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ASSESSING THE FINANCIAL VIABILITY OF THE FLORICULTURAL INDUSTRY IN GHANA

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Abstract: This study determines the financial viability of the floricultural industry in Ghana using both discounting and non-discounting investment appraisal methods. The feasibility analysis suggests that large-scale floricultural firms are more profitable particularly with the production of cut flowers. However, investors with limited capital can venture into small-scale production specifically cut flowers. The conclusion is that the floriculture industry is financially viable therefore investors are encouraged to expend their resources in the industry. We recommend that the government and stakeholders need to create institutional support to enable the already established firms to further develop and attract new investors in the sector.

Keywords: benefit-cost ratio, financial viability, floriculture, Ghana, profitability (JEL. Code: Q13)

INTRODUCTION

Ghana is among developing countries whose economy is driven by a single commodity. Economists argue that diversification into high-value non-traditional agricultural export is a sustainable strategy to trigger an economic transformation in these developing countries particularly, Ghana. Floriculture industry refers to the production and marketing of a wide variety of plants and planting materials which start from parental products like plant parts and cuttings to the end product for the market. The floriculture products include flowers, foliage, potted plants, garden plants, nursery stock (trees), flowering leafy, annuals, perennials, flower bulbs and tubers (UFFELEN and DEGROOT 2005). UNCTAD (2008) report shows that African countries such as Kenya, Egypt, South Africa, Uganda, and Tanzania among others are stimulating economic growth and development through the floriculture industry. Most of these African countries generate sizeable foreign earnings from the European market through the exports of the horticultural products. GEBREEYESUS and SONOBE (2012) indicated that in 2006, sub-Saharan Africa (SSA) exported about US\$ 2.06 billion worth of fresh

vegetables and fruits with 63% headed to the European Union (EU) market. UNCTAD (2008) further revealed that US\$ 423 million worth of cut-flowers were exported from SSA to the EU market. This highlights the contribution of the floricultural industry to the economic development of the SSA countries.

LEIPOLD and MORGANTE (2013) emphasised that Kenya alone exports some US\$ 400 million worth of floriculture products to the EU. This accounts for 7% of global trade in the sector. The country is ranked as 3rd world exporter of floricultural products and 1st in Africa. In addition, Kenya exports 500 mt of floricultural products to the European markets and this amounts to US\$ 1.3 million earnings from the industry daily. The floriculture industry in Kenya employs over 50,000 people directly and supports several hundred thousand indirectly (KSOLL et al. 2009). Despite the good performance of the floriculture industry in Kenya, the industry is confronted with challenges including political unrest, high oil prices coupled with high transportation cost (KSOLL et al. 2009; RIKKEN, 2011). The current threat to the industry is the delay of Kenyan Government to sign the Economic Partnership Agreement with EU.

Moreover, floricultural products, particularly cut-flowers, are rapidly becoming export businesses in Ethiopia. Ethiopia is the 5th world largest flower export in the world and ranked 2nd in Africa (ZERIHUM et al. 2014). Since 2001, Ethiopia's cut-flower industry has grown by 147,000%. Thus, it increased from US \$145,000 in 2001 to US \$230 million in 2014 (Van RIJSWICK, 2015). The industry employs more than 85,000 workers (with 70% being women) on more over 100 farms. The success story behind Ethiopia's cut-flower industry is the strong and effective partnerships between donors, private sector and government. Ethiopian government provided good incentives to attract investors while Dutch government provided the private sector with investment grants to create a partnership between Dutch companies and Ethiopian producers (DELOITTE, 2014). Ethiopian flower industry illustrates an extraordinarily fast and successful diversification into a non-traditional export product (ZERIHUN et al. 2014). Despite the rapid growth of the Ethiopian floriculture industry, the industry is challenged with barriers including the absence of appropriate infrastructure, shortage of water and agricultural inputs (RAKESH and MESERET 2007).

Other African countries such as South Africa, Uganda, Egypt and Tanzania are also involved in export of floricultural products but at minimum quantity. Comparing Ghana's floriculture industry with that of the aforementioned African countries, it is obvious that Ghana is far behind, although Ghana has favourable environmental conditions to produce floricultural products. Strictly speaking, Ghana has more natural resources that can support floriculture business than Kenya and other floriculture producing countries. Even though the industry has potential to generate US\$ 120 million revenue, it is noted that the industry generates only US\$ 2.5 million. For instance, Ghana flower exported, a total of 811,800kg of cut flowers were exported in 2012 for revenue of US\$ 2,026,000, while in 2013, a total of 766,090kg of flower exports brought in US\$ 2,326,368. In 2010 and 2011, 422,914kg and 452,358kg of cut flowers were exported, generating US\$ 1,786,898 and US\$ 2,046,577, respectively (GHANA EXPORT PROMOTION, 2013).

