GhanaVeg Business Case Reports

Business Case for a Vegetable Distribution Company with Cooled Warehouse

Greater Accra Region, Ghana

WAGENINGEN UNIVERSITY & RESEARCH

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Greater Accra Region, Ghana

Authors: Sjoerd Herms, Yeray Saavedra Gonzalez, and Youri Dijkxhoorn

The GhanaVeg Program

GhanaVeg believes in healthy and quality vegetables from Ghana through new ways of doing business. GhanaVeg supports frontrunner companies in the vegetables sector with business information, contacts and can provide hands-on assistance in setting up or expanding your company.

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Source for trade data: UN Comtrade
Source for prices: various (including researchers' mission report, UNComtrade for import prices).
Source for prices of capital investments: Researchers' findings.

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1. The Market

Demand for Fresh Fruit and Vegetables (FFV) is on the rise in Ghana since 2007. The increase is driven by demand in urban Ghana, where FFV consumption has become widespread. Traders and wholesalers face problems gathering sufficient volumes of quality Ghanaian produce year-round to meet this demand, due to seasonality and low productivity at farm level. As such, wholesalers source FFV from other African countries and as far from Europe. Although there are no data available on actual increase in consumption, production and import data confirm the increase in consumption:

- The production of fruits and vegetables increased between 2007 and 2012 by 30%.
- Import of the main fruits and vegetables even tripled between 2007 and 2013. On an annual base recent import fluctuates between 90,000 tons and 100,000 tons of selected FFV (Figures 1 and 2). The most important import is onion.

The open market, dominated by the Agbogbloshie market, remains the major market channel. The open market still handles 60-95% of the market flow (CGIAR, 2010), including imported high-value crops as carrots, garlic and potato. Corner shop owners and street vendors account for most of the remaining market flow. Please note that the open market is also the key sourcing place for these vendors. The high-end retailer channels like Shoprite, Game and Koala are gaining importance, but their market share remains limited (<5%).

Onions provide a good example of the dynamics in most of the important vegetable value chains. During the dry season onions are produced in Upper East Ghana, but during the wet season it is difficult to produce them locally. Therefore 55,000 tonnes of onions are imported annually from various countries, including Burkina Faso, Niger and the Netherlands. It is likely that cross border trade is

Figure 1. *Import of selected fresh vegetables and apples (tonnes) from 2007-2013*

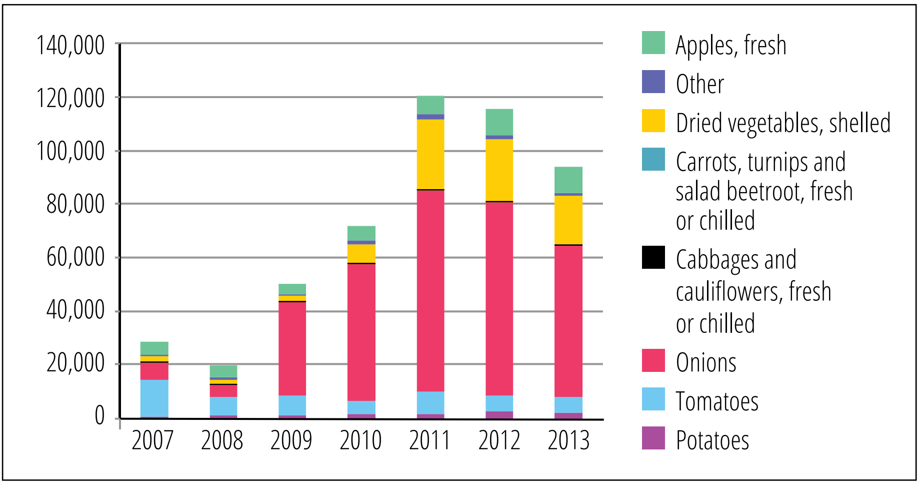
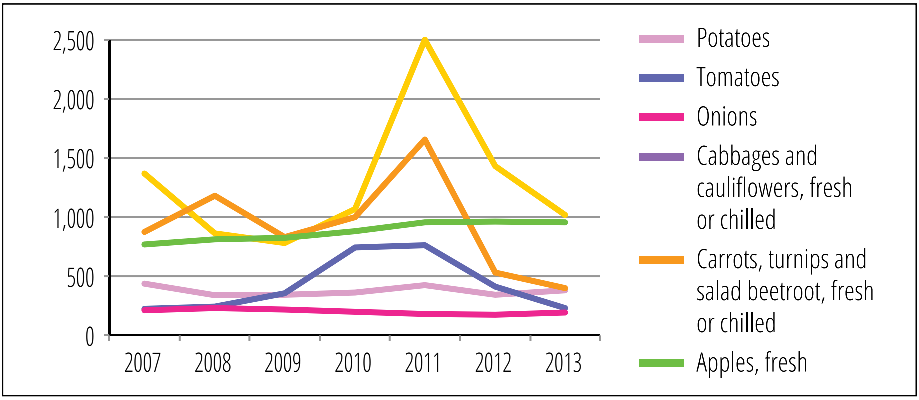


