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# The Impact of market, performance and business-specific factors on the efficiency of structured commodity trade finance.

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# THE IMPACT OF MARKET, PERFORMANCE AND BUSINESS-SPECIFIC FACTORS ON THE EFFICIENCY OF STRUCTURED COMMODITY TRADE FINANCE

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**ADMISSION NO. MBA/92826/16**

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## DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.



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## DEDICATION

To my family for their unwavering support.

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## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| CEA | Commodities Exchange Act |
| LNG | Liquefied Natural Gas |
| LPG | Liquefied Petroleum Gas |
| OTS | Open Tender System |
| SCF | Structured Commodity Financing |
| SHT | Société des Hydrocarbures du Tchad |

## DEFINITION OF KEY TERMS

1. Structured commodity finance – Sophisticated commodity-based financing technique, specifically designed for commodity producers and trading companies doing business in the developing markets.
2. Working Capital – Finances used in day-to-day business activities.

## ABSTRACT

Studies conducted by various researchers have found a link between the profitability of a firm and its working capital management policies as the policies have an impact on the cost of working capital. As part of working capital management, firms borrow to cover temporary gaps in cash. There are a number of banking products available to firms that wish to borrow. This study sought to assess the impact of Market Factors, Performance based Factors, and Business-specific Factors on the effectiveness of structured commodity trade finance. The population for this study was the 42 licensed banks in Kenya. The sample for the study was all the banks that are classified in the large peer group by the Central Bank of Kenya as well as global banks that are not in the large peer group but that operate in Kenya. Primary data was collected through questionnaires issued to bankers and borrowers. A correlation analysis model employing the use of Spearman's rank correlation model was used to analyse the data. Findings from this study indicate that there were no strong correlations between the dependent variable, effectiveness of the lending approach, and market factors, product specific factors, and customer and credit-specific factors. The only significant relationships observed were those between market factors and business-specific factors. The general inference, therefore, was that the various factors did not have an impact on the effectiveness of the lending approach.

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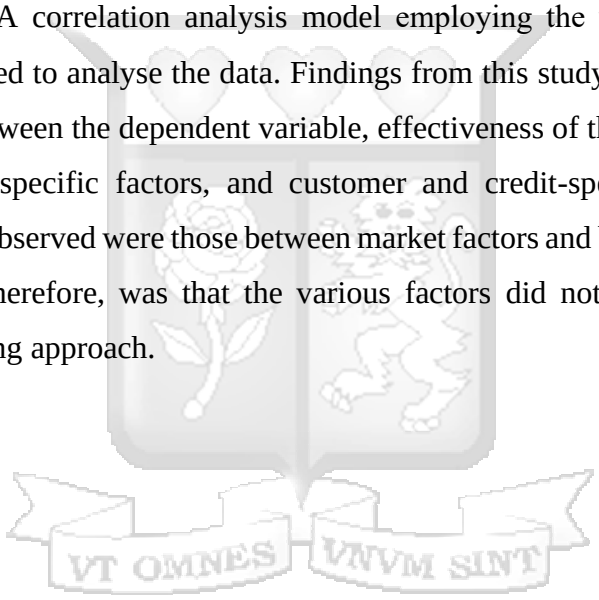

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

Commodities can be classified into primary commodities which are extracted directly from natural resources and secondary commodities which are a result of the processing of primary commodities into a form required to meet a specific need (Buchan & Errington, 2016). From a marketing perspective, a commodity is defined as a product that is not amenable to promotional activities and whose price compared to that of competitors' products stays in equilibrium in the long run as its market is not independent of its competitors (Gordon, Hannesson, & Kerr, 1999).

For purposes of this study the author uses the first definition which corresponds to the United States Commodities Exchange Act (CEA) definition of commodities as wheat, cotton, rice, corn, oats, barley, rye, flaxseed, grain sorghums, mill feeds, butter, eggs, Irish potatoes, wool, wool tops, fats and oils (including lard, tallow, cottonseed oil, peanut oil, soybean oil, and all other fats and oils), cottonseed meal, cottonseed, peanuts, soybeans, soybean meal, livestock, livestock products, and frozen concentrated orange juice, and all other goods and articles, except onions and motion picture box office receipts (or any index, measure, value, or data related to such receipts), and all services, rights, and interests (except motion picture box office receipts, or any index, measure, value or data related to such receipts) in which contracts for future delivery are presently or in the future dealt in (Commodity Exchange Act, 1936, sec. 1a).

Structured commodity finance is defined as a sophisticated commodity-based financing technique, specifically designed for commodity producers and trading companies doing business in the developing markets (Klaassens, 2005). It can also be defined as techniques offered by banks and other providers to support a supply chain (The Association of Corporate Treasurers and WWCP Limited, 2013). It helps participants in the commodity business e.g. producers, distributors, processors and physical traders in managing liquidity, increasing sales and mitigating risk.

Nearly all widely traded commodities qualify for structured commodity finance e.g. metals like copper, lead, aluminum, nickel, tin, zinc, iron & steel; energy sources like crude oil & refined products, liquefied natural gas (LNG), liquefied petroleum gas (LPG), petrochemicals, coal; soft commodities like grains, sugar, cocoa, coffee, soya, edible oils, rice (Sumitomo Mitsui Banking Corporation Europe Limited, 2013).

Structured commodity trade financing typically uses a borrowing base collateral structure. Borrowing base lines of credit allow a borrower to borrow the lesser of an absolute limit and a percentage of some specified asset e.g. accounts receivable, inventory (Flannery & Wang, 2011). The terms of agreement between financiers and recipients of credit in the structured commodity finance model are widely varied and dependent on the entities involved. In general, however, the model involves the securing of the commodity trade chain through shifting of risk from payment-based to performance-based. In practice the financier in collaboration with the borrower work together to ensure successful deployment of goods and the lender recuperates payments upon delivery to the intended party, from the off-taker at the point of payment. As an example of structured commodity financing agreements, Sitko and Jayne (2012). highlights a scenario in Africa where warehouses issue receipts to suppliers before delivery of goods and advance credit to the suppliers so as to facilitate delivery of the goods. Upon delivery, the issued receipts are preferentially offset before the suppliers are paid.

Many African countries including Kenya are dependent on primary commodity exports to sustain their economies (Deaton, 1999). In 2015, the leading source of foreign exchange revenue in Kenya was tea which earned KES 123 billion while coffee, another major source of foreign exchange revenue earned KES 21 billion in the same year (Kenya National Bureau of Statistics, 2016). On the other hand, Kenya spent KES 215 billion to import petroleum products for domestic and industrial use (Kenya National Bureau of Statistics, 2016). Other commodities that were imported during the year include plastics in primary and non-primary forms, medicinal and pharmaceutical products, wheat, organic and inorganic chemicals (Kenya National Bureau of Statistics, 2016).

Trading in the commodities mentioned above, both imports and exports created opportunities for structured commodity finance with Kenyan individuals or organizations acting as primary producers, processors, traders and holders of inventory (Sumitomo Mitsui Banking Corporation Europe Limited, 2013).

Structured commodity finance gained a bad reputation in Kenya due to the fuel shortage experienced by consumers in 2008 as a result of the Triton oil scandal where fraud was committed by some parties to the structured commodity finance transaction (Africa Centre for Open Governance, 2009). Further afield, the request by Société des Hydrocarbures du Tchad (SHT), Chad's national oil company, to restructure the extended credit facility arrangement reached earlier

with its syndicate of lenders has further reduced confidence in structured commodity finance (International Monetary Fund, 2015).

Access to structured commodity finance however remains essential in developing countries. Geman (2014) postulates the importance of commodity financing in the agricultural industry showing that following fluctuations in prices resulting in income volatility, the predominantly agriculture-centered industries on the African continent must look to nascent ways of financing that reduce overall cost of credit thereby increasing working capital – structured commodity finance therefore presents as a lucrative alternative to traditional high-interest lending.

### 1.1 Effectiveness of Structured Commodity Trade Finance

The hallmark of an effective structured commodity trade finance system is the mutual satisfaction of the client and the lender. Essentially, the primary aim of the lender (return of capital) should be aligned with that of the financed (profit following an investment). In this study, the efficiency of the lending approach is assessed on the basis of liquidity, cost of credit, increased debt-payment rates, and an increased customer base – metrics that address the interests of the lending and borrowing parties alike ( Paravisini, Rappoport, Schnabl, & Wolfenzon, 2015). Beneficial outcomes in assessing these sub-variables would entail sufficient liquidity for the businesses involved in borrowing funds, low cost of credit, increased debt repayment rates and an increase in the customer base serviced by lending institutions.

### 1.2 Market Factors

Market factors, as construed in the study, generally involve the macroeconomic and industry-specific factors that shape the business of firms that act as recipients in the structured commodity trade finance dyad. As Matthee and Heymans (2013) observe, in order to the ensure productivity in local markets and to engage in international business, firms intending to secure financing must address – in collaboration with the financers – market risks, such as price risk and exchange risk; performance risks, such as operation and supplier risk; and SME-specific risks, such as high competition. Turvey, Bogan, and Yu, (2012) further proposed a risk contingent credit approach that involves the factoring in of price fluctuations within the period of repayment of borrowed funds. In this study, market factors are assessed on the basis of exchange rates, competition, and inventory fluctuations (Matthee and Heymans (2013); Turvey, Bogan, and Yu (2012)).

### 1.3 Performance-based Factors

According to the Working Capital Management Theory (Gitman, 1997) the effectiveness of the management of a firm's capital is essential in determining the performance benefits accruing in the way of liquidity, solvency, efficiency, profitability, and shareholder wealth maximization. In a paper assessing structured commodity finance in the agricultural industry, Sitko and Jayne (2012) posit that such factors as non-compliance, limitations in attracting potential funders, conflict of interest among brokers, market manipulation and high fixed costs present as front and central hinderances to the success of the financing approach on the continent. Matthee and Heymans (2013) further observe that businesses intending to secure financing must address – in collaboration with the financers – among others, operational and supplier risk. In this study, performance-based factors are operationalized through the sub-variables conflict of interests, supply risk and operations risk (Matthee & Heymans, 2013; Sitko & Jayne, 2012)

### 1.4 Business-specific Factors

Business-specific factors speak to the characteristics of the business that are of interest to lenders. Essentially, the aspects under consideration related to the peculiarities of the business that shape the investment dynamics and thus have implications on the business' ability to repay funds. According to Ahn (2011), in considering lending, banks involved in international trade finance have a need to assess the credit worthiness of both the local borrower and the foreign trading partner as repayment of any trade financing provided depends on the performance of both parties. Wiltermuth (2011) highlights that regulations that affect particular businesses have significant effects on the credit assessment protocol of issuers of funds and thus would have implications on agreements drafted between the firms and the lending entities. In this study, business-specific factors are assessed on account of the sub-variables credit worthiness, regulation, terms of agreements, and enforcement (Ahn, 2011; Wiltermuth, 2011).