Notwithstanding the potential of the floricultural industry to stimulate economic development in Ghana, we observed that little attention has been directed to this industry. More importantly, there is a paucity of empirical studies on floriculture industry in Ghana in particular economic related issues. To the best of our knowledge, no empirical study has been conducted to investigate the financial viability of floricultural production in the country. Therefore, the extent to which the floriculture industry is viable in the country is not yet known. This study contributes to the literature on the economics of floriculture production by providing useful information on the financial viability of Ghana's floriculture industry. A financial viability study is essential to inform investors and stakeholders about the existing opportunities in the floriculture industry. The following research questions are raised: Is the floriculture industry a viable venture to be invested in? What subsector of the floricultural industry is the most profitable? What are the opportunities and challenges

that prevail in the floricultural industry?

The main purpose of the study is to determine the financial viability of floriculture industry in Ghana using both discounting and non-discounting investment appraisal methods. The study hypothesised that the floriculture industry in Ghana is financially viable. It is also expected that large-scale firms are more profitable than small scale firms. The key finding is that large scale floricultural firms are more profitable particularly with the production of cut flowers. However, investors with limited capital can also venture into small-scale production specifically cut flowers. The main conclusion drawn from the study is that the floriculture industry is financially viable. The paper is structured into four sections. The second section explains the methodology used to address the research objective. The key findings are synthesised in the third section. The last section provides conclusion and policy recommendations based on the key findings.

MATERIALS AND METHODS

Conceptual Framework

For the purpose of this analysis, the floriculture firms are categorised into large and small scale. The large scale firm employs a larger number of people, huge initial capital outlay and asset availability. Other underlying reasons for this classification are production capacities and land acreage. Large firms operate on 3 ha or more land area and employ more than one person to manage each sector. However, the small scale firms employ one person to handle all the activities related to all the subsectors and usually operate 1 ha or less. Estimating the cost associated with floriculture production involves start-up cost and operating cost. The start-up cost is the initial investment capital within the period of establishment (zero year). It also includes procurement of non-current assets that are expected to last more than one financial year. The benefits are the stream of revenues generated from the production of floricultural products, which are accrued from year 1. In this study, both discounting and non-discounting investment appraisal methods are employed to determine the financial viability of the floriculture industry in Ghana. The discounting approach takes into consideration the time value of money enabling better comparison of the future costs and benefits to determine the profitability of floriculture production in the long term. The discounting investment techniques used in this study include the net present value (NPV), the benefit-cost ratio (BCR) and internal rate of return (IRR).

The NPV is the present worth of net-revenue stream (net cash flows) obtained by a floricultural enterprise, where the net-revenue represents the difference between the present value of the cash inflows and cash outflows related to the floriculture enterprise. The floricultural enterprise is considered to be financially viable if the NPV is positive or zero and the enterprise is however rejected if it has negative NPV (VIVARELLI, 2004; ROGERS, 2004). BCR is a ratio of the present value of cash inflows to the present value of

cash outflows. The floriculture business is profitable if the BCR is greater than one, suggesting that the accrued revenue is higher and could defray the cost incurred and vice versa if BCR is less than one. Another profitability measure of floriculture production considering the time factor is IRR which relates the rate at which the present value of cash inflows from the investors equals the present value of cash outflows. According to GITTENGER (1982), IRR indicates that maximum interest that a business could pay for the resources used if the business is to recover its investment and operating costs and still break even. The floriculture production would be financially viable if the IRR is greater or equal to the prevailing market interest rate. Beside the discounting methods, payback period, a non-discounting technique is used to evaluate the number of years that the floriculture business will cover its initial capital investment. In other words, the payback period is the estimated length of time from the beginning of the project until the net value of the incremental production stream reaches the total amount of capital investment. A business enterprise with relatively shorter payback period is preferred most. The combination of the various investment appraisal techniques provides rigorous and better conclusion and decision regarding the financial viability of the floriculture industry.

