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Capital Markets Financing for Agricultural Business Development in Tanzania; A Case of Cocoa Farming in Kyela and Rungwe Districts

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ABSTRACT

This study tries to explore the financing opportunity for smallholder cocoa farmers available at capital markets through enterprise growth market (EGM) financing window. The research findings from 122 cocoa farmers revealed that, in average a single cocoa farmer needed Tshs. 551,808.12 per acre as capital investment in a given season. At the time of data collection the cocoa prices at London and New York futures markets were Tshs. 6,266.75/Kg and Tshs. 6,148.62/Kg respectively at prevailed rates which were far above the production cost. In this case the envisaged gross margin was sufficient to service issuers’ interest of running their business lucratively and collectors’ interests of getting their investment needs met. The study considered the concessionary terms and conditions on EGM for small and medium enterprises (SMEs) to fit cocoa sector in the financial arrangement. Cocoa farmers could raise needed capital for cocoa businesses from the public who would later become shareholders to such businesses. With Bank of Tanzania (BOT) being the guarantor, the findings concluded that the financing arrangement was viable since the interests of issuers and collectors were protected. Capital markets financing could now become an alternative best solution for finance to smallholder farmers following poor accessibility of the same from existing sources especially financial institutions.

I. Introduction

Over a number of years the Government of Tanzania has been looking for effective solution to modernize and commercialize agricultural sector according to the Ministry of Agriculture Food and Cooperative Societies (MAFCS, 2009). Despite all the efforts, agricultural sector in the country was still performing poorly contrary to its vision of making the sector the lead one in driving the country’s economy as highlighted by MAFCS (2015).

One of the major constraints that held back the sector from performing at its utmost was poor access to finance by smallholder farmers. GM Business Development Consultants (2010); Miller, et al. (2013) reported that financial institutions refrained from investing in small scale agriculture because of the delinquency risk associated with the sector. Molela (2016) stated the factors that deprived farmers from securing external finance including lack of enough capital, poor collateral management, low business capacity, poor character and failure to meet the credit terms and conditions set by lenders. Under this situation, smallholder farmers in the country were perceived to be in short of credit worthiness by lenders as noted by Chijoroga (2007).
MAFCS (2009) mentioned capital market as one of the ways for boosting agricultural sector development in Tanzania through financing section. The document suggested the need to offer the concessionary terms to enable farmers meeting the registration criteria at Dar Es Salaam Stock Exchange (DSE). Capital Markets and Securities Authority (CMSA, 2015) insisted that EGM segment in particular was of paramount importance to enable smallholder farmers to raise external finance through capital markets. Through the equity market, farmers on one side would be able to raise funds from the public which would on the other side get the chance to invest in agricultural sector.

Farmers under consideration in this study were the cocoa growers in Tanzania. According to Nyomora et al. (2012) cocoa farming being one of the farming practices for export purpose was still underdeveloped since when it was introduced in the country in 1950’s. Molela (2016) mentioned the lack of external finance as the main constraint to cocoa farmers in affording the costs of adherence to Good Agricultural Practices (GAP). As the result, they ended up producing low quality crops at little amount that could not meet the buyers’ volume demand and quality specifications. Solving the financial needs of cocoa farmers through capital markets would capacitate them to produce more crops of high quality and hence winning better markets interdependently.

II. Literature Review

A. Capital Markets in Tanzania

Regulations of capital market in Tanzania lie under the mandate of Capital Markets and Securities Authority according to CMSA Act, 1994. DSE (2016) added that securities exchange is executed at DSE through which companies have to register. BOT Act, 2006 stipulated under section 41 of the mandate granted to Bank of Tanzania to oversee the financial condition of the country by controlling the financial markets of which capital markets is the component.