Figure 2. *Import price CIF of selected vegetables and apples (USD per ton) from 2007-2013*



not always registered so the actual import flows are expected to be even higher. After importation, the onions are stored in warehouses and sold to traders when onions are in high demand. The bulk of the import originates from Burkina is early in the year (April-May), the import from Niger is between July to September and the import from the Netherlands is at its peak between September and November. Some consumers prefer imported onions since they are more easy to slice, less pungent and less irritating to the eyes. Onion varieties from Burkina Faso, Niger and Ghana hold can also be found in the market.

2. The Business Opportunity

Cold storage offers a good solution to capitalize on the growing demand for FFV. This document describes the business opportunity of establishing a warehouse with cold room facilities that supplies home-grown and imported fresh vegetables to high-end urban retailers and the open market in Greater Accra. The projected facility will enable the investor to 1) reliably deliver quality fresh produce year-round and 2) store produce for a longer period to benefit from market developments.

Imported products that will be marketed by the business include onions from the Netherlands and Burkina Faso (see above) as well as apples from South Africa. Tomatoes and cabbage are the most prominent home-grown products that will be marketed. The business case is premised on price increases of high-volume, high-value crops.

Historically cold storage is used first for exports of higher value food products, but once in place can also be used for domestic handling and marketing. The business case will follow a similar strategy, adjusted to Greater Accra market's context. The company will source and market imported fruit and vegetables to the open market as main source of income during the initial years, and adjust its main focus to local vegetables for the high-end urban retailers afterwards. The company will be located in the Greater Accra region since the major markets are there and serves as a key distribution channel for marketing of FFV to a population of over 4 million urban citizens.

Two views of cooling facilities operated by Celtic Cooling.

The projected facility encompasses a warehouse of 200 m^2 capacity, and a prefabricated cold room of 100m^2. The cold room will have a maximum physical storage capacity of 200 tonnes. With average storage duration of 2 weeks, the maximum annual storage capacity is 5,200 tonnes. See the pictures above for some examples.

Traders in the fruit and vegetables sector use various sourcing models:

- Some traders grow fresh produce on their own farms, and commercialize it directly. To ensure a reliable crop production, traders count with farm managers with relevant background and/or experience to run the farm.
- Others work with outgrowers that provide the fresh produce required. Traders offer farmers inputs that are later on deducted from the final payment after harvest. Sometimes they also provide extension services and advice to increase output.
- Other smaller traders buy directly from farmers at the farm gate and they re-sell this to larger wholesalers at the open markets.

A total of 17 staff members will be employed at full capacity. Positions include a general manager (1), procurement manager (1), head of accounts (1), admin staff (2), supervisor (2), general workers (8) and drivers (2). Start-up expenditures and operating expenses comprise costs for company registration, legal services, electricity, water, fuel, travel, advertising & representation, IT & telecom, office supplies, maintenance, bad debt, insurance, bank charges and contingencies.

