Five Discussion and Conclusion

The primary aim of this chapter is to cast more light on the impact of competence based education on the floriculture sub-sector in Uganda. Interviews were carried out in training institutes and flower farms to provide the performance of floriculture graduates that have gone through that diploma program and are employed by the farms. The results of the study and the connection between various subjects are discussed below in relation to the postulated research questions (section 1.6). This is then followed by the conclusion, recommendation and suggestion for subsequent research.

5.1 Discussion

1. *In which way is competence based learning strategy equipping students with practical skills?*

a) *What competencies were integrated into the learning trajectory to meet desired practical skills?*

Considering table 2, the high mean score validates that lecturers know the competencies needed for the manager. The results show that being *able to communicate effectively* and being *able to measure performance and quality* were the most important competencies for managers, they scored the highest mean (X=4.83) with a high consensus (StdDev=0.408) amongst the lecturers. This is because being *able to communicate effectively* is an important process of informing, coordinating, and monitoring people. The respondents (lecturers) assert that being able to communicate effectively is fundamental for holding organizations together. This is further supported by the high value attributed to effective communication in the training trajectories at the training institutions, whereby the module of communication skills is compulsory for all students, hence it is one of the general courses trained. While being *able to measure performance and quality* enables the manager to identify specific measures that should be collected and analyzed in order to achieve the mission and objective of the organization. The respondents (lecturers) also assert that being able to measure performance and quality is as important as being able to communicate effectively because workers are able to control production activities at the same time maintaining high quality.

On the other hand, the results of table 2 also showed a low rating of the importance of being *able to analyze core processes at work* (X=4.00, StdDev=0.894) and being *able to manage time and stress* (X=4.17, StdDev=1.169), both having reasonably lower means than other competencies as well as low consensus amongst the respondents. The reason for underrating the importance of being *able to analyze core processes at work* is the existing difficulty of making a clear connection between what we do and what we want to achieve, which occurs when faulty reward systems are used that discourage behavior that should be encouraged to get the right objectives (Kerr 1975). Respondents agree that as long as they get their activities done, then there is no need to focus on the outcome because they assume that it simply connects activities to the outcomes once done. Therefore, there is a tendency of focusing on the activities more than the outcomes, which creates a gap between activities and outcomes. While the reason for underestimating the importance of being *able to manage time and stress* is the extent to which human nature has created a time trap of believing that there is always not enough time to achieve our objectives (Mackenzie 1997). The failure of getting work done in time piles up uncompleted tasks, which leads to stress.

Considering table 3, the results showed the highest score (X=4.83, StdDev=0.408) for *auditing* and *producing*, which validates the importance of these tasks to managers. This is because *auditing and/or quality assurance* is increasingly used as the criterion to judge the performance of agribusiness such as commercial flower farms. It is important to note that quality attracts much attention in agribusiness due to raised consumer concerns and the increased demands of stakeholders, like government, interested parties and retailers (Luning and Marcelis 2009). While *producing* was rated high because the cost of production per unit produced increases with farm size (Clay 2004). On average, a flower farm in Uganda occupies approximately 10.5 hectares of land and each farm employs approximately 316 employees, implying that the cost of production per unit produced is high. Although flower farms would incur high costs of production, they elude these costs through reducing the long average costs of production. This is achieved through: purchasing inputs in bulk through long term contracts (such as chemicals and fertilizers from Balton Uganda limited), obtaining lower interest charges on loans from financial institution, increased mechanization (automated irrigation systems, mist blowers for pest and disease control, and tractors for tilling), and increasing the employment of competent personnel (floriculture graduates).

In additional, table 3 showed low scores for *accounting* (X=2.83, StdDev=1.373)*, logistics* (X=2.88, StdDev=1.191) and *procurement* (X=2.25, StdDev=1.152). The validation of low means with low consensus amongst respondents in *accounting, logistics,* and *procurement* points to the fewer course units in the curriculum equipping students with competencies of these tasks in table 1. It is evident that there are more course units equipping students with competencies of *auditing, production* and *reporting*. This implies that the training trajectory primarily focuses on *production, auditing* and *reporting*.

b) What components are used in the learning trajectory to ensure students learn these competencies?