The assumptions in this paper are based on first-hand data and information obtained from producers (stakeholders) in the floricultural industry. Current prices relating to capital items were obtained from online markets and local marketers. The total revenues and total costs were computed based on the current prices. The amount sales although projected to remain constant for the first two years is going to see a steady increase afterwards. This assumption is influenced by the fact that Ghanaians are not flower-loving people although this is gradually changing. Also, the awareness of people cultivating flowers is low and we assume that it will increase as the years go by. The pattern of demand in the country over the last decade has also influenced this assumption.

The total cost of raw materials is also held constant for the first two periods. This is based on the fact that the Government of Ghana provides certain incentives (no tax) and subsidies for producers involved in the horticultural sector (which involves floricultural products) so as to boost the sector. This decision was also influenced by the growth trends in the industry over the past decade. However, provisions have been made for any overlooked or implicit costs and these have been captured in miscellaneous expenses. A discount factor of 25% which is in line with the opportunity cost of capital on the market and also influenced by the start-up cost was used.

The major relative assumptions used in the financial analysis are presented below:

- All the amounts are quoted in Ghana Cedi (Gh₵).
- Revenues and costs are projected over a period of five (5) years.
- The average cropping and harvesting distance revolves around a three (3) month interval.
- The cropping and harvesting cycles are held at a constant cycle of three (3) months.

- Profits are ideally realized when all three (3) sectors of the industry are operated together.
- Firms operate at an “optimal level”, making use of every strength and opportunity.
- Financial costs stated in the tables capture taxes and depreciations.
- Administrative expenses also take into account the wages and salaries, transportation and maintenance costs among others.
- Higher returns relative to the cost of production is attributed to the propagative, productive and regenerative nature of most floricultural products.

Source of Data and Sampling Procedure

The study was conducted in two regions of Ghana, namely, Greater Accra and Ashanti regions. Greater Accra is the capital city of Ghana. The region has a coast-line of approximately 225km. Soils in the region have low organic contents with shallow top soils which limit the capacity for crop production and the vegetation is a coastal savannah shrub interspersed with thickets. Greater Accra region also falls within the dry, coastal, equatorial climatic zone with temperatures ranging between 20° and 30° Celsius, and annual rainfall ranging between 635mm along the coast to 1,140mm in the northern parts. The region has advanced in the hospitality industry which usually patronises floriculture products. The region has one of the largest shipping harbours (Tema Harbour) and an international airport. These facilities have attracted large businesses to be established in the region.

On other hand, Ashanti region lies in the forest zone with average annual rainfall of 1,270 mm and average daily temperature of 27 degree Celsius. The region is noted for agricultural production, mineral mining and a number of tourism attraction sites (such as national parks, birds and wildlife sanctuaries, Arboretum, lakes, waterfalls and scarp). The hospitality business in this region is also strong and demand for floricultural products including flowers and lawn grasses is rising. The region is central to other parts of the country making it a strategic for transportation and distribution networks and services.

A multistage sampling procedure was employed in the study. In the first stage, Kumasi and Accra metropolis of Ashanti and Greater regions were purposively selected because most floricultural firms are concentrated in these cities. In the second stage, two (2) small scale and two (2) large-scale firms were randomly selected from each of the city. This amounts to a total sample size of eight (8) firms comprising four (4) small scale and four (4) large scale firms. All the small scale firms are private owned enterprises while one of the large-scale firms is a state-owned enterprise. Both primary and secondary data were used in the study. The primary data were collected using both structured questionnaire and interview in 2015. The questionnaire captured information on revenue and cost of producing floriculture products. The cost items captured in the questionnaire include fixed assets, bed preparation, fertiliser/manure, charcoal, weedicides, water,

raw material, black soil and labour. The secondary data were also obtained from books, journals, newspapers, magazines and the internet.

RESULTS AND DISCUSSIONS

The summary of the start-up capital which refers to the estimated costs involved in acquiring assets needed to establish a floricultural firm or enterprise is provided in Table 1. The table shows that the average start-up capital for large scale floriculture firms is Gh₵ 84,256.99 (US\$ 21,604.36) while that of the small-scale firm is Gh₵ 25,536.78 (US\$ 6,547.89). The mean difference of Gh₵ 58, 720.21 (US\$ 15,056.464) is significant at 1%.