## 1.2 Statement of the Problem

Access to working capital financing remains a major challenge for many businesses in Kenya, especially small and micro enterprises (Bowen, Morara, & Mureithi, 2009). According to the Central Bank of Kenya Credit Survey for the fourth quarter of 2017, commercial banks reported

that interest rate capping which became effective in September 2016 has negatively affected their lending to SMEs due to the need to mitigate credit risk. Deloitte, in their Kenya Economic Outlook Report (2017), highlights that credit growth to the private sector had declined as a result of the interest rate cap.

From a borrower's viewpoint, structured financing is essential given the partnering between the financier and the financed in ensuring successful trade. This is particularly important given that the main advantage of structured commodity financing models is the transformation of risk from payment-based to performance-based aspects (Cohen & Ryvkin, 2014). Following this transformation, as Matthee and Heymans (2013) observe, the financier and financed can better address market risks, such as price risk and exchange risk; performance risks, such as operational and supplier risk; and business-specific risks, such as high competition.

Structured commodity finance with a borrowing base collateral structure has the potential to reduce the cost of consumer products manufactured using commodities like steel and palm oil due to the lower cost of working capital (2013). The use of a borrowing base makes the interest rate charged by the lender less sensitive to the borrowers overall creditworthiness (Flannery & Wang, 2011). Moody's Investor services, in their Money in the Bank report, notes that few types of debt offer lenders higher recovery rates than borrowing base facilities ("Moody's: Borrowing Base Facilities Offer Strong Recoveries in Default," 2013). Structured commodity trade finance with a borrowing base collateral structure therefore allows businesses to borrow at low interest rates while also allowing lenders to mitigate credit risk.

Few studies globally have been done on this product and none has been found that covers the Kenyan market (Flannery & Wang, 2011); particularly so from both the financier and financed perspectives. This study seeks to understand and add to the body of knowledge on structured commodity trade finance utilizing a borrowing base collateral structure from the supply side based on a survey of banks that offer this product. The impact of cheaper petroleum products, for example, would be felt in the entire economy as it is widely used in the transportation and distribution of consumer goods and the movement of labor. There is also potential to increase the earnings of farmers who produce soft commodities like maize, tea and coffee.

## 1.3 Research Objectives

This section provides an explanation of the purpose of this study. It serves as a guide around which literature and data – for the purpose of addressing the needs of the researcher – was reviewed and collected respectively.

### 1.3.1 General Objective

The main objective of the study is to assess the impact of market, performance and business-specific factors on the efficiency of structured commodity trade finance.

### 1.3.2 Specific Objectives

The specific objectives of the study are to:

1. To evaluate the relationship between market factors affecting structured commodity trade finance and the effectiveness of the lending approach.
2. To determine the relationship between performance-based affecting structured commodity trade finance and the effectiveness of the lending approach.
3. To assess the relationship between credit and business-specific factors affecting structured commodity trade finance and the effectiveness of the lending approach.

## 1.4 Research Questions

The following were the guiding questions:

1. What is the relationship between market factors affecting structured commodity trade finance and the effectiveness of the lending approach?
2. What is the relationship between performance-based factors affecting structured commodity trade finance and the effectiveness of the lending approach?
3. What is the relationship between business-specific factors affecting structured commodity trade finance and the effectiveness of the lending approach?

## 1.5 Significance of the Study

According to the working capital management theory the efficacy of working capital management has direct implications on the efficiency of a firm and its financial performance (Gitman, 1997; Brigham, Gapenski, Ehrhardt, 1999). Effective management of the factors that affect the performance of a business, through the structured commodity finance mechanism, would thus, according to the theory, be anticipated to result in favorable business outcomes (the efficiency of

the lending approach). This association is tested in the current study hence findings provided empirical evidence in support of or against this theory. To banks and borrowers, findings from the study shed light on the various factors that present a relationship with the perceived efficacy of the lending approach; this, particularly for bankers, allowing for streamlining of the lending approach. The study also seeks to contribute to the development of knowledge in this area in view of the government's efforts to deepen the financial sector in Kenya.

## 1.6 Scope of the Study

The study was restricted to the eight largest banks as listed in the Central Bank of Kenya classification of banks in their bank supervision report. Citibank N.A., Kenya branch was added to this sample because it is a branch of a global bank with a large balance sheet and its parent company Citigroup is widely involved in structured commodity trade finance in Africa and Asia (Scott, 2011). This is because structured commodity trade finance requires a large capital base as transactions tend to be of high value. The study also covered firms that participate in the commodities trade either as producers or users. These include oil marketing companies, grain millers, coffee roasters and tea processors.

# CHAPTER TWO: LITERATURE REVIEW

## 2.1 Introduction

This chapter seeks to review existing theories and empirical data on working capital management as well as structured commodity trade finance and borrowing base collateral structures developed over time through research by various scholars.

## 2.2 Theoretical Review of Literature

This section addresses the working capital management theory fronted in understanding the dynamics of structured commodity trade finance.

### 2.2.1 Working Capital Management Theory

The Theory of Working Capital management, first put forward by Gitman (1997), and later elaborated upon by Brigham, Gapenski and Ehrhard (1999) provides a description of the manner through which capital should be managed with the intention of beneficial performance in liquidity, solvency, efficiency, profitability, and shareholder wealth maximization. Among the precepts of the theory are the limitation of capital use per dollar of sale (Tully, 1994) and increasing liquidity through minimization of credit issued in addition to minimization of cash inventories (Martin, Petty, Keown, Scott, Scott, 1991). The theory is included in this study as the realization of benefits from investments made through structured commodity trade finance are particularly dependent on the management approaches employed in ensuring that the investments achieve anticipated financial returns for the repayment of the debt and profits for the business. Inefficiently managed working capital would result in a failure of the entire financing approach. Bems, Johnson, & Yi (2012, p 22) define trade finance as payment arrangements between buyers and sellers of goods. It can be bank intermediated whereby a bank facilitates transactions or non-bank whereby the buyer and the seller finance each other (Bems, Johnson, & Yi, 2012).

According to Bollard, Hunt and Hodgetts (2011) the financial system contributes to the wellbeing of the economy and society as a whole by providing payment and settlement systems, intermediating between those with excess funds and those with a shortage of funds and providing

products for use in risk management. Information asymmetry and the high cost of accessing information explains the existence of banks (Bollard, Hunt, & Hodgetts, 2011). Financing companies, in order to ensure recouping of funds must ensure that the capital management practices exercised by a firm are sufficient and effective.

Working capital management, which is the management of current assets and current liabilities, is critical for firms as it has a direct impact on a firm's profitability and liquidity (Mathuva, 2015). Businesses need to maintain liquidity in order to meet maturing obligations and for this reason, cash is considered to be a key indicator of the viability of a business (Padachi, 2006). The author further notes that working capital management is important especially for firms with limited access to long term capital markets as they have to rely on short term sources of finance from banks and trading partners. The source of working capital finance that is chosen by a firm has an impact on the firm's risk and return profile and should be carefully considered (Padachi, Howworth, & Narasimhan, 2012).

To reduce financing costs, firms can reduce the amount of investment that is tied up in current assets. Cash shortfalls or gaps, which are a measure of the length of time between incurring expenditure for purchase of raw materials and the receipt of cash on sale of the end products, may arise and these need to be covered by borrowing (Eljelly, 2004). The preferred method of covering cash shortfalls is short term bank credit (Daellenbach, 1974). A cash management policy that is tight and requires that little cash be held leads to a rise in interest rate and transaction costs incurred by a firm. Opportunity costs are incurred if the converse is true (Kytönen, 2018). Firms can use a line of credit as a cash reserve, however the firm has to pay interest on any drawdown under it (Ogden, Ogden, & Sundaram, n.d.).

### 2.3 Empirical Review

This section presents a discussion of literature pertaining to the variables under assessment in the study. The various sub-variables constituting the constructs and their details are presented herein.

### 2.3.1 Effectiveness of Structured Commodity Trade Finance

The Basel Committee on Banking Supervision (2004) defines trade finance as short term lending to finance reserves, inventories, or receivables of exchange-traded commodities, where the exposure will be repaid from the proceeds of the sale of the commodity and the borrower has no independent capacity to repay the exposure (2004). Typically, borrowers who use commodity finance structures do not have any other activities that would generate cash flow to liquidate the exposure (Paravisini, Rappoport, Schnabl, & Wolfenzon, 2015). The facilities are usually uncommitted, giving banks some relief in terms of cost of capital and allowing banks to charge lower pricing (Paravisini et al., 2015). Effective structured commodity trade finance thus allows for provision of resources for sufficient liquidity of firms anticipating profits following the maturity of investments (Paravisini et al., 2015).

Profitability is the rate of return on a firms investment and will be negatively affected by a high investment in current assets (Mathuva, 2015). The author adds that there is a need to balance between the need for liquidity and profitability. Efficient management of working capital is key to creating shareholder value (Phuong Dong, 2010); this view is in keeping with the working capital management theory. To effectively manage working capital, firms need to come up with objectives and assign responsibility (Pass & Pike, 1987). Cash management is one of the tasks under working capital management. Structured commodity trade finance allows for provision for resources towards sustaining the liquidity of a firm despite the lack of ongoing profit generating activities (Sitko, & Jayne, 2012).