Immaturity of the capital markets in Tanzania was stated by Norman (2013) to be the principal reason for most eligible businesses not to register at DSE coupled with unwillingness to do so. Kapinga, et al. (2013) proposed that the country should embark into full liberalization of capital markets to boost the registration rate and capital deal flows. MAFCS (2009) supported this proposal by suggesting the concessionary terms to be offered which are affordable to small scale businesses especially those dealing with farming.
B. Agricultural Business

Endalamaw (2013); Baruah, (n.d.) defined agribusiness as the multi-sectorial economic activity that goes beyond just the cultivation and rearing of animals. According to their reports, the agribusiness involves other players apart from producers who supply the inputs, provide fund for value addition, process the produces and facilitate the transportation of output to final consumers. Bairwa, et al. (2014) referred the agribusiness to as the business involving activities from farm level, during production to consumption level, when the final product reaches the hands of the final consumers. Agricultural business development can be achieved through sound management in key areas including production, marketing, finance, supply chain and human resources according to Barnard et al. (2012).

C. Cocoa Farming in Tanzania

Cocoa in Tanzania was grown in three regions including Mbeya, Morogoro and Tanga where Kyela district alone accounted for more than 80% of total production in the country as reported by Kanyeka, et al. (2012). According to Tarimo, et al. (2012) the overall production in the country was very low due to poor agronomic practices during production. The report noted that, despite low production smallholder farmers had the chance to benefit from the unique features of cocoa from Tanzania especially in terms of flavor.

The vast majority of cocoa producers in Tanzania were smallholder farmers owning fields ranging from 1 to 3 acres as claimed by Kalimang’asi et al. (2014). TechnoServe (2015) added that these farmers used to use poor technology in production hence resulted into low yield and poor quality crop. Molela (2016); MAFCS (2015) stressed poor access to finance as being the major constrain where cocoa farmers failed to meet buyers demand in terms of quantity and quality.

D. Challenges of Access to Finance by Smallholder Farmers

Inability to meet the market demand was stated by Markelova et al. (2009) as the major reason behind the constraints in accessing the finance by smallholder farmers. The report further suggested the collective marketing as the solution to farmers in meeting the buyers’ demand at low costs. However, having the reliable markets and accessing the finance were the two interdependent variables that were of paramount importance to agricultural development in the country. Although Zook et al. (2013) considered banks to be the major players in financing the agricultural sector including smallholder farmers but they could meet the demand by 3% only. Miller & Jones (2010) and Freeman (2015) on the other hand considered the perception of financial institutions towards agriculture as the costly and risky sector to lend made them unwilling to extend credits to farmers especially smallholders.
Agar and Dougherty (2011); Development International Desjardins (DID, 2010) pointed out that, financial institutions which should have played a significant role in rural finance tended to concentrate in urban areas where they were misled by the misconception of a close link between poverty and repayment status. However the reports accentuated the need for innovation in agricultural lending products to better suit the need for rural finance. This point was supported by AZMJ (2011) which suggested the introduction of tailor made financial products that could boost the income of smallholder farmers hence ensuring the repayment. Shinozaki (2014) concluded by suggesting the need to have diversified sources of finance to SMEs beyond just the conventional banks hence capital markets financing came into play.

E. Enterprise Growth Market (EGM) in Tanzania

CMSA (2015) defined EGM as the newly introduced capital market segment to cater the capital needs for SMEs and start-ups businesses. The guide stated further that the poor performance by SMEs and failure to start lucrative business by new ventures were attributed to poor access to capital. As noted by Nairobi Stock Exchange Limited (NSE, 2013) in its press release, through growth market enterprise segments (GMES) small and medium businesses enjoy the fund liquidity facilitated by capital market authorities.

DSE (2016) through its publications communicated the criteria for SMEs including those in agricultural sector to list at DSE. The press informed the public at large that special windows had been opened at different financial institutions to facilitate the exercise where BOT is the overall regulator.

