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ECONOMIC SUSTAINABILITY OF COCOA PRODUCTION IN GHANA

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<p>Cocoa production has contributed immensely to the Ghanaian economy since its first cultivation in the country many years ago. The cocoa industry remains a formidable sector, which absorbs a greater portion of the unemployment, hence serves as a source of livelihood to many people in the country, especially to those in the rural areas in Ghana. Despite the significant strides the industry has made on the Ghanaian economy for many decades, its sustainability has increasingly become a major challenge in recent times with the decline of yields, crop quality and ageing farmers. Though the government subsidises some of the farming inputs such as fertilizer supply, seedlings, spraying and other farming inputs, in order to revamp the sector, yet production levels and quality continue to decline. In order to achieve a successful path to sustainability and maximise yields, it is important to identify and analyse major challenges throughout the value and supply chain with greater effort mobilized on the part of all stakeholders to address the issues. This research has outlined some of these challenges on the part of the farmer, government (COCOBOD) and the licensed buying companies. The effect of some of the challenges on the industry and the way forward to the path of achieving sustainability have also been highlighted in this research. The research calls for greater involvement of all stakeholders in the industry to find a common goal towards addressing the challenges facing the industry in the path to achieve sustainability and increase productivity and quality.</p>	
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1 INTRODUCTION

Ghana is a country located in sub-Saharan Africa, which is noted in the world, among other things to be one of the leading producers of Cocoa in copious quantities and placed second to neighbouring Ivory Coast in the ranking of world producers of Cocoa (worldatlas.com, 2016) and (Laven & Boomsma, 2012).

Cocoa production in Ghana has a very significant impact in the lives of the citizens, thus providing a substantial number of the rural population with employment to sustain their livelihoods and contributing immensely to GDP. (Laven & Boomsma, 2012)

However, productivity of the crop in recent years has not been favourable enough because of issues arising from different factors. This has adversely affected the quality of the country's commodity (Cocoa) which is considered as one of the best cocoa crops in the world. (Tropenbos International, 2014; Omanhene Cocoa Bean Company, 2017)

The country was producing about 568,000 Metric tonnes (MT) in 1965, and by 1983, production levels had reduced to 160,000 MT (Dormon, et al., 2004). Though there have been some increases in production levels from the mid-1980s through to the late 1990s (Dormon, et al., 2004), if stringent measures are not immediately put in place to increase the sustainability of the commodity, there is the likelihood of serious negative impacts on the Ghanaian economy for the generations to come.

This means that sustainability of cocoa production requires urgent action from all stakeholders in the country, ranging from the government, producers, international partners, individuals, non-governmental organizations, etc., to look for both short and long-term solutions to the dwindling situation. This may involve sustainable ways of merging the core actors who would play a part in decision-making process in sustaining cocoa production by considering the economic and social benefits derived from the production and consumption of cocoa, to bring to bear a lasting solution of sustainability in the cocoa industry. This would relatively bring significant improvement in the industry and elevate the national development of Ghana, while raising the income status and the quality of lives of the farmers. (International Cocoa Organization, 2007)

2 INTRODUCTION TO GHANA

Ghana is a country with a landscape of about 227,533 square kilometres and 11,000 square kilometres of water that is located in sub-Saharan Africa. The country is surrounded and bordered by three countries, with Cote d'Ivoire to the west, Burkina Faso to the north, Togo to the east and the Atlantic Ocean to the south. (Worldatlas.com, 2017)

Ghana is noted in the world among other things as one of the leading producers of Cocoa, placed second to neighbouring Ivory Coast in the ranking of world producers of Cocoa. (worldatlas.com, 2016) Cocoa production in Ghana has a significant impact in the lives of the citizens, thus providing a great number of the rural population with employment to sustain their livelihoods and contributing immensely to GDP. (Laven & Boomsma, 2012)

Before Independence, Ghana was invaded by about several European powers, namely the Dutch, the Portuguese, the Danish, the Swedish and the English who would later name the land "the Gold Coast" because of the abundance of gold and other rich natural resources the land endows. (Ghanaweb, 2017)

After many struggles with the European invaders, the indigenes regained their sovereignty from the British who were the last European power to colonize the country for many years until finally the indigenes succeeded in gaining independence from the British in 1957. (Worldatlas.com, 2017) The country adopted the name Ghana from the ancient Ghana Empire, which existed geographically some 500 miles north of the modern day Ghana, somewhere between Senegal and Mali at independence which continues to remain the Modern day Ghana in today's world. (Ghanaweb, 2017)



Figure 1 Portrait location of Ancient and Modern Ghana

Since independence, Ghana has passed through the hands of revolutionary regimes until it successfully changed to a democratic regime in 1992 and has since maintained an enviable stable democratic government with increasingly diverse socio-economic impact on the economy. (About.com, 2017)

Ghana has a landscape rich with natural resources such as gold, timber, cocoa, diamond, bauxite and a recent discovery of an oilfield speculated to hold about three billion barrels of light oil in 2007, promising to earn significant foreign exchange for the country. (Royal Geographical Society, 2017)

Despite the political and social problems affecting the country, Ghana has been successful in the agricultural sector in boosting its domestic economy. Agriculture is an essential part of the domestic economy that takes care of about 50 percent of the country's GDP and providing work for about 85 percent of the working age population. (Royal Geographical Society, 2017)

However, to add to the success made by the agriculture sector in boosting the local economy, it is usually backed by the service and manufacturing sectors in maintaining a strong domestic economy. (gepcghana.com, 2010)

Currently, it is estimated that the overall population of Ghana is about 28 614 564 people (worldpopulationreview.com, 2017). The country is divided into 10 regions, out of which each region is further divided into districts. The number of districts in a region depends on the size of the region. The regions are given as, the Greater Accra, Eastern, Western, Ashanti, Central, Brong-Ahafo, Northern, Volta, Upper East and Upper West regions for administrative purposes of the government. (Boadu, 1994)

The society of Ghana is a harmonious blend of many ethnic groups of varying percentages with the biggest ethnic group being the Akans recording about 44% of the Ghanaian society. There are three dominant religious practices, mostly Christianity, Islam and Animism. (Boadu, 1994)

