

**THE EFFECT OF CREDIT RISK MANAGEMENT PRACTICES ON  
PROFITABILITY OF ENERGY SUPPLY COMPANIES IN KENYA**

**BY**

**PETER NJUBI MUIRURI**


**D61/9578/2018**

**A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF BUSINESS  
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE  
AWARD OF THE DEGREE OF MASTER OF BUSINESS  
ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY OF  
NAIROBI**

**2021**

## DECLARATION

This project is my original work and has not been presented for any academic award


Signed:  Date: 29/11/2021

**PETER NJUBI MUIRURI**

**D61/9578/2018**

This research project has been submitted for examination with my approval as the University Supervisor.

**DR. KENNEDY ODHIAMBO OKIRO**

Signed:  Date: 19/11/2021

**Department of Finance and Accounting,  
School of Business, University of Nairobi**

## **ACKNOWLEDGEMENT**

I take this opportunity to thank the Almighty God for being my source of strength throughout my school life. A special gratitude to my wife Naomi for the support through out the MBA studies and for holding things together while I was away studying. I also want to acknowledge my parents Mr. & Mrs. Muiruri Njubi for their financial, encouragement, moral and emotional support, I would not be where I am today without you by my side. I also acknowledge the support accorded to me by my mentor Mbugua Muiruri and my late grandparents Mr. & Mrs. Njubi Muiruri for they dared me to dream big and pursue excellence. Finally, a special thank you to my supervisor Dr. Kennedy Okiro and moderator Dr. Duncan Elly for your support throughout the study and for all your insights that contributed immensely to this research. I pray that God may bless you abundantly.

## **DEDICATION**

I dedicate this study to my lovely daughter Nungari Njubi and to those yet to be born. I encourage you to be disciplined, determined and pursue excellence in everything you do. Above all as you excel, remain humble and look up to God for wisdom.

## TABLE OF CONTENT

<b>ACKNOWLEDGEMENT</b> .....	iii
<b>DEDICATION</b> .....	iv
<b>LIST OF TABLES</b> .....	vii
<b>LIST OF FIGURES</b> .....	viii
<b>LIST OF ABBREVIATIONS</b> .....	ix
<b>CHAPTER ONE</b> .....	1
<b>INTRODUCTION</b> .....	1
1.1 Background of the Study .....	1
1.1.1 Credit Risk Management .....	3
1.1.2 Financial Performance .....	4
1.1.3 Credit Risk Management Practices and Financial Performance.....	5
1.1.4 Energy supply Companies in Kenya.....	6
1.2 Research problem .....	6
1.3 Objective of the study .....	8
1.4 Value of the study .....	8
<b>CHAPTER TWO</b> .....	<b>10</b>
<b>LITERATURE REVIEW</b> .....	<b>10</b>
2.1 Introduction .....	10
2.2 Review of Theories.....	10
2.2.1 Credit Risk Theory.....	10
2.2.2 Contingency Theory.....	11
2.2.3 Motive Theory of Credit .....	12
2.3 Empirical Literature.....	13
2.4 Conceptual Framework.....	16
.....	17
2.5 Summary.....	17
<b>CHAPTER THREE</b> .....	<b>19</b>
<b>RESEARCH METHODOLOGY</b> .....	<b>19</b>
3.1 Introduction .....	19
3.2 Research Design .....	19
3.3 Population.....	19

3.4 Data Collection .....	20
3.5 Validity and Reliability .....	20
3.5.2 Reliability Test.....	21
3.6 Data Analysis.....	21
3.6.1 Analytical Models.....	21
3.6.2 Test for Significance .....	22
3.6.3 Diagnostic Tests.....	22
3.7 Operationalization and Measurement of Study Variables .....	23
<b>CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION .....</b>	<b>25</b>
4.1 Introduction .....	25
4.2 Response Rate.....	25
4.3 Results from the Pilot study.....	25
4.4 Demographic Information Findings .....	26
4.5 Credit Risk Management Practices.....	29
4.6 Diagnostic Tests .....	33
4.6 Multiple Linear Regression Analysis .....	37
4.7 Discussion of the Findings .....	39
<b>CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS .....</b>	<b>41</b>
5.1 Introduction .....	41
5.2 Summary of Findings .....	41
5.3 Conclusion.....	42
5.4 Recommendations .....	43
5.5 Recommendations for Further Study.....	44
5.6 Limitations of the Study .....	44
<b>REFERENCES .....</b>	<b>45</b>
<b>APPENDICES .....</b>	<b>49</b>
Appendix I: List of Energy supply Companies in Nairobi .....	49
Appendix II: Questionnaire .....	51

