

# Analysing The Financing Gap in Tanzania's Large Scale Agro-Industrial Sector

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**Abstract:** Evidence of a deepening ‘financing gap’ amidst growing demand, and mutually inclusive strategies and policy interventions raises questions as to the causal factors limiting the supply of debt financing to Tanzania’s large scale agro-industries. The study therefore aimed at analysing the causal factors, limiting the supply of debt financing. Employing both descriptive and exploratory research designs, it analysed the degree to which Tanzania’s large scale agro-industrial sector had the pre-requisites to qualify for financing; the preparedness of the banking system to meet such demand; and the adequacy of the existing policy environment in addressing the gap. The findings revealed despite an adequate creditworthiness profile amongst Tanzania’s large scale agro-industries the country’s banking system was yet to adjust to meet the unique financing needs.

**Keywords:** agro-industry, large scale agro-industry, financing gap, demand, supply.

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## I. INTRODUCTION

### A. Research Context and Problem

Amidst global emphasis on value addition, and large-scale, export-oriented industrial production, agro-industry is critical to fast tracking the industrialization agenda, and enhancing export performance, food safety quality, and economic development (FAO,1997). A “subset of manufacturing that processes raw materials and intermediate products derived from the agricultural sector”, global estimates place its share of GDP at 22% in agrarian economies, 32% in transforming economies, and 27% in urbanized economies (FAO,1997; Wilkinson & Rocha, 2008).

In Tanzania, - with an estimated population of 53.5 million; a GDP of US\$45.6 billion; 44 million hectares of arable land and manufacturing value added and exports worth US\$ 2,718 and 2,376 million, respectively, - agro-industry accounts for 70% of all industrial production and 55% of total formal manufacturing output (CIA,2011; Page, 2016). From the point of view of policy analysis, a set of mutually inclusive strategies set the agenda for large-scale agro-industrial led development in Tanzania. These are: -the National Strategy for Growth and Poverty, and the ‘Kilimo Kwanza’, Big Results Now, and Rapid Industrialization strategies– accelerated by the establishment and promotion of large-scale, export-oriented, agro-led industries (UNIDO, 2012).

Despite its critical role, and existing policy interventions, the agro-value chain and by association, the agro-industrial subsector remains largely undercapitalized (Momagri, 2017). This is amidst the lack of a sustainable supply of specialized and targeted short, medium and long term concessionary funds from banks (World Bank, 2015; Wangwe & Rweyemamu, 2004). In Tanzania, lending to the entirety of the manufacturing sector, of which agro-industry is only a fraction, accounts for only 11% of bank loan portfolios as compared to 13% to the service sector, 18% to personal loans, and 20% to trade. (BOT, 2015; IFC, 2013; Mančka 2010; Masare, 2015). The bank loan portfolio allocation to manufacturing as compared to GDP share contribution- thus points to the lack of a sustainable supply of medium and long term concessionary funds for agro-led industrial development in the country (BOT, 2015).

Further amidst limited supply, the demand for targeted agro-value chain financing, continues to grow. Estimates place these financing needs, in the years ranging from 2006 to 2050, at US\$9.2 trillion globally, and US\$940 billion within sub-Saharan Africa. In Africa, approximately 66% of these needs will be required for agro-industries’ capital costs incurred in

“first stage processing (US\$207 billion), mechanization (US\$59 billion) and other power sources and equipment” worth US\$115 billion (African Union, et.al, 2010).

The evidence of a deepening and widening ‘financing gap’ within the agro-industrial sector, amidst growing demand, and the mutually inclusive strategies and policy interventions raises questions as to the causal factors, limiting the supply of debt financing to agro-industries and warrants a causal analysis of all key players within the agro value chain financing spectrum. These include banks, as credit suppliers, borrowers, as driving the demand for specialized agro-value chain financing products and policy makers as drivers of the industrialization agenda (USAID; 2012).

The study aim was therefore to analyse the causal factors, limiting the supply of debt financing to agro-industries from a threefold perspective. It analysed the degree to which Tanzania’s large scale agro-industrial sector had the pre-requisites to qualify for agro-industrial financing and the preparedness of the banking system to meet the demand for large scale agro-industry financing.