Ghana has a very sustainable and conducive environment for agricultural productivity with regards to the coastal region which is deep rooted for fishing activities and small-scale fish farming. A green forest, from which most of the country's food crops are grown with cocoa on a large scale, covers about a third of the country's landscape, while a

savannah caters for the production of livestock and various degrees of crops such as millet, rice, yams, shea and kola nuts in the Northern part of Ghana. (Our Africa, 2017)

Agriculture is the core foundation of the Ghanaian economy and very essential to both the government and the citizenry, especially the rural population. Agriculture is the most lucrative sector and thrives well in Ghanaian society in reducing poverty and maintaining social balance in the rural areas. It is also practiced and promoted based on historical grounds and the perception of cultural values for livelihood. (Republic of Ghana, 2017)

The government of Ghana is a substantial beneficiary of the proceeds of agriculture and that compels the Food and Agriculture Development policy on the sector by the government to aim at goals able to withstand global economic crises, provide improved food security and competitiveness, and to fuse into the domestic and international market more effectively, to increase income levels for economic sustainability and national development (Republic of Ghana, 2017)

In as much as Ghana's agriculture sector may appear lucrative, much of the work on the farm is still done manually, thus the use of simple tools like the cutlasses and the hoes to do most of the fatigue work on the field. It is very intriguing that about 92% of the food on the Ghanaian market is transported on the heads of labourers at the beginning of its transportation, about 5 kilometres from the farm before it gets to the consumers without any form of mechanisation involved on a large-scale basis. (The worldFolio, 2017)

Currently, the new Ghana government administration plans to roll out many developmental policies scaled to address a number of unemployment and agricultural issues in the country. Some of the policies include the broad implementation of industrialization across the country. This is already in the preliminary stages, with the aim of building food and other resource factories in every district of every region, as well as a dam for irrigation in every village in the Northern part of Ghana where rain falls only once in a year, leading to severe drought almost every year (pulse.com.gh, 2017). It is programmed to propel agriculture activities in the region. This would be a very good policy as the expansion and development of the agriculture sector may also capture mechanization and transportation on the farms to support the industrialization process.

The projects would be a joint venture between the government of Ghana and other stakeholders such as the private sector. It is speculated to create a good business

environment in the country, improving access to the various business market and capital funding, while providing capacity platforms for investors and businesses in the value chain. (pulse.com.gh, 2017)

3 HISTORY OF COCOA PRODUCTION IN GHANA

Cocoa, which is scientifically known as “Theobroma Cacao”, has existed since the Mayan ages of about 2000 years ago but was mostly used as currency. The plant was accorded much importance and value as it was associated to be the food of the gods of the land in South and Central America from where it originated. It was very prevalent in the Amazon and other tropical regions in the south and Central America until it finally found its way to Ghana through Equatorial Guinea in Central Africa in the 18th century. (Divine chocolate, 2011)

Dating back to the 15th century, the crop was only used by the upper class for drink due to the higher taxes it often attracted when Christopher Columbus first brought it to Spain in Europe on his journey back from America (Divine chocolate, 2011). It would later spread to other European countries such as Italy, France, Germany and Britain in the 16th century. (Ghana Cocoa Board , 2017)

The journey of Cocoa to Ghana began with a blacksmith with the name Tetteh Quarshie who first made a cocoa farm plantation of the cocoa beans he brought from an Island in Equatorial Guinea which was known in the past as Fernando Po in the 18th century and known in the present Equatorial Guinea as Bioko. (Ghana Premaculture Institute, 2017)

The crop began attracting other farmers in the eastern part of Ghana who would later buy the beans from his plantation to cultivate, and by so doing, the crop gained popularity and started spreading to other parts of Ghana (Ghana Cocoa Board , 2017). In the year 1910, the country made significant inroads in the world cocoa market recording a 30-40 percent of the world cocoa market annually to become a leading producer in the world. (Ghana Premaculture Institute, 2017).

The fast-growing popularity of cocoa among the Ghanaian farmers and its impacts on the economy at the time began catching the attention of the government, which in the 1930s nationalised the industry and so monopolized the market of the proceeds of cocoa plantations in the country. It was placed under the management and supervision of the Ghana cocoa board set up by the government to deal with issues regarding the security of farmers and the up and down price variation of the market. (Divine chocolate, 2011).

The Ghana COCOBOD, a government institution, which handles the management, marketing and sales of cocoa in both domestic and the international market, was created in 1947 to manage and help stabilize the producer price especially in the times when world market price for cocoa commodity are low following the market depression in 1929. (Frankel, 1974)

However, the initial idea of price stabilization of farmers by the COCOBOD further evolved into the mobilization of logistics such as warehouses, transport and processing facilities to uplift the shortfalls of the cocoa industry for future benefits to transform the national economy. (Frankel, 1974)

3.1 Subsidiaries of the Ghana COCOBOD and Functions

The Ghana COCOBOD is sub-divided into various independent department which operates as subsidiaries under the obligations and authority of the chief executive of the COCOBOD. Each department has a particular area of functioning in the cocoa industry to enhance farming activities, facilitate the increase of production and quality levels, as well as ensure the good processing practices and marketing standards in a cost-effective environment to achieve the set values and objectives of the company.

3.1.1 The Quality Control Division

The quality control division supervises not only the quality of the cocoa beans but is also responsible for the sustainability of standard quality of other similar commodities exported as well. It is responsible for the measurement of the moisture content in the beans and to make sure it meets the international standard. As part of its operations, it carries out disinfestations in the various cocoa warehouses around the country to prevent or take out insects and rodents that usually attack the beans and so reduce their quality.

3.1.2 The Cocoa Marketing Company

The cocoa marketing company is the only mandated company in Ghana to deal with international trading of the cocoa commodity both in the marketing and the selling of the product around the globe. It coordinates with its branch in the United Kingdom to see to

the smooth processing of operations in diverse aspects of the trade, such as logistics and finance related activities.