## LIST OF TABLES

Table 3. 1 Operationalization and Measurement of Study Variables .....	23
Table 4.1: Reliability Test Results .....	25
Table 4.2. Gender .....	26
Table 4.3: Age of respondent .....	27
Table 4.4: Educational qualification .....	28
Table 4.5: Duration of service .....	28
Table 4.6: Number of Employees .....	29
Table 4.7: Credit Policy .....	30
Table 4.8: Credit Collection Practices.....	31
Table 4.9: Customer Credit Appraisal.....	32
Table 4.10: Customer Information System .....	33
Table 4.12: Test for Homoscedasticity .....	35
Table 4.13: Multicollinearity Statistics .....	35
Table 4.14: Autocorrelation Test .....	36
Table 4.15: Model summary .....	37
Table 4.16: Analysis of Variance .....	38
Table 4.17: Coefficients .....	38

## LIST OF FIGURES

Figure 2. 1 Conceptual Framework.....	17
---------------------------------------	----



## **LIST OF ABBREVIATIONS**

KBS	Kenya bureau of statistics
MFI	Microfinance Institutions
ROA	Return on Assets
ROI	Return on Equity
SACCO	Savings and Credit Cooperative Society
SME	Small and Medium Enterprises

## **ABSTRACT**

Energy supply companies have a pivotal role in the economy, their products are engines that drive the economy. Over the years, energy companies have come to face many challenges revolving around inadequate resources. Credit risk has made the operation of these firms more complex with the diversified nature of the customers. Adopting risk management practices in the daily management of energy companies will go a long way in ensuring minimal exposure to this kind of risk. The purpose of this research was to investigate the impact of credit risk management practices on profitability of energy supply companies in Kenya. A descriptive research design was employed. A census was conducted where the entire population of 60 energy supply companies in Nairobi was studied. Questionnaires were used to collect primary data. The data collected was analyzed using, frequencies, percentages, mean, standard deviation and regression analysis. Diagnostic tests were conducted prior to running the regression model to guarantee best linear unbiased estimators. The study established that energy supply companies have adopted credit management practices namely credit policy, credit collection practices, customer credit appraisal and customer information system to a great extent. The research utilized inferential statistics multiple linear regression analyses. The study findings showed that credit policy, credit collection practices, customer credit appraisal and customer information system explains to a great extent profitability as evidenced by a co-efficient of determination of 28.6%. The findings revealed that the model entailing the selected credit management practices significantly predicts tax profitability. The results of the research revealed that credit policy, credit collection practices and customer credit appraisal have a positive significant relationship with profitability. On the other hand, an insignificant relationship was found to exist between customer information system and profitability of energy companies. The study recommends the top management of energy supply firms to collaborate with the credit bureau to evaluate the credit score rating of the borrower before issuing credit. Utilizing such information would reduce the chances of issuing services on credit to potential defaulters thus preventing loss of revenue through client defaulting.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the Study**

Energy supply companies are susceptible to a lot of business risk since they service all sectors of the economy. This has seen companies in this sector struggle especially where modern credit management practices have not been adopted. Mwangi and Muturi, (2016) describes credit risk in his studies as the probability that a counterparty may be unable to honor their financial debts obligation in line with prior agreed upon terms and conditions. The effect of this kind of risk is that it has the potential to drastically affect the cash flows of a business and thus curtailing its activities and growth

The goal of any business is to make profits and grow. To achieve this goal, companies need to consider adopting a risk management framework with a capacity to identify and measure credit risk. Additionally, the framework should be such that it inculcates the internal control procedures with specific people to this role put in place to manage the risks. It is of essence to highlight that credit risk management processes and procedure may vary from company to company due to difference in size, operation, and exposure. However, unique feature of a company notwithstanding, a company must adopt the most basic credit risk management principles (Cuevas & Fischer, 2006).

Strategic decision making and goal setting has become a norm in many companies across the sectors. There is a need to set up a structure that creates synergies with other risk management activities both effectively and efficiently. Strategic credit risk management calls for increased awareness of the risks both internally and to customer which enhances effective decision making

on a timely basis (Abiola, & Olausi, 2014). This framework should be such that making decision around credit risk is within the nature and level of risk that an organization is willing to take.

Energy supply companies impact the global economy especially due to the fact that they deal in products that have direct impact on humanity. This makes this sector a very significant one in the economy. Unlike in the banking sector where most of the counterparties have a credit score from external bodies most of the customers in this sector lack this rating or it is not readily available. This therefore places the burden on the company management to come up with in-house credit rating measure that will see to it that the company becomes aware of the kind of exposure it is getting in to when dealing with a particular customer (Panapanaan, Bruce, & Linnanen, 2016).

The focus of the research is thus is to analyze the extent at which credit risk management impacts the profitability of a firm (George, Ndolo, & Shimmon, 2019). Profitability of any given firm can be measured using different performance measures for example, the Gross Profit ratio, Return on Investment (ROI), Net Profit ratio, leverage ratio among others. Credit risk management practices utilized by a firm have a positive impact on the level of profitability and sustainability of the business, companies must therefore ensure they get paid on time for the services rendered to enable them to honor their short term and long-term financial needs. Firms that are unable to meet these needs are viewed as unattractive and hence not profitable.

