

## Operational Activities of Cocoa Export Processing Factories in Ondo State, Nigeria

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**ABSTRACT** The specific objectives are to: examine the organizational structure of the cocoa Export Processing Factories in the study area, investigate the contribution of cocoa Export Processing Factories to the quality and quantity of cocoa beans in Nigeria, examine the effects of incentives granted by the Federal Government to encourage cocoa exports on the productivity and efficiency of cocoa Export Processing Factories, identify the major constraints facing cocoa Export Processing factories in the study area. Data were collected from both primary and secondary sources. The primary data were collected from the three cocoa processing factories in Ondo State, three recognized cocoa exporters with international affiliation, and sixty cocoa marketers within the state, using structured questionnaire. The secondary data were collected from various publications of the Central Bank of Nigeria. The data collected were analyzed using descriptive statistics, Trend analysis, Profitability analysis, Correlation analysis and t - test. The study revealed that cocoa processing companies are confronted with a variety of challenges ranging from high cost of production including that of unpredictable and fluctuating prices of raw cocoa beans, inevitably high and additional cost of generators and diesel resulting from epileptic power supply to lack of funds when needed. The conclusion that can be drawn from this study is that Cocoa Export Processing Factories are operating at a loss. This might be partly due to the highly capital intensive nature of cocoa processing.

### 1. INTRODUCTION

The Export Processing Zone was created to stimulate export. Export Processing Factories are firms located in any part of the country and engaged in the manufacture and export of semi or final products from locally available raw materials or intermediate goods. They are registered factories that fall under the Export Processing Zones as stipulated by Decree No: 34 of 1991. In other words, in addition to being duly registered as business entities as stipulated by the Company and Allied Matters Act of 1990, Export Processing Factories are also registered under the Export Processing Zones Decree No. 34 of 1991 to benefit specially from government incentives. The objectives of the Export Processing Zones are the attraction of foreign investments and stimulation of industrial production for export and the production of semi - processed cocoa products which are partly processed cocoa products, which are not the final products and they include : Cocoa liquor, Cocoa butter, Cocoa Cake, and Cocoa powder. They are used in the manufacture of chocolate, chocolate flavoured drinks, cosmetic products such as moisturizing creams and soaps.

The Export Processing Factories were given incentives such as the new Manufacture - In - Bond Scheme, Currency Retention Scheme, Tax

Relief on Interest Income, Pioneer Status Scheme, Export Processing Zones, ECOWAS Trade Liberalization Scheme, Buyback Arrangements, and Capital Asset Depreciation Allowance were given to Nigerian exporters so as to increase and diversify the total value of non - oil exports from Nigeria (NEPC 2001a).

Over the years, various incentives have been introduced by successive governments to Nigerian exporters in order to increase and diversify the total value of non - oil exports from the country. In 1991, the Federal Government of Nigeria promulgated the Export Processing Zones Decree No.34. Several years after the promulgation of the decree there is the need to assess to what extent the policy has met the yearnings and aspirations of the people, the processing companies, and the government. Hence the need for this study.

The broad objective of the paper is to examine the operational activities of cocoa Export Processing Factories in Ondo State, Nigeria.

The specific objectives are to:

1. examine the organizational structure of the cocoa Export Processing Factories in the study area;
2. investigate the contribution of cocoa Export Processing Factories to the quality and quantity of cocoa beans in Nigeria;
3. examine the effects of incentives granted by the Federal Government to encourage

cocoa exports on the productivity and efficiency of cocoa Export Processing Factories; and

4. identify the major constraints facing cocoa Export Processing factories in the study area.

## 2. REVIEW OF LITERATURE

In the 1960s, the Nigerian economy depended on the non - oil sector, particularly agriculture and some solid mineral exports for its revenue. With the advent of, and the boom in crude oil exports in the 1970s, the oil sector took over as the leading sector of the economy. The huge foreign exchange accruing from oil exports led to massive public sector investments, especially in the area of infrastructural development. Agriculture and solid minerals sub - sectors, which used to be the back bone of the economy, were neglected as resources were not adequately extended to them (Abubakar1999).

Export Processing Zones are special enclaves usually (but not always) fenced in an area of ten (10) and thirty (30) hectares which firms, mostly foreign companies, enjoy a special status in terms of imports and exports, taxation, provision of infrastructure and a liberal regulatory environment (Hogan and Onwioduokit 1996).

The setting up of Export Processing Zones resulted from the disappointing performance of the import - substitution industrialization strategy. This had led to a shift of emphasis among developing countries towards an export - oriented development. Current economic reform programmes emphasize trade reform policies as being essential for developing countries to become integrated into the world economy. Trade policy measures include exchange rate policy, export policy and import policy.

According to War (1989), the current emphasis on export is due in part to the numerous studies, which have demonstrated that the export oriented strategy has produced not only rapid growth, but also rapid economic growth. The attraction of Export Processing Zones lie in their ability to enable countries to attract foreign investment, diversify and increase exports and create employment in special enclaves without pursuing economy - wide and comprehensive liberalization policies which might be difficult and prolonged. The benefits and costs of an Export Processing Zone as experienced by

the host country's citizens are compared with the hypothetical results of not having a zone.