Lines of credit provided by banks or finance companies are a critical source of liquidity in the economy and a key component of corporate liquidity management (Sufi, 2009). Scarcity and high cost of credit increases the variable cost of producing goods for export and therefore reduces exports to a given destination for a given supplier (Paravisini et al., 2015). Paravisini et al (2015) further argue that availability and the cost of credit do not have any effect on the entry or exit of firms into an industry in the short term. Del Prete & Federico (2014) argue that while disruptions in the supply of trade finance have a negative effect on exporters, the effect is very mild compared to that on other forms of credit. This is attributed to the short term, self-liquidating nature of commodity trade finance (Prete & Federico, 2014).

In assessing the various structured commodity trade finance models available across industries (Sitko and Jayne (2012) highlights that in the African set-up a popularized structured commodity trade finance approach involves the issuance of receipts by warehouses to suppliers after which the suppliers are credited with the necessary funds to deliver their products. The receipts are then held as collateral with part of the delivered commodities used to offset the receipted credit. The approach, in effect, limits the role of banking institutions to that of transactions as the lending role is housed by the warehousing entity.

This novel way of credit issuance emphasizes the benefits of structured commodity trade finance lending model given that the risks involved are minimized in that the value proposition for either party increases chances of repayment; the supplier depends on the warehousing entity as a conduit for payment and likewise, the warehousing entity depends on the supplier for payments hence mutual benefit increases security of dealings with regard to lending of finances (Sitko, & Jayne, 2012). The essence of the approach is to ensure accountability and security of investment through an efficient channel of debt collection. It is thus apparent that an effectively structured commodity trade finance approach would allow for a higher probability of debt repayment for the lender. The effective supply and recovery of funds thus results in a mutually beneficial interaction whereby customers are retained and business perpetuated.

### 2.3.2 Market Factors and the effectiveness of Structured Commodity Trade Finance

Matthee and Heymans (2013) focus on structured commodity trade finance from an exporter's point of view. The authors posit that to gain access to credit, businesses must grow into sustainable, profitable entities and to achieve this end, growth into the international market is often inevitable. Matthee and Heymans however highlight that there are multiple barriers in accessing international markets with the most apparent being the need for accurately addressing the logistics involved in exportation of materials and the funding associated with the same. In the structured commodity trade finance lending model, the financier is deemed responsible for providing credit and any other form of financial assistance enabling the successful deployment and arrival of the export order. In order to take on the role however, businesses intending to secure financing must address, in

collaboration with the lenders, market risks, such as price risk and exchange risk; performance risks, such as operation and supplier risk; and SME-specific risks, such as high competition.

Firms often face income volatility resulting in fixed financial obligations exceeding returns on assets thereby necessitating increased funding (Turvey, Bogan, & Yu, 2012). The authors proposed a risk contingent credit approach that involves the factoring in of price fluctuations within the period of repayment. The payment plan involves full payment of principle amounts minus prorated difference between stated and actual prices. This approach is intended to address the inaccessibility of credit by organizations that though operational, may have poor credit ratings. The approach however comes with increased interest rates which may be limiting for businesses. The postulated model in this paper is of importance to this study as it highlights that even though novel financing approaches are offered by banks with the intention of alleviating the pain points of businesses as far as borrowing is concerned, they often involve higher overall cost of credit hence emphasizing the preferability of structured commodity financing as an alternative.

Domanski and Heath (2007) investigate the course of investor activity in commodity markets. It is seen that between 2002 and 2005 there has been an increase in the prices of commodities, and a corresponding increase in derivative market activity. A rapidly growing part of the market activity is passive investment handled by a manager, much like in financial trading. Such investors rule the natural gas and oil markets (Haigh, Hranaiova & Oswald, 2005). It is also clear from regression data, in the periods between 1998-2001 and 2002-2006 that the market has been more sensitive to short-term factors. These factors include spot price increases and increased roll returns. These show an increase in speculating by short term traders. Ultimately, the conclusion is that the investment landscape in commodity market is changing and becoming similar to that of financial markets, affecting price dynamics. This paper sheds light on price volatility in commodities markets. The increased unpredictability of the market may affect the lending process.

Tang and Zhu (2016) propose a model to assess the usefulness of commodities as collateral for loans. In China, many companies are small and medium enterprises in need of financing but without sufficient collateral. It thus offers a suitable place for investing in commodity

financing. Commodities are not subject to capital control regulations and thus ease international lending.

The model relies on exchange rate spread to measure demand. A low spread indicates less capital control, while a large one indicates higher capital control. A high positive difference shows a high possible gain for a country that imports commodities rather than foreign currency as capital. It is shown that an increase in demand of a commodity increases the spot price of the commodity around the world. In addition, for the receiving country, it causes an increase in the yield related to inventory and convenience. This paper speaks to exchange rates and their effect on structured trade commodity finance, showing that capital controls, which affects the exchange rates, also in turn affects structured commodity trade finance.

Antràs and Foley (2011) argue that most trade terms agreed between importers and exporters do not require the involvement of a bank as a provider of credit especially where both parties to the transaction have a long-standing trade relationship. Most transactions are completed on open account or cash in advance terms and the bank only comes in as a provider of payments systems (Antràs & Foley, 2011). They further argue that firms that are domiciled in legal jurisdictions where it is difficult to enforce trade agreements are most in need of bank financing yet the cost of financing in such countries is highest due to the risks involved. According to the Doing Business 2018 report it takes an average of 465 days and costs 41.8% of the claim to enforce a contract in Kenya (2018). This implies a high need for financing for exporters and importers operating out of Kenya.

Specifically, in the African context, regarding structured commodity trade finance opportunities, (Sitko & Jayne, 2012) emphasize that food price volatility and high transaction costs remain major problems in the African agricultural industry. The sector therefore provides suitable opportunities for structured commodity trade finance. However, as the authors reveal, such factors as limitations in attracting potential funders, conflict of interest among brokers, market manipulation and high fixed costs present as front-and-central hinderances to prosperity of the industry in the continent. It is therefore essential to assess structured commodity trade finance from a borrower's point of view in order to understand the various ways through which the partnership can be enhanced for

the mutual benefit of all players in the industry. Financing models employed within the continent would therefore require specific modifications to address the aforementioned risk points.

### 2.3.3 Performance-based Factors and the effectiveness of Structured Commodity Trade Finance

Fender and Mitchell (2005) discuss major items of consideration in structured commodity trade finance. The authors explained that structured finance bears more risk than other finance options, due to increased complexity. A major source of the extra complexity is in evaluating the risk from the asset pool, which may involve many independent assets. The tranching process also requires a thorough understanding of the flow of money in the trade of structured products. The process must involve specific circumstances for loan remittance and payback, circumstances for money redirection in special cases and the rights of each stakeholder.

The article also explores risks associated with structured products that are unrelated to default. It is shown that senior note holders are entitled to interest payments during the transaction and a principal payment once it matures. Equity or first loss tranche holders, in contrast, are entitled to only interest payments. As a result, they may use their influence in selection of credit facilities to select those that offer higher payments before maturity. This may ultimately be more costly to the organization. This article thus speaks to conflict of interest as a factor affecting structured commodity trade finance. It also explains the complexity involved in structured finance, in that conflict of interest is a non-default risk factor to consider.

Corporate borrowing is a key component of liquidity management. The interest rate charged on such borrowing by the suppliers of credit has several components; the risk free rate e.g. the interest charged on government bonds that are considered risk free, the terms of the debt e.g. tenor, seniority of the debt and collateral structure and finally the probability that the borrower will default which is a measure of credit risk (Sitko and Jayne, 2012). The lower the probability of default, the lower the cost of credit. Repayment in a structured commodity trade finance transaction is expected from the liquidation of a flow of commodities thereby implying reduced risk of default (MacNamara, 2001).

Banks are interested in lending to customers with a low probability of default and to achieve this they employ a number of screening tactics (Stiglitz & Weiss, 1981). One of the indicators used by banks to screen customers is the interest rate that the customer is willing to pay. The higher the interest rate that a borrower is willing to pay, the higher the probability of default (Stiglitz & Weiss, 1981). They further note that borrowers who seek but are denied loans are likely to still be rejected even if the offer to pay interest rates that are higher than prevailing market rates as this would reduce the quality of a loan portfolio due to the increased risk of default. The main value proposition of structured commodity trade finance lending models is the transformation of risk from payment risk to performance risk (Cohen & Ryvkin, 2014). Essentially, the lending entity, instead of focusing on the amount issued to the recipient, focuses on the entire process of trade with the understanding that securing the chain would result in minimal exposure to funds attrition which is the main cause of defaults.

Collateral is a key component of structured commodity trade finance. Typically, for structured commodity trade finance, a borrowing base is established that provides better collateral protection. Borrowing base lines of credit allow a borrower to borrow the lesser of an absolute limit and a percentage of some specified asset e.g. accounts receivable, inventory (Flannery & Wang, 2011). The obligation under a borrowing base line of credit is secured by specific assets hence a means of payment even if the borrower fails. In addition to this, the borrowing base structure ensures that the obligation under the line of credit cannot exceed the pledged collateral (Flannery & Wang, 2011). The probability of default, effects of the borrower's accounting quality and information asymmetry on the overall cost of debt finance is reduced by the use of a borrowing base collateral structure (Mutlu, 2017).

The downside is that monitoring costs are higher, however such costs are lower than the expected losses in a borrowing base structure (Flannery & Wang, 2011). Benefits to a producer and off taker include assured commodity origin, access to financial markets where credit quality is poor, lower finance costs and opportunities for hedging commodity price risk. These benefits are especially important for liquidity management for small and risky firms that have less cashflow and more cashflow volatility (Flannery & Wang, 2011).

Broer (2018) explores the variance in opinion about the risk of default as a contributory factor in the rise of structured finance in the early 2000s. This disagreement, the author argues, is beneficial to structured financing in that it increases the value of riskier debt tranches by increasing their demand among optimistic traders. The author shows that for optimistic investors, if they cannot buy into all tranches, they tend to focus on the higher valued tranches. As a result, the initiators sell the riskier tranches at higher prices while selling the less risky tranches to pessimistic investors at near face value.

Alves (2013) compares the differences in Chinese oil backed lending between Angola and Brazil. Oil based lending is used to circumvent poor credit scoring of most African nations. Angola and Brazil have similar grade oil which is similarly located (in deep and ultra-deep waters). However, they have vastly different institutions. Angola's oil industry is almost entirely controlled by one state-owned company, Sonangol. The concentration of power in the presidency underscores this monopoly. On the other hand, Brazil is more liberalized, with several regulatory layers including the presidency, the ministry in charge of energy and the public oil company. The singular administrative structure eased Chinese operation in Angola, but Brazil's environment delayed Chinese operation over three decades between 1974 and the early 2000s. The inference therefore is that the impact of regulation and concentration of power is well defined in structure commodity trade finance.