Several theories have been put forth to describe the association between credit risk management and a firm's profitability. They include the credit risk theory, tax theory of credit and liquidity theory of credit (Ljungqvist & Sargent, 2012). These theories are bringing out the theoretical framework of how credit risk management affects a company's profitability in the long run. They also serve as a basis upon which my study will focus in the energy supply companies.

### **1.1.1 Credit Risk Management**

Kealhofer, (2003) defines credit risk as the loss that emanates from default of a counterparty on an obligation on previously agreed terms. Credit risk management, therefore, is the identification, measurement, monitoring and risk control that arises from the counterparty defaulting on the agreed upon financial obligation (Early, 1996; Coyle, 2000). Risk taking is unavoidable for any business whose customer base spans a wide range of sectors. According to studies by Early (1996) and Coyle (2000) taking credit risk is a must for businesses in operations however its effective management needs to be incorporated to ensure it is viable and that such risk is able to ensure sustained business growth. Credit risk is generally measured by possible losses from a credit portfolio held by a company. This is usually guided by the 5C's; Capital, Capacity, Character, Collateral and Condition. The 5C's are then used to come up with an individual customer risk profile that is used to assess both current and potential customers.

Companies are moving towards actively managing the credit risk exposure due to many changes in the macroeconomic field for example financial crisis, political instability and volatile values of assets held as collateral and financial globalization (Bofondi & Gobbi, 2003). This is also in line with the strategic goals that companies are now adopting which is a roadmap that the directors use to project where the company will be 5-10 years in future. Formalizing credit risk management policies on the strategic plan provides a platform for it to be continuously assessed from the top-level management of a company and thus it becomes easy to implement new changes.

Effective credit risk management is a pivotal part of an in-depth viewpoint to management of credit risk and is fundamental to long run profitability of any business. (Kealhofer, 2003). Risk monitoring is a tool used in continuous assessment to ascertain that risk taken is within the prescribed limits. The effectiveness of these measures is measured on a regular basis which then

provides a platform for new insights on sealing some loopholes or loosening others. Eventually over time through numerous decision-making companies are able to come up with a policy document that is institutionalized and guides the day-to-day operations (Basel Committee on Banking Supervision, 2000).

### **1.1.2 Financial Performance**

Financial performance as the business' ability to react to environmental threats and opportunities by operating efficiently and profitably (Turyahebwa, 2013). Analysis of financial performance is usually used to assess the health of an organization over a certain period in the short run and the long term. There exist different ways of measuring financial performance. Determining financial performance involves analyzing the financial statements of a firm. This includes the statement of financial position (balance sheet) the statement of comprehensive income (statement of profit and loss) and the statement of cash flow. These reports are able to show the position of the firm in terms of net assets, how the company has performed and its liquidity status respectively (Quadan, 2004).

In addition, there are other tools to evaluate the financial performance in the form of ratios. For example, we have profitability ratio, asset utilization leverage ratio and coverage ratio (Bekan, 2011). These ratios help us do quick analysis of what is reported on the financial statements. Financial performance is of utmost importance as it attracts many interested parties. The interested parties have their own motive which is addressed by the financial performance of a company, for example shareholders want to know whether their wealth is maximized, government is interested in the amount of tax it can collect while financial institutions want to gauge the capability of the company to honor its loan obligations.

### **1.1.3 Credit Risk Management Practices and Financial Performance**

Many companies around the world have been found to take too much unnecessary risk in their day to day conduct of business. Little resources have been dedicated to risk management as a strategic goal and function. Most of this companies have focused their energies on meeting the regulatory requirement processes and investment in human resource to control business risk (Mills, 2008). Energy companies should prepare themselves to be able to provide a thorough near real-time analysis of its credit worthiness as well as that of its counterparties. A shift in investing in credit risk management is now inevitable. Company boards of director are now in agreement that proactive risk management is as important as other functions. This has resulted from the fact of a realization that risk management has a direct relationship with how the company performs financially (Verrecchia, 2001).

In the era of the technology revolution and global village, competition in all kinds of businesses has become so stiff. This has led companies to relook at their business models to establish better ways of coping to the environment. One way of maintaining and growing their financial performance is by adopting a structured risk management model that will actively mitigate the company from unnecessary credit risk. The benefits of running these structures outweigh the cost by far as they have proven effective in deterring insolvency. A deeper understanding of credit risk management will inform effective decision making and will also create stability in the company financial performance. It further contributes to other measures of performance such as incentive based performance and liquidity measures (Nyasaka, 2017).

#### **1.1.4 Energy supply Companies in Kenya**

Electricity and petroleum are the dominant products in Kenya's energy sector while wood fuel is mainly consumed in rural areas, poor urban settlements and the informal sector. Despite the last mile connectivity efforts by the government, electricity connection remains below 15% per cent way below the target of 65% by 2022. Statistics indicate that wood fuel and biomass constitute to about 68% of the total energy consumed in Kenya. The percentages for petroleum, electricity and others are 22%, 9% and 1% respectively.

