

Isaac Aziadzo

Supply Chain Sustainability of Cocoa Beans in Ghana: A Case Study of Ghana Cocoa Board LTD (COCOBOD)

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Abstract		
<p>Ghana is still ranked among the top producers of cocoa in the world, just second to Ivory Coast. Cocoa continues to be the number one foreign earner and highest contributor to the country's GDP. The government of Ghana is very committed to the sustainability of agriculture, especially the supply chain of cocoa. Regardless of the value of cocoa to the economy, Ghana must deal with future sustainability of the cocoa value chain.</p>		
<p>This study assessed the supply chain sustainability of the cocoa beans in Ghana with a specific focus on the Ghana Cocoa Board's role in maintaining sustainability in the supply chain of cocoa. To effectively address the aim of this research, the study sought and examined how sustainability practices drive performance of the cocoa value chain and established the roles of the Ghana Cocoa Board in supply chain sustainability.</p>		
<p>The case study approach was adopted to investigate the role of Ghana Cocoa Board in driving sustainable performance in the cocoa chain. Purposive and convenience sampling techniques were employed in determining the sample size for the research. A total of 60 respondents were selected to participate in the quantitative data collection process through a well-structured questionnaire.</p>		
<p>The quantitative data collected were analysed using the SPSS, and Cronbach to ensure its validity and reliability.</p>		
<p>The results of this research showed a positive effect of supply chain improvement programs on the three dimensions of sustainability (economic, environment and social), which support current theories of sustainable supply chain management as presented in the literature. Also, the study will contribute to the active involvement of The Ghana Cocoa Board in the various stages of the supply chain as recommended and further ensure quality decision making in the cocoa sector in promoting the Government's agenda of becoming the number one largest producer of cocoa globally.</p>		
Keywords		
Supply Chain Management, COCOBOD		

CONTENTS

1	INTRODUCTION.....	6
1.1	Statement of Research Problem.....	7
1.2	Research Questions	9
1.3	Research Aim	9
1.4	Research Objectives.....	9
1.5	Research Scope	10
1.6	Key Players and Their Roles	10
2	THEORETICAL FRAMEWORK.....	13
2.1	Supply Chain	13
2.2	Supply Chain Management (SCM)	14
2.3	Sustainable Supply Chain Management (SSCM)	15
2.4	The Flow Process of Cocoa in Ghana	19
2.5	Supply Chain Management Improvement Programs	21
2.5.1	<i>Transparency</i>	22
2.5.2	<i>Risk Management</i>	22
2.5.3	<i>Supplier Development</i>	23
2.5.4	<i>Supply Chain Collaboration</i>	24
2.6	Regulatory Bodies and Their Roles	24
2.6.1	<i>Ghana Cocoa Board</i>	24
2.6.2	<i>Ministry of Finance and Economic Planning (MOFEP)</i>	26
3	GHANA COCOA BOARD IN PRACTICE	27
3.1	Regulations.....	28
3.2	Tax Enforcement	28
3.3	Ethical Code of Conducts	28
3.4	Certifications.....	29

3.5	Market Regulations.....	29
4	RESULTS AND ANALYSIS.....	30
4.1	Cronbach's Alpha.....	30
4.2	Part A: Demographic Information.....	30
4.2.1	<i>Gender</i>	31
4.2.2	<i>Job Designation</i>	31
4.2.3	<i>Nationality</i>	32
4.2.4	<i>Length of Service</i>	32
4.3	Part B: The Economic dimension of sustainability.....	32
4.3.1	<i>Inbound supply chain</i>	33
4.3.2	<i>Internal Operations</i>	36
4.3.3	<i>Warehousing / Storage</i>	37
4.3.4	<i>Outbound supply chain (Transportation)</i>	38
4.4	Part C: The Environmental dimension of sustainability.....	41
4.4.1	<i>Inbound supply chain</i>	41
4.4.2	<i>Internal operations</i>	42
4.4.3	<i>Warehousing / Storage</i>	43
4.4.4	<i>Outbound supply chain (Transportation)</i>	44
4.5	Part D: Social dimension of sustainability.....	47
4.5.1	<i>Inbound supply chain</i>	47
4.5.2	<i>Internal operations</i>	48
4.5.3	<i>Warehousing / Storage</i>	49
4.5.4	<i>Outbound supply chain (Transportation)</i>	50
4.6	Part E: Supply chain management improvement programs.....	53
4.6.1	<i>Transparency</i>	53
4.6.2	<i>Risk management</i>	54
4.6.3	<i>Supply chain collaboration</i>	55

4.6.4	<i>Supplier development</i>	56
4.7	Discussion of Results	59
4.7.1	<i>Economic Dimension of Sustainability</i>	59
4.7.2	<i>Environmental Dimension of Sustainability</i>	60
4.7.3	<i>Social Dimension of Sustainability</i>	60
4.8	Role of Supply Chain Improvement Programs.....	61
4.8.1	<i>Transparency</i>	61
4.8.2	<i>Risk Management</i>	62
4.8.3	<i>Supplier Development</i>	62
4.8.4	<i>Supply Chain Collaboration</i>	63
5	CONCLUSION.....	64
6	RECOMMENDATIONS	66
7	REFERENCES	68

APPENDICES

Appendix 1. Survey Questionnaires

Appendix 2. List of Figure

Appendix 3. List of Tables

1 INTRODUCTION

Ghana continues to export cocoa in its raw state, a problem that continues to undermine the value and contribution of cocoa to a currently struggling economy. We continue to hear stories of Ghanaian farmers selling their cocoa farms to multinational mining firms to mine gold, bauxite and other natural minerals discovered in those cocoa farms. The issue of illegal exportation of cocoa to Ivory Coast continue to undermine the supply chain sustainability of Ghana's agricultural sector, especially in the cocoa sector.

“There is an increasing debate at international, national and local levels about the consequences of development which fails to reconcile the often-conflicting objectives of economic growth, social progress, protection of the environment and prudent use of natural resources” (Vasileiou, and Morris, 2006 pp. 317 – 327). The push for this agenda is essential in the concept of sustainable development which attempts to determine how the needs of the present generation can be addressed without compromising the ability of future generations to meet their needs (WCED, 1987 pp. 183 – 184). The concept of sustainability thus seeks to create a balance between the three key components of development which define the quality of human life in the broadest sense, namely: economic, social and environmental objectives (OECD, 1997 pp. 172 – 184; DETR, 1999 pp. 34 – 35).

The Government of Ghana has identified agriculture and cocoa, as having the potential to make an important contribution to economic growth and to assist in meeting its goals for poverty reduction (Assuming-Brempong et al., 2008 pp. 72 - 75). Without a doubt, cocoa has reliably been the biggest foreign exchange earner for Ghana (Bank of Ghana, 2008 pp. 10 - 15; Amoah, 2008 pp. 52 - 53). It has long played a crucial role in Ghana's economic development as it remains an important source of rural employment and the country's most important agricultural export crop (Teal and Vigneri, 2004 pp. 102 - 106; Teal et al., 2006 pp. 78 - 80; Cappalle, 2009 pp. 122 - 124).

Porter and Kramer (2006 pp. 78 - 92) insist that sustainability is “an inescapable priority for business leaders in every country” and so competency in sustainability

provides a differential advantage if this competency is comparatively unique in the firm's marketplace" (Mentzer et al., 1989 pp. 1 - 25).

According to Carter and Easton (2011 pp. 46 - 62), supply chain managers are particularly in an advantageous position to affect positively or negatively, environmental and social performance through their chain activities such as supplier selection and development, modal and carrier selection, vehicle routing and scheduling, location decisions, and packaging choices.

As Ghana opens its development prospects through industrialization, a partnership with multinational conglomerates has become an integral part of the framework for economic, environmental, and socio-cultural advancement. The introduction of the much-touted flagship 'One District, one factory' program of the New Patriotic Party government continues to raise concerns for a comprehensive international supply chain sustainability plan to ensure the preservation of economic, environmental, and social activities in Ghana.

The researcher is motivated to embark on this study to examine how the cocoa sector through the auspices of the Ghana Cocoa Board Ltd is preparing for supply chain sustainability as the government rolls out its '1 district, 1 factory policy'.

1.1 Statement of Research Problem

Until the advent of oil production in 2011, cocoa cultivation accounted for almost 4.0% of total GDP from 1995-2000 (NDPC, 2010) and employs over 700,000 households along its value chain. With these contributions in perspective, the impact of a sustainable cocoa chain on economic development cannot be overemphasized and empirical evidence shows a strong positive correlation between cocoa revenue and economic growth (see Armah, 2009 pp. 205 - 228).

However, regardless of the significant value of cocoa to the economy, Ghana ought to confront serious challenges regarding the maintenance of future sustainability of the cocoa value chain. Sustainability challenges have been divided into three critically interrelated dimensions:

First, on the economic side, cocoa production started falling from a record high of one million metric tons in 2011 to between 776,000 and 850,000 in 2016/17.

The fluctuation of production units over the years has been largely attributed to aging farmer population, destruction of farmlands through illegal mining, and smuggling of cocoa beans to Ivory Coast. The youth have virtually shown little or no interest in cocoa; pursuing endeavours in mining and other commercial ventures and destroying water bodies that hitherto served as irrigation systems for cocoa farms. One of the questions that this study will ultimately help to address is; how do we expand production and increase productivity to sustain farmer income and export growth whilst maintaining quality? Even though Ghana continues to enjoy a quality premium on its cocoa exports; evidence shows that this premium may decline over time. Also, it is imperative to ensure that despite growing technical progress, Ghana's cocoa beans remain the buyers' choice on the international market. There is a need for all active players in the cocoa sector to interact and coordinate their activities to ensure that quality is maintained from the farm to the final consumer.

The second dimension is social sustainability which may be influenced by some level of environmental and ecological issues in the production and distribution of cocoa. Ghana's cocoa sector continues to suffer issues of child trafficking, child labour, poor health and safety mechanisms, poor incomes of farmers, lack of access to credit, land disputes, which have the potential to undermine the quality and output of cocoa (Oxfam International Research Report, 2008). Poor irrigation systems also contribute to the challenges in sustaining the production capacity of cocoa farmers in Ghana as compared to their counterparts in Ivory Coast.

The third dimension considers issues of environmental sustainability. Illegal mining (Galamsey) has in recent years gained notoriety for the destruction of farmlands and water bodies which were hitherto used in the cultivation and irrigation of cocoa and other cash crops. Poor farm practices affect the quality of beans, yet most cocoa farmers find it difficult adapting to best practices (Edwin and Masters, 2005 pp. 88 - 92; Gockowski and Sonwa, 2007 pp. 201 - 212; Opoku et al., 2009 pp. 176 - 178). For instance, improper fermentation and drying of cocoa beans by farmers caused the purple coloration of cocoa beans in the

industry in 2005; a condition which greatly affected the reputation of Ghana for quality cocoa beans. Ruf (2001 pp. 48 - 50) also indicates that farmers typically find it easier to expand their farms than to replant old and disease cocoa trees owing to the huge costs involved in replanting.

This research seeks to further investigate the current supply chain sustainability practices in the cocoa production and examine the role of the Ghana Cocoa Board Ltd in ensuring sustainability at each stage of the production process.

1.2 Research Questions

The research questions consist of how sustainable practices drive performance in the cocoa chain, including what roles the Ghana Cocoa Board play in ensuring the supply chain sustainability of cocoa.

1.3 Research Aim

The aim of this research is to assess the current supply chain sustainability practices in the cocoa production and examine the role of the Ghana Cocoa Board Ltd in ensuring sustainability at each stage of the production process. This research is basically driven by Ghana's plans for mass industrialization through the implementation of the '1 district, 1 factory' program. One of the main targets of the program is the construction of a factory for the processing of cocoa into finished products. The findings of this research will be appropriate for government policy alignment and for implementing cocoa in regulations Ghana.

1.4 Research Objectives

The objectives of the study are to assess how sustainable practices drive performance in the cocoa chain, to establish the roles of Ghana Cocoa Board in the sustainability of cocoa in Ghana, and to ascertain whether supply chain improvement programs play any role in the linkage between sustainable practices and the performance of Ghana Cocoa Board in the value chain.

1.5 Research Scope

Due to the extensive nature of the global value chain, this research ought to concentrate mainly on the role of Ghana Cocoa Board in supply chain sustainability of the domestic value chain i.e. from the farm to the domestic brokers of raw cocoa beans. Indeed, cocoa is traded through a local and international supply chain and is marketed as a variety of products at different stages in the network (Cappalle, 2009 pp. 122 - 124).

1.6 Key Players and Their Roles

A careful analysis of the trends and innovations in the cocoa sector should begin with the description of the critical players, their roles, and their functions. It is imperative to understand how the players in the cocoa sector relate to each other and the strength or weakness of the relationships. The following sub-sections try to discuss the roles of the critical players in the cocoa value chain.