The Nigerian government also approved the setting up of Export Processing Factories to benefit from the incentives applicable to Export Processing Zones. Such benefits include:

- i The waiver of legislative provisions pertaining to levies, duties and foreign exchange;
- ii Tax holiday;
- iii Permission to repatriate foreign capital investment and capital appreciation in Export Processing Zones at any time;
- iv Unrestricted remittance of profits and dividends earned by foreign investors in EPZs;
- v Exemption from paying export and import duties;
- vi Rent - Free land for factory construction and
- vii Permission to allow the sale of up to 25 percent of production in Nigeria (NEPC 2001b).

The International Cocoa Organization (ICCO 2005), stated that once the beans have been fermented and dried, they can be processed to produce a variety of products such as:

According to International Cocoa Organization (ICCOa 2010), the summary of the process of transforming cocoa beans into chocolate is as shown in the steps below:

- Step 1.* The cocoa beans are cleaned to remove all extraneous material.
- Step 2.* To bring out the chocolate flavour and colour the beans are roasted. The temperature, time and degree of moisture involved in roasting depend on the type of beans used and the sort of chocolate or product required from the process.
- Step 3.* A winnowing machine is used to remove the shells from the beans to leave just the cocoa nibs.
- Step 4.* The cocoa nibs undergo alkalization, usually with potassium carbonate, to develop the flavour and colour.
- Step 5.* The nibs are then milled to create cocoa liquor (cocoa particles suspended in cocoa butter). The temperature and degree of milling varies according to the type of nib used and the product required.
- Step 6.* Manufacturers generally use more than one type of bean in their products and therefore the different beans have to be blended together to the required formula.

*Step 7.* The cocoa liquor is pressed to extract the cocoa butter leaving a solid mass called cocoa press cake. The amount of butter extracted from the liquor is controlled by the manufacturer to produce press cake with different proportions of fat.

*Step 8.* The processing now takes two different directions. The cocoa butter is used in the manufacture of chocolate. The cocoa press cake is broken into small pieces to form kibbled press cake which is then pulverized to form cocoa powder.

*Step 9.* Cocoa liquor is used to produce chocolate through the addition of butter. Other ingredients such as sugar, milk, emulsifying agents and cocoa butter equivalents are also added and mixed. The proportion of the different ingredients depends on the type of chocolate being made.

*Step 10.* The mixture then undergoes a refining process by traveling through a series of rollers until a smooth paste is formed. Refining improves the texture of the chocolate.

*Step 11.* The next process, couching, further develops flavour and texture. Couching is a kneading process. The speed, duration and temperature of the kneading affect the flavour. An alternative to couching is an emulsifying process using a machine that works like an egg beater.

*Step 12.* The mixture is then tempered or passed through a heating, cooling and reheating process. This prevents discolouration and fat bloom in the product by preventing certain crystalline formations of cocoa butter developing.

*Step 13.* The mixture is then put into moulds or used for enrobing fillings and cooled in a cooling chamber.

*Step 14.* The chocolate is then packaged for distribution to retail outlets.

According to Salami (2000), there has been a total of seventeen cocoa processing companies in some parts of the cocoa producing states of Nigeria between 1964 and 2006, however, only seven of them were functional. "The rest have either not been completed, closed down or did not come on board at all. The processing companies have many problems such as inadequate working capital, irregular power supply, high cost of cocoa beans, inefficient and sometimes obstructive government policies." This

was corroborated by Oseni (2010), who stated that processing of cocoa beans into intermediary products such as nib, butter, liquor, cake and powder suffer as a result of low capacity utilization arising from a number of factors including lack of finance, high production cost, low level of local consumption of cocoa products, poor industrial infrastructure, absence of viable small and medium scale enterprises to absorb part of the intermediate products. Folayan (2010) classified the Cocoa Processing Factories in Nigeria into two major categories: Operating and moribund based on their operating capacity:

According to World Cocoa Foundation (2010), while processors of cocoa beans are located throughout the world, the highest percentage is based in Europe, followed by America, Asia and Oceania, and then Africa worldwide. Also, most of the countries with high level of cocoa processing have a very high level of processed cocoa consumption. "The Netherlands, as one of the main ports into Europe leads in imports of beans; the US, with significant production of cocoa complementary food products, leads in imports of powder; and United Kingdom, one of the biggest chocolate consumption per capita markets, leads in retail chocolate." (World Cocoa Foundation 2010). This corroborates an earlier work by Folayan (2003), which stated that "the largest cocoa consumers in terms of products (cake, powder and butter) are United States of America, Federal Republic of Germany, Netherlands, Brazil and United Kingdom." In recent years, the value of semi - processed cocoa exported from Nigeria seems to be on the decline.

Available statistics from the Central Bank of Nigeria shows at the national level the value of both raw cocoa beans as well as that of semi - processed cocoa (cocoa products) between years 2004 and 2008. The value of raw cocoa beans exports increased from ₦ 7,782.25 million in year 2004 through ₦ 13,244.48 million in 2005 to ₦ 31,716.63 in 2007, and then fell to ₦ 30,464.3 million in 2008. However, the percentage share of raw cocoa beans to total non - oil exports shows an increase from 6.84% in year 2004 through 12.5% in 2005 to 13.9% in 2006 which then dropped to 13.2% in 2007 before rising again to 32.3% in 2008. In other words, there has been on an overall, a relative rise in the percentage share of raw cocoa beans to total non - oil exports. In the case of semi - processed

cocoa over the same period of time, there has been a relative decline both in the value of exports and the percentage share to total exports.