Table 1. Total start-up cost for large and small-scale firms

Item	Large-scale firm	Small-scale firm	Mean difference
	Amount (Gh₵)	Amount (Gh₵)	
Fixed assets	61,790.000	17,375.000	44,375.000***
Raw materials	15,380.000	4,751.000	10,629.000***
Fertiliser	40.250	87.500	-47.500***
Black soil	130.000	300.000	170.000***
Charcoal	30.000	-	-
Weedicides	32.000	30.000	2.000**
Tools and equipment	1,398.750	502.250	896.500***
Administrative costs	1,443.750	1,275.000	168.750***
Miscellaneous expenses	4,012.200	1,216.037	2,796.163***
Total	84,256.990	25,536.788	58,720.202***

Exchange rate: US\$ 1 = Gh₵ 3.90 in 2015

** and *** denote 10%, 5% and 1% significant levels

The cost of fixed assets and raw materials formed the largest components of the total start-up capital for both large and small scale firms. We can be deduced that the investment outlay for the establishment of a large firm far outweighs that of the small-scale firm by a ratio of 3:1. There is no doubt that this difference can be attributed to the size and capacity of factors of production. We observed in the interview that small scale firms have limited access to loans. The rippling cause of this problem is that there is no well-defined and established insurance policy which caters for investors in the horticultural sector.

The operational costs are estimated according to the subsectors for the sake of comparison. Table 2 shows the operational expenditure for both large and small scale firms. The results indicate that the cost of raw materials constitutes the large proportion of the total production costs followed by administrative expenses for small or large scale for all the subsectors.

Table 2. Operational costs for large and small scale firms

Item	Large scale firm			Small scale firm		
	Bedded plants (Gh₵)	Cut flowers (Gh₵)	Potted plants (Gh₵)	Bedded plants (Gh₵)	Cut flowers (Gh₵)	Potted plants (Gh₵)
Production of bed	265	-	-			
Fertilizer/manure	161	140	80	220	20	35
Black soil	250	45	81.7	125	35	72.5
Charcoal	-	60	120	-	-	-
Storage & preservatives	-	60	-	-	27.5	-
Pots	-	-	1033.3	-	-	-
Water	-	-	-	405	-	250
Rubbers	-	-	-	440	-	500
Breakages	-	-	-	-	-	500
Weedicides	64	64	64	27.5	11.7	25
Packaging and labelling	165	725	165	50	57.5	600
Raw materials	7560	14060	24380	5316.83	1305	9960
Administrative expenses	6575	5225	6100	2133.3	1200	1800
Financial costs	349.69	116.56	233.13	102	34	68
Miscellaneous costs	769.5	1024.8	1612.86	441	134.5	690.53
Total	16508.88	21636.92	34103.12	9362.63	2859.2	14569.03

Exchange rate : US\$ 1 = Gh₵ 3.90 in 2015

The potted plant sector has the high production cost. The least cost demanding item identified is weedicides. The reason given by stakeholders is that when dealing with plants especially floricultural products nothing is treated as weed and so less resource is expended in controlling weeds. As expected in relation to size (large and small), the large-scale firms record remarkably high total operational cost with the potted plants followed by cut flowers and then bedded plants. Similarly, potted plants constitute the highest proportion of the total operational cost for small-scale firms while cut flowers have the least operational cost.

The projected operational costs for the five years represent the summation of all the three sectors of the industry which is provided in Table 3. This stems from the fact that success

of a floricultural firm is ideally based on the establishment and operation of all the three sectors. Apportionments with regards to start-up and items of depreciation are done based on the information obtained from stakeholders, degree of resource requirement and productivity of products from each sector. Based on this deduction, apportionments relating to the industry are computed in terms of ratios as bedded plants = 3/6, cut flowers = 1/6 and potted plants = 2/6. These ratios suggest that bedded plant section require relatively higher initial capital investment for both small and large scale firms. This result supports the findings of OULU (2015) indicating that production of floricultural products is capital and labour intensive.

Table 3. Operational costs for producing bedded plant, cut flowers and potted plants

Large Scale	Year 1	Year 2	Year 3	Year 4	Year 5
Costs					
Bedded Plants (Gh ₦)	16509.2	16509.2	17946.3	17175.6	17946.3
Cut Flowers(Gh ₦)	21637.4	21637.4	22680.5	22423.4	22680.5
Potted Plants(Gh ₦)	34103.1	34103.1	35810.4	35296.3	35810.4
Totals	72248.9	72249.7	76437.2	74895.3	76437.2
Small Scale					
Bedded Plants(Gh ₦)	9362.7	9362.7	10271.6	9719.1	10271.6
Cut Flowers(Gh ₦)	2859.2	2859.2	3158.9	2974.8	3158.9
Potted Plants(Gh ₦)	14569	14569	15456.6	15088.3	15456.6
Totals	26790.9	26790.9	28887.1	27782.2	28887.1