3.1.3 The Cocoa Research Institute of Ghana

The cocoa research institute does research on cocoa and other commodities that produce fat and butter similar to the cocoa butter such as coffee, Kola and shearnut. This is intended to find solutions to the problems these crops encounter during their life span on the plantation and post-harvest by engaging farmers for discussion and advice on problem related issues.

3.1.4 Cocoa Swollen Shoot Virus Disease

The Cocoa Swollen Shoot Virus Disease Control Unit, monitors the development of the cocoa trees on the plantation and controls the presence of the Cocoa Swollen Shoot Virus Disease, by supervising the cutting down of infested trees and replacing these with a hybrid resistant to the disease for planting and replanting. The service of this unit is extended onto all cocoa farmers in every region of the country with the help of extension field assistants who carry out the inspection on the plantation.

3.1.5 Seed Protection Unit

The Seed Production Unit sees to the availability of seedlings to farmers and takes care of the nursing of cocoa and coffee seedlings in abundance sufficient for supply to farmers in all cocoa regions of the country, to prevent unnecessary waiting and shortages in order to improve planting and stable production increases. (Nbabuine, 2012)

3.2 Cocoa Industry in Ghana

The cocoa industry in Ghana consists of certain vital players in the industry who engage themselves in discussing, sharing of information and knowledge to provide, create and innovate solutions to tackle existing and potential problems facing or likely to confront the industry. These players function in their respective roles in relation to the industry for

continues and sustainable coordination to the industry's operation. (Essegbey & Gyamfi, 2012)

Some of the players actively involved in the successful operation of the industry are:

The global Companies who are dependent on the cocoa beans for production; the government ministries (COCOBOD), which supervise the management of the sector and liaise with the farmers to address their problems through their subsidiaries; the Marketing commercial enterprises that see to the marketing and exportation of the beans; the processing industries that are liable for processing some percentage of the raw beans into butter for export; the Scientific institutions that conduct research on diseases and pests that affect cocoa productivity; the civil society organizations that advocate for corporate social responsibility and human right measures; the cocoa rural communities (farmers) who are the main cultivators; and the financial institutions that support the industry with financial resources. (Essegbey & Gyamfi, 2012)

The country has a bilateral trade relationship with countries such as the United States, Canada, the EU (Holland, UK, Germany, Belgium, France, and Spain), Asia (Japan, Thailand, China, and India etc.), Brazil and South Africa. (Ashitey, 2012)

Cocoa beans from the Ghanaian industry are either converted into butter, liquor, powder or cake before export, or are exported as quality dried beans that continue to earn a higher premium on the world's commodities markets. The industry administers excellent quality control, monitoring and evaluation measures to ensure that the exported product meets the international market standard with credit to the quality control division of the Ghana COCOBOD. (Ashitey, 2012)

Ghana's cocoa productivity and farming competitiveness of potential achievable yields relative to neighbouring Cote d'Ivoire stands far apart. There is a difference of about 50 to 80 percent gap of productivity and achievable yields relative to neighbouring Cote d'Ivoire. This depends on the farming and technological practices applied by the farmers with regards to the environmental conditions under which the cultivation may take place and cost of production. However, Ghana records low yields annually as against neighbouring Cote d'Ivoire. (Kolavalli & Vigneri, 2011)

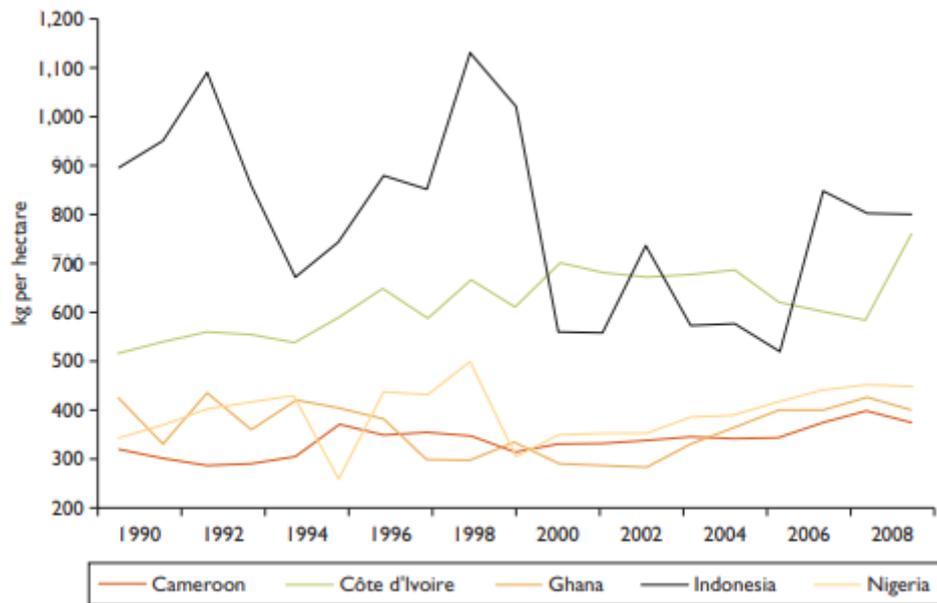


Figure 2. Cocoa yields of competitive countries

The government has tried to manage and increase the cocoa production levels over the years by providing sufficient fertilizers to farmers whilst keeping the plantations from being destroyed by pests and diseases through a mass cocoa spraying programme offered to farmers at no cost. (United World Limited, 2017). Though the exercise is

carried out at time periods of the cocoa season, it has been criticised by many farmers due to corruption issues and marginalization coming from the political arena for years (MyJoyOnline.com, 2014).