### 2.3.4 Business-specific Factors and the effectiveness of Structured Commodity Trade Finance

For banks involved in international trade finance, there is a need to assess the credit worthiness of both the local borrower and the foreign trading partner as repayment of any trade financing provided depends on the performance of both partners which means that information acquisition costs will be incurred (Ahn, 2011). Information on foreign trading partners tends to be less accurate which leads to higher rates of default in international trade and therefore banks have to charge a premium to compensate for the higher risk (Ahn, 2011). The use of confirmed letters of credit does

not completely create symmetry between domestic and foreign trade as the local bank still has to gather information on the foreign confirming bank (Ahn, 2011).

A study conducted in the united states found that firms explicitly make a choice between lines of credit secured by a borrowing base and those that are secured by other means (Flannery & Wang, 2011). There is empirical evidence that a positive relationship exists between collateral and risk; firms that are riskier than average tend to borrow on a secured basis, the average secured loan tends to be riskier than the average unsecured loan and banks that make a higher fraction of unsecured loans tend to have riskier portfolios (Berger & Udell, 1990). Smaller and riskier firms with higher cash flow volatility are more likely to choose lines of credit secured by a borrowing base collateral structure. Interest rates are less sensitive to a firms overall creditworthiness in instances where a borrowing base collateral structure is used than for other collateral structures (Flannery & Wang, 2011). The study also found that if borrowing base borrowers were to give up the borrowing base restriction and select another type of secured line, they would pay a substantially higher spread, receive a substantially lower credit limit, and be subject to more restrictive covenants.

Matthee and Heymans (2013) highlight that the efficiency of structured commodity trade finance is contingent on the addressing of various risks that fall under three main categories – market, performance-based and business-specific factors. Addressing issues eminent from these specific factors would therefore serve to improve the general efficiency of the lending approach from both lender and borrow perspectives. The risk of repayment, traditionally assessed through credit worthiness remains front-and-central as a factor affecting the efficiency of any lending system (Stiglitz & Weiss, 1981) it is for this reason that the factor has been included as a determinant of the perceived effectiveness of structured commodity trade finance.

In assessing the regulations associated with structured commodity trade finance (Wiltermuth, 2011), in an exposition of various statements posited by industry players highlights that the Basel Committee on Banking Supervision, in an effort to regulate the industry, proposed changes that would lead to a more conservative and standardized approach in lending through the structured commodity trade finance lending model. This therefore indicates a possible additional risk to recipients of funds under the model as cost of credit, in an unregulated environment, as may be the

case in many developing countries, may accrue to be more than those traditionally charged by lending institutions.

### 2.4 Gap in research

According to Flannery and Wang (2011), there is limited research in public databases on commodity trade finance with a borrowing base collateral structure as a cash management tool globally. It is estimated that the trade finance through banks in Africa is valued at USD 330 to USD 350 billion, equivalent to a third of all trade in Africa (Gajigo, Triki, Drammeh, & Dhaou, 2015). There is however huge demand for trade finance whose estimated value is USD 110 to USD 120 billion that is unmet due to factors such as quality of credits, foreign currency liquidity constrains, inadequate facilities advanced by confirming or correspondent banks, small balance sheets and single obligor limits (Gajigo et al., 2015). East Africa is listed among the most promising markets for trade finance in the next two to three years in the Commodity Finance Market Report (2017). In order to ensure adequate funding, it is necessary to assess the various factors that affect structured commodity trade finance in the bid to understand the pitfalls to the lending approach. The scarcity of findings pertaining to the determinants of the lending approach in Kenya despite the appreciated need thus provided the main impetus for the conducting of the current study.

### 2.5 Conceptual Framework

A conceptual framework contributes to a study by identifying the research variables and clarifying the relationship among them (McGaghie, Bordage, & Shea, 2001). Below is the conceptual framework that was adopted for this study.

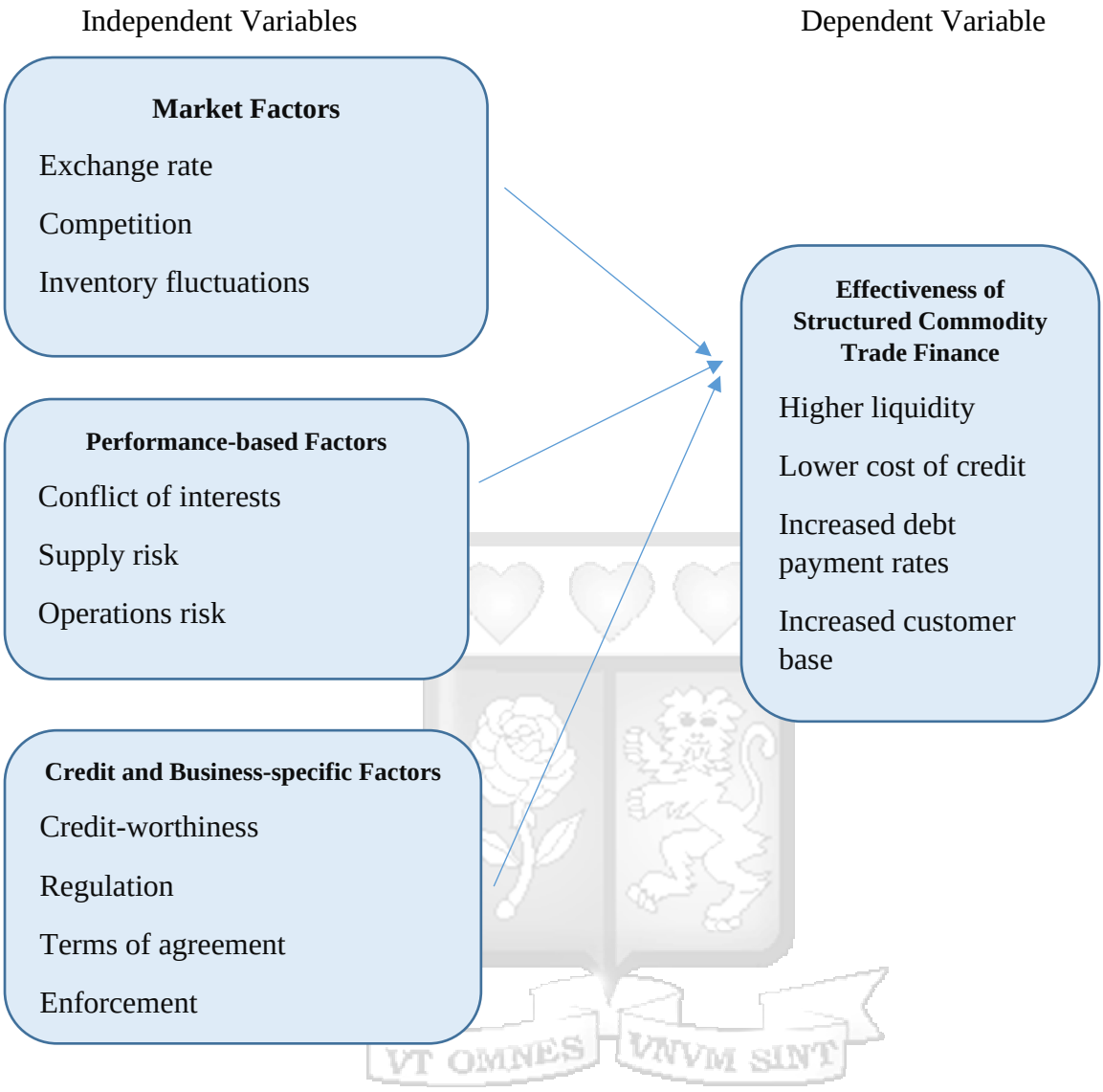


Figure 2.2: Conceptual framework of the study

Matthee and Heymans (2013) highlight that the efficiency of structured commodity trade finance is contingent on the addressing of various risks that fall under three main categories – market, performance-based and business-specific factors. Addressing issues eminent from these specific factors would therefore serve to improve the general efficiency of the lending approach from both lender and borrow perspectives. The risk of repayment, traditionally assessed through credit worthiness remains front-and-central as a factor affecting the efficiency of any lending system (Stiglitz & Weiss, 1981) it is for this reason that the factor has been included as a determinant of the perceived effectiveness of structured commodity trade finance.

## 2.6 Operationalization of the Variables

The three independent factors – market factors, performance factors and, credit and business-specific factors were operationalized through the following attributes - Exchange rate, Competition, Inventory fluctuations for market factors; Conflict of interests, Supply risk, Operations risk for performance-based factors; Credit-worthiness, Regulation, Terms of agreement, and Enforcement for credit and business-specific factors (Matthee and Heymans, 2013); Stiglitz & Weiss, 1981).

The total cost of credit/finance is made up of interest rates, charges and fees and other third-party costs. Interest is the price paid for borrowing a given amount of money that is known as principal from a bank. It takes into account the bank's cost of funds (deposits), operational costs, income requirements and the risk associated with both the customer and the economic environment. Bank charges and fees are one off payment made to the bank in order to facilitate the granting of credit. An example is facility arrangement fees or commitment fees. Third party costs are a catch all phrase that captures all charges related to a borrowing that are levied by parties other than the bank. Examples are legal fees, taxes, insurance charges and valuation fees. All these charges and fees when put together add up to the cost of credit, in this case working capital cost.



## 2.7 Summary of the Chapter

Research has found that working capital management has a direct impact on the profitability of firms. In cases where a firm experiences a temporary cash shortfall, it becomes necessary to obtain trade credit or borrow in order to bridge the gap. While trade credit is free, borrowing comes with a cost that has an impact on the profitability of the firm. Structured commodity trade finance with a borrowing base has been found to reduce the borrowing cost for risky firms.

# CHAPTER THREE: RESEARCH METHODOLOGY

## 3.1 Introduction

This section discussed the research methodology that was used to meet the research objectives. The chapter thus provides details on the study population, sampling, data collection methods and data analysis methods.