The ministry of health is mandated to develop energy and implement energy policies, oversee the management of state -owned utilities across the country as well as steer the actualization of the rural electrification program (ERC, 2021). Energy supply companies therefore aim at empowering the communities through wind and solar energy technologies. The predominant technologies utilized include wind turbines which use wind to produce electricity, photovoltaic (PV) modules which use solar radiation to generate electricity and fuel cells which use hydrogen for electricity generation.

#### **1.2 Research problem**

Energy supply companies have a pivotal role in the economy, their products are engines that drive the economy. The success of these companies translates to a more vibrant economy with a diverse range of innovative products. Over the years, energy companies have come to face many challenges revolving around inadequate resources. This is due to the fact that they are capital intensive which calls for flexibility when dealing with customers. Credit risk has made the operation of these firms more complex with the diversified nature of the customers. Adopting risk management practices in the daily management of energy companies will go a long way in ensuring minimal exposure to



this kind of risk. Strategic risk management should be established to help address the evolving risk exposures in modern day economics. Decreased credit risk exposure will translate in better financial performance attributed to better decision making by managers (Fadun, 2013).

Financial performance is dependent on many factors including but not limited credit risk management, government policy, liquidity, technology and operation efficiency. For the firms to remain profitable they need to ensure that they get paid for what they sell. Failure to do this will see companies being unable to meet their short-term financial obligations hence leading to bankruptcy. Leverage ratios can be used to gauge the position of the firm in terms of meeting all the short and long-term debt obligations in the foreseeable future. This will only improve if measures have been put to reduce the debtor months and putting measures to eliminate chances of creating new bad debts. Companies with a healthy debt book are considered to be financially strong and they are therefore able to attract funding from financial institutions.

Scholars have submitted several research works relating to credit risk management. Hempel (1994) conducted a study of national banks in USA that became bankrupt in mid 1980s concluded that the failures were due to lack of a responsive risk management system for appraising loan quality. Chijoriga, (2013) discovered that credit risk was one of the costliest risks in financial institutions as its negative impacts could cripple their operations. The researcher further unearthed the reason for financial institutions continually experiencing financial difficulty as the result of poor management of debt portfolio as well as loosely applied credit risk management policies.

Lagat, Mugo and Otuya, (2013) conducted a research that concluded that credit risk management is an instrumental tool in management of loan portfolios in SACCOs. Thabo and Gichira, (2003) in a research here in Kenya found out that SACCOs have difficulties in generating wealth as a result of inefficient credit risk management practices. However, a huge bias has been in favour of

financial institutions which will be totally different from energy companies based on the nature of their business model.

The above studies bring out sensitive issues surrounding the area of credit risks and financial performance. Few theories have been forwarded on energy supply companies which tend to have a different business model. Managers of companies in these sectors need to understand their risk exposure and quantify the impact this risk will have on the financial performance. In addition, they need to understand the strategies that can be adopted to mitigate them from the adverse effects of credit risk. Hence this study is aimed at determining the credit risks that energy companies' face, their impact on the financial performance and the strategies that can be adopted to measure and manage the risks.

### **1.3 Objective of the study**

The research aims at determining the effects of credit risks management practices on profitability of energy supply companies in Kenya.

### **1.4 Value of the study**

It stands to benefit the leadership of companies in this sector in a great way. They will benefit from the awareness that this research will create on the credit risk issues within the organization hence take precautionary measures. It will also help the companies to be able to appraise their customers credit risk profile early enough before any contracts are commenced. The study also stands to help the managements of these companies in developing strategic credit risk policies that will drive the company long term goals.

To the shareholder it will help create some basic awareness on the credit risk management policies and practices and the impact to the overall wealth creation of a firm. This will also help in reducing

the shareholder-management conflict that may arise due to matters pertaining credit risk management.

The study will benefit scholars in that they can use the study's findings as reference on policies formulation with respect to credit risk management. This study will also open new research questions that have not been covered by this study which scholars can now pursue. In addition, the research will expand scope of knowledge on credit risk management of energy supply companies in Kenya.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The section reviews relevant literature associated with research objectives. Theoretical review focused on different theories and frameworks associated with the study elucidating their facts interconnectedness with the study's variables. On the other hand, empirical review reviewed other studies conducted that guided the study. The section also covers the conceptual framework analyzing how the study variables relate.

#### **2.2 Review of Theories**

##### **2.2.1 Credit Risk Theory**

Advanced by Melton (1974), the credit risk theory provides a mechanism that aids financial institutions to measure and manage exposure to credit risks. This model describes loan defaulting as a practice subject to and determined borrower. Even when the economic circumstances are favorable for the borrower to repay the loan, a potential defaulter will still default. The key credit risk analysis approaches include appraisal form, completeness approach and the structural approach. This theory thus provides a good theoretical framework for a comprehensive study in this area of credit risk since it does not solely depend on traditional actuary methods that were primarily dependent on historical data (Koulafetis, 2017).