Following the partial liberalization of the domestic cocoa market in Ghana, some prominent farmers in the industry found it very useful to organize themselves into a cooperative union in 1993, named Kuapa kokoo, to mediate for farmers in price negotiation, take measures to improve the quality and productivity of cocoa, and address the welfare issues of farmers in the cocoa industry for better livelihoods, as a way of making their impact in the industry be felt in both the domestic and the international market. (Kuapa Kokoo, 2017)

The expansion of cocoa productivity has always been a priority of the Ghanaian government and other stakeholders in the industry. The primary idea of increasing yields through increasing the use of fertilizer and land expansion without increase in farmer incomes has not really achieved the expected yields in Ghana in view of the thriving environmental conditions to the crop. This drew the attention of stakeholders in the chocolate and processing corporations to enforce initiatives with the Fairtrade and other certification organisations that would earn increases in price premiums and encourage farmers to invest more in the industry. (Smoot, 2013)

3.2.1 Cocoa farming practices and farmer activities in Ghana

Farmers in Ghana use different cultivating practices depending on the type of terrain, but most farming activities occur in the forest areas since the crop is more viable in the forest environment. Farming practices used in cultivation may contribute or have adverse effects on productivity. Nevertheless, the most common method used during land clearing by small scale cocoa farmers, who are the largest group in the cocoa industry, are slash and burn which is usually referred as the traditional or conventional way of land clearing. (Asuming, 2009)

Cultivation of the cocoa plant might be based on the level of farming activities by the farmer. An entirely new area of farmland may require entirely new seedlings and an existing one may go through practices such as complete replanting, under planting and gradual planting. (Asare & Sonii, 2010)

Complete planting is the process whereby cocoa plants in an existing farm are completely cut down and cleared for new ones to be planted. This can be due to ineffective productivity or disease, whereas under planting and gradual planting may involve planting new trees within a section of the existing trees. (Asare & Sonii, 2010)

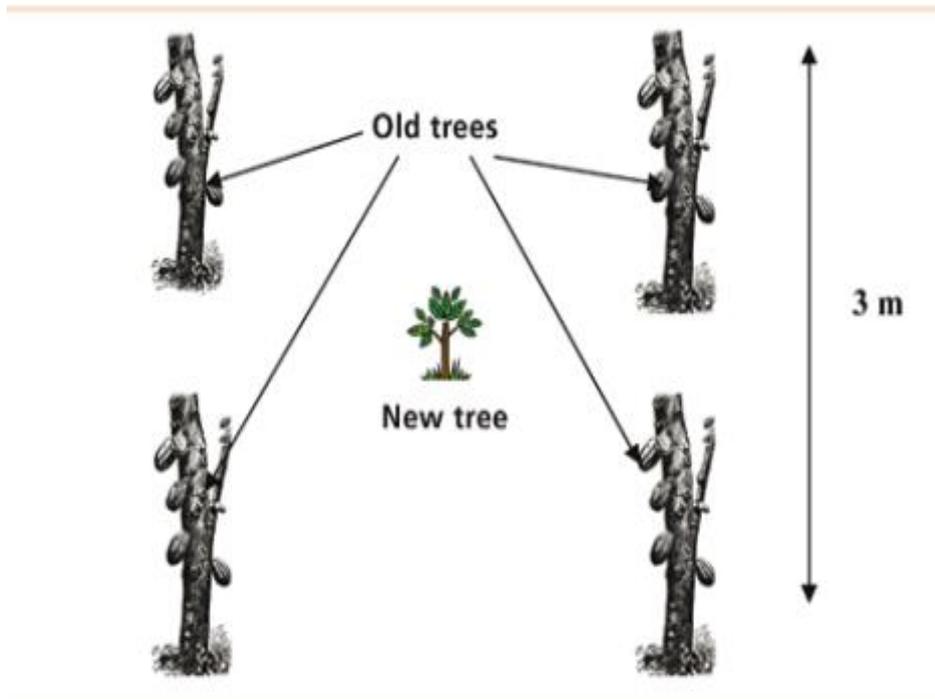


Figure 3. An illustration of cocoa tree in under planting of an existing farm

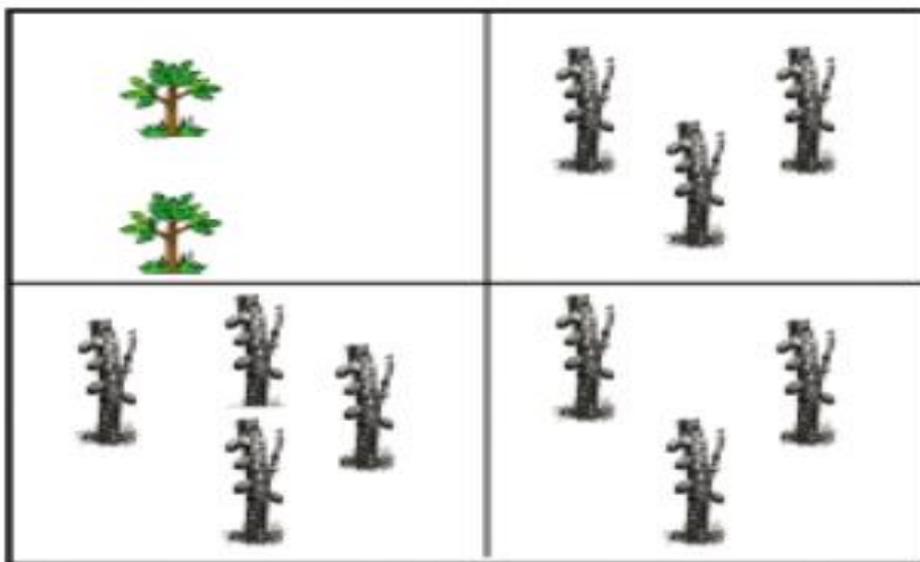


figure 4. An illustration of Cocoa tree in gradual planting of an existing farm

Planting and replanting of cocoa trees may be accompanied with the application of fertilizers in areas of low soil fertility as a way of increasing the soil fertility rate and productivity. Relatively, cocoa under its natural potential to grow in the most fertile soil may not provide the needed yield as against demand. (Food and Agriculture organization of the United Nations, 2005)

To ensure that there is a better seasonal yield, farmers and their families spend a lot of intense effort on the farm to manage the growth of the crop by inspecting and monitoring any irregular development on the farm after planting. (Cocoa Care, 2017)

3.2.2 Cocoa drying process

Cocoa beans in their raw state must go through a fermentation period before they are dried to the needed market standard. During fermentation, the moisture contained in the bean may be around 60% and it must be reduced to about 7.5% to prevent the tendency of fungi and mould generation during storage in transportation. (Cocoa research centre, 2017) Though the International cocoa market quality benchmark is around 7.5% of moisture content in the final bean, the Ghana cocoa board set its standard to achieve high quality bean above the minimum quality standard of the international market. (COCOBOD, 2017)

The drying process have some impact on the final quality. If the drying of the beans is not done well, the beans may retain some of the acid content produced during fermentation thus affecting the good flavour of the beans and making it bitter.