## **B. Literature Review**

1) *Defining “The Financing Gap”*: Ramlee & Berma, (2013) define the term “financing gap as a mismatch between the demand for, and supply of funding in what is referred to as a “funding lacuna.” In symptomatic terms, the gap is characteristic of either weak demand for financing, or limited supply of such funds. As such, where potential borrowers are abundant and financing to them unavailable; and, where lenders are risk averse and unwilling to issue financing due to what they perceive as “lack of qualified demand”, a gap exists (Ramlee & Berma, 2013). Further, where lenders offer credit at unreasonable interest rates, -due to agency problems, asymmetric information, adverse credit selection and monitoring difficulties- a gap exists as borrowers’ access to credit is limited (OECD, 2006).

## **C. Theoretical Framework**

1) *Credit Rationing Theory*: Stiglitz & Weiss’ (1981) and Jaffe & Russell’s (1976) credit rationing theory has as its conceptual foundation the credit rationing concept. The concept refers to a condition in which banks either lend less than demanded, or choose to withhold credit altogether resulting in a disequilibrium between supply of funds and demand at quoted contract terms, with demand exceeding supply (Jaffee, 1989). Fundamental to the theory is the assumption of asymmetric information between the borrower and lender, - in favor of the borrower- which exposes banks to credit risk arising from adverse selection, or moral hazard. Amidst information asymmetry, adverse selection, as an ex-ante risk occurs when a bank unknowingly issues credit to high-risk, low-credibility borrowers, while moral hazard, as an ex-post risk occurs where, borrowers, unbeknownst to the bank, mismanage already issued credit (Ata, et.al 2015).

Thus to manage the credit risk, the theory postulates that rational profit maximizing banks limit credit to the riskiest borrowers (Chmura, 1993). Banks employ this strategy to an extent, through pegging premium interest rates and collateral terms to loans issued to high risk borrowers up to a maximum rate, beyond which the incentive to lend diminishes as the probable losses from default risk exceed the returns expected from increased interest rates. (Chmura, 1993; Jaffee, 1989; Malhotra, 2014). Thus the theory assumes a parabolic relationship between expected return from loans, and interest rates

In relation to the study, the credit rationing theory thus attributes credit rationing behaviour to what banks perceive as “lack of qualified demand” as per quantitative and qualitative borrower risk assessments (Ramlee & Berma, 2013). Borrowers’ socio-demographic characteristics, loan contract terms; loan parameters and purpose; and contract performance characteristics all contribute to the aggregate borrower risk assessment profile (Ozhegov, 2013).

2) *The Modern Portfolio Theory*: Markowitz’ (1959), Modern Portfolio Theory (MPT) as applied to banking explains the dynamics of the risk-return trade-off in bank loan portfolio determination and the level of sectorial diversification in lending (Gollinger & Morgan, 1993; Markowitz, 1952). It assumes banks to be risk-averse entities that seek to maximize returns while minimizing risk exposure through loan portfolio diversification by industry and loan maturity dates (Centre for Financial Training, 2010). MPT assumes loan portfolio diversification to be the output of a borrower risk assessment, using historical data as an indicator of expected future returns, and optimal credit distribution based on the weighted sectorial allocation that results in the highest aggregate expected return (Koch, 2017). Thus, as per MPT’s postulations, to limit exposure to credit risk arising from sectorial volatility- as an indicator of default risk, and to lower total variance, banks engineer their portfolios such that the weighted collection of issued loans is concentrated and skewed in favour of high-return low-risk sectors and limited within “volatile” sectors (Kazan & Uludağ, 2014; Csongor & Curtis, 2005). Sectorial volatility indicators include sectorial vulnerability to sudden macro-economic changes and economic downturns, a high degree of sectorial reliance on government support and concessions, and exposure to a highly competitive

industry environment. High-return low risk sectors- which receive lending priority- include multi-sector conglomerates, reputable business brands and core industries such as trade (Ciby, 2006).

MTP thus sheds light into the relationship between bank loan portfolio decisions and sectorial allocation as well as credit concentration or lack thereof in different sectors. In relation to agro-value chain financing, it provides a plausible hypothesis for bank aversion to lending to a sector widely considered risky and thus underpins the supply-side analysis of the agro-industry financing gap (Ciby, 2006).

## **E. Materials and Methods**

The study employed both descriptive and exploratory research designs.