Discussing the results of table 4, *internships* scored the highest mean as well as had the highest consensus amongst the respondents, which justifies the involvement of flower farms in the training trajectory. According to the curriculum; lecturers, experts, students, and peer students are involved in the training trajectory. Couple with the three *internships* at the end of the first, second, and fourth semesters, this create opportunities for students to learn from experts through practice in the flower farms. Meanwhile, *excursions* (X=3.17, StdDev=1.472) and *case studies* (X=3.17, StdDev=0.753) scored the lowest means and had low consensus amongst the respondents that validate their low use in the training trajectory. The low use of excursions in the training trajectory is attributed to the location of the training institutions from the flower farms (figure 2) with distances ranging between 93km to 350km and 180km to 361km for BAC and MMU respectively. In case of the longer distances, a transit of two days is required that includes accommodation and meals hence costing a lot. Therefore one to three excursions are done in the semester. While *case studies* are not often used because of the fewer cases or problems available that relate with the floricultural training.

In addition the low score of *oral exams* (X=2.83) and low consensus of respondents (StdDev=0.983) in table 5, justifies why *oral exams* are not used in assessing students, which is attributed to their omission from the curriculum (table 1). The omission of *oral exams* from the curriculum further underestimate the importance of assessing students orally. Because *oral exams* allow the assessors to determine how much the student knows about a given topic, but it also creates opportunities for students to generate innovative ideas as well as relate different subjects.

2. *What is the impact of the learning trajectory on the graduates' effectiveness and efficiency in performing the tasks?*

a) *What tasks are expected to be done by graduates in the flower farms?*

Considering figures 8 and 9, there evidence of 100% that lecturers are training future managers, while 66.67% shows that graduates are employed as supervisors. This contrast validates the gap in communication that exists between the training institutes and the farms. Therefore, there is a need to coincide the targeted job profiles in the training institutions and the farms. Relating figure 9 to table 3, it is justifiable that graduates are expected to primarily oversee the *production* and *auditing* of the cut flowers, cuttings, and pot plants as well as *prepare work reports* which are tasks mainly performed under the supervisor profile. From the respondents' reaction, this justifies the need for redefining the job profiles in the farms with regard to the training in the institutions. Implying that the diploma course does not necessarily meet managerial job profile as first designed for the curriculum.

b) *How effective and efficient are graduates at performing these tasks in the flower farms?*

Considering table 8, the average scores of *improved efficiency* (X=3.71, StdDev=1.083) and *effectiveness* (X=3.46, StdDev=1.141), justify that the graduates are on average efficient and effective. The managers and supervisors observe that graduates are averagely effective because they quickly adjust to decisions, but they are not confident enough about the decisions they make, hence they seek for the experts' help. At the same time, the managers and supervisors also considered the graduates to be averagely efficient because they are willing to work extra hours in order to get work done especially in peak seasons such as harvesting time without grumbling or complaining. From the results, the graduates' average performance is also attributed to their *attitude*, *creativeness*, ability to *communicate effectively*, ability to *plan*, and the freedom to *make decision*, which were also rated average. The correlation justifies that an improvement in the graduates' *attitude*, *creativeness*, ability to *communicate effectively*, ability to *plan*, and freedom to *make decision* will make them more efficient and effective.

5.2 Conclusion

Considering the findings in relation to the objective of the study, that is to evaluate how competence based learning approach has transformed the training trajectory at MMU and BAC into producing competent farm managers and supervisors as well as identifying appropriate interventions for the existing gaps, I can conclude that the bigger portion of CBL approach integration has been achieved during the four years of the project through: designing the curriculum, preparing the training matrices, handouts, and power points, as well as the training materials and facility building. This implies that the remaining portion of CBL approach integration is to guarantee that the training of trainers (ToTs) on how to implement the CBL approach in the missing areas of: increasing students' ability of analyze core processes at work and their ability to manage time and stress, assessing competencies with oral exams, and training with case studies and excursions.