Development Partners Group Tanzania (DPG, 2016) reported that BOT acts as the guarantor to issued fund so as to safeguard the interest of both issuers and collectors. The report stressed the need to have guarantor since smallholder farmers do not have supporting collateral to qualify for direct lending. FAO (2013) defined the accountability of the guarantor as to compensate the lender should the borrower default.

III. Research Methodology

A. Research Technique

Quantitative research technique was used in the exercise of data collection and later-on on research analysis. This approach was preferred to qualitative technique because most of the findings were reported in quantitative manner supported by qualitative analysis.
B. Research Area

Data collection on the side of farmers was done in Tanzania to cocoa farmers in Kyela and Rungwe districts in Mbeya region. These districts were where cocoa was grown in abundance in Tanzania. Collecting data from these areas about cocoa explored the cocoa farming in Tanzania as a whole.

Likewise, data collection on the side of capital markets was based on secondary sources. DSE was the sole capital market facilitator in Tanzania. On the other hand CMSA was the regulator of stock exchange businesses in Tanzania along with BOT as the overall controller.

C. Sample Size

Primary data was collected from 122 cocoa farmers in the form of interview, filling questionnaires and observations. These farmers were all sampled from the already formed farmer business groups (FBGs).

D. Sampling Techniques

Different means of data collection were employed to obtain primary data as the supplement to secondary data. Empirical data was collected from target respondents through observational means. Target areas for observational exercise were selected based on judgmental sampling technique. This technique was effective so as to gather relevant information for post-harvest processing from right places.

E. Data Analysis

Data analysis was performed using SPSS and Excel. The exercise involved data processing and interpretation to suit the hypothesis set forth before.

IV. Research Findings

A. Cocoa Production Cost

Total cost incurred prior to selling was subdivided into two components including production cost with harvesting inclusive and post-harvest processing cost. Production cost involved a number of activities prior to harvesting which include nursery establishment, nursery management, farm preparation, transplanting, soil management, weeding, disease control, compost making, mulching and pruning.

Likewise post-harvest processing included such activities as fermentation, drying and transporting to buyer. All these activities in aggregate are performed throughout the year i.e. from August to September of the following year.
Table 1: Cocoa Production Cost Per farmer

<table>
<thead>
<tr>
<th>Activity</th>
<th>Period</th>
<th>Total acreage</th>
<th>Total cost</th>
<th>Cost per farmer</th>
<th>Cost percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transplanting of seedlings</td>
<td>December - March</td>
<td>113.00</td>
<td>13,810,000.00</td>
<td>113,196.72</td>
<td>14.20%</td>
</tr>
<tr>
<td>Disease control</td>
<td>January - June</td>
<td>4.00</td>
<td>1,000,000.00</td>
<td>8,196.72</td>
<td>1.03%</td>
</tr>
<tr>
<td>Soil management</td>
<td>January - March</td>
<td>213.20</td>
<td>16,370,000.00</td>
<td>134,180.33</td>
<td>16.83%</td>
</tr>
<tr>
<td>Weeding</td>
<td>March</td>
<td>64.00</td>
<td>4,800,000.00</td>
<td>39,344.26</td>
<td>4.93%</td>
</tr>
<tr>
<td>Harvesting</td>
<td>March - September</td>
<td>89.00</td>
<td>14,800,000.00</td>
<td>121,311.48</td>
<td>15.22%</td>
</tr>
<tr>
<td>Compost making</td>
<td>April - June</td>
<td>168.20</td>
<td>8,630,000.00</td>
<td>70,737.70</td>
<td>8.87%</td>
</tr>
<tr>
<td>Mulching</td>
<td>June</td>
<td>227.20</td>
<td>8,202,000.00</td>
<td>67,229.51</td>
<td>8.43%</td>
</tr>
<tr>
<td>Nursery establishment</td>
<td>August</td>
<td>75.00</td>
<td>5,900,000.00</td>
<td>48,360.66</td>
<td>6.07%</td>
</tr>
<tr>
<td>Nursery management</td>
<td>August - December</td>
<td>65.00</td>
<td>11,010,000.00</td>
<td>90,245.90</td>
<td>11.32%</td>
</tr>
<tr>
<td>Pruning</td>
<td>September - December</td>
<td>34.00</td>
<td>650,000.00</td>
<td>5,327.87</td>
<td>0.67%</td>
</tr>
<tr>
<td>Farm preparation</td>
<td>October - November</td>
<td>103.00</td>
<td>12,100,000.00</td>
<td>99,180.33</td>
<td>12.44%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>227.20</strong></td>
<td><strong>97,272,000.00</strong></td>
<td><strong>797,311.48</strong></td>
<td><strong>100.00%</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Authors’ collected data