## 3.2 Research Design

The study took on a descriptive-correlational approach in that the author sought to assess the relationship between the factors affecting the efficiency of structured commodity trade finance and the efficiency of the lending approach. This type of study is useful if one wishes to get clarity on the interrelationship between studied phenomenon (Saunders, Lewis, & Thornhill, 2016). The research data was collected through questionnaires with constructs assessed through Likert scales and distributed to lenders and borrowers in the commodities sector. The questionnaires were structured so as to gain standardized responses for comparison and analysis.

## 3.3 Population

The first population of the study was comprised of banks participating in structured commodity trade finance; these were peer-group one banks in addition to Citibank. Prior to 2010, bank classification was done on account of fixed asset size. Banks with an asset base higher than KES 15 billon were considered to large whereas those of KES 15 billion and 5 billion were of medium categorization (Central Bank of Kenya, 2010). Those of lower than KES 5 billion asset base were considered small banks. The current classification is based on a weighted composite index comprising assets, deposits, capital size, number of deposits, and loan accounts. Peer group one banks refer to those with over 5% market share whereas peer group two and three are of market shares of between 1% and 5%, and below 1% respectively (Central Bank of Kenya, 2010). Citigroup is widely involved in structured commodity trade finance in African and Asia and was thus included as part of the banks under assessment (Scott, 2011). Respondents from the banks were further requested to identify customers that form the target market for structured commodity trade finance; these formed the second population of the study. The unit of analysis was thus the firms in question, and this was represented by five respondents per bank (for lenders) and three respondents per firm (for borrowers).

### 3.4 Sampling Frame

The sampling frame was obtained from the list of licensees published on the Central Bank of Kenya website as well as the bank supervision report that is published annually by the Central Bank of Kenya. An accompanying list of companies involved in commodity trade as producers or users, as reported by the banks under study, was also included to reflect the borrower sampling frame.

### 3.5 Sample and Sampling Technique

Out of the forty-two licensed commercial banks in Kenya, only eight are classified under the large peer group classification. Citibank N.A., Kenya branch was added to this sample because it is a branch of a global bank with a large balance sheet and its parent company Citigroup is widely involved in structured commodity trade finance in African and Asia (Scott, 2011). These nine commercial banks have the requisite capital bases to facilitate structured commodity finance transactions that tend to be large e.g. Kenya's oil imports under the open tender system (OTS). The nine banks i.e. Kenya Commercial Bank Ltd, The Cooperative Bank of Kenya Ltd, Equity Bank Ltd, Barclays Bank of Kenya Ltd, Standard Chartered Bank (K) Ltd, Diamond Trust Bank (K) Ltd, Commercial Bank of Africa Ltd, Stanbic Bank (K) Ltd and Citibank N.A., Kenya Branch formed the sample for this study. A census approach was thus taken in reaching financiers in that full bank representation was sought; a total of five respondents were sought from each bank. Bank respondents were additionally required to provide information on at least three companies financed through the commodity financing approach. The various partners that the banks engage with in structured commodity finance constituted the sample for the borrower side; these firms could not be established beforehand and were therefore reported on following the collection exercise, as being nineteen in total.

Table 3.1 Sample breakdown

| Item | Number of firms | Targeted total respondents |
|---|---|---|
| Number of banks in the large peer group as at 31 December 2016 | 9 | 45 |
| Borrower-side respondents | 9 | 27 |
| Final sample | | 72 |

### 3.6 Data Collection Instrument

Primary data collection was the main approach employed for the study. Primary data was collected through dispersion of questionnaires that were administered to survey subjects in the two categories of respondents – borrowers and lenders.

### 3.7 Data Collection Procedure

Product managers, relationship managers and trade service professionals in the banking industry were issued with questionnaires; they were then required to provide introductions to borrowing firms – firms that further provided insights into the lending dynamics. A total of 72 respondents were sought for the study.

### 3.8 Data Processing and Analysis

Descriptive statistics, in the form of tables and charts, were constructed to provide insight into the profile of the respondents. The three objectives of the study were as follows; to evaluate the relationship between market factors affecting structured commodity finance and the effectiveness of the lending approach, to determine the relationship between performance-based affecting structured commodity finance and the effectiveness of the lending approach and to assess the relationship between credit and business-specific factors affecting structured commodity finance and the effectiveness of the lending approach. A factor analysis was run to assess the general grouping of the various sub-variables and a subsequent, to assess the relationships, a spearman's rank correlation model was conducted. The correlation approach was chosen on account of the non-parametric nature of the tests and the which was thus deemed fitting for analysis of ordinal data (Cleophas & Zwinderman, 2011).

### 3.9 Research Quality

To ensure that the findings of this study were valid, reliable and objective the questionnaire was constructed based on conversations with subject matter experts. It was also tested to ensure that the respondents are able to understand it. According to Kothari (2004) validity assesses the congruency between the measurement aspects and the measured construct. In this study, research validity was assessed though a pilot study involving asking the respondents to comment on whether the questions used in the study matched the construct under assessment. Ten questionnaires were distributed to respondents that issued with the questionnaires in the pilot study. It was established that there was a match between the questions and the constructs. Saunders,

Lewis, Thornhill (2009) posit that reliability entails the consistency of scales. To assess the reliability of the scales used in the study, Cronbach's alpha was computed. Results are presented in table 3.2. All scales were considered to have ratings of 0.7 (2dp) and were thus deemed reliable (Saunders, Lewis, Thornhill, 2009).

Table 3.2 Reliability Statistics

Performance Factors

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .918 | 3 |

Customer and Credit Factors

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .812 | 3 |

Market Factors

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .810 | 3 |

Effectiveness

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .664 | 4 |

### 3.10 Ethical Issues in Research

This study was conducted in a manner that strictly adheres to the required ethical standards. Approval for the questionnaire was sought from Strathmore University's Institutional Review Board (IRB). Respondents were informed that participation in the study was voluntary and that they have a right to withdraw their participation at any point during the study. All information collected as part of the study was kept confidential. Authorization for the study was further sought from National Commission for Science, Technology and Innovation (NACOSTI) before conducting of the study. All collected data was held securely to ensure confidentiality.

# CHAPTER FOUR: ANALYSIS AND PRESENTATION OF FINDINGS

## 4.1 Introduction

The purpose of this chapter is to show how the research questions were addressed through analysis of the data collected for the study. This chapter is thus subdivided into four main sections – respondents' profile, response rate, descriptive statistics, and objectives of the study.

## 4.2 Response Rate

The total number of responses for the study was 62 responses of the anticipated sample size of 72 responses; this therefore represents 86.1% of the anticipated sample size. Baruch and Holtom (2008) highlight that a low response rate has become common in modern research with an average of 52% response rate typical of most data collection efforts. This trend has been attributed to apathy among respondents due to the multiplicity of surveys. The response rate of 86.1% was thus deemed sufficient for the study.

## 4.3 Respondents' Profile

Of the total number of respondents, 43 (69%) were bankers whereas 19 (31%) were from the commodity industry. Majority of respondents, among financiers (37%), had been in the industry for 5 to 10 years whereas 47% of respondents among those from the commodity industry had served less than or up to five years within the industry. Responses gathered from financiers were thus deemed more authoritative on account of the comparatively higher level of experience.

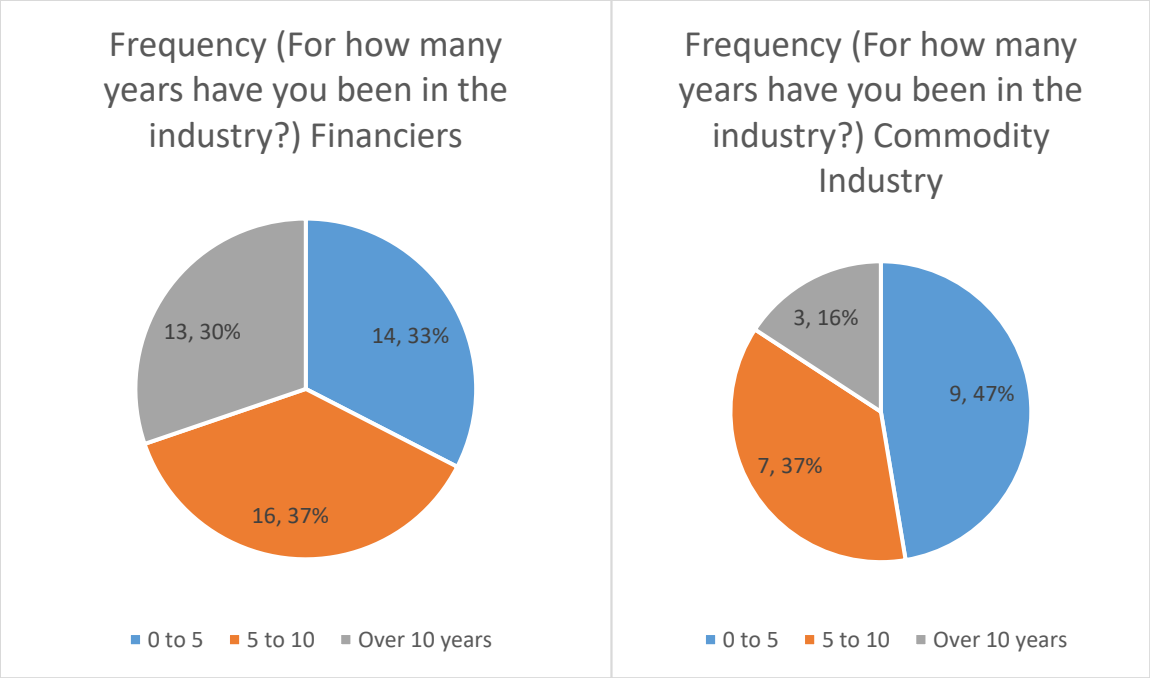


Figure 4.1 Years spent in respective industries

### 4.4 Descriptive Statistics

Bankers and commodity-industry respondents provided answers pertaining to their perception of market factors, performance-based factors, and business and credit specific factors as influencers of the efficiency of structured commodity finance. The median response for each of the respondents, in addressing each construct, was computed and deemed representative of the particular respondent. Comparisons done on the basis of the median responses for each construct as captured across the two industries are presented below.