Secondly, the findings of this study should be used to review and improve the curriculum in order to ensure that it meets the needs of all stakeholders: trainers, students, flower farms and UFEA among others. The review and improvement of the curriculum should adopt the missing training and assessment approaches, such as oral assessments.

Furthermore, the relationship between training institutions and flower farms should be strengthened through allowing active participation of lecturers in identifying and archiving case studies from the farms and for the experts (managers and supervisors) to participate more in training at the farms.

The graduates' perspective is that they are trained for managerial profile, but when they are employed as supervisors, this dissatisfies their expectations as well as demotivates them. And when graduates are demotivated, their effectiveness and efficiency to perform lowers, which affects their confidence to participate in decision making. This necessitates the redefining of the job profiles in the farms and realigning them with the diploma programme.

5.3 Recommendation

Beginning with training other lecturers on how to implement the CBL approach, I recommend the training institutions to use seminars to equip other lecturers with competencies of the CBL approach.

- Through seminars and/or workshops, training of trainers on the CBL concepts can be achieved. The training can be done at the beginning of an academic year during the month of august.
- Trainers should be trained on: what CBL means, how to design a CBL curriculum, how to prepare training matrices or lesson guides, how to use the various training and assessment methods to ensure that students or graduates are equipped with the necessary competencies.
- To ensure that the that trainers have learnt the CBL concepts, they should be assessed in areas of knowledge, skills and attitude through written, oral, and practicing assessment.

Using figure 10 as an improvement of figure 7 (p27), the relationship especially effective communication between the three main stakeholders is strengthened, which promotes learning and thus this model:

- Allows the service provider in this case UFEA to focus on consultancy, advocacy and lobbying for a favorable investment environment for the floriculture and floriculture-related businesses.
- Allows immediate feedback between the training institutions and farms, this helps the training institutions to identify exist gaps in the training trajectory especially the performance of students or graduates, but it also acts as a means of archiving cases in the farm to use in training as case studies. In addition, the feedback between the training institutions and farms redefines the job profiles and appropriately aligns them with the trained programmes.
- Allows immediate reflection on the feedbacks that have been given by either the training institutions or farms thus finding solutions or interventions for existing gaps. This is of greater benefit to the training institutions because reflection enables them to review the

curriculum as well as make the training trajectory more effective by adding any missing or new approaches.

- Simplifies the recruitment system of the farms, because when the flower farm managers are closely involved in the training trajectory; they are able to identify potential managers and supervisors in students before they graduate. Through identifying potential managers and supervisors while still studying, the students' weaknesses are easily identified and corrected, while at the same time, their strengths are harnessed.
- Improves the placement of students for internships and also make lectures more accountable about the students' learning trajectory in the farms. The direct linkage between the farms and institutions creates an opportunity of students developing skills and attitude of applying for jobs. Because students can be given the liberty of apply to flower farms for internships coupled with interviews as a means of training them on how apply for jobs after graduation.
- Enables the flower farms to create a favorable environment for doing research and learning on the job. This is possible in the third and last internship where students can do mini projects on the farm. The aim of these mini projects are to create practical interventions or solutions to prevailing problems in the farms. When problems are solved through mini projects, opportunities for graduates to participate in decision making are created in the farms because they would have gained the managers and supervisors' trust.