Exchange rate : US\$ 1 = Gh₵ 3.90 in 2015

Revenue Generation

Table 4 provides information regarding revenue generation by small and large scale firm. The results indicate that the large-scale firms are associated with higher total revenues as compared to the small scale firms. Another noticeable fact is that the potted plant sector in the industry (small and large) shows the highest revenue of Gh₵ 45,136.70 (US\$ 11,573.51) and Gh₵ 2,1250 (US\$ 5,448.72), respectively. The least revenue generated sector varied among the various

industries. Bedded plants and cut flowers recorded the least revenue for large scale and small firms respectively. Thus, a ranking by inspection would place the establishment of the large scale firm (ideally the potted and cut flower) over that of the small. One should also note that revenue generated does not decline and it is logical to say that the floricultural industry is a very promising industry. The revenue generation ratio from Table 4 is roughly 3:1 in favour of the large-scale firms.

Table 4. Generated revenue from bedded plant, cut flowers and potted plants

Revenue	Year 1	Year 2	Year 3	Year 4	Year 5
Large scale					
Bedded plants(Gh ₦)	31530	31530	33106.5	33106.5	33106.5
Cut flowers(Gh ₦)	41592	41592	43671.6	43671.6	43671.6
Potted plants(Gh ₦)	45136.7	45136.7	47393.5	47393.5	47393.5
Totals	118258.7	118258.7	124171.6	124171.6	124171.6
Small scale					
Bedded plants(Gh ₦)	12478.3	12478.3	13102.25	13102.25	13102.3
Cut flowers(Gh ₦)	6330.33	6330.3	6646.85	6646.9	6646.9
Potted plants(Gh ₦)	21250	21250	22312.5	22312.5	22312.5
Total	40058.63	40058.6	42061.6	42061.65	42061.7

Exchange rate: \$1 = Gh₵ 3.90 in 2015

Feasibility Analysis

Table 5 presents the combination of all the discounted measures used to analyse the study. Based on the decision rules governing the discounted methods, the bedded plants sector of both large and small scale firms as per NPV would be disregarded when making an investment decision. However, it would be logical to invest in the cut flowers and potted plants of the industry. The BCR rule states that it would be feasible to undertake and run the cut flower and potted plants sectors in the industry whiles forgoing the bedded plants section. In using the IRR as a decision, all sectors having a return rate below 25% would be disregarded and overlooked. The same conclusion can be drawn here as per the rule of the other discounted methods. The mean differences of NPV, BCR and IRR for large and small scale firms are statistically significant

Table 5. Financial feasibility of large and small-scale firms

	Large-scale firms			Small-scale firms			Mean differences		
	NPV (Gh₵)	BCR	IRR%	NPV (Gh₵)	BCR	IRR%	NPV (Gh₵)	BCR	IRR%
Bedded plants	-294.54	0.997	24.7	-4236.25	0.890	7.73	3941.71*	0.107**	16.97***
Cut flowers	41357.58	1.566	142.39	5271.31	1.434	78.36	36086.27***	1.5*	63.94***
Potted plants	3134.01	1.026	30.25	10016.36	1.207	75.49	-6882.29***	-0.181*	-48.24***

*; **, and *** denote 10%, 5% and 1% significant levels

Table 6. Summary of Profit/Loss for large and small scale firms

Year	Large scale			Small scale		
	Bedded Plants	Cut Flower	Potted Plants	Bedded Plants	Cut Flower	Potted Plants
	Gh ¢	Gh ¢	Gh ¢	Gh ¢	Gh ¢	Gh ¢
1	15021.14	19955.1	11033.55	-6608	504.67	-8545.1
2	15021.14	19955.1	11033.55	-6608	504.67	-8545.1
3	15159.89	20991.08	11583.11	-7842.13	208.56	-9298.63
4	15930.96	21248.11	12097.21	-6709.51	586.09	-8543.58
5	15159.89	20991.08	11583.12	-7842.13	208.56	-9298.63

Exchange rate: US\$ 1 = Gh¢ 3.90 in 2015

at 1% level suggesting that the scale of production is critical for higher profitability of the floriculture industry.

Profit/ Loss

The profit or loss for the various sectors was determined for both large and small scale in the industry as shown in Table 6. This was computed by subtracting the total cost of production from total revenue (TR - TC). The total cost was derived by adding depreciation cost back to the cash outflows and the cash inflows were used as the total revenue derived from each sector. Table 6 indicates that it is more profitable to set up a large-scale floricultural firm operating in all the three sectors in Ghana particularly the major cities like Accra and Kumasi. Another observation made is that the cut flower sector of the large-scale firms is the most profitable while the potted plant is the least profitable.