In line with the three research objectives two key populations were targeted. The first group comprised of large-scale agro-industries operating within Tanzania, targeted for a demand side constraint analysis. These included industries employing over 100 persons, and with an initial capital outlay of over TZs. 800 million, engaged in the processing of: - food and beverages, paper and paper products, wood and wood products, textiles, wearing apparel, furniture, tobacco, rubber products, footwear and leather and leather products (URT, 2003). The second group comprised of banks targeted for a supply- side constraint analysis. These included the 41 commercial, banks operating within Tanzania. Non-probabilistic sampling techniques were used both in determining the sample size, and the sample selection methodology. Data was collected from both primary and secondary data sources. Secondary data was collected through an in-depth and comprehensive desk research process. Primary data from agro-industries was collected through a highly structured researcher administered questionnaire. Primary data was collected through field research as per the target population through structured questionnaires, semi structured questionnaires and one on one expert interviews.

## **II. RESULTS & DISCUSSION**

### **A. Demand for Large-Scale Agro-Industrial Financing**

The analysis addressed two fundamental issues on the basis of the definition of demand as the “willingness and ability” to take up short, medium and long term financing (Patel, 2014). The first was the depth of large scale agro-industrialists’ appetite for short, medium and long term financing. The second was the adequacy of their ability to service debt financing instruments if granted as measured through a creditworthiness assessment. Findings from a highly structured questionnaire administered within the finance and accounting units of large scale agro-industries formed the basis for the analysis

#### *1) Profile of Sampled Agro-Industries:*

All (100%, n=13) entities sampled were operating within the boarder umbrella of the agro-industrial subsector and were large scale in nature as measured by the volume of employees as being 100 and above. The majority (69%, n=9) were engaged in the manufacture of food and beverages, while thirty-one percent (31%, n=4) in that of textiles and wearing apparel. By ownership structure and legal status, the vast majority (69%, n=9) of sampled agro-industries were privately held companies; fifteen percent (15%, n=2) were publicly listed, and fifteen percent (15% n=2) were sole proprietorship entities, largely operating as family businesses. By current export activity, the majority (62%, n=8) were exporting a portion of their production output; thirty-one percent (31%, n=4) were not but planned to do so in the future, while eight percent (8%, n=1) only served the domestic market and had no future plans to venture into export. Thus, from the profile analysis, it was concluded that the vast majority of agro-industries operating within Tanzania are privately held companies engaged in the manufacture of food and beverages, and serving both domestic and export markets.

#### *2) Agro-Industrial Financing Needs Assessment*

To analyse “willingness” as a fundamental demand element, the study first assessed areas within agro-industries, requiring additional financing. This was denoted by ‘purpose’ in the questionnaire. The analysis, focused on capital expense items for “going concern” entities. From the findings, by order of importance and precedence, the sampled large scale agro-industries required funding for: plant, machinery and equipment (100%, n=13); property, land and buildings (92%, n=12); research and development (77%, n=10); inventory and working capital needs (54%, n=7) and for refinancing existing liabilities (23% n=3). Therefore, the bulk of the financing required by large scale agro-industries in Tanzania was for upgrading and modernizing production and processing plant machinery and equipment, investing in

property land and buildings as a production expansion strategy, and developing new products so as to diversify agro-industrial product offerings. These formed the key financing demand drivers.

*3) Agro-Industrial Capitalisation Strategy:*

By order of precedence, to meet their most pertinent financing needs, agro-industries intended to use internal equity (100%, n=13); external debt financing from banks (100%, n=13); government grants and subsidies availed to the agro-value chain (62%, n=8); and external equity in the form of joint venture capital (39%, n=5). Therefore, the bulk of the additional financing of large scale agro-industries in Tanzania would be met by using a mix of equity and debt. The majority were also open to taking advantage of existing or any future government grants and subsidies, especially given the renewed momentum, within the government in promoting agro-based industrialization. The findings thus provided evidence of the growing importance of and demand for debt financing from banks within the capitalization structures of large scale agro-industries.

*4) Agro-Industrial Appetite for Financing Instruments:*

By order of precedence, the demand for regular financing instruments was highest with the majority expressing an interest in obtaining term loans (100%, n=13), overdraft facilities (100%, n=13), credit lines (100%, n=13) and equipment finance (92%) and indirect financing instruments such as letters of credit as an (77%, n=10) and credit guarantees as government-facilitated financial enhancement (77%, n=10). However, there was little demand for factoring (46.2%, n=6) and equity and joint finance venture financing instruments (38%, n=5). Therefore, the financing needs assessment revealed Tanzania’s large scale agro-industries to largely require additional financing for plant, machinery, property land and buildings and R&D activities. Evidence however showed little appetite for additional finance for inventory and for refinancing existing debt. The findings revealed demand for regular finance instruments such as term loans, overdraft facilities, credit lines and equipment, assets and vehicle finance to be very high; demand for indirect secured transactions in the form of letters of credit to be high; demand for receivables finance in the form of factoring to be small but substantial, and demand for financial enhancements in the form of credit guarantees to be high.