3. The Business Case

A full-fledged financial model for the vegetable distribution company with cooled warehouse in the Greater Accra Region has been developed, and is available on request from GhanaVeg. Table 1 provides an overview of the FFV that will be marketed by the vegetable distribution company, including sourcing prices.

Table 1. *Estimated average annual prices and volumes of selected products*

FFV	Source	Average sourcing price, 2012-2015 (USD/tonnes)	Marketed volume at full capacity (tonnes)
Onion	Local, import	200	355
Cabbage	Local	300	346
Tomato	Local	300	346
Potato	Import	370	355
Carrot	Import	780	346
Apple	Import	920	360
Others: garlic, bell pepper, citrus	Local, import	900	1,383

Table 2. *Investment costs broken out by category*

Item	Amount (USD)
Total capex	**199,600**
Land + levelling + fencing (m2; 1 plot; 30m * 30m)	10,800
Pre-fab cold room (m2; includes sandwich panels for wall, floor and ceiling, cooling equipment, roof, hinged door and light)	57,500
Power connection (lump sum)	12,000
Water supply (lump sum)	2,500
Warehouse construction (m2; basic structure for pre-fab cold room; 14m * 24m)	29,400
Office construction (m2; 8m * 8m)	22,400
Furniture & IT (lump sum)	9,000
2nd hand cool truck (lump sum; 3 tonnes storage capacity; includes import duties)	24,000
2nd hand truck (lump sum; 3 tonnes storage capacity; includes import duties)	13,000
Manual forklift & supporting equipment (lump sum)	8,000
Back-up generator (lump sum; 27 KvA)	11,000
Working capital for product sourcing	**360,400**
Total investment	**560,000**

The envisaged facility would require a total capital expenditure investment of USD 199,600, including the purchase of a second-hand cold truck. For products that don't require cooling during last-mile transportation to the client, a regular transport truck is also included. Please note that, as a trading business, the largest investment is working capital. Staff salaries, start-up expenses, operating costs, but most importantly sourcing costs, will require an additional investment in working capital of USD 360,400. The total investment of USD 560,000 is summarised in Table 2.

Investing in a warehouse with cold room facilities is a profitable business case. An overview of the Profit & Loss account and financial analysis are provided in Tables 3 and 4. In Year 1 and Year 2 of operation the net loss will accumulate to an estimated USD 107,000 and USD 66,000 respectively. The investment becomes profitable from year 3 onwards, with a

Table 3. *Profit and loss summary for years 1-7*

Year	1	2	3	4	5	6	7
Income							
Onion	0	59,250	75,550	88,225	88,725	88,725	88,725
Cabbage	0	85,950	110,400	128,925	129,675	129,675	129,675
Tomato	0	57,300	73,600	85,950	86,450	86,450	86,450
Potato	0	109,613	139,768	163,216	164,141	164,141	164,141
Carrot	0	223,470	287,040	335,205	337,155	337,155	337,155
Apple	0	281,520	352,912	412,114	414,414	414,414	414,414
Others	0	1,031,400	1,324,800	1,547,100	1,556,100	1,556,100	1,556,100
Direct costs							
Onion	0	-52,000	-62,400	-72,800	-72,800	-72,800	-72,800
Cabbage	0	-78,000	-93,600	-109,200	-109,200	-109,200	-109,200
Tomato	0	-52,000	-62,400	-72,800	-72,800	-72,800	-72,800
Potato	0	-96,200	-115,440	-134,680	-134,680	-134,680	-134,680
Carrot	0	-202,800	-243,360	-283,920	-283,920	-283,920	-283,920
Apple	0	-239,200	-287,040	-334,880	-334,880	-334,880	-334,880
Others	0	-936,000	-1,123,200	-1,310,400	-1,310,400	-1,310,400	-1,310,400
Gross profit	**0**	**192,303**	**376,630**	**442,055**	**457,980**	**457,980**	**457,980**
Bad debt	0	-73,940	-47,281	-55,215	-55,533	-55,533	-55,533
Staff costs	-57,267	-92,663	-101,324	-104,364	-107,495	-110,720	-114,042
Start-up expenses	-9,000	-2,000	0	0	0	0	0
Other operational expenses	-22,365	-46,830	-48,995	-50,661	-50,728	-50,728	-50,728
Operating profit	**-88,632**	**-23,131**	**179,028**	**231,815**	**244,224**	**240,999**	**237,677**
Depreciation	**-7,795**	**-15,590**	**-15,590**	**-15,590**	**-15,590**	**-15,590**	**-15,590**
Profits before interest and tax	-96,427	-38,721	163,438	216,225	228,634	225,409	222,087
Interest paid and received	-10,800	-27,600	-30,000	-20,800	-9,600	-2,000	0
Profit before tax	**-107,227**	**-66,321**	**133,438**	**195,425**	**219,034**	**223,409**	**222,087**
Taxation	0	0	0	-46,595	-65,710	-67,023	-66,626
Profit after tax	**-107,227**	**-66,321**	**133,438**	**148,830**	**153,324**	**156,386**	**155,461**