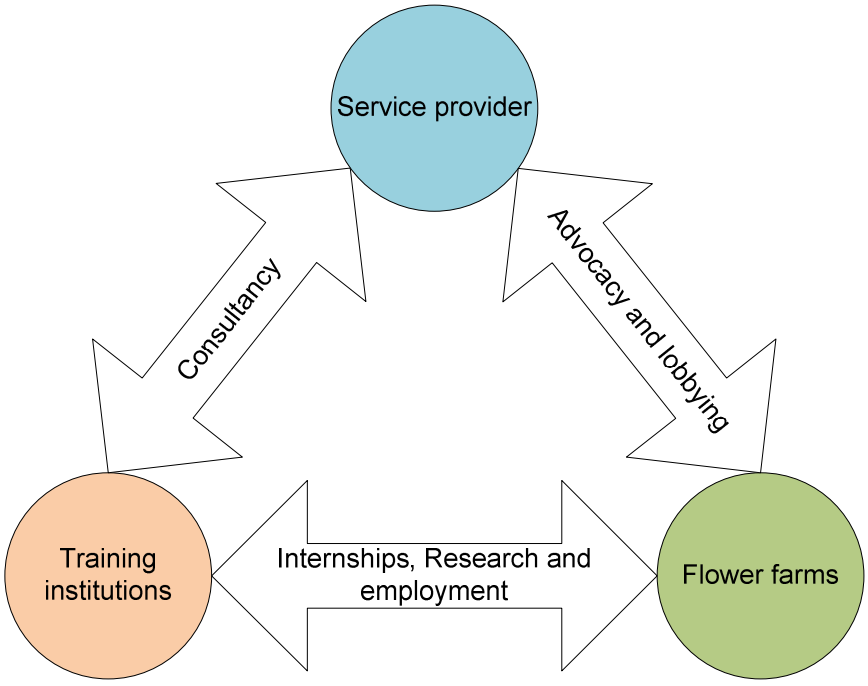

Figure 10 Proposed relationship between the flower farms, training institutions, and UFEA.

- In addition to the above points, the reviewed curriculum should clearly define and connect key components for all stakeholders to understand and implement, these

components include: job profile, competencies, specific learning outcomes per competence, teaching method, study structure and study load, and course or module components. Putting more attention on specific learning outcomes per competence, the learning outcomes should be clearly outlined and allotted specific time in the study structure. This enables trainers to understand the learning outcome of the competence being trained at a particular time and how best to assess it.

5.4 Suggestions for further research

It is of great importance that the above recommendations are integrated into the training trajectory because this will make graduates more competent than they are at the moment as well as make flower farms more competitive. Therefore a replica of this research should be done after three years to determine the impact of the changes made to the training trajectory. A comparison between this research and its replica after three years should determine the significance of the change achieved from the changes made.

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Appendix

Questionnaires for the lecturers, and farm managers and supervisors.

Appendix A: Questionnaire for lecturers

This questionnaire is prepared to evaluate the impact of professional training at Mountain of Moon University and Bukalasa Agricultural College on the efficiency and effectiveness of the floriculture sub sector in Uganda. The questionnaire will be used to identify the existing gaps in the learning trajectory and provide potential interventions for these gaps.

Instruction(s)

Please, cross out the circle(s) that is/are more applicable to you! (X)

1. What competencies were integrated into the learning trajectory to meet desired practical skills?

a) What job profiles are considered in the learning trajectory?
   i. Manager ◯
   ii. Supervisor ◯

b) What competencies are needed for these job profiles? (scale of 1 – 5)
   i. Able to communicate effectively Yes ◯ No ◯