### 3. RESEARCH METHODOLOGY

The study area is Ondo State. Ondo State was created from the old Western State of Nigeria on 3<sup>rd</sup> February, 1976 under the then Military Government of late General Muritala Mohammed. Ondo State shares common boundaries with six cocoa producing states which are: Ekiti and Kogi States to the North, Edo State to the East, Delta State to the South east, and Ogun and Osun States to the West. Ondo State is typically agrarian with large cocoa production and the existence of three cocoa processing factories in Ondo, Ile - Oluji and Akure.

Ondo State is predominantly an agrarian state with over 60 percent of its labour force deriving their income from farming. It is richly blessed with varied and favourable ecological and climatic conditions with vegetation ranging from mangrove swamps to the southern coastal riverine areas through the rainforest of the midlands to the derived savannah in the northern part of the state. The southern zone supports fishing activities and the production of tree crops such as cocoa, rubber, oil - palm, cashew and forest trees like teak, gmeligna and indigenous tree species (ODSG 2005).

Data were collected from both primary and secondary sources. The primary data were collected from the three cocoa processing factories in Ondo State (i.e. Stanmark Cocoa Processing Company Limited, Ondo, Cocoa Products (Ile - Oluji) Limited, COOP Cocoa Products Limited, Akure), three recognized cocoa exporters with international affiliation, which are: Olam Nigeria Limited, Akure, Abiola Fantastic Nigeria Limited, Ile - Oluji and E D and F Man Nigeria Limited, Akure, and sixty cocoa marketers within the state, using structured questionnaire. The sixty cocoa marketers were randomly selected at an average of twenty marketers from each of three Local Government Areas (LGAs) of the state namely: Ondo East, Ile - Oluji / Oke - Igbo and Akure South. The three Local Government areas were purposively selected based on the fact that the cocoa processing factories are situated there.

The secondary data were collected from various publications of the Central Bank of Nigeria,

National Bureau of Statistics, Ondo State Ministry of Natural Resources and other relevant publications.

The data collected were analysed using descriptive statistics (frequency, percentages), Trend analysis, Profitability analysis, Correlation analysis and t - test. The Trend analysis was used to assess the contribution of cocoa export processing factories to the quality and quantity of cocoa beans exported from Nigeria.

The Trend analysis is given implicitly as:

$$\text{Log}_e Q = \text{Log}_e a + bt$$

where Q = Output of cocoa processing factories

t = time variable

a and b = parameters to be estimated

e = Euler's exponential constant with a value of 2.71828

The profitability analysis is specified as:

$$\pi = \text{TR} - \text{TC}$$

Where  $\pi$  = Profit

TR = Total Revenue

TC = Total Cost

Correlation coefficient measures the joint relationship between two variables. The value that correlation coefficient may assume varies from -1 to +1 and it is usually denoted by r. When r is negative, it means variables move in opposite direction but when r is positive, it means variables move in the same direction, either there is an increase or a decrease. When r is zero, then there is no correlation between variables. The Correlation coefficient equation is as given below:

$$r = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2]} \times \sqrt{[n\sum Y^2 - (\sum Y)^2]}}$$

where n = number of cocoa processing factories

X = processing capacity of plant

Y = output of cocoa processing factories.

T - Statistic was also used. It is expressed as:

$$T = \frac{x - \bar{x}}{\sqrt{s}}$$

### 4. RESULTS AND DISCUSSION

The results and discussion are divided into five major sub-sections:

- 1 Views and opinions of the cocoa marketers
- 2 Operational activities of cocoa processing companies in Ondo State
- 3 Costs and Returns associated with cocoa processing
- 4 Correlation Analysis Results
- 5 t - test

As contained in Table 1, majority of the respondents (83percent) are aware of the Fiscal and Administrative incentives put in place by the Federal Government to boost cocoa exports. The incentive other than Export Processing Factory with the highest level of awareness is Export Expansion Grant as attested to by 52.33 percent of the respondents. The high level of awareness of the government incentives might not be unconnected with their high level of education (literacy level).

**Table 1: Distribution of cocoa marketers according to awareness of other government incentives to boost cocoa exports**

| <i>Other government incentives apart from cocoa export processing factory</i> | <i>Frequency</i> | <i>Percentage</i> |
|-------------------------------------------------------------------------------|------------------|-------------------|
| The new Manufacture - In - Bond Scheme                                        | 4                | 6.67              |
| Currency Retention Scheme                                                     | 4                | 6.67              |
| Buy Back Arrangements                                                         | 6                | 10.00             |
| Export Expansion Grant                                                        | 32               | 52.33             |
| Tax Holiday                                                                   | 4                | 6.67              |
| None                                                                          | 10               | 16.66             |
| Total                                                                         |                  | 100.00            |

Source: Field Survey 2009

Only 16percent of the respondents are not aware of the government incentives and their major reason is that the incentives are not directly targeted at them but at exporters and cocoa processors.

As contained in Table 2, the modal major effect of incentives granted by the Federal Government of Nigeria to Cocoa Export Processing Factories is "Better Performance" as attested to by 23.33 percent of the respondents. This is closely followed by "Creation of more job opportunities" as attested to by 21.6 percent of the respondents. However, it amounts to a total of thirty five percent (35%) on the overall of the respondents who contended that Enhanced efficiency in conjunction with other factors (such as Better performance, increased productivity, creation of more job opportunities) are part of the effects of government incentives to Cocoa Export Processing Factories. Also, a total of thirty percent (30%) of the respondents on the overall believed that increased productivity in conjunction with other effects is the result of government incentives.