Cocoa Farmers: they live in the semi-deciduous forests covering six of the ten administrative regions of Ghana and encompassing several of the main ethnic groups of Ghana are the first point of call for the cocoa industry. Over the last few decades, cocoa has enabled farming households to stay significantly above the national poverty average. Poverty in the cocoa farming communities has reduced considerably and the growth of cocoa has been more beneficial than growth in other sectors (Breisinger et al, 2008). Many cocoa farmers are members of the Ghana Cocoa, Coffee and Shea Nut Farmers Association (GCCSFA) and continue to enjoy economies of scale and co-operative power from the association. The cocoa farmers associations are still formidable in influencing critical policy decisions that favor their members. The two major roles of cocoa farmers in the value chain include;

- ✓ On-farm production and
- ✓ Pre-harvest industrial procession of cocoa

Manufacturers: these in the value chain in Ghana are often referred to as the Cocoa Processing Companies. As far back as the 1960s, there was an effort to process cocoa before export. The West Africa Mills Company (WAMCO) was established with the purpose of processing cocoa beans into cocoa butter, paste, and chocolate etc. However, the share of the total processed cocoa in the total cocoa exported was minimal. A key national agenda is to export about 50% of the cocoa processed in Ghana. Thus, the role of cocoa processing companies has become very important in ensuring that this goal is attained. Currently, there are about five large processing companies operating in the country all at various levels of processing. These are the Cocoa Processing Company (CPC), Barry Callebaut, Afrotropics, Cargill and Archer Daniels Midland (ADM). The major role of these processing companies is to process cocoa into paste, butter and nibs, chocolates and confectioneries. In Ghana today, the total installed capacity for processing cocoa is 343,000 metric tons, which gives some optimistic indication that Ghana could achieve its medium-term policy goal of processing 50% of its cocoa before exports.

Wholesalers: these License Buying Companies and are responsible for the bulk purchase of cocoa and its evacuation from the cocoa villages to the local and global markets. The reforms which began in the 1990s started with the deregulation of the cocoa sector and liberalized cocoa purchases. In June 1993, COCOBOD implemented the multiple cocoa purchasing systems for internal marketing of the commodity and as a way of introducing competition in the industry. In effect, the main roles of the wholesalers or license buying companies include;

- ✓ Internal marketing of cocoa
- ✓ Purchasing cocoa directly from the farmers and
- ✓ Selling cocoa to statutory body

Retailers: they simply participate in the movement of cocoa to the final consumers. They have the broad responsibility of ensuring that only the best quality cocoa products are retailed to consumers. Retailers must continue to keep the local cocoa products on their shelves to prevent the invasion of foreign cocoa

products. However, foreign cocoa products have taken over the retail business in Ghana due largely to the fact that they are cheaper than the made-in-Ghana products. Since every retailer is in business to make profits, they will continue to import foreign cocoa products to the detriment of locally produced ones. Retailers must be encouraged to promote locally produced chocolate, butter, and confectioneries etc.

Consumers: Today, people around the world enjoy chocolate in many different forms, consuming more than 3 million tons of cocoa beans annually. Each country and region have unique preferences and distinctive blends of candies and desserts. The cocoa, chocolate, and confectionery industry employs hundreds of thousands of people around the world and is a key user of other agricultural commodities such as sugar, dairy, nuts, and fruits. Demand for pre-processing cocoa products (butter, powder, cake, and paste) continue to increase drastically due to the continuous changes in the middle class in China and Europe etc. (WCF, 2014). The main role of consumers is to keep the cash crop profitable on the global market to sustain production, processing, and marketing. Any shift in the level of consumption of cocoa would have an adverse effect on farmers, wholesalers, retailers, and even regulators.

Civil Society: One of the developments in the cocoa industry is the emphasis on social responsibility and human rights. For example, the issue of child labor and the demand for the recognition of child rights has become pivots for the increase in the activities of civil society organizations (CSOs) such as International Cocoa Initiative (ICI). Whereas some of the work of the CSOs is desirable, there are cases where issues are not presented or discussed in a way they should be. For example, some of the citations of child labor are the misrepresentation of the communal activities typical of the African societies. Children make contributions to the total household income and as such, going to weed or help harvest cocoa pods on cocoa farms does not necessarily mean that children are slaves on cocoa farms. Civil Society Organizations in Ghana must begin to push more for green environments by actively engaging in the fight against illegal mining (*'Galamsey'*), pollution, and deforestation.

2 THEORETICAL FRAMEWORK

2.1 Supply Chain

Also known in literature as value chain or demand chain, the supply chain is the entire network of enterprises or facilities that are involved in the functions of procurement of materials, transformation of materials to intermediate and finished products and distribution of finished products or services to an end customer (Huňka et al, 2011 pp. 408 - 411; Lee and Billington, 1993 pp. 835 - 847; Frazelle, 2002 pp. 92 - 101). According to Waters (2003 p. 65), “often, organizational barriers between these facilities exist, and information flows can be restricted such that complete centralized control of material flows in a supply chain may not be feasible or desirable. Consequently, most companies use the decentralized control in managing the different facilities at a supply chain”.

In his definition, Ayers (2000 pp. 179 - 192) likens the supply chain to a Life Cycle processes that support physical, information, financial and knowledge flows for moving products and services from suppliers to end-users. Slack et al. (2010, p. 460) also use the analogy of the pipeline to describe supply chains;

“Just as liquids flow through a pipeline, so physical goods (and services, but the metaphor is more difficult to imagine) flow down a supply chain. Long pipelines will, of course, contain more liquid than short ones. So, the time taken for the liquid to flow all the way through a long pipeline will be longer than if the pipeline were shorter. Stocks of inventory held in the supply chain can be thought of as analogous to storage tanks. On the journey through the supply chain pipeline, products are processed by different operations in the chain and stored at different points”.

These two definitions illustrate a shift of supply chain from the traditional viewpoint of forwarding customer requests, to meeting customer needs in an efficient and effective manner through knowledge inputs in the processes (Ayers, 2000 pp. 179 - 192). The primary purpose for the existence of every supply chain is to satisfy customer needs in an efficient manner, while in the process generating profits for actors. Firms in a supply chain, therefore, coordinate and

share the benefits through market mechanisms, contracts and partnership arrangements, which lead to the increasing efficiency of all partners (Xia & Tang, 2011 pp. 495 - 512). This justifies the need for strategic management to ensure that gains are enhanced, and value upgraded or maintained at every stage of the chain.

2.2 Supply Chain Management (SCM)

Supply chain management as defined by the Council of Supply Chain Management Professionals (CSCMP) encompasses "the planning and management of all activities involved in sourcing and procurement, conversion and all logistics management activities". Most other definitions of SCM emphasize the integration of the linkages that exist between supply chain partners. For example, according to Slack et al. (2010 pp. 468 - 472), SCM is the management of the interconnections that exist between organizations that relate to each other through upstream and downstream linkages between the processes that produce value to the ultimate consumer in the form of products and services. It is an integrating function with the sole responsibility for linking major business functions and processes within and across organizations into a cohesive and high-performing business model which includes all the logistics management activities as well as manufacturing operations (Vitasek, 2010 pp. 88 -102).

Therefore, SCM is the process through which a buyer works with their suppliers to ensure that products and services are procured in ways that meet the buyer's specifications (Schwartz et al., 2008 pp. 120 - 125). These authors add that SCM initially focused on quality aspects, and later was broadened to include environmental issues to improve eco-efficiency and reduce waste, as part of the implementation of lean production systems. Most supply chain managers share one common and central objective; to satisfy the end-customer. All stages in a chain must eventually include consideration of the final customer, no matter how far an individual operation is from the end-customer (Schwartz et al., 2008 pp. 120 - 125). When a customer decides to make a purchase, he or she triggers action back along the whole chain. All the businesses in the supply chain pass on

portions of that final customer's money to each other, each retaining a margin for the value it has added. Each operation in the chain aims at satisfying its own customer but also making sure that eventually the final customer is also satisfied (Slack et al., 2010 pp. 468 - 472).

The objective of managing the supply chain is to be efficient and cost-effective across the entire system; total system-wide costs, from transportation and distribution to inventories of raw materials, work in process and finished goods. To the consumer, evaluating the chain of supply of a product brings more advantage in terms of better availability, less stock-outs, fresher produce with a longer shelf-life and potential cost savings (Wilson, 2005 pp. 134 - 145). For the producer, such an activity results in strategic advantages in the form of improved market intelligence, assured volumes, quality information for planning, less obsolescence, accurate investment and increased revenue generation through increased quality, enhanced reputation, gaining competitive advantages by proactively shaping future legislation and being more attractive overall to customers, employees and suppliers (Votano et al., 2004 pp. 234 - 248 and Wilson, 2005 pp. 134 - 145).

2.3 Sustainable Supply Chain Management (SSCM)

The triple bottom line approach suggests that a minimum performance needs to be achieved in the environmental, economic and social dimensions (Elkington 1999 pp. 56 - 59) if an organization wants to grow sustainably within its operational context.

However, Ahi & Searcy (2013 pp. 329 - 341) affirm that this definition addresses only 8 of the 13 identified characteristics of business sustainability and supply chain management in their systematic literature review of the published definitions of Green Supply Chain Management and Sustainable Supply Chain Management. They have proposed a new definition, which includes all the identified characteristics, "*The creation of coordinated supply chains through the voluntary integration of economic, environmental, and social considerations with key inter-organizational business systems designed to efficiently and effectively manage the material, information, and capital flows associated with the*

procurement, production, and distribution of products or services in order to meet stakeholder requirements and improve the profitability, competitiveness, and resilience of the organization over the short- and long-term.”

A sustainable supply chain is consequently achieved when there are social and environmental supply chain activities that lie at the intersection with the economic bottom line. Critical areas of collaboration and performance exist in the overlap between two pillars but to achieve an optimal goal, all actions and decisions must overlap all three dimensions. Supply chain experts and practitioners have argued that for the supply chain to remain sustainable, it must simultaneously satisfy all dimensions. The reason is that at every stage in the life-cycle of specific products, there are social and environmental impacts or externalities on the environment and on people (Sisco et al., 2010 pp. 123 - 142) regardless of the economic gains' agents derive.

According to Carter and Rogers (2008) cited in (Carter & Easton, 2011 pp. 46 - 62), examples of the activities that fall within the triple bottom line include cost savings owing to reduced packaging waste and more effective design for reuse and disassembly; lower health and safety costs, as well as reduced turnover and recruitment costs due to safer warehousing and transport and improved working conditions; reduced labor costs in the form of higher levels of motivation and productivity and less absenteeism resulting from improved working conditions; lower costs, shorter lead-times, improved product quality and lower disposal costs resulting from the implementation of ISO 14000 standards and the use of design for disassembly and reuse and an enhanced organizational reputation, which can make a firm more attractive to both customers and suppliers. Simply put, supply chains are critical links that connect an organization's inputs to its outputs. However, the increasing environmental costs of these networks and growing consumer pressure for greener products have led many organizations to look at supply chain sustainability as a new measure of profitable logistics management. This shift is reflected by an understanding that sustainable supply chains frequently mean profitable supply chains (Kaufmann and Carter, 2008 pp. 75 - 79).

In effect, the fundamental difference between sustainable supply chain management and mainstream supply chain management, as stated by (Hall et al. 2012 pp. 1332 - 1348), is the recognition of stakeholders within and beyond the supply chain.

Social Issues: Social sustainability encompasses human rights, labor rights, and corporate governance. A socially sustainable network is equitable, diverse, connected and democratic; with the aim of providing good quality of life for members. The cocoa sector in Ghana is currently faced with several socio-cultural issues that inhibit the performance of the sector and continue to pose threat to the sustainability of the sector. Some of the issues are outlined as follows:

Firstly, child labor: Farmers have been accused of employing the services of under-aged children in menial labor on cocoa farms, a practice that has caused an increase in the percentage of school dropouts and in worse case scenarios child abuse and trafficking.

Secondly, lack of adequate development in cocoa communities: Many of the farmers in the cocoa towns are currently selling their cocoa farms to Galamsey operators for mining activities. This situation is threatening the goal of reaching a production target of 1.2 million tons by 2020.

Also, the illegal transfer of quality cocoa beans to neighboring Ivory Coast. Although the COCOBOD has put stringent measures to prevent this menace, some farmers continue to collaborate with illegal exporters to transport cocoa to neighboring countries without proper procedures

Lastly, the age of current cocoa farmers poses a threat to the sustainability of the cocoa sector in the next ten to fifteen years. This threat is fueled by the fact that the younger generation seems not to be interested in cocoa farming as a career.

Environmental Issues: The resurgence of unstable production methods in the cocoa sector has driven farmers to extend their farming activities into forested areas. As a matter of urgency, many cocoa farms in Ghana need to be rehabilitated to reverse productivity declines and ensure production meets the

growth in global demand. Some of the major environmental challenges to the sustainable cocoa sector are:

Deforestation and habitat conversion: Today, farming activities have extended into forested zones and caused tree felling and disturbance of natural habitats for certain species of wildlife. Major forest zones have in the past few years been converted into cocoa fields.

Again, the adoption of biodiversity-friendly (higher shade) production systems can give rise to a decline in crop yield and cause a widespread of pest infestation on cocoa fields. Zero-input production techniques had led to major soil degradation in cocoa fields.

Improved cocoa cultivation practices are affected by both land tenure and tree tenure issues, which impact on natural resource management and the environment at large.

Lastly, climate change caused by deforestation impacts the ecosystem services provided, soil fertility, carbon sequestration, habitat, and biodiversity conversion, and regulation of microclimate. This has resulted in the steady decline in the productivity of old cocoa plantations.

Economic Issues: A country's economic development is often measured in GDP per capita. Ghana's GDP per capita is 1,441 USD, while 24.2% live below the national poverty line. Poverty is a big issue in Ghana and it is severe in the cocoa sector. Low-incomes for cocoa farmers are often due to low cocoa prices, small farm sizes, low yields per hectare and a lack of market access. The poverty resulting from these factors, in turn, lead to the use of child labor, malnutrition due to food insecurity, illiteracy and young generation of farmers leaving the cocoa sector as it does not provide a living income (Hütz-Adams & Fountain, 2015 pp. 176 - 183). Improving yields would improve the situation for cocoa farmers, but a lack of access to inputs and loans and bad farming practices make achieving this a tough challenge (Wessel & Quint-Wessel, 2015 pp. 74 - 88).