In the case of small-scale firms, the potted plant sector recorded the highest level of losses making that sector uneconomical in a five-year span. However, investors with limited capital can venture into the small scale floriculture industry specifically the cut flower sector since the other sectors including bedded and potted plants are not profitable. Our finding is consistent with NUSRAT (2012) and SUDHAGAR (2013) which observed that higher returns are associated with production cut flowers.

SWOT Analysis

The SWOT analysis is used to analyze the strengths, weaknesses, opportunities and threats of the floral industry based on the responses from the respondents and also observations that were made during the data collection (WEBBER and LABASTE 2010 and RIKKEN, 2011). RIKKEN (2011) indicated that SWOT analysis is a qualitative starting point for any competitive strategy analysis. WEBBER and LABASTE (2010) and RIKKEN (2011) stressed that even though SWOT analysis is not precise tool, it is a good way to provide a general characterization of the current state of the industry, identify issues, and generate discussion. It is particularly useful as a neutral facilitation tool to focus an initial discussion on the perceived state of the value chain or to perform initial brainstorming on the potential opportunities and risks. Strengths, weaknesses, opportunities and threats

that prevail in the floriculture industry are provided in Figure 1 and explained below:

Strengths: Ghana has a number of comparative advantages that makes it favourable choice within sub-Saharan region for investors in the floriculture industry. They include the following:

Land: Ghana has vast agricultural land available in Eastern region (Nsawam) where most of the country's floriculture production takes place. The area is endowed with small water bodies which can be used for irrigation.

Human resources: There is available labour force both skilled and unskilled that can be harnessed for expansion in the floriculture industry.

Packaging: Quality corrugated boxes and sanitary products are currently produced by a number of local companies in the packing industry for diverse business activities. The tight competition that exists in the packaging industries makes the prices of the packaging materials also competitive.

Irrigation: Drip and sprinkler irrigation materials are usually imported from Europe. However, the rising demand by high-value horticultural growers has necessitated high local production of such materials in the country which are relatively cheaper than the imported ones.

Transportation: A number of cargo airlines are available in the country to provide freight services to non-traditional exporters. Expansion of project of the Ghana's international airport suggests that more airlines can operate in the country. Ghana also has a comparative advantage in its proximity to the main EU markets, with flights to Amsterdam averaging only six hours compared to over 11 hours from other flower exporting countries.

Research: Ghana is endowed with a number of well-established research institutions that support agricultural projects with various services ranging from soil tests, crop trials, pest and disease control, and organised training for farmers. These institutions provide a range of services at competitive rates.

Financing: Ghana's finance sector is one of the most developed in Africa. With numerous banks, insurance and brokerage firms and a stock exchange that allows companies to raise long-term capital at low cost, the country's finance sector is more poised than ever to support the nation's economic development in coming years. The range of services available

includes working capital finance, project finance, and letters of credit.

Opportunities:

Greenhouse production, globalisation and changing cultures, festive seasons and special occasions, real estate housing contracts, high demand for flowers, export opportunities, lots of available investors and partnership opportunities.

Weaknesses: Poor security, high level of breakages (pots), disloyal customers, poor financial management, inadequate technology and cold-storage facilities and poor record keeping.

Threats: Difficulty in acquiring capital, unfavourable weather conditions, land tenure problems, competitions from substitute products example artificial flowers, attitude of Ghanaians