#### 4.4.1 Market factors

Both categories of respondents – bankers and commodity industry respondents – viewed market factors as significant influencers of structured commodity trade finance dynamics. The specific aspects under assessment in market factors were – exchange rate fluctuations, competition in the commodity industry, and fluctuations in inventory. Respondents were required to indicate the level of significance of the various factors based on statements indicating significance level. A scale of 1 to 5 was used where 1 was strongly disagree and 5 was strongly agree. The general observation

therefore was that market factors were understood, at an industry-wide level, to significantly affect structured commodity financing. The proportion of respondents who strongly agreed or agreed with statements assessing the contribution of the various factors was also similar across response categories. Both financiers and commodity industry respondents had higher than 60% proportions indicating agreement or strong agreement with the statements – 68.42 % for commodity industry respondents and 72.01 for financiers.

Table 4.1 Descriptive – Market factors

| Variable\Statistic | Nbr. of observations | Mode | Mode frequency | Categories | Frequency per category | Rel. frequency per category (%) |
|---|---|---|---|---|---|---|
| **Market Factors CI** | 19 | 4 | 10 | 1 | 1.000 | 5.263 |
| | | | | 2 | 2.000 | 10.526 |
| | | | | 3 | 3.000 | 15.789 |
| | | | | 4 | 10.000 | 52.632 |
| | | | | 5 | 3.000 | 15.789 |
| **Market Factors F** | 43 | 4 | 24 | 1 | 2.000 | 4.651 |
| | | | | 2 | 1.000 | 2.326 |
| | | | | 3 | 9.000 | 20.930 |
| | | | | 4 | 24.000 | 55.814 |
| | | | | 5 | 7.000 | 16.279 |


### 4.4.2 Performance-Based Factors

As was the case with market factors, most people in either industry agreed or strongly agreed with the view that performance-based factors were significant determinants of the effectiveness of the lending approach. In comparison to responses on market factors however, less people indicated the factor as a prominent one. table 4.2 provides a summary of the responses put forward by respondents from either sector. As was the case with market factors, performance-based factors were assessed on a scale of 1 to 5 with one indicating strong disagreement with the statements and 5 a strong agreement with the statements. Both cohorts similarly generally agreed or strongly agreed with the statements with the proportion among commodity industry respondents being 63.16% and that from financiers being 60.37%. It was therefore apparent that there was a general consensus on the perceived impact of performance-based factors across the industry.

Table 4.2 Descriptive Performance-based Factors

| Variable\Statistic | Nbr. of observations | Mode | Mode frequency | Categories | Frequency per category | Rel. frequency per category (%) |
|---|---|---|---|---|---|---|
| **Performance-based factors CI** | 19 | 4 | 8 | 1 | 1 | 5.26 |
| | | | | 2 | 3 | 15.79 |
| | | | | 3 | 3 | 15.79 |
| | | | | 4 | 8 | 42.11 |
| | | | | 5 | 4 | 21.05 |
| **Performance-based factors F** | 43 | 4 | 19 | 1 | 2 | 4.65 |
| | | | | 2 | 6 | 13.95 |
| | | | | 3 | 9 | 20.93 |
| | | | | 4 | 19 | 44.19 |
| | | | | 5 | 7 | 16.28 |

### 4.4.3 Business-specific factors

Credit and business-specific factors were considered to have a larger bearing on the effectiveness of the lending approach than the previously discussed factors – market factors and performance based factors. Most respondents indicated that they strongly agreed with the view that the factor was of significant bearing in determining effectiveness of the lending approach. Table 4.3 provides a summary of median responses presented by respondents from either industry. Business-specific factors were generally viewed to be most significant factor of the three factors. This was inferred from the proportion of respondents who indicated strong agreement with the statements under assessment. In particular, 78.95% of respondents from the commodity industry indicated that they either agreed or strongly agreed with statements whereas among the financiers, the proportion was 83.72%. It was therefore apparent that business factors can be understood as being understood by both cohorts to contribute significantly to the dynamics of the industry.

Table 4.3 Descriptive – Credit and business-specific factors

| Variable\Statistic | Nbr. of observations | Mode | Mode frequency | Categories | Frequency per category | Rel. frequency per category (%) |
|---|---|---|---|---|---|---|
| **Customer and Credit-Specific Factors CI** | 19 | 5 | 8 | 1 | 2 | 10.53 |
| | | | | 3 | 2 | 10.53 |
| | | | | 4 | 7 | 36.84 |
| | | | | 5 | 8 | 42.11 |
| **Customer and Credit-Specific Factors F** | 43 | 5 | 19 | 1 | 3 | 6.98 |
| | | | | 3 | 4 | 9.30 |
| | | | | 4 | 17 | 39.53 |
| | | | | 5 | 19 | 44.19 |

### 4.4.4 Efficiency of structured commodity finance

Median responses on the effectiveness of structured commodity trade finance indicated more variability than that observed in assessing previous factors as bankers generally agreed (rating 4) with the view that structured commodity trade finance was generally effective with six respondents indicating that they tended to strongly agree with the view. None of the respondents from the commodity industry indicated that they strongly agreed with the view (rating 5). However, most respondents agreed with the observation. Table 4.4 provides a summary of median responses put forward from either sector. As compared to general responses on the factors deemed significant influencers of the efficiency, a lower proportion of respondents viewed the financing approach as efficient. Among commodity industry respondents, none indicated a median score of 5 (strongly agree) whereas among financiers, only 7% indicated that a median score of 5 – strongly agree with statements alluding to the effectiveness of the lending approach. It was therefore apparent that the efficiency the lending approach was generally found wanting by both cohorts.

Table 4.4 Descriptive – Efficiency

| Variable\Statistic | Nbr. of observations | Mode | Mode frequency | Categories | Frequency per category | Rel. frequency per category (%) |
|---|---|---|---|---|---|---|
| **Effectiveness CI** | 19 | 4 | 7 | 1 | 2 | 10.53 |
| | | | | 1.5 | 1 | 5.26 |
| | | | | 2 | 3 | 15.79 |
| | | | | 2.5 | 1 | 5.26 |
| | | | | 3 | 3 | 15.79 |
| | | | | 3.5 | 2 | 10.53 |
| | | | | 4 | 7 | 36.84 |
| **Effectiveness F** | 43 | 4 | 13 | 1 | 1 | 2.33 |
| | | | | 1.5 | 3 | 6.98 |
| | | | | 2 | 4 | 9.30 |
| | | | | 2.5 | 4 | 9.30 |
| | | | | 3 | 9 | 20.93 |
| | | | | 3.5 | 3 | 6.98 |
| | | | | 4 | 13 | 30.23 |
| | | | | 4.5 | 3 | 6.98 |
| | | | | 5 | 3 | 6.977 |

### 4.5 Objectives of the study

The research sought to address three main objectives - To assess the perceived relationship between factors affecting structured commodity trade finance and the effectiveness of the lending approach from a lender perspective; to assess the perceived relationship between factors affecting structured commodity trade finance and the effectiveness of the lending approach from a recipient perspective; and to assess the consistency or lack thereof of perceptions on relationships of structured commodity trade finance from borrower and lender viewpoints. Findings for each objective are subsequently presented.

#### 4.5.1 Factor analysis

Two factor analysis tests were conducted to assess the grouping of factors as presented from bankers' and commodity industry responses. Both tests were conducted under a direct oblim rotation approach as the factors were deemed to be inherently related (e.g. market factors and customer factors) (Osborne, 2015). The data presented a KMO value of 0.866 thereby indicating that the data was sufficiently structured for the extraction of latent factors. Similarly, a significance

value lower than 0.01 presented Bartlett's Test of Sphericity confirmed the observation of suitability of the dataset for latent factor extractions; these findings are presented in table 4.5.

Table 4.5 KMO and Bartlett's Test

| KMO and Bartlett's Test | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .866 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 205.308 |
| | df | 36 |
| | Sig. | .000 |

Two factors were extracted from the data set. These two factors accounted for 65% of variability in the data set (table 4.6). The presentation of two underlying factors was contrary to expectations as the factors were deemed to segregate into the three considered – market factors, performance-based factors and customer and credit-specific factors. The first factor deemed 'aggregate factor' encompassed all but one of the various questions assessing the three constructs – market factors, performance-based factors, and credit and business specific factors. Only one of the questions assessing market factors – 'competition in the commodity industry significantly affects structured commodity finance dynamics' loaded strongly onto the second factor; this factor was thus deemed 'competition in the market'. Findings on the factors and the loading of the various questions considered are presented in table 4.6.

Table 4.6 Variance explained

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 4.836 | 53.739 | 53.739 | 4.836 | 53.739 | 53.739 | 4.548 |
| 2 | 1.019 | 11.327 | 65.065 | 1.019 | 11.327 | 65.065 | 2.227 |
| 3 | .921 | 10.233 | 75.298 | | | | |
| 4 | .630 | 6.997 | 82.295 | | | | |
| 5 | .593 | 6.586 | 88.881 | | | | |
| 6 | .412 | 4.578 | 93.458 | | | | |
| 7 | .281 | 3.123 | 96.581 | | | | |
| 8 | .167 | 1.854 | 98.435 | | | | |
| 9 | .141 | 1.565 | 100.000 | | | | |

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table 4.7 Factor loading matrix (Pattern Matrix)

**Pattern Matrix[a]**

| | Component | |
|---|---|---|
| | 1 | 2 |
| MARKET FACTORS [Exchange rate fluctuations significantly affect structured commodity finance dynamics.] | **.718** | -.040 |
| MARKET FACTORS [Competition in the commodity industry significantly affects structured commodity finance dynamics.] | .142 | **.765** |
| MARKET FACTORS [Fluctuations in inventory significantly affect structured commodity finance dynamics.] | **.744** | -.009 |
| PERFORMANCE-BASED FACTORS [Conflicts of interest – among players in the distribution chain – significantly affect structured commodity finance dynamics.] | **.859** | .139 |
| PERFORMANCE-BASED FACTORS [The reliability of supply significantly affects structured commodity finance dynamics.] | **.819** | .010 |
| PERFORMANCE-BASED FACTORS [Operational risks – such as equipment failure – strongly affect structured commodity finance dynamics.] | **.731** | .105 |

| | | |
|---|---|---|
| CREDIT AND BUSINESS-SPECIFIC FACTORS [The regulatory environment significantly affects structured commodity finance dynamics.] | **.623** | -.504 |
| CREDIT AND BUSINESS-SPECIFIC FACTORS [The terms of 4ment significantly affect structured commodity finance dynamics.] | **.485** | -.612 |
| CREDIT AND BUSINESS-SPECIFIC FACTORS [The enforcement of 4ments through the legal process significantly affects structured commodity finance dynamics.] | **.606** | -.452 |

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 6 iterations.