2.4 The Flow Process of Cocoa in Ghana

The flow of unprocessed cocoa beans in Ghana's domestic cocoa chain begins with farmers whose major role is to cultivate cocoa and supply the unprocessed cocoa beans to other downstream players within the chain. In this sense, cocoa farmers are the major players at the point-of-origin or the very upstream suppliers of cocoa in the supply chain of cocoa in Ghana. This implies that the performance of all other players in the chain is primarily dependent on these farmers especially in terms of both quality and quantity. While the very upstream of the chain is dominated by thousands of farmers, it is worthwhile noting that most of these farmers are smallholder operators and a greater majority of these farmers lack the appropriate mechanized farming practices necessary for the increased level of productivity and so cocoa yield per farmer is relatively low compared to international operators. The major supplier of inputs to farmers for the cultivation of cocoa is COCOBOD, which primarily supplies farmers with seedlings and appropriate chemicals for the cultivation of cocoa. Cocoa farmers are concentrated in the Western, Eastern and Ashanti Regions of Ghana.

The next major stage of the flow process is the Licensed Buying Companies (LBCs) who have the legal authority from the government of Ghana to purchase cocoa from these farmers. However, due to the thousands of farmers and their dispersed nature across many cocoa growing villages, LBCs have commissioned Purchasing Clerks (PCs) at various designated sheds (called societies) at various vantage points in and around the cocoa growing villages who on behalf of these LBCs, buy cocoa in relatively smaller quantities from the cocoa farmers. PCs are also known by some few other LBCs as Commission Marketing Clerks (CMCs). PCs play a value adding role by consolidating smaller supplies from many sources for onward supply to the various districts of these LBCs. While the major role of PCs is to purchase, bulk and bag cocoa beans in 64kg bags for onward primary evacuation, some quality problems such as not-thoroughly dried (NTD) cocoa beans usually necessitate that PCs re-condition (example re-drying) the purchased cocoa beans before the final primary evacuation to the district depots of the LBCs.

The next major activity is what is commonly referred to as primary evacuation. LBCs have situated many smaller sheds at the societies that primarily serve the needs of the PCs. It is at the sheds that PCs bulk the smaller quantities from the farmers, after which the relatively larger quantities are evacuated to the district depots of the LBCs. LBCs have depots in the district towns of the cocoa growing areas, headed by district managers primarily for the consolidation and grading of cocoa that are purchased by the PCs from the various societies. In this sense, an LBC may have about 40 sheds or 40 PCs operating under each depot.

Once cocoa arrives at the depot, various operations are made such as packing and reconditioning. Once a sizeable quantity of cocoa is recorded at the district depots, the depot keeper under the supervision of the district manager writes an application to the Quality Control Company (QCC), a subsidiary of COCOBOD for grading and sealing which legally permits the LBC to embark on the next flow process; secondary evacuation. Among the quality checks of the QCC include checking for moisture content, NTD, add-mixture, weight, beans size, among others. Once cocoa fails the test, the consequence may be entire rejection, but there are still others that may need reconditioning for re-grading. However, once the cocoa successfully passes through the quality test, the QCC affix seals on the bagged cocoa as a certification for onward secondary evacuation to the take-over point (at the port) and at this point, the Cocoa Marketing Company (also a subsidiary of COCOBOD) takes over.

The CMC purchases the cocoa from LBCs on behalf of COCOBOD for final shipment of the unprocessed cocoa to other downstream buyers, the majority of which are international buyers. While the Government remains the final buyer of cocoa within the domestic chain, it allows some LBCs to sell a small percentage of their purchases directly to other international buyers. This is what is referred to as traceable cocoa. Within the country, there are some local processors who also buy cocoa from COCOBOD and process for the global market. Figure 2 below depicts the graphical representation of the flow process of cocoa in Ghana.

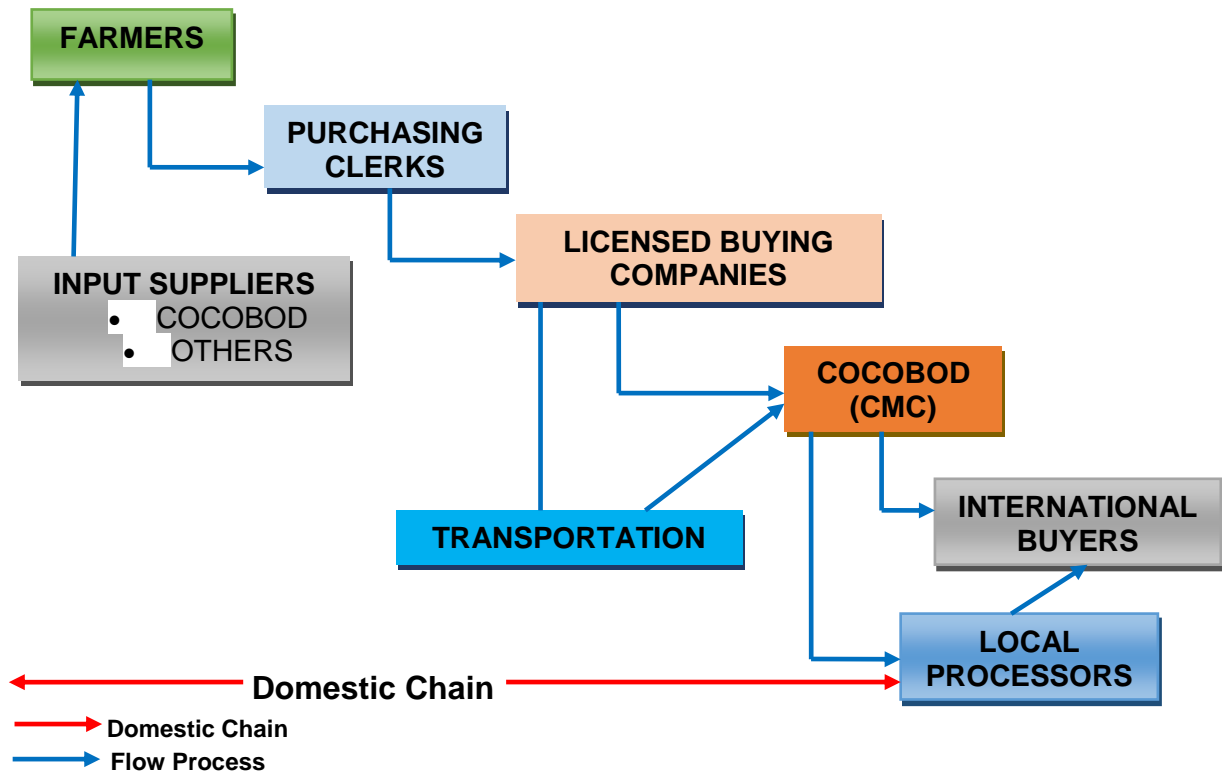


Figure 1: The Flow Process of Cocoa in Ghana's Domestic Cocoa Chain

Source: Author's Construct

2.5 Supply Chain Management Improvement Programs

Literature suggests that a continuous improvement program can transform an organization into a continual learning unit with self-improving mechanisms and systems and this constantly sets the outfit ahead of its competitors. It is also apparent that improving supply chain management can drive a turn-around in tumultuous times, manage sustainability risks and optimize operational performance. Granted, pursuing sustainability initiatives in the overall supply chain reaps comprehensible benefits to actors within the chain. However, engaging in these SCM improvement programs entrenches these benefits and mitigates the risk of failure (Roger and Carter, 2008 pp. 360 - 387). This section, therefore, seeks to highlight the moderating effect of each of these areas and their relationship with sustainability. The four constructs were selected based on their consistent appearance in extant literature and sustainability reports; though it may be argued that this selection is not exhaustive.

2.5.1 Transparency

Transparency is simply defined as the extent to which information flows within the supply chain. It involves how focal firms engage their stakeholders in their activities and constant reporting and receiving feedback, to both secure buy-in and improve supply chain processes (Roger and Carter, 2008 pp. 360 - 387). Suppliers can proactively communicate their efforts, performance, and goals through a sustainability report, enabling continuous improvement and closer engagement with buyers. This builds trust and confidence within the supply chain and helps bolster reputation and legitimacy. The cost of secrecy and covering wrongdoings can be very devastating to the progress of the organization. This encourages focal firms to maintain standards, thereby ensuring performance. Transparency also requires systems that capture traceability. Opara (2002 pp. 1 - 13) maintains that the capacity for full trace-back and trace-forward at any stage in the supply chain is crucial to confronting falling consumer confidence and public concern about the rising incidence of food-related deaths and illnesses and can, therefore, be improved through vertical coordination across a supply chain as well as horizontal coordination across networks (Roger and Carter, 2008 pp. 360 - 387). From the above, it can be concluded that transparency has a positive impact on competitive advantage and increases the level of supply chain sustainability.

2.5.2 Risk Management

Risk management is the continuing process of identifying, analyzing, evaluating and either accepting or mitigating uncertainty and potential losses, followed by the coordinated and efficient application of resources to monitor, minimize and control the likelihood or impact of detrimental occurrences while maximizing the attainment of opportunities within the supply chain. Roger and Carter (2008 pp. 360 - 387) also state that risk is “the probability of variation surrounding an anticipated outcome.” Shrivastava (1995 pp. 936 - 960), cited in Roger and Carter (2008) equates the importance of managing risks to the short-term financial performance of the organization. To the authors, business units must

attach the same commitment to the management of their financial performance to managing business risks.

Literature highlights six types of risks associated with supply chain network including financial risks (cost of claims and liability judgments), operational risks (labor strikes), perimeter risks (weather and political change), consumer and strategic risks (management changes or loss of reputation), compliance risks (human rights, labor laws and environmental risks) and reporting risks. To the author, risk improvement can even improve the share price of an ethical firm. “The confluence of risks and opportunities associated with environmental, social and economic performance has made sustainability a strategic priority for companies as part of their overall business strategy. The investment community (including investors and regulators) has become increasingly prescriptive in asking boards to mitigate risks tied to evolving regulations, shifting global weather patterns and heightened public awareness of climate change issues; any of which can affect a company’s business” (Ernest and Young, 2013 pp. 302 - 345).

2.5.3 Supplier Development

Supplier development has therefore become central to current strategic management issues, for the sole purpose of improving supplier capabilities to deliver better quality, timely and low-cost products and services (Hales and Arumugam, 2012 pp. 121 - 124), bring in innovation to support clients’ sourcing and procurement targets and sustainable development objectives (Gupta and Margolis, 2011 pp. 147 - 155) while at the same time increasing profitability for all supply chain participants. It goes beyond simple auditing of suppliers to check for compliance or whether they are delivering on-time or fulfilling quality goals. Supplier development is developing suppliers in much the same way employees are developed. It is aimed at improving suppliers’ performance, not browbeating them into charging less or simply auditing and rewarding them. Instead, supplier development is all about providing suppliers with what they need to be successful in the supply chain. Bowen et al. (2001 pp. 174 - 189) indicate that strategic supplier capabilities are essential for sustainable supply chain network. Extant literature also corroborates the standpoint that a buying company’s performance

and ability to create value is strongly perpendicular to the performance of its suppliers.

2.5.4 Supply Chain Collaboration

Gupta and Margolis (2011 pp. 147 - 155) posit that an effective collaboration between actors within the supply chain results in competitive advantage accruing to the focal firm, as it ensures not only the procreation of dynamic ideas but helps the existing organization to create immutable products and services to the marketplace. Hence an effective collaboration between actors; suppliers, buyers, end users and 3-tier organizations are important for supply chain excellence. “Successful collaboration relies on the development of mutual trust, as well as the willingness to share information that can benefit all the members. The goal is to treat all suppliers, outsourcing partners, customers, and service providers as an extension of your organization” (SAP, 2007).

Literature suggests that three levels of collaboration are necessary for the driving of a good sustainable effort; upstream (company-supplier-outsourcing partners), downstream (company-customers) and internal collaboration (within the parameters of the organization). When the focal organization utilizes collaboration as a strategy, all partners including the smallest identify with its strategic and tactical supply chain efforts are included (SAP, 2007). Collaboration creates a bond between actors; a strategic relationship that hinges on a pillar of trust shared vision and objectives.

2.6 Regulatory Bodies and Their Roles

2.6.1 Ghana Cocoa Board

The cocoa sector in Ghana is regulated by the Ghana Cocoa Board Act of 1984 (PNDCL 81). The Ghana Cocoa Board as established in 1947 has had a long history of regulating the cocoa sector of Ghana. It has undergone various transformations since the cocoa industry was established. However, its modern constitution and mandate reflect the modern trends in the industry especially in

the light of Ghana's socio-economic and political aspirations. Reforms carried out beginning from the 1980s through 1990s to present have restructured COCOBOD significantly. There was the Cocoa Sector Rehabilitation Project funded by the World Bank which included reducing COCOBOD in size by restructuring and re-organizing some of the subsidiaries to enhance the share of farmers in the earnings from cocoa exports (Aryeetey et al, 2008). Currently, COCOBOD has five main subsidiaries including the Quality Control Company and Cocoa Marketing Company (limited liability companies, which play lead roles in addressing the overall organizational goal of exporting premium and high-quality cocoa). It maintains strong linkages with the critical players especially its subsidiaries, the licensed buying companies, the Cocoa Research Institute of Ghana, the Cocoa Swollen Shoot Virus Disease Control Unit (CSSVDCU) and the Seed Production Unit (SPU). The following are the functions of the Ghana Cocoa Board.