*5) Agro-Industrial Creditworthiness Assessment:*

The second component of the two fundamental demand issues addressed by this empirical analysis was creditworthiness as measured by the ability of Tanzania’s large scale agro-industrialists to qualify for, and service the various financing instruments on offer by financial institutions. The assessment took into account the Basel Committee on Banking Supervision (BCBS) credit risk management principles that mandate banks to undertake a comprehensive borrower and counterparty credit risk assessment prior to making the lending decision (BCBS, 2000).

The assessment was through a researcher developed credit rating index, designed within the framework of 5Cs creditworthiness assessment model. The credit rating index comprised of 5 core variables, and was design was as follows:

- *Creditworthiness Variables:* The 5C creditworthiness assessment factors, being - character, capacity, capital, collateral and conditions served as the core variables, each weighed equally.
- *Creditworthiness Sub-Variables:* These comprised of creditworthiness sub variables in each of the 5 variables. The creditworthiness rating for each of the sub-variables was on a scale 1 to 5, with 1 being very low and 5 being very high. The questions in the questionnaire were designed either as having 5 variables, or a scale of 1-5 ranging from the least ideal to the most ideal, and coded as such for the sub-variable rating on a 5-point scale. The summation of the sub-variables in each variable added up to a sub weight creditworthiness core for each variable.

Table I below summarizes the creditworthiness assessment findings as per the index.

**TABLE I: CREDIT RATING INDEX AND AGGREGATED SCORES FOR LARGE SCALE AGRO-INDUSTRIES IN TANZANIA**

	Creditworthiness Variables & s Sub variable s	Creditworthiness Indicator Weights	Sub Variable Creditworthiness Rating: On Scale 1 to 5	Weighted Creditworthiness Score%
<b>1</b>	<b>CHARACTER</b>			
1.1	Age of firm	4.0%	4.5	3.6%
1.2	Size of firm	4.0%	2.9	2.3%
1.3	Management experience	4.0%	3.4	2.7%
1.4	Internal control policies	4.0%	3.0	2.4%
1.5	Financial Performance (Income per Annum)	4.0%	3.4	2.7%
	<b>Variable Weighted Score</b>	<b>20.0%</b>		<b>13.8%</b>

2	<b>CAPACITY</b>			
2.1	Debt management performance	6.7%	3.6	4.8%
2.2	Liquidity performance	6.7%	3.8	5.1%
2.3	Profitability performance	6.7%	2.9	3.9%
	<b>Variable Weighted Score</b>	<b>20.0%</b>		<b>13.8%</b>
3	<b>CAPITAL</b>			
3.1	Existence of land and buildings	5.0%	5.0	5.0%
3.2	Existence of Machinery and equipment	5.0%	5.0	5.0%
3.3	Existence of Motor vehicles	5.0%	5.0	5.0%
3.4	Existence of furniture and fixtures	5.0%	5.0	5.0%
	<b>Variable Weighted Score</b>	<b>20.0%</b>		<b>20.0%</b>
4	<b>COLLATERAL</b>			
4.1	Willingness to put up land and buildings as collateral	4.0%	5.0	4.0%
4.2	Willingness to put up Machinery and equipment as collateral	4.0%	3.5	2.8%
4.3	Willingness to put up Accounts receivables as collateral	4.0%	2.5	2.0%
4.4	Willingness to put up personal owner assets as collateral	4.0%	1.8	1.4%
4.5	Willingness to put up insurance cover as collateral	4.0%	1.8	1.4%
	<b>Variable Weighted Score</b>	<b>20.0%</b>		<b>11.6%</b>
5	<b>CONDITIONS</b>			
A:	<b>Industry Risks</b>			
1	Impact of stiff competition on business growth	2.0%	1.5	0.6%
1.1	Impact of limited export opportunities on business growth	2.0%	1.8	0.7%
1.2	Impact of fluctuating production costs on business growth	2.0%	1.7	0.7%
1.3	Impact of broken agro value-chains on business growth	2.0%	2.4	1.0%
1.4	Impact of seasonality of input supplies on business growth	2.0%	2.3	0.9%
B	<b>Location Risks</b>			
1.5	Impact business regulatory issues on business growth	2.0%	1.8	0.7%
1.6	Impact of unfavourable tax regimens business growth	2.0%	2.3	0.9%
1.7	Impact of exchange rate fluctuations business growth	2.0%	1.9	0.8%
1.8	Impact of poor infrastructure on business growth	2.0%	2.2	0.9%
1.9	Impact on licencing policies on business growth	2.0%	3.1	1.2%
	<b>Variable Weighted Score</b>	<b>20.0%</b>		<b>8.4%</b>
	<b>Weighted Average Creditworthiness Score</b>	<b>100.0%</b>		<b>67.6%</b>