The theory purports that the default scenario arises from the asset evolution of the firm modelled by a dispersion with constant variables (Petroni, & Latora, 2018). This type of evolution is illustrated by asset of models whereby the loss attributed to default is inhibitory. This theory concludes that firms should do a credit appraisal of individual customers before advancing credit.

However, this theory has been criticized on account that the criteria used is dynamic to a firm. Therefore, it becomes difficult to use a standard measure to use across the board.

The theory is useful to the study is that it stipulates the steps towards effective credit risk management via a theoretic model which may be customized for a given cluster of borrowers and used to predict the possibility for occurrence of default. According to the theory, credit management is largely dynamic and there exists a conventional approach of averting credit the risk. It outlines a framework for evaluating credit risks of any form being experienced by the energy supply firms thus resulting to better performance.

### **2.2.2 Contingency Theory**

The proponent of the contingency theory of management was Fred Fiedler (1978). The theory argues that each organization has its own specific contingent factors which shape how it conducts its operations. Every entity therefore experiences varying external and internal challenges depending on its contextual capabilities which determine their efficiency (Battilana, & Casciaro, 2012). A firm only be able to perform as expected when there is adequate understanding of these contingency attributes and how managed any challenges which occur as a result.

The main strength of Contingency Theory is that it describes fitting characteristics of the organization to contingencies that reflect the situation of the organization (Ganco, & Hinings, 2013). The theory advocates that the firm should explore alternative solutions to solving problems as opposed to sticking to the traditional ways of doing things. According to the theory, alternative approaches may prove more effective given that different circumstances demand specific organizational structures (Otley, 2016).

The theory is applicable for this investigation is that it theorizes the energy supply companies as to having different internal and external factors which affect how they perform. The preposition to the study is that the impact of the credit management practices to performance will vary depending on the energy company due to varying contextual factors. Additionally, the type and success of each credit risk management practice will differ organizational wise among the energy supply companies (Hanisch, & Wald, 2012).

### **2.2.3 Motive Theory of Credit**

The proponent of this theory was Schwartz (1974). The theory aims at finding out the motive for which suppliers extended credit to other firms. Based on this theory, the motive to extend credit by a supplier is classified into three; financial, operational, and commercial. The theory holds that financially stable firms were more likely to continually extend credit to their small customers who are not able to access funding from conventional financial institutions. Suppliers in this case are the financial intermediaries for companies with limited resources. Larger firms have easy access to capital markets and hence on the other end they were able to offer more credit to customers. They find fewer constraints when sourcing for fund to expand their commercial operations (Faulkender & Wang, 2006).

According to Emery, (1984) there is a clear nexus between offering trade credit and the size of an organization. The theory goes further to propose that creditworthiness of companies should offer more credit to the less creditworthy companies. Suppliers are likely to be motivated to give credit to their customers if they will gain a higher rate of return from the debtors than that of other investments (Emery 1984). This model implies that companies that are more cash liquid are likely to prefer offering more credit to their customer than investing in short term marketable securities. The motive behind this is to guarantee repeat sales and cement customer loyalty.

This theory's key contribution to the study is that firms with low market share should consider introducing trade credits sales as a strategy to expand their market share (Hill et al., 2010). The theory supports the decision by certain energy supply companies to offer services on credit which exposed them to higher risks. Therefore, for the energy supply firms, they have to evaluate the motive behind issuing credit before issuing them so as to ensure maximum gains are accrued from the credits issued.

### **2.3 Empirical Literature**

Over several years ago different studies have been carried out to examine the degree of association between credit risk management and profitability of the firm. Wu, Firth, and Rui (2014) studied the correlation between trust and trade credit within companies in China. The findings in this research established that privately owned companies that enjoyed superior social trust chose to make use of trade credits from their creditors. Moreover, these firms would reciprocate the same by extending more trade credit to their customers. The study found that firms with little or no social trust were not able to gain credit facility from the creditor and they were not able to extend the same to their customers. Therefore, companies that enjoyed high trust levels were found to be in a position where they recover their overdue debts with ease and more quickly. On the other hand, they were also able to settle their debts within their agreed upon credit terms. The study concluded that Small to Medium Enterprises need to establish some degree of trust which will inform their decisions before they offer a trade credit facility to their customers.

Uwonda et al., (2013) with a survey that examined cash flow management of Ugandan SMEs arrived in a conclusion that more often than not, a majority of SMEs actively tracked their cash flows. In addition, the findings showed that many SMEs were able to match their cash flows. In addition, they were able to continually upgrade and improve their credit policies on a regular basis.

In the end the results show that credit management practice among SMEs in Uganda in the form of having an efficient credit policy which is continuously reviewed and updated had an impact on the maintenance of an estimated optimal cash flows within the business.