Firstly, to determine, with the prior approval in writing of the Minister, the prices to be paid to producers for their cocoa, coffee, and shea, and shall arrange in the manner that the Board thinks fit to notify the prices to the producers. Next, to take steps to pay promptly for any cocoa beans, coffee and shea purchased from producers and which all payments shall be made by cheque in accordance with the Akafo Cheque System. Also, to establish purchasing and marketing organizations and regulate the mode of operation of the organizations. Another is to acquire and hold an interest in the business of a person carrying on functions, whether in the Republic or outside Republic, similar or related to the objects of the Board and may dispose of that interest, and to provide seedlings, credit and any other facilities to cocoa, coffee and shea farmers to plant new farms or rehabilitate old ones or redeem pledged farms; and Finally, with the prior approval of the Minister, carry on any other activities as appear to the Board to be conducive or incidental to the attainment of the objects and functions of the Board under this Act.

2.6.2 Ministry of Finance and Economic Planning (MOFEP)

The Minister of Finance and Economic Planning exercises executive control of the cocoa sector. The Ministry of Finance and Economic Planning oversees national budgeting and is responsible for resource allocation. With the restricted resources in the coffers of the state, the duty of MOFEP in resource distribution is not a simple one. For instance, continuously Ghana's aggregate export income has been underneath total imports revenue. In 2010, the aggregate export revenue including that of cocoa for Ghana was about \$7.9 billion as against imports of \$10.7 billion (ISSER, 2010). Income mobilization in Ghana has its own difficulties and even as government's income as a level of GDP expanded from 26.23% in 2009 to 29.27% in 2010, it is still not as would be enough to enhance resource distribution to State Owned Enterprises (SOEs).

As a matter of fact, actual government revenue excluding grants in 2010 fell short by about 7 percent of the estimated budgeted of roughly \$5.5 billion (ISSER, 2010). The entire cocoa industry falls within MOFEP's economic and financial control. The cocoa sector is still a priority area for the government because of its contribution to the total GDP of the country as well as to employment and social development. However, MOFEP continues to struggle with revenue allocation to key SOEs in the cocoa sector, which revenues have always fallen short of the required budget.

3 GHANA COCOA BOARD IN PRACTICE

The Ghana Cocoa Board Act of 1984 (PNDCL 81) established the regulations governing the cocoa sector in Ghana. The following table outlines the objects of the Board:

Table 1: Objects of Cocoa Board

To encourage the production of cocoa, coffee, and sheanuts;
To undertake the cultivation of cocoa, coffee, and sheanuts
To initiate programs aimed at controlling pests and diseases of cocoa, coffee and sheanuts
To purchase, import, undertake and encourage the manufacture in Ghana of, and distribute and market inputs used in the production of cocoa, coffee and sheanuts
To undertake, promote and encourage scientific research aimed at improving the quality and yield of cocoa, coffee, sheanuts and other tropical crops
To regulate the marketing and export of cocoa, coffee and sheanuts
To secure the most favorable arrangements for the purchase, inspection, grading, sealing and certification, export and sale of cocoa, coffee, and sheanuts
To purchase, market and export cocoa produced in Ghana which is graded under the Cocoa Industry (Regulation) (Consolidation) Decree, 1968 (NLCD 278) or any other enactment as suitable for export
To establish or encourage the establishment of industrial processing factories for the processing of cocoa and cocoa waste into marketable cocoa products
To purchase, market and export cocoa, cocoa products, coffee, shea nuts and shea-butter produced in Ghana
To assist in the development of the cocoa, coffee and sheanuts industries of Ghana
To promote the general welfare of cocoa, coffee and sheanuts farmers in Ghana

Source : https://cocobod.gh/Objectives_Functions_Board.php

3.1 Regulations

The Board of Directors of COCOBOD may, by legislative instrument, make such regulations as it may think fit for giving effect to the provisions of this Law.

Without prejudice to the generality of subsection (1) of this section, regulations made thereunder may prescribe the form of all licenses or permits to be issued under this Law; and regulate the control of the issue of such licenses or permits and determine the conditions under which they may be used, produced, revoked or returned. Regulations made under this section may prescribe in relation to any contravention of the regulations with penalties not exceeding a fine of ₦50,000.00- or five-years' imprisonment or both; additional penalties not exceeding ₦200.00 for each day in respect of continuing offenses; and forfeiture to the State of any articles with which the offenses are committed.

3.2 Tax Enforcement

The Board shall be exempted from income tax imposed under the provisions of the Income Tax Decree, 1975 (SMCD 5). All farmers in the cocoa production are also exempted from tax as the products are regarded as national products.

3.3 Ethical Code of Conducts

It shall be the duty of the Board to conduct its affairs on sound commercial lines and in such a manner as to ensure a reasonable return on its capital. Again, in determining what constitutes a reasonable return, all pertinent economic and financial considerations shall be taken into account, including but not limited to the need to provide a reasonable proportion of the funds needed for expanding the Board's activities and improving its work; to provide reserves for expansion or other purposes if and to the extent to which the Board deems it necessary to establish such reserves; and to make such reasonable payments to the Consolidated Fund from time to time as may be determined under section 29 of this Law.

3.4 Certifications

To operate successfully in Ghana's cocoa sector, organizations must obtain the Ghana Cocoa Board Quality Assurance Certificate, the Ghana Revenue Authority Tax Clearance Certificate, the Ghana Standards Authority Quality Standard of Operations Certificate and the Environmental Protection Agency Permit.

3.5 Market Regulations

A Licensed Buying Company (LBC) that have participated in the internal marketing of cocoa for a minimum period of two cocoa crop years can be engaged in the external marketing of cocoa in Ghana. The company must have purchased a minimum of 10,000 tons of cocoa per year over the immediately preceding two consecutive crop years. Also, the company must have personnel who possess the relevant technical know-how and experience in external marketing or can demonstrate it has access to the requisite human resources. The company must as well demonstrate that it has access to adequate financial resources.

LBCs that qualify to export or have been licensed to export may come together to form a company for the purposes of exporting cocoa. For the avoidance of doubt, LBCs that have not purchased a minimum of 10,000 tons of cocoa per year shall not qualify to engage in direct exports. LBCs that do not qualify to export under regulations 1 and 2 may market and export their quota through any licensed exporter and Cocoa Marketing Co. (Gh.) Ltd. (CMC). The company or companies referred to in regulation 2 above may be licensed as exporters.

The company/companies referred to in regulation above, together with CMC and any other LBCs licensed to export shall be the sole exporters of cocoa beans. Finally, a Licensed Buying Company wishing to participate in the external marketing and export of cocoa must apply to Ghana Cocoa Board (COCOBOD) for a license.

4 RESULTS AND ANALYSIS

This chapter presents the results and analysis of the data collected from the respondents of Cocoa Board. In total, sixty (60) respondents participated in the data collection process and all 60 questionnaires were returned for analysis. Frequency tables were adopted for the analysis of the data as well as descriptive analysis for the Likert scale questions. The questionnaire was divided into five parts including demographic information, economic sustainability, environmental sustainability, social sustainability, and supply chain management improvement programs. The Cronbach's alpha was calculated to determine the reliability and validity of the instrument used for the data collection process. The mean scores were measured using a scale ranging from 1 = very low, 2 = low, 3 = moderate, 4 = high, and 5 = very high.

4.1 Cronbach's Alpha

Table 2: Cronbach's Alpha

Case Processing Summary			
		N	%
Cases	Valid	60	100
	Excluded	0	0
	Total	60	100
Reliability Statistics			
Cronbach's Alpha	N of Items		
0.87	44		

Source: Author's Field Research, 2017

4.2 Part A: Demographic Information

This part examined the gender, job designation, nationality, and length of service of the respondents. The frequency distribution tables below outline the responses of the participants;

4.2.1 Gender

Table 3: Gender distribution of respondents

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Male	40	66.67	66.67	66.67
Female	20	33.33	33.33	100
Total	60	100	100	

Source: Author's Field Research, 2017

From Table 4 above, forty (40) respondents representing 66.67% of the total sampled population are male while the remaining twenty (20) respondents representing 33.33% are females. This emphasizes the fact that the Ghana Cocoa Board is male-dominated.

4.2.2 Job Designation

Table 4: Job Designation of respondents

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Director of Research	1	1.67	1.67	1.67
Research Manager	1	1.67	1.67	3.33
Research Officer	18	30	30	33.33
Quality Control Officer	10	16.67	16.67	50
Marketing Officer	9	15	15	65
Warehouse Officer	11	18.33	18.33	83.33
Shipping Officer	5	8.33	8.33	91.67
Auditor	2	3.33	3.33	95
Admin Officer	1	1.67	1.67	96.67
Health & Safety Officer	2	3.33	3.33	100
Total	60	100	100	

Source: Author's Field Research, 2017

From table 5 above, it can be concluded that majority (18) of the respondents are Research Officers. Eleven (11) respondents are Warehouse Officers, ten (10) are Quality Control Officers, nine (9) is Marketing Officers, five (5) are Shipping Officers, two (2) each are Health & Safety Officers and Auditors, one (1) each are Research Manager and Admin Officer. The Director of Research also participated in the data collection process. It can, therefore, be concluded that all major departments of the Board participated in the research.

4.2.3 Nationality

Table 5: Nationality of respondents

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Ghanaian	60	100	100	100
Total	60	100	100	

Source: Author's Field Research, 2017

From Table 6 above, it can be concluded that all the respondents sampled for the data collection are Ghanaians.

4.2.4 Length of Service

Table 6: Length of service of respondents

Value Label	Frequency	Percent	Valid Percent	Cum Percent
1 - 3 years	16	26.67	26.67	26.67
7 - 9 years	7	11.67	11.67	38.33
10 years and above	37	61.67	61.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

Per the length of service, 16 respondents representing (26.67%) have served the Board between (1 – 3) years. Again, seven (7) respondents representing (11.67%) have served between (7 – 9) years on the Board. Also, thirty-seven (37) respondents representing (61.67%) have been in the company for ten (10) + years. It can be concluded that majority of the respondents have served for more than ten years.

4.3 Part B: The Economic dimension of sustainability

This part of the questionnaire tried to examine the practices of the Board that ensure economic sustainability of the cocoa beans. A Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree was used to measure the extent of respondents' agreement with selected statements. The researcher outlined four thematic areas for the assessment including; Inbound supply chain, Internal operations; Warehousing/storage, and Outbound supply chain/transportation. The following tables show the frequency distribution tables and descriptive analysis of the responses to the questions on economic sustainability.

4.3.1 Inbound supply chain

Table 7: Quality cocoa beans / seed (hybrid variety) / inputs is key

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	1	1.67	1.67	1.67
Disagree	3	5	5	6.67
Neutral	11	18.33	18.33	25
Agree	23	38.33	38.33	63.33
Strongly Agree	22	36.67	36.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

From Table 8 above, 1 respondent representing 1.67% of the sampled population strongly disagree with the statement. 3 respondents disagree with the statement, 11 respondents indicate neutral to the statement, 23 respondents agree with the statement and 22 respondents strongly agree with the statement. Descriptive statistics were further calculated to assess the dispersion and central tendency of the frequency distribution (Collins & Hussey, 2009). Respondents reported a high level of agreement with mean = 4.03 and standard deviation = 0.96. In effect, it can be concluded that majority of the respondents accept that in selecting suppliers, Ghana Cocoa Board ensures quality cocoa beans is key.

Table 8: High commitment to total quality regulation by Cocoa Board

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	1	1.67	1.67	1.67
Disagree	5	8.33	8.33	10
Neutral	14	23.33	23.33	33.33
Agree	21	35	35	68.33
Strongly Agree	19	31.67	31.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

It can be inferred from Table 9 above that, most of the respondents (35%) agree with the statement that Ghana Cocoa Board ensures suppliers have a very high commitment to its total quality regulation. Nineteen respondents (31.67%) strongly agree with the statement, fourteen respondents (23.33%) are neutral, five respondents (8.33%) disagree, and one respondent (1.67%) strongly disagree with the statement. Respondents reported the moderately high level of agreement with mean = 3.87 and standard deviation = 1.02. It can, therefore, be concluded that COCOBOD ensures adherence to its total quality regulations.

Table 9: Ability to supply equally good quality cocoa beans at a cheaper price

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	8	13.33	13.33	13.33
Disagree	12	20	20	33.33
Neutral	8	13.33	13.33	46.67
Agree	24	40	40	86.67
Strongly Agree	8	13.33	13.33	100
Total	60	100	100	

Source: Author's Field Research, 2017

It can be inferred from Table 10 above that, most of the respondents (40%) agree with the statement that Ghana Cocoa Board ensures suppliers can supply equally good quality cocoa beans at a cheaper price. Twelve (12) respondents (20%) disagree with the statement, eight respondents (13.33%) are neutral, eight respondents (13.33%) strongly disagree, and eight respondents (13.33%) strongly agree with the statement. Respondents reported the moderate level of agreement with mean = 3.20 and standard deviation = 1.29. It can, therefore, be concluded that COCOBOD ensures suppliers can supply equally good quality cocoa beans at a cheaper price.

Table 10: Good cost control/reduction efforts with good cost performance

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	1	1.67	1.67	1.67
Disagree	12	20	20	21.67
Neutral	15	25	25	46.67
Agree	25	41.67	41.67	88.33
Strongly Agree	7	11.67	11.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

It can be inferred from Table 11 above that, most of the respondents (41.67%) agree with the statement that Ghana Cocoa Board ensures suppliers have good cost control/reduction efforts with good cost performance. Fifteen (15) respondents (25%) are neutral, twelve (12) respondents (20%) disagree with the statement, seven (7) respondents (11.67%) strongly agree with the statement, and one (1) respondent (1.67%) strongly disagree with the statement. Respondents reported the moderate level of agreement with mean = 3.42 and standard deviation = 1.29. It can, therefore, be concluded that COCOBOD ensures suppliers have good cost control/reduction efforts with good cost performance.