The table above shows in average a farmer incurred Tshs. 797,311.48 per acre to start a new cocoa field of 0.93 acre and maintain the old field of 0.73 acre hence incurred Tshs. 480,308.12 per acre.

**Nursery Establishment**

The exercise of nursery establishment is of paramount importance to prepare better place to grow cocoa seedlings. Based on the nature of cocoa farming, it is recommended to grow cocoa trees from seedlings instead of direct growth from seeds. The findings showed that this exercise is done in August when there is no rain.

By average a single farmer incurred Tshs. 48,360.66 to establish a good nursery which was 6.07% of the total cost of production per 0.61 acre. The cost covers labor charge of plot cleaning, compost making and soil leveling. According data collected a nursery of 0.61 acre was enough to produce seedlings that were transplanted to a plot of 0.93 acre.

**Nursery Management**

Nursery management is the following step after nursery establishment where seeds from selected cocoa pods are laid in the ground for germination. The findings revealed that this cost component mostly covers labor charges on laying seeds in the ground, mulching, watering and weeding carried out from August to December. This component was Tshs. 90,245.90 per 0.53 acre that accounted for 11.32% of the total cost.

**Pruning**

Pruning is necessary to remove contaminated pods to stop the spread of contagious diseases. The research findings revealed that it requires a trained individual to perform proper pruning since if improperly done it leads to buds ceasing
germination. Likewise, pruning is done to boost production as cocoa pods need enough air ventilation that can only be done by maintaining proper spacing and annual leaves pruning.

In average a farmer incurred Tshs. 5,327.87 which accounted for 0.67% of total cost to prune a cocoa field of 0.28 acre. The cost covers the exercise of removing contaminated pods by special pruning tools and unnecessary over grown leaves which cause heavy shades.

Farm Preparation

The exercise of preparing farms is done immediately after harvest in order to start a new season and it is normally done from October to November. The findings showed that a farmer needed Tshs. 99,180.33 to cover cost for farm preparation which accounted for 12.44% of total cost.

Transplanting of Seedlings

After a period of 3 months, it is recommended to transplant the seedlings to cocoa field which was 0.93 acre in average. Depending on the period where seeds are laid in the ground, the exercise of transplanting takes place from December to March. The findings revealed that it costed a farmer Tshs. 113,196.72 which accounted for 14.20% of the total cost. The cost covers such activities of tillage and transferring seedlings from nursery to designated plots.

Together with nursery establishment and maintenance, transplanting is necessary for the beginner as well as for those farmers expanding their production fields.

Soil Management

In order to control soil erosion which is harmful to cocoa trees contour plowing and terrace farming are inevitable. The findings through observational means revealed that, the common practice of soil erosion control involved mulching. All these means of soil control costed a farmer Tshs. 134,180.33 per 1.75 acres of land. The exercise cuts across for both the old field with already grown up trees and newly established field where transplanting was to be done.