Loveline et. al, (2014) conducted research in Kuching-Sarawak Malaysia that examined the problems faced by women in entrepreneurship. The researcher surveyed 31 respondents; the survey found that one of the challenges the firms found was the capacity to hiring qualified professionals to run the companies. This is in addition to the challenge of credit management as a result their customers fail to honor their credit obligation which translates in poor cash flows for the business. In conclusion, this analysis found out that hiring the right people who are qualified for the job was key in handling credit management in any company no matter the size.

Tanui, Wanyoike and Ngahu, (2015) undertook a research in Nakuru county in Kenya on the effect of credit scoring and administration on SACCOs' financial performance. In the findings it was established that a strong positive association between credit scores and financial performance of the SACCOs, additionally, they also found that the mode of administering of credit in SACCOs showed a direct association with overall performance. This research proposed that SACCO's should continuously upgrade and institutionalize their credit scoring and credit administration. By doing this they will end up improving their overall financial results based on how strong their credit management practices will be positioned in the long run.

In his research on the impact of management of credit risk on SACCOs' financial performance, Sangwire (2016) employed a case study methodology by studying Urwego Opportunity Bank located in Rwanda. The study adopted the descriptive research design. The findings revealed that credit limit was a common practice among banks to cushion against exposure to credit risks arising from new customers with no collateral, zero tolerance to delinquency, standard loan terms as well



as group-based lending. The consistency in client's income and credit history were found to be major determinants of credit limit.

Makori and Sile, (2017) looked at the influence of client appraisal on Nairobi based DTSs. The primary data used was subjected to descriptive statistics. The study established a that the study variables were positively correlated. Therefore, adoption of well implemented credit appraisal practices was concluded to facilitate efficiency in the performance of loans. The study only covered SACCOs and this current study seeks to address this.

Odhiambo and Ndede, (2019) conducted a research on credit information sharing practices and performance of Kenyan Commercial banks. Secondary data was retrieved from each bank's published financial statements for the past five years while primary data was collected using structured questionnaires. The findings revealed that customer credit reports, information accuracy and volume of lending have a strong positive influence on the bank's financial performance. Based on the results, information accuracy equips the banks with more information about the clients and thus low likelihood of default. however, the significance of the impact on financial performance was not determined.

Cheptum, (2019) assessed the effect of credit collection practices on financial performance of manufacturing firms in Kenya. The scrutiny adopted two research designs: descriptive and causal. Inferential statistics findings alluded that there exists a positive a positive and significant effect between credit collection and performance since manufacturing firm's owners have the capacity to control credit with the support of skilled and experienced managers. The study however had a broad scope as it focused on the manufacturing companies in general without narrowing to the specific sectors of the manufacturing industry such as beverage companies which will be investigated.

Opiyo et al., (2019) studied the impact of credit scoring, credit approval, credit limit, documentation of credit and review of credit policies on performance in collection of debt by registered security firms in Kenya. Inferential statistics results revealed that credit limit policies has a negligible positive relationship with outstanding day sales. The findings showed that review of policies and credit documentation improve performance in debt collection in security firms in Kenya. However, it was established that scoring policies and credit approval decrease the security firm's debt collection performance.

Echwa, and Atheru, (2020) conducted a study on impact of credit effect of liquidity, credit and interest risks on the performance of banks in Kenya. A census design was employed since all the forty commercial banks were studied. The research applied the descriptive design where the panel regression approach was utilized. The analysis revealed that credit risk was negligible in influencing commercial bank's financial performance in Kenya. The results further indicate that liquidity risk has a weak correlation with the performance of the bank.