Table 11: Suppliers have high performance to promise

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	5	8.33	8.33	8.33
Neutral	13	21.67	21.67	30
Agree	28	46.67	46.67	76.67
Strongly Agree	14	23.33	23.33	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 12 above shows that majority of the respondents (46.67%) agree with the statement that Ghana Cocoa Board ensures suppliers have high performance to promise. Fourteen (14) respondents (23.33%) strongly agree with the statement, thirteen (13) respondents (21.67%) are neutral, and five respondents (8.33%) disagree with the statement. Respondents reported the moderately high level of agreement with mean = 3.85 and standard deviation = 0.88. It can, therefore, be concluded that COCOBOD ensures suppliers have moderately high performance or capacity to deliver on their promise.

Table 12: Suppliers can supply the right amount/quantity specified

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	4	6.67	6.67	6.67
Disagree	5	8.33	8.33	15
Neutral	7	11.67	11.67	26.67
Agree	31	51.67	51.67	78.33
Strongly Agree	13	21.67	21.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 13 shows that majority of the respondents (51.67%) agree with the statement that Ghana Cocoa Board ensures suppliers can supply the right amount/quantity specified. Thirteen (13) respondents (21.67%) strongly agree with the statement, seven (7) respondents (11.67%) are neutral, five (5) respondents (8.33%) disagree with the statement, and four (4) respondents (6.67%) strongly disagree with the statement. Respondents reported the moderately high level of agreement with mean = 3.73 and standard deviation = 1.1. It can, therefore, be concluded that COCOBOD ensures suppliers can supply the right amount/quantity specified.

4.3.2 Internal Operations

Table 13: Continuous improvement in the efficient and effective use of resources

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	1	1.67	1.67	1.67
Disagree	5	8.33	8.33	10
Neutral	7	11.67	11.67	21.67
Agree	32	53.33	53.33	75
Strongly Agree	15	25	25	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 14 shows that majority of the respondents (53.33%) agree with the statement that Ghana Cocoa Board ensures continuous improvement in the efficient and effective use of resources. Fifteen (15) respondents (25%) strongly agree with the statement, seven (7) respondents (11.67%) are neutral, five (5) respondents (8.33%) disagree with the statement, and one (1) respondent (1.67%) strongly disagrees with the statement. Respondents reported the moderately high level of agreement with mean = 3.92 and standard deviation = 0.93.

Table 14: Cocobod ensures cleaner production processes

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	1	1.67	1.67	1.67
Disagree	6	10	10	11.67
Neutral	2	3.33	3.33	15
Agree	30	50	50	65
Strongly Agree	21	35	35	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 15 shows that majority of the respondents (50%) agree with the statement that Ghana Cocoa Board ensures cleaner production processes. Twenty-one (21) respondents (35%) strongly agree with the statement, two (2) respondents (3.33%) are neutral, six (6) respondents (10%) disagree with the statement, and one (1) respondent (1.67%) strongly disagrees with the statement. Respondents reported a high level of agreement with mean = 4.07 and standard deviation = 0.97.

Table 15: Cocobod promotes the best cocoa quality standards applicable to operations

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	4	6.67	6.67	6.67
Disagree	6	10	10	16.67
Neutral	5	8.33	8.33	25
Agree	23	38.33	38.33	63.33
Strongly Agree	22	36.67	36.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 16 shows that majority of the respondents (38.33%) agree with the statement that Ghana Cocoa Board promotes the best cocoa quality standards applicable to operations. Twenty-two (22) respondents (36.67%) strongly agree with the statement, five (5) respondents (8.33%) are neutral, six (6) respondents (10%) disagree with the statement, and four (4) respondents (6.67%) strongly disagree with the statement. Respondents reported the moderately high level of agreement with mean = 3.88 and standard deviation = 1.21

4.3.3 Warehousing / Storage

Table 16: Adequate ventilation and spacing between stacks to reduce mold build up

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	3	5	5	5
Disagree	4	6.67	6.67	11.67
Neutral	7	11.67	11.67	23.33
Agree	24	40	40	63.33
Strongly Agree	22	36.67	36.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 17 shows that majority of the respondents (40%) agree with the statement that Ghana Cocoa Board ensures warehouse(s) have adequate ventilation and spacing between stacks to reduce mold build up. Twenty-two (22) respondents (36.67%) strongly agree, seven (7) respondents (11.67%) are neutral, four (4) respondents (6.67%) disagree with the statement, and three (3) respondents (5%) strongly disagree with the statement. Respondents reported the moderately high level of agreement with mean = 3.97 and standard deviation = 1.1

Table 17: Warehouse is used to store cocoa beans only to avoid cross-contamination

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	1	1.67	1.67	1.67
Neutral	6	10	10	11.67
Agree	21	35	35	46.67
Strongly Agree	32	53.33	53.33	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 18 shows that majority of the respondents (53.33%) strongly agree with the statement that Ghana Cocoa Board ensures the warehouse is used to store cocoa beans only to avoid cross-contamination. Twenty-one (21) respondents (35%) agree with the statement, six (6) respondents (10%) are neutral, and one (1) respondent (1.67%) disagree with the statement. Respondents reported a high level of agreement with mean = 4.4 and standard deviation = 0.74

4.3.4 Outbound supply chain (Transportation)

Table 18: Cleaner fuels are used to transport the cocoa beans to depot sheds

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	8	13.33	13.33	13.33
Neutral	14	23.33	23.33	36.67
Agree	28	46.67	46.67	83.33
Strongly Agree	10	16.67	16.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 19 shows that majority of the respondents (46.67%) agree with the statement that Ghana Cocoa Board ensures cleaner fuels are used to transport the cocoa beans to districts and depot sheds. Ten (10) respondents (16.67%) strongly agree with the statement, fourteen (14) respondents (23.33%) are neutral, and eight (8) respondents (13.33%) disagree with the statement. Respondents reported the moderately high level of agreement with mean = 3.67 and standard deviation = 0.91

Table 19: Load planning tools are used to optimize loads and avoid break-downs

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	2	3.33	3.33	3.33
Disagree	1	1.67	1.67	5
Neutral	5	8.33	8.33	13.33
Agree	37	61.67	61.67	75
Strongly Agree	15	25	25	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 20 shows that majority of the respondents (61.67%) agree with the statement that Ghana Cocoa Board ensures load planning tools are used to optimize loads and avoid break-downs. Fifteen (15) respondents (25%) strongly agree with the statement, five (5) respondents (8.33%) are neutral, one (1) respondent (1.67%) disagrees with the statement, and two (2) respondents (3.33%) strongly disagree with the statement. Respondents reported a high level of agreement with mean = 4.03 and standard deviation = 0.8

Table 20: Summary of the descriptive analysis

Economic Dimension of a sustainable cocoa chain					
Variable	N	Mean	S.E. Mean	Std Dev	Scale
INBOUND SUPPLY CHAIN					
Quality cocoa beans/seed (hybrid variety) / inputs is key	60	4.03	0.12	0.96	High
Suppliers have a very high commitment to total quality regulation by Cocobod	60	3.87	0.13	1.02	Moderately high
The supplier can supply equally good quality cocoa beans/seeds at a relatively cheaper price	60	3.2	0.17	1.29	Moderate
The supplier has good cost control/reduction efforts with good cost performance relative to industry	60	3.42	0.13	1	Moderate
The supplier has high performance to promise	60	3.85	0.11	0.88	Moderately high
The supplier can supply the right amount/quantity specified	60	3.73	0.14	1.1	Moderately high
INTERNAL OPERATIONS					
Cocobod ensures there is continuous improvement in the efficient and effective use of resources	60	3.92	0.12	0.93	Moderately high
Ensures cleaner production processes	60	4.07	0.13	0.97	High
Promotes the best cocoa quality standards applicable to our operations	60	3.88	0.16	1.21	Moderately high
WAREHOUSING / STORAGE					
We ensure warehouse(s) have adequate ventilation and spacing between stacks of cocoa to help reduce potential mold build up	60	3.97	0.14	1.1	Moderately high
We ensure the warehouse is used to store cocoa beans only to avoid cross-contamination	60	4.4	0.1	0.74	High
OUT-BOUND SUPPLY CHAIN (TRANSPORTATION)					
We ensure cleaner fuels are used to transport the cocoa beans to the districts and depot sheds	60	3.67	0.12	0.91	Moderately high
We use load planning tools to optimize loads and avoid break-downs during shipment	60	4.03	0.11	0.84	High

Source: Author's Field Research, 2017

4.4 Part C: The Environmental dimension of sustainability

This part of the questionnaire tried to examine the practices of the Board that ensure environmental sustainability of cocoa beans. A Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree was used to measure the extent of respondents' agreement with selected statements. The researcher outlined four thematic areas for the assessment including; Inbound supply chain, Internal operations; Warehousing/storage, and Outbound supply chain/transportation. The following tables show the frequency distribution tables and descriptive analysis of the responses to the questions on environmental sustainability.

4.4.1 Inbound supply chain

Table 21: Promote Eco-labelled cocoa beans/seedlings

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	5	8.33	8.33	8.33
Neutral	10	16.67	16.67	25
Agree	37	61.67	61.67	86.67
Strongly Agree	8	13.33	13.33	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 22 shows that majority of the respondents (61.67%) agree with the statement that Ghana Cocoa Board promotes Eco-labelled cocoa beans/seedlings. Eight (8) respondents (13.33%) strongly agree with the statement, ten (10) respondents (16.67%) are neutral, and five (5) respondents (8.33%) disagree with the statement. Respondents reported the moderately high level of agreement with mean = 3.8 and standard deviation = 0.78.

Table 22: Verification of supplier compliance with environmental legislation

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	3	5	5	5
Neutral	10	16.67	16.67	21.67
Agree	33	55	55	76.67
Strongly Agree	14	23.33	23.33	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 23 shows that majority of the respondents (55%) agree with the statement that Ghana Cocoa Board ensures verification of supplier compliance with environmental legislation. Fourteen (14) respondents (23.33%) strongly agree with the statement, ten (10) respondents (16.67%) are neutral, and three (3) respondents (5%) disagree with the statement. Respondents reported the moderately high level of agreement with mean = 3.97 and standard deviation = 0.78.

4.4.2 Internal operations

Table 23: Energy efficiency improvement in operations

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	4	6.67	6.67	6.67
Disagree	3	5	5	11.67
Neutral	9	15	15	26.67
Agree	38	63.33	63.33	90
Strongly Agree	6	10	10	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 24 shows that majority of the respondents (63.33%) agree with the statement that Ghana Cocoa Board ensures energy efficiency improvement in operations. Six (6) respondents (10%) strongly agree, nine (9) respondents (15%) are neutral, three (3) respondents (5%) disagree with the statement, and four (4) respondents (6.67%) strongly disagree with the statement. Respondents reported the moderately high level of agreement with mean = 3.65 and standard deviation = 0.97.

Table 24: Utilization of green power and cogeneration plants

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	2	3.33	3.33	3.33
Disagree	4	6.67	6.67	10
Neutral	13	21.67	21.67	31.67
Agree	29	48.33	48.33	80
Strongly Disagree	12	20	20	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 25 shows that majority of the respondents (48.33%) agree with the statement that Ghana Cocoa Board ensures the energy utilization of green power

and cogeneration plants. Twelve (12) respondents (20%) strongly agree with the statement, thirteen (13) respondents (21.67%) are neutral, four (4) respondents (6.67%) disagree with the statement, and two (2) respondents (3.33%) strongly disagree with the statement. Respondents reported the moderately high level of agreement with mean = 3.75 and standard deviation = 0.97

Table 25: Ensures increase in water systems efficiency

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	1	1.67	1.67	1.67
Disagree	19	31.67	31.67	33.33
Neutral	14	23.33	23.33	56.67
Agree	25	41.67	41.67	98.33
Strongly Agree	1	1.67	1.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 26 shows that majority of the respondents (41.67%) agree with the statement that Ghana Cocoa Board ensures the energy utilization of green power and cogeneration plants. One (1) respondent (1.67%) strongly agrees with the statement, fourteen (14) respondents (23.33%) are neutral, nineteen (19) respondents (31.67%) disagree with the statement, and one (1) respondent (1.67%) strongly disagrees with the statement. Respondents reported moderate level of agreement, with mean = 3.1 and standard deviation = 0.97.

4.4.3 Warehousing / Storage

Table 26: Techniques to measure and reduce energy consumption

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	11	18.33	18.33	18.33
Neutral	16	26.67	26.67	45
Agree	28	46.67	46.67	91.67
Strongly Agree	5	8.33	8.33	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 27 shows that majority of the respondents (46.67%) agree with the statement that Ghana Cocoa Board promotes techniques to measure and reduce energy consumption from lights, heating, ventilation and air conditioning. Five (5) respondents (8.33%) strongly agree with the statement, sixteen (16) respondents (26.67%) are neutral, and eleven (11) respondents (18.33%) disagree with the

statement. Respondents reported moderate level of agreement, with mean = 3.45 and standard deviation = 0.89.

Table 27: Importance of the application of materials that are environmentally friendly

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	1	1.67	1.67	1.67
Disagree	7	11.67	11.67	13.33
Neutral	17	28.33	28.33	41.67
Agree	28	46.67	46.67	88.33
Strongly Agree	7	11.67	11.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 28 shows that majority of the respondents (46.67%) agree with the statement that Ghana Cocoa Board emphasizes the importance of the application of materials that are environmentally friendly. Seven (7) respondents (11.67%) strongly agree with the statement, seventeen (17) respondents (28.33%) are neutral, seven (7) respondents (11.67%) disagree, and one (1) respondent (1.67%) strongly disagrees with the statement. Respondents reported moderate level of agreement, with mean = 3.55 and standard deviation = 0.91.