Weeding

The weeding exercise that is exclusive to activities performed during nursery management is mostly carried in March. Apart from removing unwanted plants that compete for food and water with cocoa trees, weeding is important to clean the ground on which cocoa pods fall. The research findings showed that Tshs. 39,344.26 which was 4.93% of the total cost was needed to weed a cocoa field of 0.52 acre.
**Harvesting**

After having transplanted to cocoa fields, the seedlings take up to 2 – 4 years to grow to the capacity of producing ripe cocoa pods ready for harvest. Cocoa is the perennial type of crop that produces over years commencing on its 2\textsuperscript{nd} to 4\textsuperscript{th} year before production starting deteriorating after its 10\textsuperscript{th} year tenure of production. Harvesting is done from March to September with peak production differing from location to location where in total it costed a farmer Tshs. 121,311.48 that accounted for 15.22\% of the total cost to harvest 0.73 acre of land.

TechnoServe (2015) suggested replacing poorly producing old trees with new trees to boost the production. The manual emphasized the importance to perform budding to old trees as an alternative means of rejuvenating old poorly producing trees.

**Compost Making**

The findings revealed that cocoa produced from Tanzania especially Kyela and Rungwe was organically grown to meet final consumers’ quality demand. The practice was supported by Craves et al. (2004) where they stated that products from organically grown crops were more demanded by consumers because of fewer or no chemicals applied during production and the practice likewise preferred by farmers themselves because of being less expensive.

To coincide with the rainy season, compost making and application is done from April to June for better performance where it costed a farmer Tshs. 70,737.70 that accounted for 8.87\% of the total cost. The cost covers the labor charges and transport of input materials to the field area.

**Mulching**

The findings discovered that mulches applied to cocoa fields serve two main purposes including water conservation as well as the component of manure for soil fertility. The exercise is mostly performed in June where a farmer incurred Tshs. 67,229.51 which accounted for 8.43\% of the total cost to apply mulches to a field of 1.86 acres. The cost mostly covers the transport to carry mulches to field and labor charge to spread them on the field.

**B. Post-harvest Processing Cost**

Post-harvest processing is necessary to convert wet cocoa within 10 days after harvest to dry cocoa before being ultimately sold to chocolate manufacturers. Molela (2016) reported that it was prohibited by Tanzanian government through Kyela and Rungwe local authorities to sell wet cocoa to middlemen. The report further discouraged the post-harvest processing to be done individually but rather by farmer groups as the means to reduce the processing cost and ultimately wins better market through collective approach.
**Fermentation**

Vera-Montenegro et al. (2014) emphasized the importance of fermentation and drying as the important processes to be performed to determine desired quality of cocoa final products. The fermentation period varies depending on cocoa species as reported by ICCO (2012) where TechnoServe (2015) suggested the number of days to be at least 6 for better quality.

Research findings revealed that based on the cost and amount of cocoa beans required to be processed at ago, mostly fermentation was performed collectively at FBGs. An FBG of average 30 members needed just a medium fermentation room with one section for the processing to take place and another section for storage after drying. The findings discovered that all the visited FBGs had the fermentation infrastructures in place including the fermentation centers and fermentation boxes.

For the case of fermentation, there was no cost to be incurred by a farmer as individual since it was absorbed by the respective FBG. To enjoy the fruits of collective fermentation, farmers were needed to participate in the exercise of fermentation on rotational basis.

**Drying**

ICCO (2012) suggested the fermented cocoa beans to be dried so as to reduce moisture content from 60% to 7.5% as recommended. The natural way of drying cocoa beans is to expose them on raised platform under the sun which is the recommended means although Musa (2012) suggested the artificial drying method of using the designated machine as an alternative means. TechnoServe (2015) suggested 5 days to dry cocoa beans using the natural means.

As it is for fermentation, the findings revealed that drying was performed collectively by farmers through their FBGs. All visited FBGs had drying infrastructures in place including raised platforms and drying mats. In this case there was no cost to be incurred by farmer as individual but rather they were required to attend duties related to drying at FBG centers on rotational basis.

**Bagging**

The ultimate post-harvest processing before delivery to buyer is packaging of dried seeds in appropriate sacks of capacity ranging from 60 to 70 Kgs that costed approximately Tshs. 5,500.00 per sack.