As contained in Table 3, the modal single stated positive effect of Cocoa Export Process-

**Table 2: Distribution of cocoa marketers according to major effects of government incentives to cocoa export processing factories**

| <i>Major effects of government incentives</i>                                                                             | <i>Frequency</i> | <i>Percentage</i> |
|---------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|
| (i) Better performance of cocoa Export Processing Factories (EPFs)                                                        | 14               | 23.33             |
| (ii) Creation of more job opportunities                                                                                   | 13               | 21.67             |
| (iii) Enhanced efficiency                                                                                                 | 4                | 6.67              |
| (iv) Better performance of cocoa EPFs, Increased productivity and Enhanced efficiency                                     | 5                | 8.33              |
| (v) Better performance of cocoa EPFs and Enhanced efficiency                                                              | 5                | 8.33              |
| (vi) Better performance of cocoa EPFs, Increased productivity, Enhanced efficiency and Creation of more job opportunities | 7                | 11.67             |
| (vii) Increased productivity                                                                                              | 6                | 10.00             |
| (viii) Better performance of cocoa EPFs and Creation of more job opportunities                                            | 6                | 10.00             |
| Total                                                                                                                     | 60               | 100.00            |

Source: Field Survey 2009

ing Factories is increased cocoa production locally as attested to by 16.67 percent of the respondents. This is so because the Cocoa Export Processing Factories do procure raw cocoa beans both for processing for export and for local consumption. However, it amounts to a total of 56.67 percent on the overall of the respondents who believe that increased cocoa production in conjunction with more revenue to the farmers, and increased foreign earnings to the country serve as the positive effects of Cocoa Export Processing Factories on cocoa business in Nigeria.

Also, 13.33 percent of the respondents believed that improved quality of cocoa beans serve as a positive effect of Export Processing Factories on cocoa business. In addition, a total of forty percent (40%) of the respondents believed that Export Processing Factories have led to increased revenue to the farmers as well as increase in foreign earnings to the country.

As contained in Table 4, majority of the respondents (58.34%) were of the opinion that the composition of the management of Cocoa Export Processing Factories is good. This might be because all the departments of the factories are represented in their management team comprising of the Managing Director, General Manager (Finance), General Manager (Factory), Finance Manager, Administrative / Human Resources Manager, Logistic Manager, Senior Manufacturing Manager, Senior Engineering Manager and Senior Quality Control Manager.

**Table 3: Distribution of cocoa marketers according to the positive effects of cocoa export processing factories on cocoa business in Nigeria**

| <i>Positive effects of cocoa export processing factories</i>                                 | <i>Fre-quency</i> | <i>Percent-age</i> |
|----------------------------------------------------------------------------------------------|-------------------|--------------------|
| (i) Increased cocoa production                                                               | 10                | 16.67              |
| (ii) Increased cocoa production locally and more revenue to the farmers                      | 12                | 20.00              |
| (iii) Increased cocoa production locally and Increased foreign earnings to the country       | 12                | 20.00              |
| <i>(I) - (Iii) Represents Increase in Quantity of Cocoa Produced Sub - Total</i>             | <b>34</b>         | <b>56.67</b>       |
| (iv) Good quality cocoa beans exported to other countries                                    | 8                 | 13.33              |
| (v) Increased foreign exchange earnings for the country and more revenue for the farmers     | 12                | 20.00              |
| (vi) Poor quality cocoa beans processed by Export Processing Factories for local consumption | 6                 | 10.00              |
| Total                                                                                        | 60                | 100.00             |

Source: Field Survey 2009

However, 33.33 percent of the respondents complained that the management does not give the farmers and the marketers the desired recognition while 8 percent were indifferent.

**Table 4: Distribution of cocoa marketers according to their opinion about the composition of the management of cocoa export processing factories in Ondo State**

| <i>Opinion</i>                                            | <i>Frequency</i> | <i>Percent-age</i> |
|-----------------------------------------------------------|------------------|--------------------|
| Good                                                      | 35               | 58.34              |
| Do not give farmers and marketers the desired recognition | 20               | 33.33              |
| Indifferent                                               | 5                | 8.33               |
| Total                                                     | 60               | 100.00             |

Source: Field Survey 2009

As shown in Table 5, a major constraint in conjunction with others facing Cocoa Export Processing Factories is shortage of capital which represents the views of 63% of the respondents. Shortage of capital may also affect the capacity utilization of the processing plant. In fact, Table 9 also shows that eighty percent (80%) of the respondents (ii) – (v) believe that Cocoa Export processing Factories are operating below full capacity.

The operational activities of the functional and existing cocoa processing companies in Ondo State are as stated in Table 6

**Table 5: Distribution of cocoa marketers according to their views of major constraints facing cocoa export processing factories in Ondo State**

| <i>Major Constraints</i>                                                            | <i>Fre-quency</i> | <i>Percent-age</i> |
|-------------------------------------------------------------------------------------|-------------------|--------------------|
| (i) Shortage of capital                                                             | 10                | 16.67              |
| (ii) Shortage of capital, Use of obsolete equipment, Operating below full capacity  | 5                 | 8.33               |
| (iii) Shortage of capital, Operating below full capacity                            | 10                | 16.67              |
| (iv) Shortage of capital, Operating below full capacity, High cost of raw materials | 13                | 21.67              |
| <i>(i) - (iv) Represents Shortage of Capital Sub - Total</i>                        | <b>38</b>         | <b>63.34</b>       |
| (v) Operating below full capacity                                                   | 20                | 33.33              |
| (vi) use of obsolete equipment                                                      | 2                 | 3.33               |
| Total                                                                               | 60                | 100.00             |

Source: Field Survey 2009

As contained in Table 6, the three major cocoa processing companies in Ondo State are Olam Nigeria Limited, Akure (formerly Coop Cocoa), Stanmark Cocoa Processing Company Limited, Ondo and Cocoa Products (Ile - Oluji) Limited. Both Stanmark Cocoa Processing Company Limited and Olam Nigeria Limited benefit directly from Government incentives.