4.4.4 Outbound supply chain (Transportation)

Table 28: Periodic workshops on driver skill improvement

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	1	1.67	1.67	1.67
Disagree	12	20	20	21.67
Neutral	9	15	15	36.67
Agree	31	51.67	51.67	88.33
Strongly Agree	7	11.67	11.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 29 shows that majority of the respondents (51.67%) agree with the statement that Ghana Cocoa Board organizes periodic workshops on driver skill improvement. Seven (7) respondents (11.67%) strongly agree with the statement, nine (9) respondents (15%) are neutral, twelve (12) respondents (20%) disagree, and one (1) respondent (1.67%) strongly disagrees with the statement.

Respondents reported the moderate level of agreement, with mean = 3.52 and standard deviation = 1

Table 29: Energy efficient trucks for transportation of cocoa beans

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	1	1.67	1.67	1.67
Disagree	5	8.33	8.33	10
Neutral	19	31.67	31.67	41.67
Agree	26	43.33	43.33	85
Strongly Agree	9	15	15	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 29 shows that majority of the respondents (43.33%) agree with the statement that Ghana Cocoa Board recommends energy efficient trucks for transportation of cocoa beans. Nine (9) respondents (15%) strongly agree with the statement, nineteen (19) respondents (31.67%) are neutral, five (5) respondents (8.33%) disagree, and one (1) respondent (1.67%) strongly disagrees with the statement. Respondents reported the moderately high level of agreement, with mean = 3.62 and standard deviation = 0.9.

Table 30: Summary of Environmental Dimension descriptive analysis

Environmental Dimension of a sustainable cocoa chain					
Variable	N	Mean	S.E. Mean	Std Dev	Scale
INBOUND SUPPLY CHAIN					
We consciously promote Eco-labeled cocoa beans/seedlings	60	3.8	0.1	0.78	Moderately high
We ensure verification of supplier compliance with environmental legislation	60	3.97	0.1	0.78	Moderately high
INTERNAL OPERATIONS					
We ensure energy efficiency improvement in operations	60	3.65	0.13	0.97	Moderately high
We utilize green power and cogeneration plants	60	3.75	0.12	0.97	Moderately high
We increase water systems efficiency	60	3.1	0.12	0.93	Moderate
WAREHOUSING / STORAGE					
Promotes techniques to measure and reduce energy consumption from lights, heating, ventilation, and air conditioning	60	3.45	0.12	0.89	Moderate
Emphasizes the importance of the application of materials that are environmentally friendly	60	3.55	0.12	0.91	Moderate
OUT-BOUND SUPPLY CHAIN (TRANSPORTATION)					
We organize periodic workshops on driver skill improvement	60	3.52	0.13	1	Moderate
We recommend energy-efficient trucks for transportation of cocoa beans	60	3.62	0.12	0.9	Moderately high

Source: Author's Field Research, 2017

4.5 Part D: Social dimension of sustainability

This part of the questionnaire tried to examine the practices of the Board that ensure social sustainability of cocoa beans. A Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree was used to measure the extent of respondents' agreement with selected statements. The researcher outlined four thematic areas for the assessment including; Inbound supply chain, Internal operations; Warehousing/storage, and Outbound supply chain/transportation. The following tables show the frequency distribution tables and descriptive analysis of the responses to the questions on economic sustainability.

4.5.1 Inbound supply chain

Table 31: Workplace safety at supplier's locations meet international standards

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	2	3.33	3.33	3.33
Disagree	11	18.33	18.33	21.67
Neutral'	5	8.33	8.33	30
Agree	35	58.33	58.33	88.33
Strongly Agree	7	11.67	11.67	100
Total	60	100	100	

Source: Author's Field Survey, 2017

Table 32 shows that majority of the respondents (58.33%) agree with the statement that Ghana Cocoa Board ensures workplace safety at supplier's locations meet international standards. Seven (7) respondents (11.67%) strongly agree with the statement, five (5) respondents (8.33%) are neutral, eleven (11) respondents (18.33%) disagree, and two (2) respondents (3.33%) strongly disagree with the statement. Respondents reported the moderate level of agreement, with mean = 3.57 and standard deviation = 1.03.

Table 32: Employment of children aged under 18 years

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	2	3.33	3.33	3.33
Disagree	8	13.33	13.33	16.67
Neutral	4	6.67	6.67	23.33
Agree	30	50	50	73.33
Strongly Agree	16	26.67	26.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 33 shows that majority of the respondents (50%) agree with the statement that Ghana Cocoa Board ensures that suppliers do not employ children under 18 years old. Sixteen (16) respondents (26.67%) strongly agree with the statement, four (4) respondents (6.67%) are neutral, eight (8) respondents (13.33%) disagree with the statement, and two (2) respondents (3.33%) strongly disagree with the statement. Respondents reported the moderately high level of agreement, with mean = 3.83 and standard deviation = 1.08.

4.5.2 Internal operations

Table 33: Minimum wage and employee satisfaction

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	3	5	5	5
Disagree	5	8.33	8.33	13.33
Neutral	4	6.67	6.67	20
Agree	39	65	65	85
Strongly Agree	9	15	15	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 34 shows that majority of the respondents (65%) agree with the statement that Ghana Cocoa Board ensures that no wage is lower than the applicable legal minimum and that employees receive a decent wage relative to the country and which meets employee satisfaction. Nine (9) respondents (15%) strongly agree with the statement, four (4) respondents (6.67%) are neutral, five (5) respondents (8.33%) disagree with the statement, and three (3) respondents (5%) strongly disagree with the statement. Respondents reported the moderately high level of agreement, with mean = 3.77 and standard deviation = 0.98.

Table 34: Discriminatory practices

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	3	5	5	5
Disagree	6	10	10	15
Neutral	3	5	5	20
Agree	34	56.67	56.67	76.67
Strongly Agree	14	23.33	23.33	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 35 shows that majority of the respondents (65%) agree with the statement that Ghana Cocoa Board deters any discriminatory practices such as distinction, exclusion or preference limiting equality of opportunity or treatment based on sex, gender, religion, age, nationality, etc. Fourteen (14) respondents (23.33%) strongly agree with the statement, three (3) respondents (5%) are neutral, six (6) respondents (10%) disagree with the statement, and three (3) respondents (5%) strongly disagree with the statement. Respondents reported the moderately high level of agreement, with mean = 3.83 and standard deviation = 1.06.

Table 35: Recognition and respect for employees' freedom

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	4	6.67	6.67	6.67
Neutral	2	3.33	3.33	10
Agree	36	60	60	70
Strongly Agree	18	30	30	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 36 shows that majority of the respondents (60%) agree with the statement that Ghana Cocoa Board ensures recognition and respect for employees' freedom of association, right to collective bargaining and right to freely choose their representatives with no discrimination. Eighteen (18) respondents (30%) strongly agree with the statement, two (2) respondents (3.33%) are neutral, and four (4) respondents (6.67%) disagree with the statement. Respondents reported a high level of agreement, with mean = 4.13 and standard deviation = 0.77

4.5.3 Warehousing / Storage

Table 36: Appropriate siting of buildings to minimize traffic and noise

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	8	13.33	13.33	13.33
Neutral	7	11.67	11.67	25
Agree	31	51.67	51.67	76.67
Strongly Agree	14	23.33	23.33	100
Total	60	100	100	

Source: Author's Field Survey, 2017

Table 37 shows that majority of the respondents (51.67%) agree with the statement that Ghana Cocoa Board ensures that buildings are sited at appropriate locations to minimize traffic and noise impacts on the community. Fourteen (14) respondents (23.33%) strongly agree with the statement, seven (7) respondents (11.67%) are neutral, and eight (8) respondents (13.33%) disagree with the statement. Respondents reported the moderately high level of agreement, with mean = 3.85 and standard deviation = 0.94

Table 37: Training for warehouse workers on safe handling and storage

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	4	6.67	6.67	6.67
Neutral	9	15	15	21.67
Agree	32	53.33	53.33	75
Strongly Agree	15	25	25	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 38 shows that majority of the respondents (53.33%) agree with the statement that Ghana Cocoa Board trains warehouse workers on safe handling and storage of hazardous materials. Fifteen (15) respondents (25%) strongly agree with the statement, nine (9) respondents (15%) are neutral, and four (4) respondents (6.67%) disagree with the statement. Respondents reported the moderately high level of agreement, with mean = 3.97 and standard deviation = 0.82.

4.5.4 Outbound supply chain (Transportation)

Table 38: Compliance with applicable transportation safety regulations

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	1	1.67	1.67	1.67
Disagree	5	8.33	8.33	10
Neutral	5	8.33	8.33	18.33
Agree	36	60	60	78.33
Strongly Agree	13	21.67	21.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 39 shows that majority of the respondents (60%) agree with the statement that Ghana Cocoa Board ensures compliance with applicable transportation safety regulations. Thirteen (13) respondents (21.67%) strongly agree with the statement, five (5) respondents (8.33%) are neutral, five (5) respondents (8.33%) disagree with the statement, and one (1) respondent (1.67%) strongly disagrees with the statement. Respondents reported the moderately high level of agreement, with mean = 3.92 and standard deviation = 0.89.

Table 39: Dangerous goods transportation security plan

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	9	15	15	15
Neutral	9	15	15	30
Agree	35	58.33	58.33	88.33
Strongly Agree	7	11.67	11.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 40 shows that majority of the respondents (58.33%) agree with the statement that Ghana Cocoa Board has developed and implemented a dangerous goods transportation security plan. Seven (7) respondents (11.67%) strongly agree with the statement, nine (9) respondents (15%) are neutral, and nine (9) respondents (15%) disagree with the statement. Respondents reported the moderately high level of agreement, with mean = 3.67 and standard deviation = 0.88.

Table 40: Summary of descriptive analysis

Social Dimension of a sustainable cocoa chain					
Variable	N	Mean	S.E. Mean	Std Dev	Scale
INBOUND SUPPLY CHAIN					
We ensure workplace safety at suppliers' locations meets international standards	60	3.57	0.13	1.03	Moderate
We ensure supplier does not, in any case, employ children aged under 18 years	60	3.83	0.14	1.08	Moderately high
INTERNAL OPERATIONS					
We ensure that no wage is lower than the applicable legal minimum and that employees receive a decent wage relative to the country and which meets employee satisfaction	60	3.77	0.13	0.98	Moderately high
We deter any discriminatory practices such as any distinction, exclusion or preference limiting equality of opportunity or treatment based on sex, gender, religion, age, nationality, etc.	60	3.83	0.14	1.06	Moderately high
We ensure recognition & respect for employees' freedom of association, right to collective bargaining & right to freely choose their representatives with no discrimination	60	4.13	0.1	0.77	High
WAREHOUSING / STORAGE					
We ensure buildings are sited at appropriate locations to minimize traffic and noise impacts on the community	60	3.85	0.12	0.94	Moderately high
We train warehouse workers on safe handling and storage of hazardous materials	60	3.97	0.11	0.82	Moderately high
OUT-BOUND SUPPLY CHAIN (TRANSPORTATION)					
We ensure compliance with applicable transportation safety regulations	60	3.92	0.11	0.89	Moderately high
We have developed and implemented a dangerous goods transportation security plan	60	3.67	0.11	0.88	Moderately high

Source: Author's Field Research, 2017

4.6 Part E: Supply chain management improvement programs

This part of the questionnaire tried to examine the supply chain management improvement programs adopted by the Ghana Cocoa Board in its operations. A Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree was used to measure the extent of respondents' agreement with selected statements. The researcher outlined four thematic areas for the assessment including; Transparency, Risk management; Supply chain collaboration, and Supplier Development. The following tables show the frequency distribution tables and descriptive analysis of the responses to the questions on economic sustainability.

4.6.1 Transparency

Table 41: Feedback related to performance and expectations

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	2	3.33	3.33	3.33
Disagree	6	10	10	13.33
Neutral	8	13.33	13.33	26.67
Agree	32	53.33	53.33	80
Strongly Agree	12	20	20	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 42 shows that majority of the respondents (53.33%) agree with the statement that Ghana Cocoa Board shares feedback related to performance and expectations. Twelve (12) respondents (20%) strongly agree with the statement, eight (8) respondents (13.33%) are neutral, six (6) respondents (10%) disagree with the statement, and two (2) respondents (3.33%) strongly disagree with the statement. Respondents reported the moderately high level of agreement, with mean = 3.77 and standard deviation = 1.

Table 42: Information on changing needs (e.g. tons of cocoa, supply lead-time etc.)

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	1	1.67	1.67	1.67
Disagree	3	5	5	6.67
Neutral	8	13.33	13.33	20
Agree	34	56.67	56.67	76.67
Strongly Agree	14	23.33	23.33	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 43 shows that majority of the respondents (56.67%) agree with the statement that Ghana Cocoa Board shares information on changing needs with supply chain partners. Fourteen (14) respondents (23.33%) strongly agree with the statement, eight (8) respondents (13.33%) are neutral, three (3) respondents (5%) disagree with the statement, and one (1) respondent (1.67%) strongly disagrees with the statement. Respondents reported the moderately high level of agreement, with mean = 3.95 and standard deviation = 0.85.

4.6.2 Risk management

Table 43: Periodical assessment, analyses and evaluation of supply chain risk

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	5	8.33	8.33	8.33
Neutral	11	18.33	18.33	26.67
Agree	36	60	60	86.67
Strongly Agree	8	13.33	13.33	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 44 shows that majority of the respondents (60%) agree with the statement that Ghana Cocoa Board shares periodic assessment, analyses, and evaluation of supply chain risk in the value chain. Eight (8) respondents (13.33%) strongly agree with the statement, eleven (11) respondents (18.33%) are neutral, and five (5) respondents (8.33%) disagree with the statement. Respondents reported the moderately high level of agreement, with mean = 3.78 and standard deviation = 0.78.