Figure 5. Fresh Cocoa seeds in an open pod



Figure 6. Number of fresh cocoa beans removed from the pod



Figure 7. Fresh beans from the pods ready for fermentation



Figure 8. Cocoa beans going through the drying process

3.2.3 Cocoa transportation and storage

The transportation of cocoa in Ghana before 1903 was usually done by head loading transportation and barrel rolling through the thick forest since road transportation was very scarce at the time. This made the transportation of tropical goods very expensive and relatively few to the urban areas. Eventually the construction of railway lines in cocoa producing areas began to ease and reduce the cost of transportation of tropical goods from the rural areas to the capital. Subsequently, cocoa transportation improved by the introduction of road transportation where more feeder roads were linked up to the plantations and other rural areas. Currently, head loading transportation of cocoa continues in some parts of cocoa growing areas where farmers must make a head loading transportation of the beans at some distance from the plantation to a shed or point of truck loading, (Jedwab & Moradi, 2011). However, the main means of cocoa transportation in the industry in Ghana today is either by road, rail or water. (European cocoa association, 2017)

3.2.4 Storage

The dried cocoa beans are traditionally stored in sacks of durable jute fabric to safeguard the quality from compromise due to the hot humid nature of the climate. They are then stored in warehouses or directly shipped for processing. (European cocoa association, 2017)

3.3 Economic Importance of Cocoa Production in Ghana

Cocoa plays a fundamental role in supporting the growth of Ghana's economy. Apart from its impacts on GDP, the production of cocoa serves as a conduit of job creation and source of income for many small farmers, hence absorbing over 2 million people in the sector and contributing immensely towards reduction of unemployment and poverty especially among the rural population.

The cocoa sector could be a driving force for achieving the set targets of Ghana's developmental vision of attaining a sustainable middle-income status as captured in the

Millennium Development Goal (Assibey & Grey, 2013), in view of its contributions per capita towards the economy and employment as against the other service sectors. This is so as the commodity can attract a lot more foreign exchange into the country when the global demand is high, as seen in the position Ghana holds as the world number 2 producing country of cocoa.

Considering the key role cocoa plays in the Ghanaian economy, it is possible that Ghana can pursue a more productive path in increasing growth and sustainable production for potential yields to expand the export base while attracting more investors to the industry and economy as a whole. (Breisinger, et al., 2008)

3.4 Cocoa Value Chain in Ghana: from the farmer to the consumer

3.4.1 Growing

The sensitive nature of the cocoa crop requires attention from farmers daily to prevent the mishaps of natural causes that could affect proper growth of the trees thereby reducing the desired quality of production. There are varying causes that usually affect the value of production, ranging from the quality of soil, effects from the wind and sun, attacks from pests and diseases, causing distress to the trees. These mishaps put the farmer on the alert to increase the value of production by usually applying fertilizers to the soil from the beginning of planting of new seedlings and during replanting. Farmers are conscious of the possible attack on their trees by pests and diseases and are therefore very vigilant in looking for their presence in the farm constantly. (WCF, 2017)

3.4.2 Harvesting

Harvesting becomes easier when ripe cocoa pods are more flexible to reach on the farm. Ripe cocoa pods are found at random on the farm at any time, but the ultimate harvest happens two times in a year. During the growth of the tree, abnormal branches and overgrowth of trees may pose difficulties at harvest time. In order to avoid this situation, farmers take extra effort during growth to cut off unusual branches and trim trees to a more reachable height during harvest in a process known as pruning. (WCF, 2017)

3.4.3 Fermenting

After harvest, the outer husk of the pod is split, and the beans removed. The pod may yield about 20-50 beans per pod, depending on the variety planted. However, the fresh beans do not convey the chocolate flavour and therefore require some fermentation process to bring out the chocolate flavour we perceive very often in roasted and dried beans, before they are processed into chocolate bars or butter. To do this, the farmer heaps the fresh beans in boxes or into piles that are kept underneath banana leaves or covered with mats for a period of about 3-7 days where fermentation takes place and produces the chocolate flavour before they are subjected to drying. (WCF, 2017)

3.4.4 Marketing

After the beans have gone through the drying processes, they are then sold by farmers to local buying agents who then sell to the exporting company, which is the Ghana Cocoa Marketing Company. The company has the sole mandate in Ghana to sell cocoa to the international partners. Proper inspection takes place at the premises of the exporting company where they are placed in burlap, sisal, or plastic bags and taken to the exporters' warehouse. The beans then undergo additional drying to prevent the formation of moulds and fungi while in the warehouse. (WCF, 2017)

3.4.5 Transporting

Documents regarding the shipment of the beans to the international buyer's destination are prepared by the Ghana cocoa marketing company and the beans are placed on ships for transportation. On arrival, the beans in bags are taken to a warehouse belonging to the Ghana cocoa marketing company where the buyer does a quality check on the beans before accepting the delivery. (WCF, 2017)

3.4.6 Roasting and Grinding

Beans that arrive at the processor or the manufacturer's facility go through an intense inspection and are purified before being put to use. The bean itself has a shell in which there is an inner part known as the nib. During the roasting process, the shell may be removed, and the nib processed alone, or the shell remain in place and roasted and removed afterwards, depending on what the manufacturer wants. Nevertheless, the bean is processed at the facility into either butter, liquor without alcohol or unsweetened baking chocolate. (WCF, 2017)

3.4.7 Pressing

The cocoa liquor and butter further go through hydraulic treatment where the acidity content is reduced and turned into cakes or fine powder and further processed into the palatable chocolate consumed every day. (WCF, 2017)

3.4.8 Consumer

The final product then gets to the market in diverse ways around the world for consumers. It is estimated that about 3 million tons of cocoa are consumed annually. (WCF, 2017)

3.5 Challenges of Cocoa Production in Ghana

3.5.1 Shortfalls in logistics and infrastructural development

Farm inputs for farmers is a necessity and if distributed on time to farmers, may assist the potential increase in production levels. However, there have been many instances where the distribution of farm inputs such as fertilizer and pesticides by state officials are characterized with uneven distribution, corruption and diversion, thus inputs are shared on political lines in favour of supporters of the political party in power or diverted to individuals close to officials for money.