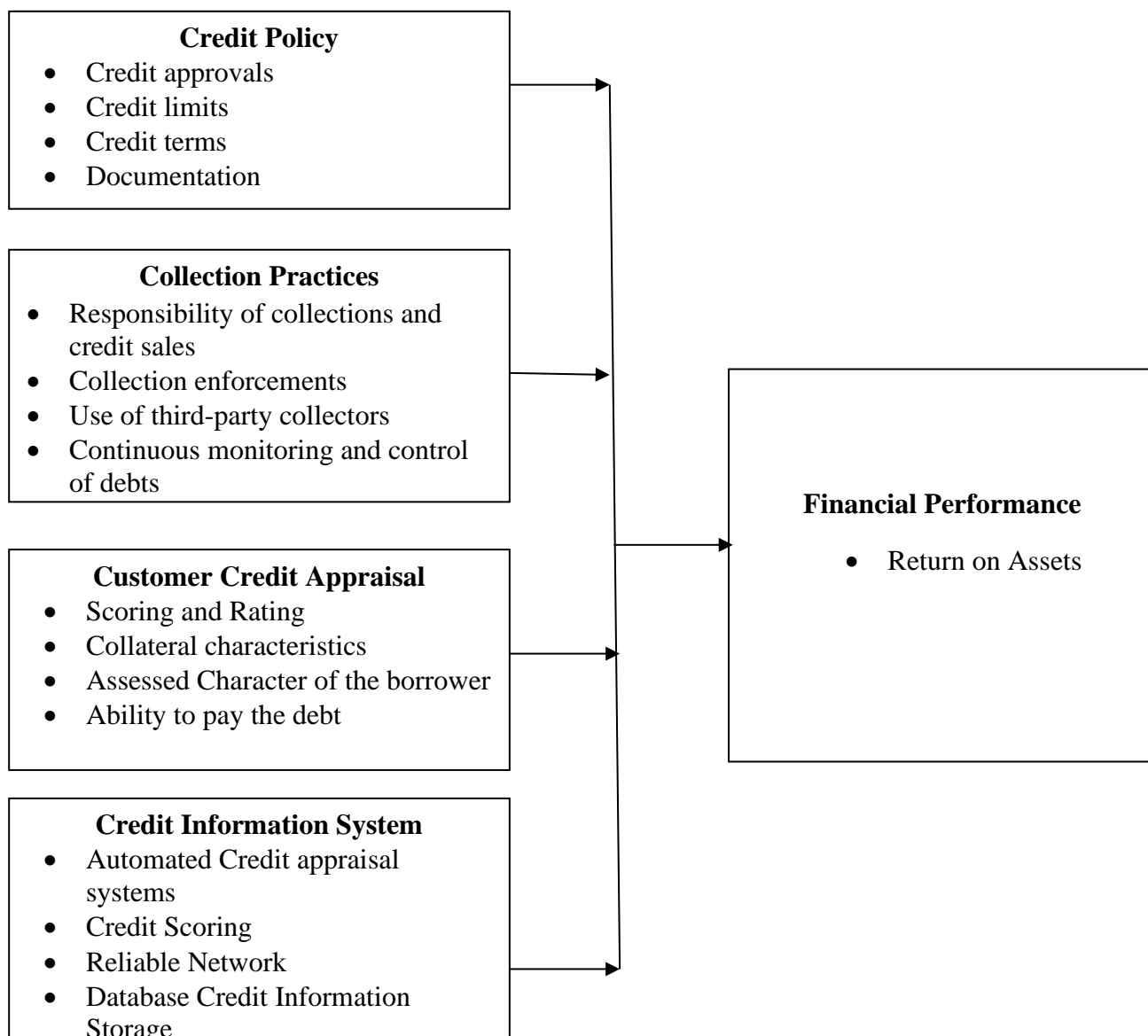
## **2.4 Conceptual Framework**

This is a diagrammatic illustration which visualizes the anticipated association between the endogenous and exogenous variables to be utilized in the study. The predictor variables for the study were the credit management practices and the dependent variable was financial performance of the energy supply companies as shown by Figure 2.1.

*Independent variables*

*Moderating Variable*

*Dependent Variable*



**Figure 2. 1 Conceptual Framework**

**2.5 Summary**

The empirical reviews above have proven that a significant positive association between the credit risk management policies a company employs, and its financial performance indeed exists. However, companies continue to struggle on determining the level of optimum debt to accept that which will realize maximum profits with minimal risk of default. Energy supply companies have

received little or no focus than is desirable from academic scholars. Little has been studied to explain how allowing of credit sales, and management of the same thereof, affects their business survival in the long run. This is a research gap in literature that this study intends to fill. It will be done by examining how various credit management practices influence the performance of energy supply companies. Eventually, the study demonstrated how credit management affects financial performance.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This section covers the research design of the study. In addition, it addresses population, sample size and the techniques used in data collection. It also discusses the procedures for processing and analyzing the data collected.

#### **3.2 Research Design**

This study made use of the descriptive survey. Creswell, and Clark, (2017) asserts that descriptive study uses observation and interpretation techniques to explain an existing condition. It describes systematically problem, phenomena or provides information about a condition. This research design enhances adequate description of the variables of the study and at the same time minimize the interferences by the investigator and thus making it suitable for this study.

#### **3.3 Population**

Kothari & Garg (2014) define study population is a group of elements with a minimum of one common characteristic. The study's population were all the companies in the energy supply sector in Kenya. As such, only the energy supply firms based in Nairobi County were targeted. Nairobi is chosen due having the largest concentration of these firms and accessible to the researcher hence convenient. This entails a total of 60 firms dealing in solar, generator, liquified petroleum gas, electricity and fuel products as per appendix I. A census methodology was adopted by this study to encompass all the 60 energy supply firms in Nairobi County.

As described by Lohr, (2019) census sampling involves enumerating the entire population items and is recommended where the entire population is enumerated to enable comprehensive exploration of the phenomena under investigation where there is high disparity within the population. The sampling approach also minimizes any biasness in the responses obtained while maximizing reliability of the data collected. The respondents were the being top, middle and lower level of management or their equals in the companies in the respective firms. These respondents are selected due to their direct involvement in the daily operations of the firms hence most knowledgeable on the credit risk management firms and performance.