Formerly, Coop Cocoa was an Export Processing Factory up till 2004 before finally leasing the processing factory to Olam Nigeria Limited in 2005. Olam Nigeria Limited has a staff strength of one hundred and thirty (130) workers. The processing plant capacity is ten thousand (10,000) metric tonnes per year and it is currently running at full capacity. Olam Nigeria Limited was granted Export Expansion Grant (EEG) status in 2005. Olam - the parent company is a leading global Supply Chain Manager and processor of agricultural products and food ingredients ranging from edible nuts like cashew, sesame and spices to food staples and packaged foods like rice, sugar; to confectionery and beverage like coffee and cocoa, as well as industrial raw materials like cotton. Olam has over twenty years of experience in the global market and at present operates business in about sixty four countries of the world. In spite of the current turbulent and precarious business environment in the country, Olam Nigeria Limited can afford to survive on the profit of it's parent company in the mean time.

Stanmark Cocoa Processing Company Limited, Ondo was established in 1991, commenced

**Table 6: Operational activities of cocoa processing companies in Ondo State**

|                                                       | <i>Olam Nig. Ltd., (formerly Coop. Cocoa)</i>        | <i>Stanmark cocoa processing company ltd. Ondo</i>                                                                                                                             | <i>Cocoa products (ile - luji) ltd.</i>                                                                     |
|-------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <i>Date of Establishment</i>                          | 1990                                                 | 1991                                                                                                                                                                           | 1981                                                                                                        |
| <i>Commence-ment Date</i>                             | 1997; 2005 (lease)                                   | 1993                                                                                                                                                                           | 1984; Feb 2006                                                                                              |
| <i>Major Owners</i>                                   | Coop Cocoa Ltd.                                      | Cadbury Nig. Plc. and Private Share holders / Individuals                                                                                                                      | Ondo State Government / Skye Bank Plc.                                                                      |
| <i>Labour :</i>                                       |                                                      |                                                                                                                                                                                |                                                                                                             |
| <i>Unskilled</i>                                      | 80                                                   | 50                                                                                                                                                                             | 46                                                                                                          |
| <i>Semi - skilled</i>                                 | 40                                                   | 30                                                                                                                                                                             | -                                                                                                           |
| <i>Skilled</i>                                        | 10                                                   | 145                                                                                                                                                                            | 145                                                                                                         |
| <i>Total No. of Staff</i>                             | 130                                                  | 225                                                                                                                                                                            | 191                                                                                                         |
| <i>Composition of Management Team</i>                 | (5) Not specified                                    | Managing Director, Gen. Mgr. (Finance), Gen. Mgr. (Factory), Finance Manager, Admin / HR Manager, Logistic Manager, Senior Mfg. Manger, Senior Eng. Manager, Senior QC Manger. | Managing Director, General Manager, Quality Control Assistant Manager, Production Manager, Factory Manager. |
| <i>Full Capacity of Plant</i>                         | 10,000 MT per annum                                  | 15,000 MT per annum                                                                                                                                                            | 30,000 MT per annum                                                                                         |
| <i>Present Level of Operation of Processing Plant</i> | At full capacity                                     | Below full capacity                                                                                                                                                            | Below full capacity                                                                                         |
| <i>Suppliers of Raw Cocoa Beans</i>                   | Cocoa Marketers (Store Keepers)                      | Cocoa Marketers and Exporters                                                                                                                                                  | Exporters - through third party processing                                                                  |
| <i>Products</i>                                       | Cocoa Butter, Cocoa Liquor, Cocoa Cake, Cocoa Powder | Cocoa Butter, Cocoa Liquor, Cocoa Powder                                                                                                                                       | Cocoa Butter, Cocoa Liquor, Cocoa Cake, Cocoa Powder                                                        |
| <i>Type of Processing</i>                             | Direct Processing for Export                         | Direct Processing for Export                                                                                                                                                   | Third Party Processing for export and also for local consumption                                            |

**Table 6: Contd.....**

|                                                                         | <i>Olam Nig. Ltd., (formerly Coop. Cocoa)</i>                                          | <i>Stanmark cocoa processing company ltd. Ondo</i>                           | <i>Cocoa products (ile - oluji) ltd.</i>                                                          |
|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <i>Perception of Specific Objectives of Export Processing Factories</i> | For profitability, adding value and to increase foreign exchange earnings 2005 to Date | Earn revenue with profit from value added to cocoa products sold 1998 - 2005 | Add value to raw cocoa beans before exporting, also to earn more foreign exchange for the country |
| <i>Period of Enjoyment of Government Incentive</i>                      |                                                                                        |                                                                              |                                                                                                   |
| <i>Type of Government Incentive and Value</i>                           | Export Expansion Grant (formerly enjoyed Export Processing Factory)                    | Export Processing Factory Status ₦110 million                                | -                                                                                                 |

production in 1993, and has total staff strength of two hundred and twenty-five (225) workers. It has a processing plant capacity of fifteen thousand (15,000) metric tonnes per year but is currently operating below full capacity. It is owned mainly by Cadbury Nigeria Limited and other individual shareholders. It was granted the Export Processing Factory incentive in 1998 with a total value of one hundred and ten million naira (₦110 million).