The creditworthiness rating index computational formulas are summarized as below: -

• **Creditworthiness Weighting Formulas:**

$$\text{Variable Weights:} = \frac{\text{Number of Creditworthiness Variables}}{100\%} = \frac{5}{100\%} = 20\% \quad (1)$$

$$\text{Sub Variables Weights:} = \frac{\text{Variable Weight}}{\text{Number of Subvariables}} \% \quad (2)$$

• **Creditworthiness Score Formulas:**

$$\text{Sample Unit Sub Variable Rating:} = \text{Rating on a scale of 1-5 with 1 being very low and 5 very high creditworthiness rating} \quad (3)$$

$$\text{Aggregated Sub Variable Rating:} = \frac{1}{\text{sample size (n)}} \times \sum_{i=1}^n \text{Sample Unit Subvariable ratings} \quad (4)$$

$$\text{Sub Variable Weighted Score} = \frac{\text{Aggregated Sub Variable Rating}}{5} \times \text{Sub Variable Weight}\% \quad (5)$$

$$\text{Variable Weighted Score:} = \sum_{i=1}^n \text{Sub Variable Weighted Score} \quad (6)$$

$$\text{Weighted Average Creditworthiness Score:} = \sum_{i=1}^5 \text{Variable Weighted Score} \quad (7)$$

The findings as summarized in Table I above are presented in detail as below: -

**Character Creditworthiness Rating:** The ‘character’ factor assessed the soundness and reputation of Tanzania’s large scale agro industries as an indicator of ability and current capacity to service external debt financing. The indicator sub-variables included firm age; size; management experience, internal control policies, and financial performance. The creditworthiness rating was on a scale of 1 to 5, with 1 being very low creditworthiness and 5 being “very high creditworthiness”. In aggregated terms, overall, the average character creditworthiness assessment of large scale agro-industries in Tanzania, in terms of strengths showed them to have vast operational experience and to be sustainable enterprises with many of them having been in business for over 10 years; and to have fairly adequate management experience and financial performance. There were also gaps in as far as setting up internal control systems and structures.

**Capacity Creditworthiness Rating:** The “Capacity” creditworthiness factor assessed the financial health of agro-industries as an indicator of ability to generate adequate cash flows to service any future external debt financing terms. The sub-variables included liquidity, debt management, and profitability performance as per subjective and qualitative financial



ratio analysis. The creditworthiness rating was on a scale of 1 to 5, with 1 being very low creditworthiness and 5 being “very high creditworthiness”. In aggregated terms, overall, the average capacity creditworthiness assessment of large scale agro-industries in Tanzania, in terms of strengths showed them to have adequate liquidity management skills, and an acceptable level of debt to equity within their capital structures to adequately service any external debt. In terms of gaps, the majority had significant operational expenses, limiting their level of retained earnings.

*Capital Creditworthiness Rating:* Capital creditworthiness factor assessed the adequacy of the agro-industries’ capital and asset composition to absorb risk and unexpected losses. All (100%, n=13) had land and buildings, machinery and equipment, and motor vehicles in their asset compositions. The findings thus showed large scale agro-industries to have adequate capital assets to serve as collateral guarantees and offset credit risk arising from borrower default. It also showed large scale agro-industries to have adequate equity contributions in capital assets to provide enough incentive for investors to avoid default and possible risk of liquidation by the bank on failure to service external debt obligations.

*Collateral Creditworthiness Rating:* Collateral was assessed from the perspective of the willingness of large scale agro-industries to put up their assets as collateral as a credit guarantees. The analysis showed them to be willing to put up land and buildings as collateral for loans but less willing to do so for accounts receivables, personal assets and insurance cover. Therefore, the diversity of collateral assets that agro-industries were willing to put up was limited.