Table 44: Stringent measures to reduce impact of risk on performance

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	4	6.67	6.67	6.67
Neutral	10	16.67	16.67	23.33
Agree	39	65	65	88.33
Strongly Agree	7	11.67	11.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 45 shows that majority of the respondents (65%) agree with the statement that Ghana Cocoa Board takes stringent measures to reduce the impact of difficult risks on performance. Seven (7) respondents (11.67%) strongly agree with the statement, ten (10) respondents (16.67%) are neutral, and four (4)

respondents (6.67%) disagree with the statement. Respondents reported the moderately high level of agreement, with mean = 3.82 and standard deviation = 0.72

Table 45: Measures to help avoid risks that are costly to rectify

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	8	13.33	13.33	13.33
Neutral	5	8.33	8.33	21.67
Agree	42	70	70	91.67
Strongly Agree	5	8.33	8.33	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 46 shows that majority of the respondents (70%) agree with the statement that Ghana Cocoa Board takes measures to help avoid those risks whose impact on performance seem costlier to rectify. Five (5) respondents (8.33%) strongly agree with the statement, five (5) respondents (8.33%) are neutral, and eight (8) respondents (13.33%) disagree with the statement. Respondents reported the moderately high level of agreement, with mean = 3.73 and standard deviation = 0.8.

4.6.3 Supply chain collaboration

Table 46: Key suppliers/customers participate in planning and goal setting

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	11	18.33	18.33	18.33
Neutral	6	10	10	28.33
Agree	32	53.33	53.33	81.67
Strongly Agree	11	18.33	18.33	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 47 shows that majority of the respondents (53.33%) agree with the statement that Ghana Cocoa Board includes key suppliers / customers in planning and goal setting activities. Eleven (11) respondents (18.33%) strongly agree with the statement, six (6) respondents (10%) are neutral, and eleven (11) respondents (18.33%) disagree with the statement. Respondents reported the moderately high level of agreement, with mean = 3.72 and standard deviation = 0.98.

Table 47: Facilitate assistance for suppliers / customers

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	1	1.67	1.67	1.67
Disagree	8	13.33	13.33	15
Neutral	4	6.67	6.67	21.67
Agree	37	61.67	61.67	83.33
Strongly Agree	10	16.67	16.67	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 48 shows that majority of the respondents (61.67%) agree with the statement that Ghana Cocoa Board facilitates assistance for suppliers and customers. Ten (10) respondents (16.67%) strongly agree with the statement, four (4) respondents (6.67%) are neutral, eight (8) respondents (13.33%) disagree with the statement, and one (1) respondent (1.67%) strongly disagrees with the statement. The mean score was measured using a scale ranging from 1 = very low, 2 = low, 3 = moderate, 4 = high and 5 = very high. Respondents reported the moderately high level of agreement, with mean = 3.78 and standard deviation = 0.94.

4.6.4 Supplier development

Table 48: Product quality improvement

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Strongly Disagree	1	1.67	1.67	1.67
Disagree	3	5	5	6.67
Neutral	4	6.67	6.67	13.33
Agree	34	56.67	56.67	70
Strongly Agree	18	30	30	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 49 shows that majority of the respondents (56.67%) agree with the statement that Ghana Cocoa Board has helped its suppliers to improve their product quality through extension services and best technology. Eighteen (18) respondents (30%) strongly agree with the statement, four (4) respondents (6.67%) are neutral, three (3) respondents (5%) disagree with the statement, and one (1) respondent (1.67%) strongly disagrees with the statement. Respondents reported the moderately high level of agreement, with mean = 4.08 and standard deviation = 0.85.

Table 49: Regular monitoring of social, environmental, and economic expectations

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Disagree	6	10	10	10
Neutral	3	5	5	15
Agree	36	60	60	75
Strongly Agree	15	25	25	100
Total	60	100	100	

Source: Author's Field Research, 2017

Table 50 shows that majority of the respondents (60%) agree with the statement that Ghana Cocoa Board regularly monitors whether suppliers meet social, environmental and economic expectations. Fifteen (15) respondents (25%) strongly agree with the statement, three (3) respondents (5%) are neutral, and six (6) respondents (10%) disagree with the statement. Respondents reported the moderately high level of agreement, with mean = 4.0 and standard deviation = 0.84.

Table 50: Summary of descriptive analysis

Supply chain management improvement programs					
Variable	N	Mean	S.E. Mean	Std Dev	Scale
TRANSPARENCY					
Feedback related to each other's performance vis-a-vis expectations	60	3.77	0.13	1	Moderately high
Information on changing needs (e.g. tons of cocoa, supply lead time, etc.)	60	3.95	0.11	0.85	Moderately high
RISK MANAGEMENT					
Periodical assessment, analyses, and evaluation of supply chain risk in the value chain	60	3.78	0.1	0.78	Moderately high
For risks that seem difficult to avoid, there are stringent measures to reduce its impact on performance	60	3.82	0.09	0.72	Moderately high
We have measures to help avoid those risks whose impact on performance seem costlier to rectify	60	3.73	0.1	0.8	Moderately high
SUPPLY CHAIN COLLABORATION					
We include our key suppliers/customers in our planning and goal setting activities	60	3.72	0.13	0.98	Moderately high
We facilitate suppliers / customers' ability to seek assistance from us	60	3.78	0.12	0.94	Moderately high
SUPPLIER DEVELOPMENT					
We have helped our suppliers to improve their product quality (e.g. through extension services and best practices)	60	4.08	0.11	0.85	Moderately high
We regularly monitor whether our suppliers still meet our social, environmental and economic expectations	60	4.0	0.11	0.84	Moderately high

Source: Author's Field Research, 2017

4.7 Discussion of Results

This section presents a discussion of the results of the quantitative data analysis. The discussion is presented in two major parts. The first part presents a discussion of the SCM Phases; purchasing, internal operations, warehousing, and outbound transportation that are prioritized by COCOBOD in the cocoa supply chain and as they relate to the economic, environmental, and social dimensions of sustainability. The second part assesses whether supply chain improvement programs play any role in the linkage between sustainable supply chain practices and the performance of Ghana Cocoa Board. The data analysis in the previous sections reveals an interesting summary of the characteristics of the observed variables, especially concerning the relevant phases of supply chain management that COCOBOD concentrates on in terms of activities towards sustainability. It was generally observed that high variation exists in terms of the aspects that the Board emphasized to arrive at a sustainable supply chain.

4.7.1 Economic Dimension of Sustainability

Observation shows that generally, emphasis on the economic dimension was moderately high for COCOBOD. This is indicative of the fact that Ghana Cocoa Board is directly in charge of both the internal and external marketing of cocoa in Ghana and as such the Board must ensure high foreign exchange gains for the commodity. It was observed in the analysis that the Board placed much attention on supplier selection and warehousing as it did with outbound transportation and internal operations. The Ghana Cocoa Board's performance in the economic dimension of cocoa chain sustainability corresponds with the assertion by Harris (2000) that, an economically sustainable system must be able to produce goods and services on a continual basis; to maintain manageable levels of government and external debt and to avoid extreme sector imbalances which damage agricultural or industrial production. The moderately high performance of the Board proves its commitment to ensuring that Ghana's cocoa beans continue to compete effectively on the world market for both value and improved foreign exchange. It is therefore recommended that the Board continues to improve its

performance in ensuring a firm commitment to the economic sustainability of cocoa beans.

4.7.2 Environmental Dimension of Sustainability

Again, observation shows that generally, emphasis on the environmental dimension of supply chain sustainability was moderately high for COCOBOD as depicted in Table 31. The Board again showed best performance in its inbound supply chain operations, followed by its internal operations, outbound transportation, and warehousing. In effect, it can be concluded that the Board was least impressive in its warehousing activities in ensuring environmental sustainability. A review of the relevant literature indicated that Environmental sustainability considers the physical inputs used in production (Kaufmann and Carter, 2010), emphasizing environmental life-support systems without which neither production nor humanity could exist. These life support systems include atmosphere, water, food, soil, minerals, materials and energy resources; all of which need to be healthy; their environmental service capacity needs to be maintained (Goodland, 1995; Sloan, 2010). However, the author observed that the COCOBOD is not directly responsible for warehousing and transportation of cocoa beans, hence its average performance in the activities that ensure environmental sustainability of the cocoa chain.

It is recommended that the Board pays more attention to the activities of the Purchasing Clerks (PCs) and Licensed Buying Companies (LBCs) to ensure that they are complying to all environmental standards in their operations.

4.7.3 Social Dimension of Sustainability

Observation from the data analysis shows that generally, emphasis on the social dimension of supply chain sustainability was high for COCOBOD. The study revealed that the Board placed much emphasis on internal operations, warehousing, outbound transportation and inbound supply. This goes to show that the Board is generally concerned about the business activities and practices that other players in the cocoa chain are applying to ensuring equity, safety, and improvement. The literature has revealed that improving sustainability with

respect to the social dimension involves developing and maintaining business practices that are fair and favorable to the labor, communities, and regions touched by the supply chain (Sloan, 2010). Social well-being encompasses improving labor standards and conditions, enhancing communities and creating and delivering socially responsible products and services (Mahler, 2007). Ghana Cocoa Board's activities that ensure social sustainability confirm the arguments of Sloan (2010) and Mahler (2007) that, business practices must be geared towards improving the quality of life of people and communities. To continue to spur the current productivity level, the Board must increase its efforts in all the supply chain phases.

4.8 Role of Supply Chain Improvement Programs

The study also sought to find out whether supply chain improvement programs play any role in the linkage between sustainable practices and performance of Ghana Cocoa Board.

4.8.1 Transparency

The Ghana Cocoa Board showed moderately high performance in the transparency of its activities in the cocoa chain. This performance indicates that transparency has a positive impact on performance.

Specifically, the results indicate that the interaction between social initiatives and transparency, economic initiatives and transparency, transparency and environmental initiatives and transparency and overall sustainability are significant. It can be concluded that the Board has a good working relationship with the rest of the players in the cocoa chain which will ensure that all aspects of sustainability are improved through effective collaboration. It can, therefore, be deduced that; cocoa players stand to reap higher performance if they improve transparency in the cocoa chain. Indeed, this is re-echoed by Opara (2002) who maintains that the capacity for full trace-back and trace-forward at any stage in the supply chain is crucial to confronting falling consumer confidence and public concern about the rising incidence of food-related deaths and illnesses.

4.8.2 Risk Management

For risk management, Ghana Cocoa Board's performance illustrates that risk management significantly affects the social, economic and overall sustainability of the cocoa chain. This confirms Mefford (2011), who highlights the importance of hedging against risks especially risks of legal suits from employees, consumers, and the public by incorporating sustainable supply chain practices. To the author, risk improvement can even improve the share price of an ethical firm. This is essentially important as the cocoa sector is known for its high-risk exposure at almost every stage in the chain, and much of the waste that reduces cocoa yield emanate from such risks. While not every risk in the cocoa sector can be avoided, the ability of chain players to manage these risks can greatly reduce its impact on sustainable goals and this will require very great efforts in sustainable initiatives at all levels, especially at the farm level which is the point-of-origin. The argument here is that the performance at the point-of-origin of any supply chain strongly influences the performance of the entire chain. Thus, if no proper risk management system at the farm level exists, it will increase their vulnerability to a high-risk impact which consequently will affect the performance of subsequent downstream players.

The author is therefore of the view that, Cocoa Board must take a special interest in the activities of each player in the cocoa chain to ensure that all risk factors are properly mitigated to prevent loss in the value of cocoa beans.

4.8.3 Supplier Development

The Ghana Cocoa Board showed impressive performance in its activities per supplier development. The Board considers all its suppliers in decisions that have a direct and indirect impact on their activities. Again, Cocoa Board empowers its suppliers to seek and access all necessary support to enhance their activities. The author, therefore, concludes that supplier development has a positive impact on the performance of the players in the supply chain. Indeed, Williams (2009) maintains that improving the economic viability of the cocoa chain will require the continual improvement in the relationship and interactions that exist among actors in Ghana's cocoa supply chain and if this interaction can be fostered it will

require great efforts in developing suppliers in the chain. The current global economic barometer has called for the increased collaborative relationships and strategic ties between organizations and their suppliers to overcome the myriads of challenges and risks arising from more volatile operating business environments.

4.8.4 Supply Chain Collaboration

Again, the Ghana Cocoa Board showed impressive performance with reference to supply chain collaboration. The results showed that the Board includes all other players of the cocoa chain in goal setting and decision making. The level of collaboration between the Board and other players spurs positive impact on the performance of the supply chain. From the author's perspective, a good collaboration will further enhance the performance of each player in ensuring economic, social and environmental sustainability. In other words, supply chain players can easily identify the shortfalls in their sustainability activities and complement each other in achieving a holistic supply chain sustainability. A fundamental principle in supply chain management is collaboration, in the sense that different players come together to form a supply chain. The objective of the supply chain is to fulfill the customer's order, and so for a supply chain to successfully achieve this objective, it will rationally require that all players within the chain interact and collaborate. In this vein Gupts and Mangolis (2011) posits that an effective collaboration between actors within the supply chain results in competitive advantage accruing to the focal firm; as it ensures not only the procreation of dynamic ideas but helps the existing organization to create immutable products and services to the marketplace. Hence, an effective collaboration between farmers, purchasing clerks (PCs), licensed buying companies (LBCs), and COCOBOD etc. is essential for supply chain excellence in the cocoa sector.