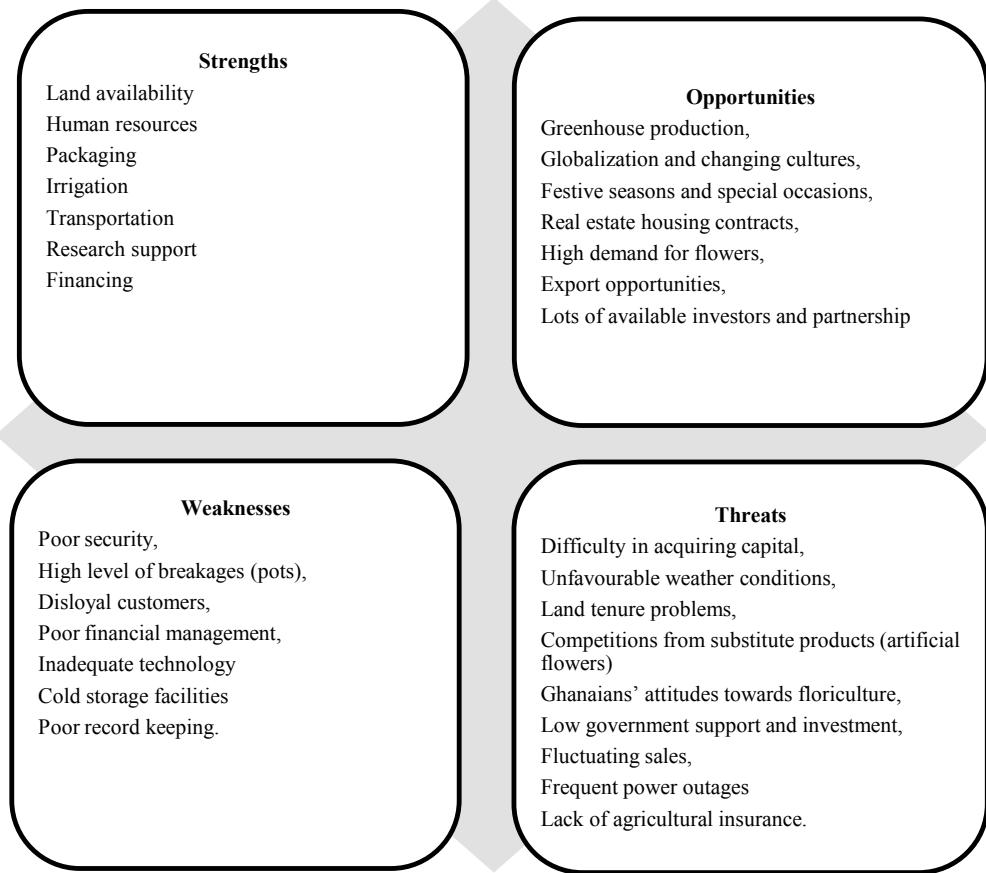
towards floriculture, low government support and investment, fluctuating sales, frequent power outages and lack of agricultural insurance.

CONCLUSION AND POLICY RECOMMENDATION

Some developing countries are diversifying into high-value non-traditional export including the floriculture industry. However, in Ghanaian situation, the sector is underdeveloped and numerous opportunities offered by the industry are not yet fully exploited. The reason is that there is inadequate research on economics of floriculture industry to inform investors about the extent to which the industry is profitable. Therefore, this study tended to determine the financial feasibility of the floriculture industry in Ghana using the two major cities- Accra and Kumasi as a case study. Eight (8) floricultural firms comprising four small-scale and four large-scale firms were selected from the two cities. Both discounting and non-discounting investment appraisal methods were employed to determine the financial feasibility of the floriculture industry. The combination of these two methods provides rigorous and better conclusion and decision. Three floricultural products namely, cut flowers, potted and bedded plants were considered for both small and large scale firms for the study.

The results indicate that large-scale floriculture firms require higher capital investment of Gh₵ 84,256.99 (US\$

Figure 1. SWOT analysis



21,604.35) while that of small scale firms is Gh₵ 25,536.79 (US\$ 6,547.89). Our findings reveal that production of potted plants for both small and large scale requires higher cost as compared to cut flowers and bedded plants. However, cut flower production for small and large scale appears to be more profitable for both small and large scale. Generally, both discounting and non-discounting methods point out that large scale firms are more profitable and feasible to invest. However, investors with limited capital can venture into small-scale production specifically cut flowers. In addition, the study identified a number of opportunities available to expand the floriculture industry. These include greenhouse production, globalisation and changing cultures, festive seasons and special occasions, real estate housing contracts, large customer base, high demand for flowers, export opportunities, lots of available investors and partnership opportunities. Despite these opportunities, some challenges also exist in the industry including difficulty in acquiring capital, unfavourable weather conditions, land tenure problems, competitions from substitute products example artificial flowers and also import firms, attitude of Ghanaians towards floriculture, low government support and investment, fluctuating sales, frequent power outages and lack of agricultural insurance.

The main conclusion drawn from the study is that the floriculture industry is profitable especially the cut flowers. We, therefore, recommend that potential investors should expend resources in the floricultural industry as it has been

proven to be financially viable. Efforts must be made to promote demand for the floricultural products on the local market to boost sales. At the production side, we suggest that new technologies should be adopted by producers while government and other stakeholders provide necessary institutional support to improve the sector and attract more investors in the sector. Lastly, intensive research is also required to reveal relevant information needed by stakeholders and investors in the floriculture industry.