*Conditions Creditworthiness Rating:* Conditions assessment was from the perspective of the large scale agro-industries sensitivity to economic and market developments as an indicator of risk profile and potential future exposures. The assessment took into account firm sensitivity to industry specific risks such as competition, access to export markets, cost of production volatility, broken agricultural value chains, and seasonality of input supply and output demand. It also took into account agro-industries’ sensitivity to macro-economic factors such as the regulatory environment, tax regiments, exchange rate fluctuations, ease of doing business, and enabling infrastructure.

*Aggregated Creditworthiness Rating for Large Scale Agro Industries:* Overall, out of 20%, the large agro-industries’ weighted score for character was 13.8%, capacity 13.8%, capital 20.0% collateral 11.6%, and conditions 8.4%. All 5C scores added up to an aggregated creditworthiness score of 67.6% out of the maximum possible score of 100%. Table II provide the risk classification index for interpreting the creditworthiness score.

TABLE II: CREDIT RISK CLASSIFICATION INDEX

No	Category	Index Range of Weighted Average Creditworthiness Score
1	Very high creditworthiness	81-100%
2	High creditworthiness	61-80%
3	Moderate creditworthiness	41-60%
4	Low creditworthiness	20-40%
5	Very low creditworthiness	< 20 %

Source: Researcher, 2018

The creditworthiness assessment as per the credit rating index showed large scale agro-industries in Tanzania to have a ‘high’ (60-80%) creditworthiness score with a score of 67.6% out of a maximum possible score of 100%. Therefore, Tanzania’s large scale also had the ability to service short, medium and long term financing as availed from banks.

### **B. Supply of Large-Scale Agro-Industry Financing**

The preparedness and readiness assessment of Tanzania’s banking systems to meet the demand for large scale agro-industrial financing in Tanzania was from several perspectives. The first included the availability within banks of specialized agro-value chain financing instruments, the distribution of bank loanable funds to the agro-industrial sector, the capacity and capability of banks in appraising agro-value chain financing requests, the transaction costs incurred by banks in managing agro-value chain financing facilities and the risk perception., by banks, of lending to the sub-sector. All (100%, n=10) sampled banks were commercial banks operating within Tanzania. By ownership structure, the majority (60%, n=6) were local banking institutions while forty percent (40%, n=4) were foreign banking institutions.

1) *The Product Diversity Factor:*

The product diversity factor was assessed with a view to analysing the supply and availability, to Tanzania's large scale agro-industries of both specialized agro-value chain financing and regular finance, receivables finance, physical assets and collateralization finance, risk mitigation and financial enhancements. The analysis assessed the presence, or lack thereof of specialized agro-value chain credit facilities on offer by Tanzania's commercial banks. Fifty percent (50%, n=5) of banks had a specialized agro-credit facility, while fifty percent (50%, n=5) did not. The specialized agro-value chain financing facilities on offer ranged from financing for farming, agro-processing, commodity trading, and purchase of relevant plant, machinery and equipment. They also included security and commodity based term loans. By allocation of specialized financing facilities to key value chain players, of the sampled banks, fifty percent (50%, n=5) had specialized agro-value chain financing for input farmers, thirty percent (30%, n=3) for post-production activities; thirty percent (30%, n=3) for agro industries; and twenty percent (20%, n=2) for agro exporters and wholesalers. By preferred size of agro-value chain entity for financing, forty percent (40%, n=4) of the sampled banks had in place products targeting SMEs; and thirty percent (30%, n=3) large scale enterprises.

By regular finance as necessary for the financing of all entities, including large scale agro industries, all sampled banks (100%, n=10) offered most of the regular finance products including term loans, overdraft facilities, and credit lines. However, only thirty percent (30%, n=3) offered equipment asset and vehicle finance products. By receivables finance products, the majority (60%, n=6) had within their product portfolio financing options for trade receivables finance factoring, with many offering letters of credit to facilitate export trade. Sixty percent (60%, n=6) also offered warehouse receipts, repos and financial leasing products. Credit guarantees were on offer by half (50%, n=5) of the sampled banks. The supply of forward contracts and futures was however limited with only forty percent (40%, n=4) of the banks offering the product. That of agricultural commodity exchanges was particularly significantly limited with only ten percent (10%, n=1) of the sampled banks offering the product.