5 CONCLUSION

This study sought to examine the supply chain sustainability of cocoa beans in Ghana's cocoa sector with specific attention on the roles of the Ghana Cocoa Board in ensuring the economic, environmental, and social sustainability of the cocoa chain. In order to achieve the broad aim of the research work, specific objectives were formulated to assess how sustainable practices drive performance in the cocoa chain; to establish the roles of Ghana Cocoa Board in the sustainability of cocoa in Ghana; and to ascertain whether supply chain improvement programs play any role in the linkage between sustainable practices and the performance of Ghana Cocoa Board in the value chain.

The study has discussed how the domestic chain of cocoa in Ghana can be managed for its sustainability. Three dimensions of sustainability were carefully examined to ascertain the role of the Ghana Cocoa Board in ensuring sustainability of the cocoa chain in Ghana. Findings from the analysis showed that, the Board performed moderately to high in the economic, environmental, and social dimensions of sustainability as shown in Table 21(p.50), Table 31 (p. 60), and Table 41 (p. 70). The findings further indicated Ghana Cocoa Board's role as very critical to the performance of Ghana's cocoa beans on the international market in terms of dealing with the economic, environmental, and social issues affecting cocoa in Ghana. Most studies on sustainability in the cocoa chain have concentrated on cocoa cultivation, with little attention to other supply chain functions that impact on cocoa productivity. "Ideally, any assessment of sustainability must apply to the supply chain, rather than any one part of it. Otherwise, for example, the benefits of improvements in the environmental performance of farming systems could be lost if subsequent processing or distribution stages result in increased waste or environmental risk" (Vasileiou, and Morris, 2006).

The study further revealed a positive effect of supply chain improvement programs on the three dimensions of sustainability, in that, transparency along the chain improves the activities of the players in the chain and further ensures effective collaboration in improving the contribution of each player in ensuring

supply chain sustainability of cocoa beans. This finding is shown in Table 51 (p. 76).

Finally, in terms of limitation, the study focused only on four phases of supply chain, purchasing, internal operations, warehousing and out-bound transportation. Further research may thus, look at product design and commercialization and reverse flows within the cocoa chain. While the researcher believes investigating into the sustainability of cocoa relative to product design and commercialization seems somewhat appropriate for downstream players beyond the domestic chain, it will be very interesting if further studies relate the issue with cocoa sustainability considering the increased interest in cocoa verification and certification.

6 RECOMMENDATIONS

Based on the results from the quantitative analysis, the following recommendations are made towards a sustainable supply chain for cocoa beans.

First, Ghana Cocoa Board must increase its commitment to sustainable initiatives. Although the Board performed above average in most of the sustainability activities, it is critical to further improve performance to increase cocoa production and reduce the risks in the value chain.

Second, COCOBOD must enhance its monitoring and regulatory activities to improve the performance of other players in the value chain. A closer collaboration with other players will ensure effective evaluation of the value chain. The Board must also realize that emphasis on transportation is critical to ensuring effective supply chain sustainability of cocoa beans.

Third, COCOBOD must strengthen supply chain improvement programs to further enhance the performance of the value chain. More effort must be geared towards enhancing transparency, supplier development, supplier collaboration and risk management. It is essential for COCOBOD to offer technical support to stakeholders through constant reporting and feedback to improve transparency. Roger and Carter (2008) indicate that transparency helps build trust and confidence within the supply chain and consequently helps bolster reputation and legitimacy.

Fourth, COCOBOD and other actors in the value chain must engage in continuous process of identifying, analyzing, evaluating, and mitigating against uncertainty and potential losses.

Fifth, government must be able to fix prices annually for all those involved in the domestic cocoa sector. It is important to keep in mind that this will result in cocoa farmers receiving a decent income and that the authorities would have the financial means to invest in the country's cocoa production.

Sixth, COCOBOD must map the activities of all those involved in the internal cocoa sector, and monitor, regulate, or sanction where necessary.

Seventh, government must increase transparency in the cocoa sector, including for farmers. This could include information about the use of the tax revenues which are levied on the export of cocoa beans, cocoa peels and other cocoa waste products, and on chocolate products.

Finally, there must be coordinated and efficient application of resources to monitor, minimize, and control the likelihood or impact of detrimental occurrences whilst maximizing the attainment of opportunities within the supply chain.

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SURVEY QUESTIONNAIRE

This survey instrument has been designed to enable me to carry out a research on the topic: Supply Chain Sustainability of Cocoa Beans in Ghana: A case study of Ghana Cocoa Board. The purpose of the research is to provide an understanding of how sustainable efforts pay-off in the domestic value chain of cocoa in Ghana. Your responses to this questionnaire will be very much appreciated and any information provided will be treated as highly confidential. Thank you for your time. Please, kindly write in ink in the box which corresponds to the statement, which in your opinion is the most appropriate answer to the related question or provides further explanation where necessary. For other questions that follow, kindly select by checking (✓) all that apply.

Part A: Demographics

1. Gender:

Male Female

2. Job Designation:

3. Nationality:

Ghanaian Foreigner

4. Length of service:

1 – 3 years 4 – 6 years 7 – 9 years

10 years and above

Part B: The Economic dimension of a sustainable cocoa chain

<i>Please indicate your opinion for each of the following statements below by placing a checkmark (✓) in the right column under the 5-point Likert Scale where:</i>					
1 = Strongly Disagree		2 = Disagree	3 = Neutral	4 = Agree	5 = Strongly Agree
Inbound Supply Chain: <i>In selecting suppliers, we ensure</i>					
<i>Quality Systems</i>	5.	Quality cocoa beans/seed (hybrid variety)/inputs is key			
	6.	Suppliers have a very high commitment to total quality regulation by Cocobod			
<i>Cost Structure</i>	7.	The supplier can supply equally good quality cocoa beans/seeds at a relatively cheaper price			
	8.	The supplier has good cost control/reduction efforts with good cost performance relative to industry			
<i>Delivery performance</i>	9.	The supplier has high performance to promise			
	10.	The supplier can supply the right amount/quantity specified			
Internal Operations: <i>In managing internal operations, our company</i>			1	2	3
11.	Ensures there is continuous improvement in the efficient and effective use of resources				
12.	Ensures cleaner production processes				
13.	Promotes the best cocoa quality standards applicable to our operations (Cocoa pods are screened to obtain quality seeds for the nursery, a 2-week cocoa bean fermentation & its subsequent drying))				
Warehousing / Storage			1	2	3
14.	We ensure warehouse(s) have adequate ventilation and spacing between stacks of cocoa to help reduce potential mold build up.				
15.	We ensure the warehouse is used to store cocoa beans only to avoid cross-contamination				
Out-Bound Supply Chain (Transportation): <i>In managing outbound supply chain operations,</i>			1	2	3
16.	We ensure cleaner fuels are used to transport the cocoa beans to the districts and depot sheds				
17.	We use load planning tools to optimize loads and avoid break-downs during shipment				

Part C: The Environmental dimension of a sustainable cocoa chain

<i>Please indicate your opinion for each of the following statements below by placing a checkmark (✓) in the right column under the 5-point Likert Scale where:</i>										
1 = Strongly Disagree		2 = Disagree		3 = Neutral		4 = Agree		5 = Strongly Agree		
Inbound Supply Chain: <i>In selecting suppliers,</i>						1	2	3	4	5
18.	We consciously promote Eco-labelled cocoa beans/seedlings									
19.	We ensure verification of supplier compliance with environmental legislation									
Internal Operations: <i>In managing internal operations,</i>						1	2	3	4	5
20.	We ensure energy efficiency improvement in operations									
21.	We utilize green power (e.g. electric) and cogeneration plants									
22.	We increase water system efficiency									
Warehousing / Storage: <i>In managing warehouse operations, our company</i>						1	2	3	4	5
23.	Promotes techniques to measure and reduce energy consumption from lights, heating, ventilation, and air conditioning.									
24.	Emphasizes the importance of the application of materials that are environmentally friendly									
Out-Bound Supply Chain (Transportation): <i>In managing out-bound supply chain operations,</i>										
25.	We organize periodic workshops on driver skill improvement									
26.	We recommend energy-efficient trucks for the transportation of cocoa beans									

Part D: Social dimension of a sustainable cocoa chain

<i>Please indicate your opinion for each of the following statements below by placing a checkmark (✓) in the right column under the 5-point Likert Scale where:</i>						
1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree						
Inbound Supply Chain: <i>In selecting suppliers,</i>						
		1	2	3	4	5
27.	We ensure workplace safety at suppliers' locations meets international standards					
28.	We ensure Supplier does not, in any case, employ children aged under 18 years					
Internal Operations: <i>In managing internal operations,</i>						
29.	We ensure that no wage is lower than the applicable legal minimum and that employees receive a decent wage relative to the country and which meets employee satisfaction					
30.	We ensure any discriminatory practices such as any distinction, exclusion or preference limiting equality of opportunity or treatment based on sex, gender, religion, age, nationality, etc					
31.	We ensure recognition & respect for employees' freedom of association, right to collective bargaining. & right to freely choose their representatives with no discrimination					
Warehousing / Storage: <i>In managing warehouse operations,</i>						
32.	We ensure buildings are sited at appropriate locations to minimize traffic and noise impacts on the community					
33.	We train warehouse workers on safe handling and storage of hazardous materials					
Out-Bound Supply Chain (Transportation): <i>In managing outbound supply chain operations,</i>						
34.	We ensure compliance with applicable transportation safety regulations					
35.	We have developed and implemented a dangerous goods transportation security plan					

Part E: Supply Chain Management Improvement Programs

<i>Please indicate your opinion for each of the following statements below by placing a checkmark (✓) in the right column under the 5-point Likert Scale where:</i>					
1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree					
Transparency: We and our supply chain partners share / exchange ...,					
	1	2	3	4	5
36	Feedback related to each other's performance vis-a-vis expectations				
37	Information on changing needs (e.g. tons of cocoa, supply lead-time, etc.)				
Risk Management:					
	1	2	3	4	5
38.	Periodical assessment, analyses, and evaluation of supply chain risk in the value chain				
39.	For risks that seem difficult to avoid, there are stringent measures to reduce its impact on performance.				
40.	We have measures to help avoid those risks whose impact on performance seem costlier to rectify				
Supply Chain Collaboration					
	1	2	3	4	5
41.	We include our key suppliers/customers in our planning and goal-setting activities				
42.	We facilitate suppliers/customers' ability to seek assistance from us				
Supplier Development					
	1	2	3	4	5
43.	We have helped our suppliers to improve their product quality (e.g. through extension services, best technology)				
44.	We regularly monitor whether our suppliers still meet our social, environmental and economic expectations				

LIST OF FIGURES

Figure 1: The Flow Process of Cocoa in Ghana's Domestic Cocoa Chain 21

LIST OF TABLES

Table 1: Objects of Cocoa Board	27
Table 3: Cronbach's Alpha	30
Table 4: Gender distribution of respondents	31
Table 5: Job Designation of respondents	31
Table 6: Nationality of respondents	32
Table 7: Length of service of respondents	32
Table 8: Quality cocoa beans / seed (hybrid variety) / inputs is key	33
Table 9: High commitment to total quality regulation by Cocoa Board	33
Table 10: Ability to supply equally good quality cocoa beans at a cheaper price	34
Table 11: Good cost control/reduction efforts with good cost performance	34
Table 12: Suppliers have high performance to promise	35
Table 13: Suppliers can supply the right amount/quantity specified	35
Table 14: Continuous improvement in the efficient and effective use of resources ..	36
Table 15: Cocobod ensures cleaner production processes	36
Table 16: Cocobod promotes the best cocoa quality standards applicable to operations	37
Table 17: Adequate ventilation and spacing between stacks to reduce mold build up	37
Table 18: Warehouse is used to store cocoa beans only to avoid cross- contamination	38
Table 19: Cleaner fuels are used to transport the cocoa beans to depot sheds	38
Table 20: Load planning tools are used to optimize loads and avoid break-downs .	39
Table 21: Summary of the descriptive analysis	40
Table 22: Promote Eco-labelled cocoa beans/seedlings	41
Table 23: Verification of supplier compliance with environmental legislation	41
Table 24: Energy efficiency improvement in operations	42
Table 25: Utilization of green power and cogeneration plants	42
Table 26: Ensures increase in water systems efficiency	43
Table 27: Techniques to measure and reduce energy consumption	43
Table 28: Importance of the application of materials that are environmentally friendly	44

Table 29: Periodic workshops on driver skill improvement.....	44
Table 30: Energy efficient trucks for transportation of cocoa beans.....	45
Table 31: Summary of Environmental Dimension descriptive analysis	46
Table 32: Workplace safety at supplier's locations meet international standards	47
Table 33: Employment of children aged under 18 years	47
Table 34: Minimum wage and employee satisfaction.....	48
Table 35: Discriminatory practices	48
Table 36: Recognition and respect for employees' freedom	49
Table 37: Appropriate siting of buildings to minimize traffic and noise	49
Table 38: Training for warehouse workers on safe handling and storage	50
Table 39: Compliance with applicable transportation safety regulations	50
Table 40: Dangerous goods transportation security plan	51
Table 41: Summary of descriptive analysis.....	52
Table 42: Feedback related to performance and expectations	53
Table 43: Information on changing needs (e.g. tons of cocoa, supply lead-time etc.)	53
Table 44: Periodical assessment, analyses and evaluation of supply chain risk.....	54
Table 45: Stringent measures to reduce impact of risk on performance	54
Table 46: Measures to help avoid risks that are costly to rectify	55
Table 47: Key suppliers/customers participate in planning and goal setting	55
Table 48: Facilitate assistance for suppliers / customers	56
Table 49: Product quality improvement.....	56
Table 50: Regular monitoring of social, environmental, and economic expectations	57
Table 51: Summary of descriptive analysis.....	58