Cocoa Products Limited, Ile-Oluji was established in 1981, commenced production in 1984 and has been closed down on about two occasions under different managements before resuming operations under a new management in the year 2006. It is a Limited liability Company with staff strength of one hundred and ninety one (191) workers. At present, it is jointly owned by the Ondo State Government and Skye Bank Plc. It has a processing plant capacity of thirty thousand (30,000) metric tonnes per year but is currently operating below full capacity. The company is involved mainly in Third Party Processing for export as well as local consumption.

The Organizational Chart in Figure 1 shows the typical structure of a Cocoa Export Processing Factory.

The Managing Director of the company represents the Board of Directors of the company in the day to day running of the organization.



eters believed that efficiency in conjunction with other factors is increased through government incentives. Also, thirty percent (30%) of the respondents opined that increased productivity in conjunction with other factors are part of the effects of incentives granted by the Federal Government. Costs that could have been incurred by the processing factories on tax for instance would now be averted or saved. This will go a long way in reducing their cost of production.

**Table 8: Effects of incentives granted by the Federal Government to boost exports on the productivity and efficiency of cocoa export processing factories**

| <i>Olam Nigeria Limited</i>                                                                                                                                                   | <i>Stanmark Cocoa Processing Company Limited</i>                                                                             | <i>Cocoa Products (Ile - Oluji) Limited</i>                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Increase in working capital</li> <li>• Easy access to spare parts</li> <li>• Competitive-ness in the International market</li> </ul> | <ul style="list-style-type: none"> <li>• Reduces operational loss</li> <li>• Funding for plant capacity expansion</li> </ul> | <ul style="list-style-type: none"> <li>• Empowerment of existing and potential beneficiaries</li> </ul> |

Source: Field Survey 2009

Table 9 represents data from the three cocoa processing factories in Ondo State. It shows that the major constraint (in conjunction with other constraints) facing Cocoa Export Processing Factories (and indeed other processors) is shortage of capital. Table 9 also shows that sixty three percent (63%) of cocoa marketers opined that the major constraint facing Cocoa Export Processing Factories is shortage of capital. Other constraints facing Cocoa Export Processing Factories are: high cost of maintenance of machinery, poor infrastructure, and high cost of raw materials and low level of consumption of semi-processed cocoa. This variety of factors might

be the reason for the very few existing cocoa processing factories in Ondo State in particular, and in Nigeria as a whole.

**Table 9: Major constraints facing cocoa export processing factories in Ondo State**

| <i>Constraints</i>                                                                                                | <i>Frequency</i> | <i>percent age</i> |
|-------------------------------------------------------------------------------------------------------------------|------------------|--------------------|
| Shortage of capital, High cost of maintenance of machinery, Poor infrastructure.                                  | 1                | 33.33              |
| Shortage of capital, High cost of raw materials, High cost of maintenance of machinery, Poor infrastructure.      | 1                | 33.33              |
| Shortage of capital, High cost of raw materials, Poor infrastructure, Low level of local consumption of products. | 1                | 33.33              |

Source: Field Survey 2009

Table 10 gives a representation of the general trend of output of cocoa processing companies in Ondo State. As contained in Table 10, there is an undulation in the tonnage of cocoa butter, cocoa liquor and cocoa powder produced by cocoa processing companies over time.

Cocoa butter production increased from 2,900 metric tonnes in year 2003 to 4,620 metric tonnes in year 2008. Between years 2003 and 2004, annual production of cocoa butter increased by 13.79 percent, increased by 9.12 percent in 2005 increased by 22.47 percent in 2006, and then fell by - 26.08 percent in 2007 before increasing 41.72 percent in 2008.

The pattern of production of cocoa liquor differed a little bit from that of cocoa butter. Its production decreased from 1,300 metric tonnes in year 2003 to 380 tonnes in year 2004 representing - 70.77 percent decrease in quantity produced. Production then increased to 1,700 metric tonnes in year 2007 before decreasing again to 782 metric tonnes in year 2008 representing - 54 percent decrease in quantity produced.

**Table 10: Trend analysis of a typical export processing factory in Ondo State**

| <i>Year</i> | <i>Cocoa butter in metric tonnes</i> | <i>Cocoa liquor in metric tonnes</i> | <i>Cocoa powder in metric tonnes</i> | <i>Annual change in cocoa butter (%)</i> | <i>Annual change in cocoa liquor (%)</i> | <i>Annual change in cocoa powder (%)</i> |
|-------------|--------------------------------------|--------------------------------------|--------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|
| 2003        | 2,900                                | 1,300                                | 3,317                                | -                                        | -                                        | -                                        |
| 2004        | 3,300                                | 380                                  | 3,832                                | 13.79                                    | -70.77                                   | 15.53                                    |
| 2005        | 3,601                                | 450                                  | 4,280                                | 9.12                                     | 18.42                                    | 11.69                                    |
| 2006        | 4,410                                | 615                                  | 4,880                                | 22.47                                    | 36.67                                    | 14.02                                    |
| 2007        | 3,260                                | 1,700                                | 4,590                                | -26.08                                   | 176.42                                   | -5.94                                    |
| 2008        | 4,620                                | 782                                  | 5,430                                | 41.72                                    | -54.00                                   | 18.30                                    |

Source: Field Survey 2009

The production of cocoa powder increased from 3,317 metric tonnes in year 2003 to 4,880 metric tonnes in 2006 before declining to 4,590 metric tonnes in 2007 and then increasing again to 5,430 metric tonnes in year 2008. The recent increase represents an 18.30 percent rise in quantity produced.