The findings discovered that in average a single acre of cocoa field yielded 1,776 Kgs of wet cocoa which when processed to dry cocoa the weight went down to 888 Kgs. With this case, a single farmer needed to contribute Tshs. 71,500.00 for at least 13 sacks per acre.
Combining the two cost components, the research findings concluded that a single farmer needed Tshs. 551,808.12 including Tshs. 480,308.12 and Tshs. 71,500.00 to meet the production cost and post-harvest processing cost respectively.

The pie chart below shows that of the total amount a farmer needed more fund for production than for post-harvest processing activities. This was only the case for collective processing where it was different for individual processing as more fund was needed to buy and install post-harvest processing plants.

**Figure I: A Pie Chart Showing the Percentage of Capital Needed per Acre**

![Pie chart](image.png)

Source: *Excel Drawing from Author’s Data*
V. Discussion and Recommendations

A. Financing Structure under Enterprise Growth Market

Figure II: Financing Structure under EGM

Source: Authors’ Own Financing Arrangement Proposal

Description of the Diagram Above:
1 – FBG registers at DSE.
2 – DSE announces shares to the public.
3 – Public buys shares of FBG through DSE by depositing money at designated Financial Institutions (FIs) where there are special financing window for EGM.
4 – DSE issues shares to the public whether at a primary or secondary market.
5 – FIs deliver money to FBG which is subject to prior appraisal agreed between the two.
6 – FBG delivers cocoa seeds to identified buyer who is the party of tripartite arrangement involving other parties such as FBG and FIs.
7 – Buyer makes payments to FBG through designated FIs.
8 – FBG communicates the financial performance to FIs and orders them to pay dividends to shareholders.
9 – FIs completes the cycle by paying dividends to shareholders based on CMSA terms and conditions on EGM.

B. Recommendations

Boosting the Production

Research findings discovered that cocoa farmer practices farming in average 1.66 acres of land including 0.93 acre of new field for expansion and 0.73 acre of field with already producing trees. Buyers’ demand had never been met something that signaled production below average. TechnoServe (2015) suggested a number of ways on boosting production including budding, re-planting and field expansion.

Meeting Buyers’ Quality Specifications

Buyers play major role in this arrangement because they are the ones who determine the ultimate ability of FBGs to service paid up capital. Dividends are supposed to be paid out of profit generated, hence the better the price the higher the dividends. Cocoa quality is the principal price driver followed by quantity, hence should be of high standards. Research study by Vera-Montenegro (2014) concluded that, cocoa quality did not depend on the technology used to process wet beans after harvest but rather on adhering to recommended standards for fermentation and drying. The number of days, temperature factor and processing centers are the determinant factors of cocoa quality.

Encouraging Collective Approaches

The proposed financing arrangement was suitable for farmers working as groups and not as individuals. It could accommodate individual farmers producing cocoa as individuals but should ultimately join forces as a group once after harvest. The main responsibilities of the group were to handle post-harvest processing together and collective marketing. Similarly, the issue of arranging financing with possible sources was under the mandate of the group finance committee.
Restructuring the Market

For the financing arrangement to be effective there must be a better market in terms of reliability and price. The findings revealed that, buyers especially local ones evaded from entering into legal contracts because of unreliability of seed stock delivery from FBGs as noted by Molela (2016). To develop confidence on seller-buyer relationship, it was imperative to get rid of illegal buyers as further suggested by report.

Standardizing the Business Terms

In order to avoid confusion and distrust from target shareholders, the business terms guiding issuers must be standardized. It came to researcher’s attention after found out that; it was illegal to trade wet cocoa in Kyela and Rungwe while it was legal to perform the similar business in kilombero. Molela (2016) provided that if the situation is left unattended in kilombero, it would distort the whole sector in the country where smallholder farmers would be deprived of access to external finance.

REFERENCES