Poor roads connecting farmlands to communities impedes the smooth transportation and evacuation of harvested beans ready for drying and packaging from the farm to drying sheds in the communities. Farmers desperately employ their own means of transporting their beans to mainland which in most times involves child labour to prevent the beans from going rotten, which becomes worse in the rainy season.

The lack of effective and adequate handling of packaging and storage facilities at both the communal level and at the port reduces the quality of handling management and put the beans at risk of being contaminated with other unfriendly materials.

3.5.2 Natural causes and bad farming practices

Natural causes such as heavy rainfalls, pests and diseases are a major setback to the industry and hamper productivity, as cocoa plantations are vulnerable to attack by various kinds of diseases capable of destroying about 30-40% of production worldwide. Alternatively, continuous heavy downpours of rain cause many cocoa pods to rot on the tree while causing flooding to block access routes and bridges that lead to farmlands, preventing farmers to reach their plantations.

The scarcity of financial support to enable many rural farmers to adapt to modern agrotech farming practices leaves many farmers with no choice than to go the usual conventional way which is also referred as slash and burn where the farm land is cleared with cutlasses manually and burnt. This form of practice does not only harm biodiversity in the ground that increases soil fertility but often causes bush fires that destroy nearby plantations as well.

The productivity of cocoa trees reaches their peak in about 20 years, after which may require planting and replanting to replace aged ones. However, the labour required which also grows as the years advance, prevents many farmers from willingly cutting down their trees and replant when they consider the cost involved and the time to grow them again, and this is a contributing factor to the decline in production.

3.5.3 Price Volatility

The fluctuation of cocoa prices on the international market adversely affects Ghana's government and farmers. This is because in Ghana, the government sets a fixed price for the cocoa farmers, thus whether prices increase or decrease, the farmer receives the amount set by the government unless the government decides to re-adjust the set amount. The adverse effect of this price mechanism in the local market is that, when prices go down on the international market, the government takes the losses. This sometimes leads to giving the commodity on credit to the international partners and receiving payment later, hence making the government cash strapped to be able to pay the local farmers on time and assist with farming materials needed to boost production in the due time. This leads to late application and planting. On the other hand, the increase in prices on the international market does not reflect directly in the local farmers'

intake because the government reserves the money surpluses from price increases to take care of farmers in times of decrease and this system of price mechanization places the farmer always at the bottom of the chain. This situation leads to smuggling of the commodity from Ghana by local farmers to nearby countries where they earn better prices for their product while others also decide to leave the industry and transfer their farms into other produce other than cocoa plantation.

3.5.4 Inadequate Credit facilities

The lack of sufficient credit access to small farm holders, hinders their ability to expand their plantations into large scale farming. The use of advanced technologies and equipment for cultivation and processing may be useful, to create economies of scale and employment. Nevertheless, small farm holders tend to be contempt with the little they have, as seeking credit can be very frustrating to them and see the paperwork involved in securing the credit as difficult processes. The farmer may fear losing his/her plantation and feel cheated in the end by the terms of conditions for securing the credit, especially when he/she defaults on payment. Basically, credits are supplied by the financial institutions recognized by the Bank of Ghana, precisely the banking sector. The terms of conditions for securing a credit may be different depending on the bank one secures a credit from, the type of credit secured, banking relationship and the amount. The type of credits is usually secured and unsecured credits, and the terms may come with either collateral security, guarantors and monthly payments with interest depending on the credit type (Ghanacompare.com, 2017), which farmers find not feasible. The cost of borrowing from banks could be somewhat high which prevent potential investors from accessing the industry and limits farmers ability, produce buying companies and other agents from expanding their investment in the industry.

3.5.5 Undesirable land tenure policies

In Ghana, most lands are owned by traditional chiefs of ethnic groups within their jurisdiction and are mostly leased to farmers for a specific number of years in return for a percentage of the proceeds of their plantation each year. The ratios could be given as 1:2, 1:3 or 1:4 where the greater part goes to the landowner and the rest to the farmer. Such policies have been a hindrance to productivity in the cocoa industry and discourage potential farmers from going into cocoa farming while the existing farmers also feel

humiliated after investing all resources, time, money and labor only to reap just a smaller portion of his/her investment. Many farmers consider it not worth their stay in the industry and so leave after time.

4 WAY FORWARD FOR SUSTAINABLE PRODUCTION OF COCOA IN GHANA

4.1 Production

Productivity has become a major setback in the effort to obtain substantial improvement of production levels and attain sustainable cocoa production for the Ghanaian economy and the world at large. The average production capacity of the industry revolves around 350-400 kilograms per hectare as against 1000 kilograms per hectare and above in other cocoa producing countries, (Barrientos, et al., 2015).

The first issue related to the problem of low levels of cocoa production concerns the scarcity of available lands to farmers for farm extensions to exploit economies of scale. Due to the scarcity of land, it would be prudent for farmers to resort to existing methods such as planting and replanting in raising yields and refurbishing of an existing plantation. Continuous use of existing land loses part of its fertility rate in the longer-term, which tends to pose a serious threat to yield levels and sustainable production. Such a situation requires farmers to efficiently apply fertilizers more often during planting and replanting to revitalize declined biodiversity nutrients in the land for better growth.

4.1.1 Fertilizer

The problem of fertilizer usage has been the case that farmers do not often have the financial capability to purchase fertilizers when their application is due and the few who can afford also lack education on their application, thus do not apply them in the rightful dosage as recommended. Though the method is effective, these problems tend to take the interest of fertilizer application by farmers away and limit yield impact.