The observed fluctuations in the output of cocoa processing companies are as a result of a combination of factors which include: instability in government policies, fluctuations in prices of raw cocoa beans, changes in demand and market mix by international client.

**Table 11: Cost and returns associated with cocoa processing**

| A. Cost                                                                                            |                         | ₦                          |
|----------------------------------------------------------------------------------------------------|-------------------------|----------------------------|
| Average labour cost per year                                                                       |                         | 32,000,000.00              |
| Average machinery cost per year                                                                    |                         | 2,500,000,000.00           |
| Average cost of raw materials per year                                                             |                         | 1,688,666,667.00           |
| Average cost of warehousing per year                                                               |                         | 30,333,333.33              |
| Average cost of transportation                                                                     |                         | 22,333,333.33              |
| Other costs (Miscellaneous expenses)                                                               |                         | 2,800,000.00               |
| Total Cost                                                                                         |                         | 4,276,127,333.6            |
| B. Revenue                                                                                         |                         |                            |
| Product                                                                                            | Output in metric tonnes | Price per metric tonne (₦) |
| Cocoa butter                                                                                       | 3,681                   | 676,000                    |
| Cocoa liquor                                                                                       | 861                     | 313,950                    |
| Cocoa cake                                                                                         | 540                     | 170,000                    |
| Cocoa powder                                                                                       | 4,388                   | 238,333                    |
| Total                                                                                              |                         | 3,896,272,154.00           |
| Profit = Total Revenue - Total Cost = ₦ 3,896,272,154.00 - ₦ 4,276,127,333.66 = - ₦ 379,855,179.66 |                         |                            |

The profitability analysis revealed that cocoa processing companies do operate at a loss with an average loss of ₦ 379,855,179.66 per annum. This might be partly due to the highly capital intensive nature of cocoa processing in terms of high cost of machinery, raw materials and warehousing. A closer look at the cost and returns revealed that the average machinery cost per year of ₦ 2.5billion is relatively high. This might be due to the fact that the machines are revalued at the current market price, and also because of the exchange rate since most of the machines are imported. In reality, based on participatory observation on the field, most of the cocoa processing companies usually incur losses for the first few years of operation, and then break even before eventually making profit (Table 11).

Table 12 shows the result of the Correlation Analysis carried out on the data collected from the field.

**Table 12: Correlation analysis result**

| Variables | O      | C      | P      | Q      | F      |
|-----------|--------|--------|--------|--------|--------|
| O         | 1.0000 | 0.8383 | 0.6412 | 0.5475 | 0.5191 |
| C         | 1.0000 | 0.7215 | 0.4074 | 0.4197 |        |
| P         |        |        | 1.0000 | 0.3648 | 0.7167 |
| Q         |        |        |        | 1.0000 | 0.5053 |
| F         |        |        |        |        | 1.0000 |

Source: Computer printout of Survey Analysis 2009

The variables are defined as:

O = Output of cocoa processing companies

C = Processing capacity of plant

P = Processing type (third party, for direct export, for local consumption)

Q = Quality of raw cocoa beans

F = Federal Government incentives

According to Table 12, the following correlation coefficients were obtained:

i.  $r(O,C) = 0.8383$

This represents a very strong and positive relationship between the output of cocoa processing companies and their processing capacity. As the capacity of their processing plant increases, the output of their products - cocoa butter, cocoa liquor, cocoa cake, and cocoa powder - also increases.

ii.  $r(O,P) = 0.6412$

This represents a strong and positive relationship between the output of cocoa processing companies and their processing type. The processing objective and type (third party, for direct export, for local consumption) determines their output. Those that produce for export may likely have greater output than those producing for local consumption and those that are into third party processing.

iii.  $r(O,Q) = 0.5475$

This value indicates that there is a fairly strong and positive relationship between the output of cocoa processing companies and the quality of raw cocoa beans processed. An increase in the quality of raw cocoa beans processed will lead to an increase in the output of the products.

iv.  $r(O,F) = 0.5191$

This value indicates that there is a fairly strong and positive relationship between the output of cocoa processing companies and Federal Government incentives to non - oil exports. With an increase in Federal Government incentives to cocoa processing companies, there is

likely to be a corresponding increase in their productivity.

v.  $r(C,P) = 0.7215$

This represents a very strong and positive relationship between the processing capacity of cocoa processing companies and the type of processing that they are involved in. Those companies that are into direct export of their products will have a bigger processing plant with higher capacity than those processing for local consumption and for third party processing.

vi.  $r(C,Q) = 0.4074$

This value indicates that there is a fairly strong and positive relationship between the processing capacity of the plant of cocoa processing companies and the quality of raw cocoa beans. With improved quality of raw cocoa beans, the efficiency of the processing plant will also improve.

vii.  $r(C,F) = 0.4197$

This value indicates that there is a fairly strong and positive relationship between processing capacity of cocoa processing plants and Federal Government incentives. With increased Federal Government incentives, more funds will be available to purchase more machinery and spare parts at reduced cost.