Manager	◯	◯	◯	◯	◯
Supervisor	◯	◯	◯	◯	◯

   ii. Able to analyze core processes at work Yes ◯ No ◯

Manager	◯	◯	◯	◯	◯
Supervisor	◯	◯	◯	◯	◯

   iii. Able to design work through setting goals and objectives Yes ◯ No ◯

Manager	◯	◯	◯	◯	◯
Supervisor	◯	◯	◯	◯	◯

   iv. Able to manage time and stress Yes ◯ No ◯

Manager	◯	◯	◯	◯	◯
Supervisor	◯	◯	◯	◯	◯

   v. Able to work productively Yes ◯ No ◯

Manager ◯ ◯ ◯ ◯ ◯

Supervisor ◯ ◯ ◯ ◯ ◯

vi. Able to foster a productive work environment Yes ◯ No ◯

Manager ◯ ◯ ◯ ◯ ◯

Supervisor ◯ ◯ ◯ ◯ ◯

vii. Able to build and organize teams Yes ◯ No ◯

Manager ◯ ◯ ◯ ◯ ◯

Supervisor ◯ ◯ ◯ ◯ ◯

viii. Able to measure performance and quality Yes ◯ No ◯

Manager ◯ ◯ ◯ ◯ ◯

Supervisor ◯ ◯ ◯ ◯ ◯

c) What tasks are met by these competencies? (Scale of 1 – 5)

i. Balancing books

Very low ◯ ◯ ◯ ◯ ◯ Very high

ii. Distributing products

Very low ◯ ◯ ◯ ◯ ◯ Very high

iii. Purchasing inputs

Very low ◯ ◯ ◯ ◯ ◯ Very high

iv. Monitoring and Controlling quality

Very low ◯ ◯ ◯ ◯ ◯ Very high

v. Producing products

Very low ◯ ◯ ◯ ◯ ◯ Very high

vi. Preparing work reports

Very low ◯ ◯ ◯ ◯ ◯ Very high

d) How actively do you involve competencies in the learning process?

◯0 – 25% ◯25 – 50% ◯50 – 75% ◯75 – 100%

2. What components are used in the learning trajectory to ensure students learn these competencies?

a) What training components are used in learning trajectory? (Scale of 1 – 5)

i. Lectures

Very low ◯ ◯ ◯ ◯ ◯ Very high

ii. Case studies

Very low ◯ ◯ ◯ ◯ ◯ Very high

iii. Practicals

Very low ◯ ◯ ◯ ◯ ◯ Very high

iv. Presentations

Very low ◯ ◯ ◯ ◯ ◯ Very high

v. Excursions

Very low ◯ ◯ ◯ ◯ ◯ Very high

vi. Internships

Very low ◯ ◯ ◯ ◯ ◯ Very high

b) To what extent are these training components connected?

◯0 – 25% ◯25 – 50% ◯50 – 75% ◯75 – 100%

c) How do you assess the competencies in the training components? (Scale of 1 – 5)

i. Written exams

Very low ◯ ◯ ◯ ◯ ◯ Very high

ii. Oral exams

Very low ◯ ◯ ◯ ◯ ◯ Very high

iii. Practical reports

Very low ◯ ◯ ◯ ◯ ◯ Very high

iv. Take home assignments

Very low ◯ ◯ ◯ ◯ ◯ Very high

v. Class exercises

Very low ◯ ◯ ◯ ◯ ◯ Very high

Thank You!

Appendix B: Questionnaire for farm managers and supervisors

This questionnaire is prepared to evaluate the impact of professional training at Mountain of Moon University and Bukalasa Agricultural College on the efficiency and effectiveness of the floriculture sub sector performance in Uganda. Secondly, the questionnaire will be used to identify the existing gaps in the learning trajectory and provide potential interventions for these gaps.

Instruction(s)

Please, cross out the circle(s) that is/are more applicable to you! (X)

1. What tasks are expected to be done by graduates in the flower farms?

a) At what level are graduates employed at the farm?

i. Manager ◯
ii. Supervisor ◯
iii. Assistant manager ◯
iv. Assistant supervisor ◯
v. Intern ◯

b) What criteria do you use to employ them? (Scale of 1 – 5)

i. Based on school performance

Very low ◯ ◯ ◯ ◯ ◯ Very high

ii. Based on prior experience

Very low ◯ ◯ ◯ ◯ ◯ Very high

iii. Based on internship with the farm

Very low ◯ ◯ ◯ ◯ ◯ Very high

iv. Based on age

◯20 – 25 years ◯26 – 30 years ◯31 – 35 years

v. Based on salary

◯ ≤ 250,000 UGX ◯ 250,000 – 500,000 UGX ◯ 500,000 – 1,000,000 UGX

c) What tasks are they expected to perform? (Scale of 1 – 5)