To enhance fertilizer usage by farmers in order to achieve the targeted levels of production, there must be an effective education campaign nationwide. This would reach out to the non-literate farmers as a promotion exercise to raise awareness of the importance of fertilizer usage at recommended dosages. Notwithstanding, the creation of more sustainable credit institutions accessible to all farmers would ease the financial constraint on farmers so that many can afford the purchase of fertilizers without complaints. In addition, farmers' bonuses due to them should be paid out on time by the Ghana COCOBOD as a way to encourage farmers to do more.

4.1.2 Hybrid cocoa seeds and seedlings

Hybrid cocoa seeds and seedlings are genetic modified seedlings produced by the Ghana COCOBOD to help improve on the declined state of productivity. The seeds do fairly well on old farms or new farms by the method of planting or replanting as compared to the seeds obtained from pods. Unfortunately, many farmers ignore the hybrid seedlings and continue to use seedlings from their own farms that do not produce the expected yields. Farmers ignore the hybrid seedlings because they must always make an unpleasant journey from their rural communities before they are able to acquire the hybrid seedlings. Many get tired with time and carry on with the seedlings from their farms while others do not even know the yield difference between the hybrid seedlings and the seedlings from their farms regarding productivity.

To ensure effective ways of productivity, workshop and hybrid seedling centres must be established in major farming communities where the farmer is introduced to new innovations and best cultivation practices that are easily accessed by farmers to increase growth levels that meet stipulated standards. This requires a more formidable extension of services from the Ghana COCOBOD to do a comprehensive study of farmers and reach out to them when necessary.

4.1.3 Crop diversification

Cocoa farmers are usually entangled with extreme poverty because the income earned from cocoa farming alone is not sufficient to take care of their upkeep. They are vulnerable to the exposure of harsh conditions in the outbreak of disease or price declines on the international market.

As a way of subsidising their incomes to improve their living standards, it would be necessary for farmers to explore the benefits of crop diversification by identifying opportunities for engaging in other food items and farming activities, such as animal husbandry, to raise extra incomes, rather than limiting themselves to only cocoa farming. This would also increase food security and multiply their income levels. Nevertheless, it would be more useful for stakeholders and civil society groups such as NGOs,

community-based organizations, churches and philanthropists in and out of the country to capture the needs of cocoa farmers in their charity works. These organizations can collaborate with the Ghana COCOBOD to provide advice on strategies and infrastructure initiatives in the form of road construction, irrigation projects and the creation of market opportunities for high value crops.

4.2 Labour and Land

Cocoa farming is a labour-intensive occupation and thus requires a significant amount of workforce in the production processes. However, the availability of labour for farming activities in recent times has been very scarce due to Rural-Urban migration. Most young and able folks in the rural communities prefer to move away to the cities and start a new life in different disciplines rather than farming work. This trend has really pushed the cost of labour in cocoa communities very high and makes it difficult for farmers to meet the expected production levels, leading to the use of child labour.

The increasing use of child labour in cocoa farms and the scarcity of adult labour calls for the introduction of new forms of farming innovations such as labour-saving devices and simple power tools in order to apply modern standards of mechanical and technological application farming methods. Another example in exploring new forms of practices and methods to reduce the arduous nature of labour in cocoa farms is the introduction of inputs such as long handled pruners and power tillers. These tools reduce the strenuous nature of work and make work easier to handle in the absence of adequate labour. On the other hand, not only would these tools make work easier to handle but also would minimise the use of child labour by farmers. This can be realized if support groups such as multi stakeholders in the cocoa industry, politicians and civil society organizations and farmers come together to tackle the problem of child labour in cocoa farms and seek a sustainable solution to labour scarcity in the industry.

4.3 Market Access

Access to the market from the rural communities is usually impeded by limited availability of good road networks, lack of maintenance to existing ones that constrains the regular transportation of people and goods, poor information flow, and communication.

The primary effort in creating market access to cocoa regions should be focused on infrastructure development to increase the efficiency of the flow of goods and people. There should be a conscious effort by the government and private sector to initiate programmes that would improve road networks, access to market information and communication systems. The expansion of broad band networks to these regions would make the use of mobile phones and internet access easier to the rural population as well.

4.4 Global Value Chain

The global cocoa value chain is faced with strains among the actors in the value chain. Such development compromises efforts in achieving sustainable cocoa production. In the Ghanaian cocoa industry, COCOBOD, Licensed buying companies (LBCs) and farmers who are the main actors in the value chain have all found themselves blaming each other. Licensed buying companies of cocoa, who primarily interact with farmers and are the first to be reached by farmers in the value chain, blame COCOBOD for delayed payment on cocoa goods delivered to them, which usually constrains their resources and their ability to give better assistance to farmers. However, COCOBOD also blames LBCs for employing fraudulent ways in the value chain to their advantage, thus the need to subject them to proper checks which causes the delays. On the other hand, farmers also complain about LBCs of adjusting scales to downscale the weights of their cocoa against their original weights in order to cheat them. In addition, the rush by LBCs to purchase cocoa from farmers in a competitive situation has often led to insufficient fermentation and drying processes, thereby damaging the quality of the beans.

It would be therefore good to look for a more pragmatic solution to be devised with a common approach by all actors in the value chain to ensure more sustainable cocoa production and to promote Ghanaian cocoa on the world market. To do this, there must be an upgrade of the logistics and supply chain payment systems by all actors involved in the process for a smooth delivery and payments results. Again, Licensed buying

companies and their activities must be reviewed and controlled to fish out fraudsters and look at how best their assistance to farmers can be improved.

4.5 Making Cocoa Farming a Passionate Employment

Most people in Ghana perceive Cocoa farming as a primitive job and as such would not like to venture into the sector, given their education and time. The educated youth prefer jobs in other fields in the urban areas. Such motives are often supported and encouraged by parents, even those who are within the cocoa communities and in the cocoa farming business themselves. There is a common belief that cocoa farming is for the uneducated and less fortunate. On the other hand, people feel that committing themselves into cocoa farming would force them to live in a rural environment that is usually deprived of insufficient social amenities for the entire duration of their farming activities. They feel they would lose their self-esteem and not be respected or recognized in society by their peers and other prominent personalities, unlike those who might be relatively successful from the urban areas.