payback period of 4.8 years and a 7 year IRR of 17%. In addition to assumptions as outlined throughout this document, the following major assumptions have been made:

- On average, a gross margin of 25% will be realised on sourcing prices.
- Unsellable stock due to product deterioration varies between 1% for apples (from Year 3 onwards) and 8% for tomatoes and cabbage (in Year 1).
- With respect to sourcing, an average debt collection period of 30 days is assumed, as well as 0 creditor days during Year 1 to 3 of the investment and 14 days afterwards.
- Inflation for income and expenditures is the same, except for salaries, which will increase by 3% above inflation.
- The total investment of USD 560,000 is financed for 50% by equity and for 50% by a USD 12% loan.
- The loan will be disbursed in two instalments (Year 1: USD 180,000 and Year 2: 100,000), and repaid in 3 years with a one -year grace period.

Table 4. *Financial analysis*

7 year IRR: 17% | Payback period: 4.8 years

Year	1	2	3	4	5	6	7
Operating cash flow	-88,632	-202,762	131,113	282,820	242,702	240,999	237,677
Capital expenditure	-183,195	-16,405	0	-8,260	-740	-7,342	-8,918
Cash taxes	0	0	-6,394	-50,966	-67,672	-67,861	-66,872
Free cash flow	-271,827	-219,168	124,718	223,595	174,290	165,795	161,888

Textbox 1. Method and Disclaimer

Method

The economic feasibility of the business case is based on interviews and secondary data like UN Comtrade import statistics. Prices are obtained from import statistics, interviews and literature. Prices of FFV in Ghana fluctuate heavily throughout the year, and multi-annual averages have been used over the 2012-2015 period. The data collected allowed the team to provide realistic product prices, volumes, investments and returns. Key investment indicators (Internal Rate of Return (IRR) and payback period) have been calculated to analyse the feasibility of the business case.

Disclaimer

This business opportunity fully depends on a number of preconditions:

- *A good network for sourcing of locally grown FFV from reliable farmers. Investor can decide to source from a few medium-scale farmers or from numerous small-scale farmers. Both models have advantages and disadvantages.*
- *A reliable network in importing countries to secure the assortment of imported products.*
- *The supply of locally-grown fresh produce must be carefully programmed and supervised. All year round supply is a necessary precondition.*
- *Also, the quality of the produce must be monitored so quality parameters such as size, colour and maturity desired are delivered on a continuous basis.*

GhanaVeg Secretariat
No. 113A Mbabane Avenue, East Legon Residential Area
PMB CT 284 Cantonments, Accra – Ghana
Tel +233 (0) 560 027 917/18
Email info@ghanaveg.org
Web ghanaveg.org

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