The findings showed that banks within Tanzania were yet to diversify their product offerings to cater the unique financing needs of the agro-value chain in general, and agro-industries in particular. Further, only half had prioritized agro-value chain lending through offering specialized agro-value chain facilities, pointing to a gap. Further, even within banks with agro-value chain financing facilities, the focus was significantly on lending to input farming, rather than to agro-industries and to smaller enterprises rather to large enterprises. However, there was evidence that the country's banking system was well positioned to meet export financing needs such as letters of credit. From the analysis, it was also significant to note that the vast majority of banks in Tanzania lacked agricultural commodity exchanges.

2) *The Credit Distribution and Allocation Factor:*

The study also assessed the distribution and allocation of credit to the agro-industries as per the postulations of the credit rationing theory. The respondents were asked to rate the extent to which they agreed with the statement "loan allocation to the agro-value chain is smaller than to other industries". On a 5 point Likert scale, with, the majority (60%, n=6) strongly agreed with the statement. In assessing the preference, or lack thereof, of lending to agro-industries within the agro-value chain, respondents were asked the extent to which they agreed with the statement "in the agro-value chain, farmers are more likely to get their loans approved than agro-processing industries". The majority, (40% (n=4), strongly disagreed with the statement. In assessing the preference for lending to larger entities than SMEs, or lack thereof, the study asked respondents the extent to which they agreed with the statement "In terms of size, the bank lends higher volumes to SMEs than it does to large scale enterprises." The majority, (40%, n=4), agreed with the statement. The findings therefore showed that Tanzania's banks were averse to concentrating their loan portfolios in the agro-value chain, and when doing so, were more likely to provide short term financing to farmers vis-à-vis agro-processors within the agro-value chain; or to SMEs vis-à-vis large scale enterprises, given the smaller financing needs. This implied that based on bank loan portfolio allocation decisions, large scale agro-industries were at a disadvantage as they operated in a sector that banks were averse to concentrating their credit portfolios in, and possessed larger and longer term financing needs than smaller enterprises.

3) *The Capacity and Competency Factor:*

The study, in assessing the preparedness of Tanzania's banking system to meet large scale agro-industrial financing demand also analysed the capacity and competency factor. The assessment was from the perspective of the capacity of bank personnel to adequately and competently review and appraise loans from agro-industries. The study analysed the organizational bank structures in place to address the unique agro-value chain financing needs, the technical competency

of bank personnel in handling and appraising agro-industrial financing applications, and the level of investment in building the technical expertise and capacity through on-the-job trainings. In terms of organizational structural support for agro-industrial financing appeals handling, only thirty percent (30%, n=3) of the sampled banks had dedicated agri-business relationship managers, while seventy percent (70%, n=7) did not. These were involved in finance structuring and risk management for agro-value chain lending to farmers, agro processors and aggregators. Further only twenty percent (20%, n=2) had a dedicated agro-value chain finance unit or department while 80%, (n=8) did not. Only ten percent (10%, n=1) had an agricultural lending policy and strategy while 90% did not. This featured a specialized department established to manage agro-value chain financing applications as well as an agro-value chain research and advisory unit. Thus, as per the findings despite agriculture's priority status in the country, the banking system has done little to prioritize agro-value chain lending. This is reflected by the inadequate strategic efforts geared towards streamlining agro-value chain lending, and by extension, agro-industrial within banks.

The technical competency of banks to handle complex agro-value chain and by extension, agro-industrial financing applications was assessed through a series of statements rated on a 5 –point Likert scale with 1 being strongly disagree and 5 being strongly agree., the majority, 40%, (n=4) disagree with the statement “loan officers possess sufficient technical competency commensurate with the volume and complexity of agro-value chain applications”. The majority, (50%, n=5) either agreed or strongly agreed with the statement “the number of loan officers is sufficient to grant and administer financing to agro-value chain borrowers”. The majority, 60%, (n=6) either disagreed or strongly disagreed with the statement “sufficient resources have been spent in training loan officers to assess agro-value chain financing applications.” Thus, the findings provided evidence of inadequate human resource capacity, within banks, to handle the unique financing needs of agro-industry entities specifically, and agro-value chain entities in general.

Thus, in general, the capacity and competency factor analysis showed banks to have a strategic and policy gap in the prioritization of agro-value chain lending. The findings also revealed that banks were not investing enough in building the capacity and competency of their loan officers to provide advisory, appraisal, and relationship management services to agro-value chain players such as agro-industry. This meant that despite the unique nature and needs of the agro-value chain in general, and agro-industries in particular, banks within Tanzania were using a one size fits all approach and applying it to all sectors.