In making cocoa farming a real job for the educated youth, there should be an integrated plan, put forward by stakeholders, purposely to introduce the youth into cocoa farming. It must be a package attractive enough to draw the youth into cocoa farming activities as a full-time job. This would in other words erase the stigmatization related to it as a job for the uneducated. Integrating the educated youth into cocoa farming would help bring on board various creative ideas, skill and innovations that would help develop the industry, reduce unemployment and increase the grounds for sustainability.

The integration plan could be included in the Agribusiness module of the Ministry of Manpower and National Youth Employment programme so that the youth can be well informed to tap into the potentials lying within the cocoa value chain. This could strategically reduce the burden of unemployment and criminality and other social vices in the country.

Government and stake holders such as the Ghana COCOBOD, LBCs, farmer organizations and chocolate manufacturing companies must find an innovative approach of commitment in enhancing the cocoa sector, enough to attract the youth into the sector for a sustainable replacement of the aged and for continuity of farming.

4.6 Finance

The absence of proper financial support to cocoa farmers has become a major headache for farmers. Though cocoa farmers used to enjoy some advance cash payment from some produce buying companies, the influx of some LBCs after the liberalization in the cocoa sector by the Ghana government corrupted the once existing loyalty, trust and confidence between farmers and Produce buying companies. In recent times, many farmers try to raise money through the informal way by forming groups who contribute to help each other, which usually result in disputes and even riots as some may be compelled to join but may default on paying in the process and risk some properties they own or sometimes even their lives.

To overcome the financial challenges often faced by farmers, farmers must come together as a united group or association with a common set of purposes and objectives aimed at influencing society, the government and NGOs for support. Farmers can now begin to contribute monthly dues to resource the union financially, which can gradually organize itself into an independent, credible organization that can solicit financial and logistical help from all stakeholders to help farmers. The union may even transcend into creating cocoa farmers rural banks in many farming communities by lobbying the government and the Ghana COCOBOD for their establishment. This may help resource farmers with credit loans so that they could expand their farming activities to ensure sustainable growth and development.

4.7 Social Amenities

For far too long, many farming communities have been deprived of essential amenities such as electricity, education, good healthcare and portable water. These amenities, when existing in a community, help accelerate the development of the livelihoods of the people and the community.

4.7.1 Education

Though most farmers themselves did not have the privilege to go to school, education seems to be the highest priority for every parent in Ghana. Yet access to quality education in most cocoa growing communities is very hard to find. The lack of resources to run the existing schools also erases the confidence and discourages many farmers to send their children to school, hence engaging them in their farming activities. They believe that it would be much better to engage the children in farming activities so that they can pick up the farming work as they grow rather than to go to school and not achieve anything in the end. This trend in many instances is referred to as child labour.

The solution to child labour would only be a committed effort by government, stakeholders and non-governmental organizations to extend the provision of schools and resources to the cocoa growing areas to absorb these children into the education system. There are situations where teachers who are posted to these communities refuse to go. Obviously, the livelihood of a teacher in an urban area would be different from those in the rural area as the urban teacher enjoys a number of facilities. To motivate teachers to go to rural areas, the government and the Ghana Education Service must have a scheme of pay increment and other incentives such as free teacher accommodation to compensate their effort.

4.7.2 Healthcare

Similar to the lack of education in cocoa farming areas, the cocoa communities do not have clinics. This sometimes makes the aged and children vulnerable to death when they get sick. The people in these communities have to travel many miles to get healthcare in the urban areas with the patients sometimes carried on a bamboo stretcher, at the back of a person or on a bicycle. To avoid maternal, children and aged mortality, government should make it a priority to enroll all cocoa farmers into the Ghana health insurance scheme to cover their families while making plans to extend clinics and health staffs to these communities.

5 CONCLUSION

Cocoa is one of Ghana's cherished commodities and has become an important asset to the Ghanaian economy, which is earning significant foreign exchange into the GDP of the country. Cocoa farming reduces unemployment by providing jobs for a significant amount of the Ghanaian population especially in rural regions.

Ghana's cocoa still enjoys its place on the world market as the premium quality among its competitors. However, in the face of changing consumer behaviour, growing social and environmental concerns may have compelled manufacturers and processors of the chocolate industry to find high standard dynamic ways of meeting consumer demands and to address issues of social and environmental concern in terms of quality. Notwithstanding, producers continue to struggle with sustainability and the maintenance of quality standards of cocoa production, leading to a continuous decline in cocoa production and prices. Farmers have not been able to adopt the use of sustainable modern technological farming practices on a large scale to advance the falling quality standards of the beans. Combined with the ageing labour this threatens the sustainability of cocoa farming at large. It puts the future of cocoa farming at risk as uncertainty over future supply looms in the market and puts pressure on manufacturing and processing companies.

While farmers in Ghana are supported by the Ghana COCOBOD to maintain the quality of the beans, Ghana is not exempted from the current risks of decline in the industry as highlighted in this research. Despite the enormous effort being put in by COCOBOD to help farmers, the Ghanaian cocoa sector present distressing challenges that call for urgent attention and solutions by all stakeholders to ensure the sustainability of the Ghanaian cocoa sector. This is to preserve the heritage to enable it to continue to serve the generations yet to come and more as we enjoy today.

This research has outlined and discussed a number of limitations and strategies to help tackle them. Some of the key issues include: improved access to finance, the use of modern production methods, availability of quality planting materials, improved market accessibility, access to modern infrastructure and better social amenities.

The rapid changes taking place in the chocolate market constitute a challenging moment for Ghana. However, Ghana must employ strategic means in dealing with the external

factors that affect cocoa prices by adding value to the raw cocoa before export. Value addition would help attract better prices so that farmer incomes and share value could be raised without encouraging oversupply that could further bring prices down. Currently, the producer share value is the lowest of the total cost chain, relative to processors, manufacturers and retailers. Nevertheless, this research is confined to the cocoa farmers in the Ellembelle District in the western part of Ghana in the hope that a continuation of similar research in the future could be taken in the other regions of Ghana to advance the fight for Cocoa sustainability in the country.

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