viii.  $r(P,Q) = 0.3648$

This rather low and positive correlation indicates a very weak but positive relationship between processing type and the quality of raw cocoa beans. Poor quality cocoa beans are processed mainly for local consumption while raw cocoa beans of good quality are processed mainly for exports.

ix.  $r(P,F) = 0.7167$

This is a very strong and positive relationship between processing type and Federal Government incentives. With increase Federal Government incentives, cocoa processing companies can improve from producing for local consumption or third party processing only to producing for direct export.

x.  $r(Q,F) = 0.5053$

This value indicates that there is a fairly strong and positive relationship between the quality of raw cocoa beans and Federal Government incentives. A trickle down effect is expected from available funds down to the farmers in terms of better prices, terms of payment, better organization of farmers' day programmes. This will ensure promptness and efficiency of both pre - harvest and post - harvest operations on cocoa beans, resulting in better quality of the raw cocoa beans.

## t - Test

The t - test was used to test Null hypotheses stated below:

$H_{01}$ : There is no significant difference between the income of Cocoa Processing Factories before and after the attainment of Export Processing Factory status.

$H_{02}$ : There is no significant difference between the output of Cocoa Processing Factories before and after the attainment of Export Processing Factory status.

From Table 13 based on the t - values, it could be seen that there is no significant difference in the income and output of the Cocoa Processing Factories before and after the attainment of Export Processing Factory status. This might be so because the impact of the Export Processing Factory incentive was not felt by the processing companies due to inflation, poor infrastructure, high cost of transportation, high cost of purchase of the machinery and spare parts that are not available locally. In addition, most of the Cocoa Processing companies do run at a loss for the first few years of operation because of the high capital intensive nature of the business.

**Table 13: Paired samples test**

| Pairs                                                                                                | t values | Standard error mean |
|------------------------------------------------------------------------------------------------------|----------|---------------------|
| 1st pair – Income of Cocoa Processing Factories before and after attaining Export Processing status. | - 1.400  | 0.8214              |
| 2 <sup>nd</sup> Pair – Output of Cocoa Processing Factories before and after attaining status        | 0.754    | 1.7519              |

Source: Computed from Field Data 2009

## CONCLUSION

The paper revealed among others that cocoa processing companies are confronted with a variety of challenges ranging from high cost of production including that of unpredictable and fluctuating prices of raw cocoa beans, inevitably high and additional cost of generators and diesel resulting from epileptic power supply to lack of funds when needed. This results in such companies operating below full capacity as attested to by eighty percent (80%) of the cocoa marketers.

The major constraint of Export Processing Factories in spite of the Government incentive

is that of inadequate operating capital as attested to by all the cocoa processing factories (100%) and corroborated by sixty three percent (63%) of the cocoa marketers. A large operating capital is necessary as cocoa production is seasonal, with the best quality available during the main crop season especially between October and December leading to great competition even with exporters and hence, high prices. The main crop season allows for massive purchase of best quality raw cocoa beans for storage / warehousing in preparation for the off - season.

Based on the data collected from the field, it appears that the three functional cocoa processing factories in Ondo State now prefer to engage in the newly re - introduced Export Expansion Grant which enjoys more Government support and is not restricted to processing factories only. This means that cocoa exporters especially those engaged in third party processing can equally benefit from the Government incentive. Cocoa processing factories now see the 'Export Processing Factory' Government incentive as a mere status symbol which is costly to maintain as a result of the need to own special number plates for their vehicles, provide for office accommodation and logistics for staff of the Federal Produce Department as well as those of Nigeria Export Processing Zones Authority (NEPZA).

In spite of the above challenges, the Export processing Factories have impacted positively in the cocoa business in the following areas:

- i Greater quantity of cocoa produced as attested to by sixty-seven percent (67%) of the cocoa processing factories and corroborated by fifty-seven percent (57%) of the marketers.
- ii Improved quality of raw cocoa beans as attested to by all the cocoa processing factories (100%) and corroborated by thirteen percent (13%) of the cocoa marketers.

In addition forty percent (40%) of the cocoa marketers believed that Export Processing Factories have led to increased revenue to the farmers as well as foreign exchange earnings to the country.

## RECOMMENDATIONS

The paper recommends among others that:

1. The Export Processing Factory incentive should be re - engineered by the Federal

Government to include the provision of long term, low interest rate loans to beneficiaries and made available when due, as well as regular credit grants to performing beneficiaries.

2. The Federal Government should liberalize the energy sector of the economy in order to make it more efficient and hence reduce the cost of production through reduction in cost of power supply.
3. Provision of incentives and farm inputs to cocoa farmers in order to increase their productivity and hence make available good quality cocoa beans at reasonable prices to cocoa Export Processing Factories.
4. Non-Governmental Organizations (NGOs) should be encouraged to engage in the funding of the cocoa industry.

The above recommendations will go a long way in making Cocoa Export Processing Factories more viable and profitable, reducing the level of unemployment and even encouraging greater local consumption of cocoa products by the populace. On the overall, the expected impact of the Federal Government incentives package to boost non - oil exports, particularly semi-processed cocoa export will become a reality.

The major conclusion that could be drawn from the findings of this study is that Cocoa Export Processing Factories are operating at a loss. This might be partly due to the highly capital intensive nature of cocoa processing in terms of high cost of machinery, raw materials, high interest rates on loans, as well as ware - housing. In reality, based on participatory observation on the field, most of the cocoa processing companies usually incur losses in their first few years of operation, and then break even before making profit.

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