#### 4) *The Transaction Costs Factor*

The preparedness and willingness of Tanzania's banking system to meet the demand for large scale agro-industrial financing was also assessed from the perspective of transaction costs incurred by banks from lending to the agro-value chain, and by extension, agro-industries as compared to lending to other industries. The analysis was subjective and undertaken through a series of statements ranked by a 5-point Likert scale with 1 being strongly disagree and 5 being strongly agree. On the 5-point Likert scale, the majority (70%, n=7) strongly agreed with the statement “there is a high level of information asymmetry amongst agro-value chain borrowers”. The majority (70%, n=7) agreed with the statement “the bank incurs higher transaction costs in managing loans to the agro-value chain players”. The majority, (50%, n=5) agreed with the statement, “appraising agro-value chain loan applications is more complex than assessment for other industries.” Therefore, the findings provided evidence of the perception, within banks, of agro-value chain financing as being costly to the bank in terms of the amount of verifying borrower creditworthiness, arising from a vast amount of information asymmetry. Although agro-industries are manufacturing entities engaged in agro-value addition, the perception extends to them as a key component of the agro-value chain.

#### 5) *The Risk Perception Factor*

The preparedness and willingness of Tanzania's banking system to meet the financing needs of large scale agro-industries was also assessed from the perspective of the risk perception, and risk eversion or lack thereof towards lending to the agro-value chain and by extension, agro-industries. The assessment was from three perspectives as being lending terms, perceived agro-industry creditworthy, and ranking of risks likely to expose agro-industries to default risk. From the lending terms perspective, banks were asked, on a 5 point Likert scale with 1 being strongly disagree and 5 being strongly agree the extent to which they agreed with a series of statements. The majority fifty percent (50%, n=5) agreed that “loans to agro-industries are often short term and seldom medium and long term” while 20% strongly disagreed and 30% remained neutral. The majority 60%, n=6 also strongly agreed that their bank “seldom provides unsecured loans to the agro-industry. Collateral is mandatory”. 40%, n=4 disagreed with the statement. The majority, 70%, n=7, also either agreed or strongly agreed with the statement “agro-industrial loans attract higher collateral terms and requirements as



compared to loans to other industries.” 30%, n=3 either disagreed or strongly disagreed with the statement. From a risk of default perception perspective, on a 5 point Likert scale with 1 being very low and 5 being very high the majority (70%, n=7) felt that incidences of credit default in agro-value chain financing, and by extension agro-industry had been high or very high. 30% rated the incidences of default as “moderate.” On the same 5-point Likert scale, the majority (70%, n=7) also felt that the incidences of loan restructuring from the sector had also been high or very high, while 30% felt it had been moderate.

The banks were also asked to cite the extent to which pre-defined reasons were deemed as either adversely or otherwise contributing to the risk default probability of agro-industries as entities within the agro-value chain. Out of a set of 10 statements ranked on a five point Likert scale with 1 being strongly disagree and 5 being strongly agree, several issues were cited as being a reason for financing aversion by banks. These, by order of importance included: -variations in agro-input costs (90%); variation of agricultural commodity prices (90%); high incidences of default (80%); constantly fluctuating commodity prices (80%); poor financial records (70%); weak organizational (70%); inadequate value chain integration (70%); limited collateral (70%); low return on investment (70%); limited business skills (50%). Thus, banks in Tanzania, perceived agro-value chain and by extension agro-industries to have a higher risk of default due to sector specific risks including production, price and market risk.

In general, the findings on the risk perception factor showed that banks in Tanzania, either based on perception, or factual data, considered agro-value chain entities to be high risk, low return entities. This translated as higher interest rates pegged on agro-value chain lending as compared to lending to other industries. Thus, by implication, the findings showed that banks were averse to agro-value chain lending as it increased their exposure to credit risk. This was in addition to the entities themselves being exposed to risks specific to the agro-value chain with the top two being variations in agro-input costs; variation of agricultural commodity prices. Being a key component of the agro-value chain, large scale agro-industries, by association, suffered the same fate.

### III. CONCLUSION

Therefore, overall, it was concluded that although Tanzania’s large scale agro-industries had an adequate creditworthiness profile to access concessionary short, medium and long term financing the country’s banking system was yet to adjust to meet the unique financing needs. Thus, summed up in simple terms, the conclusion was that while large scale agro-industries are able and willing to obtain financing to expand and grow their operations, significant supply gaps exist.

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