The second factor analysis centred on responses as put forward by respondents within the commodity industry. As with factor analysis on bankers' responses, the dataset presented a KMO value higher than 0.05 and Bartlett's test of Sphericity significance value lower than 0.01; the data was thus sufficiently structured for the extraction of latent factors.

Table 4.8 KMO and Bartlett's test of Sphericity – Commodity Industry

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .641 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 144.614 |
| | df | 36 |
| | Sig. | .000 |

With regard to the variance accounted for by the extracted factors, it was evident that the two extracted factors accounted for a higher percentage of variance in that dataset as compared to financier responses (77% and 65% respectively). Table 4.9 presents a summary of this finding.

Table 4.9 Variance explained

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 5.859 | 65.102 | 65.102 | 5.859 | 65.102 | 65.102 | 5.587 |
| 2 | 1.031 | 11.453 | 76.555 | 1.031 | 11.453 | 76.555 | 3.354 |
| 3 | .923 | 10.252 | 86.806 | | | | |
| 4 | .419 | 4.660 | 91.466 | | | | |
| 5 | .339 | 3.764 | 95.230 | | | | |
| 6 | .176 | 1.959 | 97.189 | | | | |
| 7 | .140 | 1.552 | 98.741 | | | | |
| 8 | .093 | 1.033 | 99.774 | | | | |
| 9 | .020 | .226 | 100.000 | | | | |

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Two factors, as with the foregoing analysis presented from the analysis. The first factor was similarly deemed ‘aggregate factors’ as it contained all but two questions; one question assessing competition and another fluctuation in inventory constituted the second factor. There was therefore market similarity between the structuring of latent factors as depicted by data from both cohorts. The second factor was dubbed ‘competition and inventory factor’. As was the case with financier-responses, one factor loaded most of the questions with the exception being that the second factor, in commodity-industry responses, presented as having two market factors (table 4.10).

Table 4.10 Pattern Matrix – Commodity Industry

**Pattern Matrix[a]**

| | Component | |
|---|---|---|
| | 1 | 2 |
| MARKET FACTORS [Exchange rate fluctuations significantly affect structured commodity finance dynamics.] | **.946** | -.219 |
| MARKET FACTORS [Competition in the commodity industry significantly affects structured commodity finance dynamics.] | .259 | **.708** |
| MARKET FACTORS [Fluctuations in inventory significantly affect structured commodity finance dynamics.] | -.054 | **1.013** |
| PERFORMANCE-BASED FACTORS [Conflicts of interest – among players in the distribution chain – significantly affect structured commodity finance dynamics.] | **.833** | -.036 |
| PERFORMANCE-BASED FACTORS [The reliability of supply significantly affects structured commodity finance dynamics.] | **.824** | .099 |
| PERFORMANCE-BASED FACTORS [Operational risks – such as equipment failure – strongly affect structured commodity finance dynamics.] | **.704** | .193 |
| CREDIT AND BUSINESS-SPECIFIC FACTORS [The regulatory environment significantly affects structured commodity finance dynamics.] | **.902** | .019 |
| CREDIT AND BUSINESS-SPECIFIC FACTORS [The terms of 4ment significantly affect structured commodity finance dynamics.] | **.572** | .328 |
| CREDIT AND BUSINESS-SPECIFIC FACTORS [The enforcement of 4ments through the legal process significantly affects structured commodity finance dynamics.] | **.871** | .113 |

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Given that both analyses indicated the existence of two latent factors with one prominent one, it was surmised that responses from either cohort were not significantly different.

### 4.5.2 Spearman's Rank Correlation

To assess the relationships between the variables, as captured in the objectives of the study, Spearman's rank correlation was conducted. The findings of the study are put forward in the subsequent table (table 4.11).

Table 4.11 Spearman's Correlation

**Correlations**

| | | | Market Factors | Performance-based factors | Customer and Credit-Specific Factors | Effectiveness |
|---|---|---|---|---|---|---|
| Spearman's rho | Market Factors | Correlation Coefficient | 1.000 | .667** | .465** | .372** |
| | | Sig. (2-tailed) | . | .000 | .000 | .003 |
| | | N | 62 | 62 | 62 | 62 |
| | Performance-based factors | Correlation Coefficient | .667** | 1.000 | .480** | .081 |
| | | Sig. (2-tailed) | .000 | . | .000 | .533 |
| | | N | 62 | 62 | 62 | 62 |
| | Customer and Credit-Specific Factors | Correlation Coefficient | .465** | .480** | 1.000 | .332** |
| | | Sig. (2-tailed) | .000 | .000 | . | .008 |
| | | N | 62 | 62 | 62 | 62 |
| | Effectiveness | Correlation Coefficient | **.372**** | .081 | **.332**** | 1.000 |
| | | Sig. (2-tailed) | .003 | .533 | .008 | . |
| | | N | 62 | 62 | 62 | 62 |

**. Correlation is significant at the 0.01 level (2-tailed).

Findings indicated that of the three factors, performance-based factors were the only ones not to present a statistically significant correlation with effectiveness of the financing approach. Market and business-specific factors however presented weak correlation with the effectiveness of the approach with coefficients of 0.372 and 0.332; both were confirmed at the 95% confidence level.

# CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

## 5.1 Introduction

The purpose of this chapter is to provide a discussion of the findings in light of the study objectives and the literature pertaining to each of the objectives, to conclude on the findings of the study, and to provide direction on the implications of the findings, limitations observed, and point to areas for further study. The chapter is therefore structured with respect to the outlined purpose. As a preamble to the assessment of the objectives, a factor analysis was conducted to assess the alignment of the various sub-variables considered in the study. Findings indicate an overlap of variables hence pointing to the possibility of an inaccurate demarcation of factors affecting the lending approach. The subsequent section presents discussions of the study findings in light of literature reviewed.

## 5.2 The relationship between market factors affecting structured commodity finance and the effectiveness of the lending approach

According to the working capital theory, the source of working capital finance that is chosen by a firm has an impact on the firm's risk and return profile and should be carefully considered (Padachi, Howorth, & Narasimhan, 2012). The choice of structured commodity trade finance should therefore be informed by the effectiveness of the lending approach via-a-vis factors affecting the approach from a lender's perspective. In the event that there is no relationship between the factors and lending approach, then it may be inferred that a different model of financing, may be better suited for the industry in question. Matthee and Heymans (2013) focusing on the structured commodity trade finance from an exporters point of view highlight that to gain access to credit, businesses must grow into sustainable, profitable entities and to achieve this end, growth into the international market is often inevitable.

In assessing market factors, Flannery and Wang (2011) highlight that typically, for commodity trade finance, a borrowing base is established that provides better collateral protection. Borrowing base lines of credit allow a borrower to borrow the lesser of an absolute limit and a percentage of some specified asset e.g. accounts receivable or inventory. The lack of a strong relationship between such market specific factors, as level of inventory, and the effectiveness of lending, as observed in this study, therefore point to a lack of consideration of the factor in the making of

lending decisions. This therefore points to a lack of efficiency in the lending approach within the industry

The presence of a weak relationship between market factors and lending effectiveness as observed in this study therefore imply that the factors were not considered significant predictors of the effectives of the lending approach. This would therefore imply that insufficient consideration was placed in factoring in the effect of such aspects as exchange rate, competition, and inventory fluctuations in structuring the funding mechanism for various organization. Given that Banks are generally motivated to lend to customers with the least probability of default (Stiglitz & Weiss, 1981), it may be the case that the lack of understanding of the importance of market factors may play a role in default rates observed.

### 5.3 The relationship between performance-based affecting structured commodity finance and the effectiveness of the lending approach

As highlighted in the previous sections the working capital management theory indicates the need for a fit between financing approaches and the dynamics of the recipient industry (Padachi, Howorth, & Narasimhan, 2012). The lack of a correlation between the factors deemed definitive of the industry and the effectiveness of the lending approach therefore point to a likelihood of high risk of lending and subsequently, an unwillingness of lending or an ineffectual lending mechanism.

With regard to performance-based factors, Bollard, Hunt and Hodgetts (2011) highlight that the financial system contributes to the wellbeing of the economy and society as a whole by providing payment and settlement systems, intermediating between those with excess funds and those with a shortage of funds and providing products for use in risk management. A lack of relationship between the various risks assessed in performance of a firms – conflict of interest, supply risk and operations risks – and the effectiveness of lending therefore point to an ill-structured lending mechanism.

### 5.4 The relationship between business specific factors affecting structured commodity finance and the effectiveness of the lending approach

A lack of strong relationship between credit and business specific factors and effectiveness of the lending approach was also observed. In summation, as was the case with the foregoing discussion on the relationship between the variables, it was evident that there is a need for revisiting of the lending approach in the local context. As Ahn (2011) points out, for banks involved in international trade finance, there is a need to assess the credit worthiness of both the local borrower and the foreign trading partner as repayment of any trade financing provided depends on the performance of both partners which means that information acquisition costs will be incurred (Ahn, 2011). Furthermore, there is empirical evidence suggesting that a positive relationship exists between collateral and risk; firms that are riskier than average tend to borrow on a secured basis, the average secured loan tends to be riskier than the average unsecured loan and banks that make a higher fraction of unsecured loans tend to have riskier portfolios (Berger & Udell, 1990) . Assessing the regulatory environment surrounding a business, its credit worthiness, and terms of agreement involved and enforced would thus serve to inform on the amounts to be issued in light of the risk associated. There should therefore be a correlation between risk and effectiveness of the lending approach; this correlation was not apparent in the study.

### 5.5 Conclusion

The researcher sought to address three main objectives through this study – To evaluate the relationship between market factors affecting structured commodity finance and the effectiveness of the lending approach; to determine the relationship between performance-based affecting structured commodity finance and the effectiveness of the lending approach; to assess the relationship between credit and business specific factors affecting structured commodity finance and the effectiveness of the lending approach. The foregoing discussion indicated that all three objectives were addressed.