i. Balancing books

Very low ◯ ◯ ◯ ◯ ◯ Very high

ii. Distributing products

Very low ◯ ◯ ◯ ◯ ◯ Very high

iii. Purchasing inputs

Very low ◯ ◯ ◯ ◯ ◯ Very high

iv. Monitoring and Controlling quality

Very low ◯ ◯ ◯ ◯ ◯ Very high

v. Producing products

Very low ◯ ◯ ◯ ◯ ◯ Very high

vi. Preparing work reports

Very low ◯ ◯ ◯ ◯ ◯ Very high

d) What is their attitude to the job? (Scale of 1 – 5)

i. Self initiative

Very low ◯ ◯ ◯ ◯ ◯ Very high

ii. Assertive

Very low ◯ ◯ ◯ ◯ ◯ Very high

iii. Opinionative

Very low ◯ ◯ ◯ ◯ ◯ Very high

iv. Confidence

Very low ◯ ◯ ◯ ◯ ◯ Very high

2. How effective and efficient are graduates at performing these tasks in the flower farms?

a) How creative are the graduates? (Scale of 1 – 5)

i. Critical

Very low ◯ ◯ ◯ ◯ ◯ Very high

ii. Analytical

Very low ◯ ◯ ◯ ◯ ◯ Very high

iii. Reflective

Very low ◯ ◯ ◯ ◯ ◯ Very high

b) To what extent graduates manage change? (Scale of 1 – 5)

i. Social change in society

Very low ◯ ◯ ◯ ◯ ◯ Very high

ii. Technological advances

Very low ◯ ◯ ◯ ◯ ◯ Very high

iii. Competition for money and resources

Very low ◯ ◯ ◯ ◯ ◯ Very high

iv. Compliance with regulations

Very low ◯ ◯ ◯ ◯ ◯ Very high

v. Expansion

Very low ◯ ◯ ◯ ◯ ◯ Very high

vi. Improved efficiency

Very low ◯ ◯ ◯ ◯ ◯ Very high

vii. Improved cost effectiveness

Very low ◯ ◯ ◯ ◯ ◯ Very high

c) Can graduates communicate effectively? (Scale of 1 – 5)

i. Realistic (tangible) communicating

Very low ◯ ◯ ◯ ◯ ◯ Very high

ii. Optimistic (possible) communicating

Very low ◯ ◯ ◯ ◯ ◯ Very high

iii. Activity (motional) communicating

Very low ◯ ◯ ◯ ◯ ◯ Very high

iv. Certainty (assuredness) communicating

Very low ◯ ◯ ◯ ◯ ◯ Very high

d) Can they design work plans? (Scale of 1 – 5) Able to define:

i. Strategy (mission, goal and objective)

Very low ◯ ◯ ◯ ◯ ◯ Very high

ii. Structure (organizational structure)

Very low ◯ ◯ ◯ ◯ ◯ Very high

iii. Rewards (outcome)

Very low ◯ ◯ ◯ ◯ ◯ Very high

iv. People (attraction, recruitment, selection, development, & rotation of employees)

Very low ◯ ◯ ◯ ◯ ◯ Very high

e) Can they work without supervision?

i. 25% supervision ◯
ii. 50% supervision ◯
iii. 75% supervision ◯

f) To what level are graduates involved in decision making? (Scale of 1 – 5)

i. Manager makes decision and announces it

Very low ◯ ◯ ◯ ◯ ◯ Very high

ii. Manager presents ideas and invites questions

Very low ◯ ◯ ◯ ◯ ◯ Very high

iii. Manager presents problem, gets suggestions, makes decision

Very low ◯ ◯ ◯ ◯ ◯ Very high

iv. Manager permits subordinates to function within limits defined by superior

Very low ◯ ◯ ◯ ◯ ◯ Very high

Thank You!