REFERENCES

Deloitte. Ethiopia, a growth miracle, 2014. Available online: <http://www2.deloitte.com/za/en/pages/strategy/articles/ethiopia-growth-miracle.html>

Dilta BS, Sharma, BP Baweja HS, and Kashyap B. Flower drying techniques- A review. *International Journal of Farm Sciences* 2011; 1:1-16. <https://www.inflibnet.ac.in/ojs/index.php/ijfs/article/download/794/709>

Gebreeyesus M, Sonobe T. Global value chains and market formation process in emerging export activity: Evidence from Ethiopian flower industry. *Journal of Development Studies* 2012; 48(3): 335-348. <http://dx.doi.org/10.1080/00220388.2011.635199>

Gittinger, J. P. Economic analysis of agricultural projects. Unnumbered series ; no. UNN 76. Washington, DC: World Bank, 1998. <http://documents.worldbank.org/curated/en/584961468765021837/Economic-analysis-of-agricultural-projects>

Jaeger P. Ghana export horticulture cluster strategic profile study. Part 1-scoping review. Prepared for World Bank Sustainable Development Network (WB-SDN) Africa Region, Agriculture and Rural Development (AFTAR), The Republic of Ghana Ministry of Food and Agriculture, and European Union All ACP Agricultural Commodities Programme (EU-AAACP), 2008. www.cocopeatcompany.com/report/1328108812.pdf

Ksoll C, Macchiavello R, Morjaria A. Guns and roses: The impact of the Kenyan post-election violence on flower exporting firms. *Centre for the Study of African Economies Working Paper Series* 2009-06, University of Oxford.

Leipold B, Morgante F. The impact of the flower industry on Kenya's sustainable development. *International Public Policy Review* 2013; 7 (2):1-31.

Nusrat HM. Profitability of flower production and marketing system of Bangladesh. *Bangladesh Journal of Agricultural Research* 2012; 37(1):77-95.

Oulu M. The unequal exchange of Dutch cheese and Kenyan roses: Introducing and testing an LCA-based methodology for estimating ecologically unequal exchange. *Journal of Ecological Economics* 2015; 372-383. <https://doi.org/10.1016/j.ecolecon.2015.09.022>

Rakesh B, Meseret C. Catalysts and barriers to cut-flower export: a case study of Ethiopian floriculture industry. *International Journal of Emerging Markets*, 2007; 3(2): 216-235. <https://doi.org/10.1108/17468800810862650>

Rikken M. The global competitiveness of the Kenya flower industry. Prepared for the Fifth Video Conference on the Global Competitiveness of the Flower Industry in Eastern Africa. Technical Paper for the World Bank Group and Kenya Flower Council, 2011.

Rogers M. Networks, firm size and innovation. *Small Business Economics* 2004; 22(2):141-53. doi:10.1023/B:SBEJ.0000014451.99047.69

Sudhagar S. Production and marketing of cut flower (rose and gerbera) in Hosur Taluk. *International Journal of Business and Management Invention* 2004; 2(5): 15-25. www.ijbmi.org/papers/Vol%282%295/version-1/C251525.pdf

Uffelen RLM, De Groot NS. Floriculture worldwide ; Production, trade and consumption patterns show market opportunities and challenges. The Hague, 2005. Retrieved from <http://purl.umn.edu/29148>.

United Nations Conference on Trade and Development, UNCTAD. Export performance following trade liberalization: some patterns and policy perspectives. *Economic Development in Africa*, 2008 series, UNCTAD, Geneva

Van Rijswick C. Gearing up for stronger competition. *World Floriculture Map* 2015. Rabobank Industry Note No. 475, January 2015.

Vivarelli M. Are all the potential entrepreneurs so good? *Small Business Economics* 2004; 23(1): 41-49. doi:10.1023/B:SBEJ.0000026023.11752.a9

Voisard JM, Jaeger P. Regional study on agricultural trade facilitation/export promotion in SSA. Ghana horticulture sector development study including agricultural subsector investment program restructuring. Prepared for ESSD Department of the World Bank, 2003.

Webber MC, Labaste P. Building competitiveness in Africa's agriculture - a guide to value chain concepts and applications. IDB and World Bank, 2010.

Zerihun AZ, Kibret H, Wakiaga J. *Ethiopia 2014. African Economic Outlook*. Available online: www.africaneconomicoutlook.org.