With regard to the first objective of the study – To evaluate the relationship between market factors affecting structured commodity finance and the effectiveness of the lending approach – it was evident that there were no strong correlations between market factors and the efficiency of the lending approach thereby pointing to a shortcoming in the market-factor assessment mechanism.

Similarly, in addressing the second objective of the study - to determine the relationship between performance-based affecting structured commodity finance and the effectiveness of the lending approach it was evident that there was not a strong correlation between performance factors and the efficiency of the lending approach. Similarly for the final objective - to assess the relationship between credit and business-specific factors affecting structured commodity finance and the effectiveness of the lending approach – no strong correlations were observed. The general inference, therefore, is that the structured commodity trade finance lending approach is ill-structured and therefore not suitable for addressing the needs of firms seeking the solution.

### 5.6 Limitations of the study

The main limitation of this study was methodological in nature. Respondents were required to provide self-assessed perceptions of the influence of factors and the effectiveness of structured commodity finance hence the relationships observed between the variables were subject to individual perception biases; this was because the firms queried were unwilling to provide financial data that would be used to objectively assess the relationship between market dynamics and the lending approach. To mitigate against this limitation the researcher sought feedback from high-ranking practitioners in either industry; these respondents by virtue of their experience were likely to offer insightful bias-free responses as compared to peripheral employees within either sector.

### 5.7 Recommendations and areas for further study

The main recommendation forthcoming from this study is the need for investigation, by lending institutions, of the mismatch between commodity industry dynamics and the lending approach – structured commodity finance. Given the merits of the lending approach, it is apparent that there is an opportunity lost in not matching the lending approach to the needs of borrowers. Understanding the reasons for shortfalls in the association between the variables would allow for optimization of the lending product to ensure adequate financing to firms and lucrative and sustainable financing to lenders.

To academicians, this study highlights a major gap in literature in that whereas the effectiveness of structured commodity trade finance as a function of market dynamics is established in other contexts the same is not the case in the Kenyan context. It is therefore necessary that further studies be conducted on the peculiarities of the Kenyan market that result in this divergence in findings. Additionally, it is apparent that further studies ought to be conducted to identify other lending approaches that may be better suited for the commodity industry in the local market.

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# APPENDICES

## APPENDIX 1: Letter of Introduction

16th May 2018

To whom it may concern

Dear Sir / Madam,

This is to introduce Dennis Njoroge who is a Master of Business Administration (MBA) student at Strathmore Business School. As part of our MBA program, he is expected to complete a dissertation on a topic of his choice. This is in partial fulfilment of the requirements of the program. For this purpose, he would like to request for information from your organization. His topic of study is 'The Effect of Structured Commodity Trade Finance on Working Capital Cost for Kenyan Commodity Producers and Offtakers'.

Our MBA seeks to establish links with industry and one of the ways of doing this is by directing our research to areas that would be of direct benefit to industry. We shall be glad to share our findings with you after the study is completed and trust that you will find them to be of value to your organization.

We appreciate your support and are available to provide further information if required.

Yours Sincerely,
Eliud Njogu
Director, MBA Programs

**APPENDIX 2: Research Questionnaire**

# THE EFFECT OF STRUCTURED COMMODITY TRADE FINANCE ON BANKS AND BUSINESSES IN KENYA

Dear Sir/Madam,

Thank you for agreeing to take part in this survey. The survey will take about 10 minutes to complete. Your participation is highly appreciated.

## Section A: Biodemographic Information

---

Biographic Information

1. For how many years have you been involved within the industry?

| Category | Tick to indicate appropriate category |
|---|---|
| 0 to 5 | |
| 5 to 10 | |
| Over 10 years | |

2. Within which industry to you operate?

| Category | Tick to indicate appropriate category |
|---|---|
| Financial Industry | |
| Commodity Industry | |

## SECTION B: factors affecting structured commodity finance

This section assesses the various factors deemed to affect the effectiveness structured commodity finance from both lender and borrower perspective. Three main groupings of factors are considered – market factors; performance-based factors; and credit and business-specific factors.

### Market Factors

Kindly indicate your agreement with the following statements.

| | Strongly Disagree (1) | Disagree (2) | Neutral (3) | Agree (4) | Strongly Agree (5) |
|---|---|---|---|---|---|
| Exchange rate fluctuations significantly affect structured commodity finance dynamics. | | | | | |
| Competition in the commodity industry significantly affect structured commodity finance dynamics. | | | | | |
| Fluctuations in inventory significantly affect structured commodity finance dynamics. | | | | | |

**Performance-based factors**

Kindly indicate your agreement with the following statements.

| | Strongly Disagree (1) | Disagree (2) | Neutral (3) | Agree (4) | Strongly Agree (5) |
|---|---|---|---|---|---|
| Conflicts of interest – among players in the distribution chain – significantly affect structured commodity finance dynamics. | | | | | |
| The reliability of supply significantly affects structured commodity finance dynamics. | | | | | |
| Operational risks – such as equipment failure – strongly affect structured commodity finance dynamics. | | | | | |

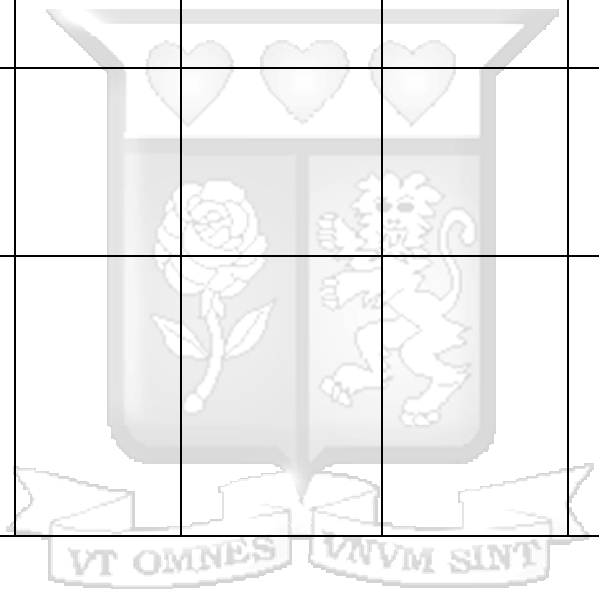
## Credit and Business-specific factors

Kindly indicate your agreement with the following statements.

| | Strongly Disagree (1) | Disagree (2) | Neutral (3) | Agree (4) | Strongly Agree (5) |
|---|---|---|---|---|---|
| The regulatory environment significantly affects structured commodity finance dynamics. | | | | | |
| The terms of agreement significantly affect structured commodity finance dynamics. | | | | | |
| The enforcement of agreements through the legal process significantly affects structured commodity finance dynamics. | | | | | |

**SECTION C: Efficiency of structured commodity finance**

| | Strongly Disagree (1) | Disagree (2) | Neutral (3) | Agree (4) | Strongly Agree (5) |
|---|---|---|---|---|---|
| The lending model has resulted in increased liquidity among commodity companies | | | | | |
| The lending approach has resulted in lower costs of credit. | | | | | |
| The lending approach improves debt repayment rates | | | | | |
| The lending approach allows for the reaching of previously unreached lower-credit-score clients | | | | | |




THANK YOU VERY MUCH FOR YOUR TIME AND PARTICIPATING IN THE RESEARCH.

**APPENDIX 3: List of Companies**

- Barclays Bank of Kenya Ltd
- Stanbic Bank Ltd
- Citibank N.A
- Co-operative Bank of Kenya Ltd
- Commercial Bank of Africa Ltd
- Diamond Trust Bank Ltd
- Ecobank of Kenya Ltd
- Equity Bank Ltd
- Family Bank Ltd
- I&M Bank Ltd
- Kenya Commercial Bank Ltd
- National Bank of Kenya Ltd
- NIC Bank Ltd
- Standard Chartered Bank of Kenya Ltd
- HFC Ltd
- Vivo Energy
- Libya Oil Kenya Limited
- Total Kenya Limited
- KenolKobil
- Hashi Energy
- National Oil Corporation of Kenya
- Riftcot Ltd
- Bunge
- Cargill Kenya Ltd
- Louis Dreyfus Commodities Kenya Limited
- Kenya Tea Development Agency Ltd
- Unilever Tea Kenya Ltd
- Chai Trading Company Ltd

- James Finlay (Kenya) Ltd
- Williamson Tea
- Sasini Tea and Coffee Company Ltd
- Kakuzi Limited
- Unga Group PLC
- Kenya Planters Cooperative Union
- Bamburi Cement Ltd
- East Africa Portland Cement Ltd
- ARM Africa PLC
- East Africa Breweries Ltd

## APPENDIX 4: ETHICS APPROVAL LETTER

Strathmore UNIVERSITY

6th June 2018 SU-IRB 0242/18

**DENNIS NJOROGE**
P.O. BOX 30711
Nairobi
Kenya.

Email: dennis.ngugi.njoroge@gmail.com

Dear Dennis,

**REF** **Student Number:** MBA/92826/16 **Protocol ID:** SU-IRB 0242/18
**THE EFFECT OF STRUCTURED COMMODITY TRADE FINANCE ON BANKS AND BUSINESSES IN KENYA.**

We acknowledge receipt of your application documents to the Strathmore University Institutional Ethics Review Committee (SU-IERC) which includes:

1. Study Proposal dated May 2018
2. Participant Information sheet and Consent form version 1 Date: 21st May 2018
3. Study Questionnaire dated May 2018
4. CV

The committee has reviewed your application, and your study *"The Effect of Structured Commodity Trade Finance on Banks and Businesses in Kenya."* has been granted **approval**.

This approval is valid for one year beginning **6th June 2018** until **5th June 2019.**

In case the study extends beyond one year, you are required to seek an extension of the Ethics approval prior to its expiry. You are required to submit any proposed changes to this proposal to SU-IERC for review and approval prior to implementation of any change.

SU-IERC should be notified when your study is complete.

Thank you

Sincerely,

Amina Salim
**Regulatory Affairs Fellow**

STRATHMORE UNIVERSITY ★ APPROVED ★ INSTITUTIONAL REVIEW BOARD

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