### **3.4 Data Collection**

Both primary and secondary data will be utilized in the study. Structured questionnaires were issued to gather primary data. The choice of questionnaires is informed by the fact that a wide range data can be obtained within a short time and at a reasonable cost. The questionnaires constituted both closed as well as open- ended questions. The responses were evaluated with the aid of a five-point Likert Scale and information was captured in three sections. Section A made inquiry on the background information, B credit risk management while section C measured financial performance. The questionnaires were administered through the drop and pick later approach.

### **3.5 Validity and Reliability**

The instrument was assessed for content and construct validity. It entails assessing the extent to which the contents of the questionnaire capture the objectives, have applied the

correct vocabulary and has adopted a proper sentence structure. To ensure two, the researcher engaged with supervisors to design a draft questionnaire. The accuracy of data collection and consistent data cleaning was upheld. On the other hand, construct was attained from review of literature and alignment of data collection instruments (Twycross & Heale 2015)

### **3.5.2 Reliability Test**

Mugenda and Mugenda (2008) defined reliability as the consistency obtained via research instruments. A pilot study was conducted to pre-test the questionnaires and ameliorate for any inconsistencies arising. In this study SPSS was used in computing Cronbach Alpha which indicated the reliability of the measurement scales. Values of Cronbach alpha above 0.7 were deemed to be reliable.

### **3.6 Data Analysis**

The collected data was reviewed and cleaned which entails testing the data for completeness and controlling for outliers. Data entry was performed by coding the data into the SPSS software Version 20). Descriptive statistics such as standard deviation and mean will be executed to understand the data. The nexus between the dependent and predictor variables was evaluated using inferential statistics including correlation and regression and findings presented using charts and tables.

#### **3.6.1 Analytical Models**

The multiple regression equation is presented as follows;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Where:

Y = Financial Performance of the energy supply firms

$\beta_i$  = The coefficients for different variables.

$\beta_0$  = the Y intercept

$X_1$  = Credit Policy

$X_2$  = Collection Practices

$X_3$  = Customer Credit Appraisals

$X_4$  = Credit Information System

$X_5$  = Government Policies

$e$  = the error term

### **3.6.2 Test for Significance**

Analysis of variance shall be conducted to assess whether the model adopted is significant.

The F calculated value will be measured at 95% confidence level which translates to 5 per cent level of significance.

### **3.6.3 Diagnostic Tests**

Diagnostics examine the presumptions of regression analysis was performed for assessment whether qualitative data is legitimate. Diagnostic tests executed include normality, linearity test, auto-correlation, multi-collinearity and heteroscedasticity. Auto-correlation is a regression assumption where residuals are random and have no correlation with other variables as well as among themselves. The study adopted the ANOVA test of linearity to check the associations between the variables

Heteroscedasticity arises when the variance of the dependent variable is inconsistent across the data set, a departure from a scenario were OLS male the assumption that the error term's



variance is constant. The Breusch-Pagan technique of testing for heteroscedasticity was applied in the study.

Multicollinearity tests was performed so that vague deductions about the association between the exogenous and endogenous variables is averted. Multicollinearity was evaluated using the Variance Inflation Factor and thereafter controlled by eliminating highly correlated variables. The extent of kurtosis and skewness was used to measure normality.

### 3.7 Operationalization and Measurement of Study Variables

Table 3.1 depicts operationalization of the variables of the study.

Table 3. 1 Operationalization and Measurement of Study Variables

<b>Variable</b>	<b>Type</b>	<b>Measurement</b>	<b>Scale</b>	<b>Analysis</b>
Financial Performance	Dependent	<ul style="list-style-type: none"> <li>• Profitability</li> <li>• Income</li> <li>• Net Profit earnings</li> </ul>	Ordinal	Descriptive and inferential analysis
Credit Policy	Dependent	<ul style="list-style-type: none"> <li>• 5 Cs of credit of credit analysis</li> <li>• Credit approvals</li> <li>• Credit limits</li> <li>• Credit terms</li> <li>• Documentation</li> </ul>	Interval	Descriptive and inferential analysis
Collection Practices	Independent	<ul style="list-style-type: none"> <li>•Responsibility of collections and credit sales</li> <li>•Collection enforcements</li> <li>•Use of third-party collectors</li> <li>•Continuous monitoring and control of debts</li> </ul>	Ordinal	Descriptive and inferential analysis
Customer Credit Appraisal	Independent	<ul style="list-style-type: none"> <li>• Scoring and Rating</li> <li>• Collateral characteristics</li> <li>• Assessed Character of the borrower</li> <li>• Ability to pay the debt</li> </ul>	Ordinal	Descriptive and inferential analysis
Credit Information System	Independent	<ul style="list-style-type: none"> <li>• Automated Credit appraisal systems</li> <li>• Credit Scoring</li> </ul>	Ordinal	Descriptive and

- Reliable Network
- Database Credit Information Storage

inferential  
analysis

---

## **CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION**

### **4.1 Introduction**

The purpose of this research was to investigate the impact of credit risk management practices on the profitability of energy supply companies in Kenya. The study objectives were to establish the extent of adoption of various credit risk management practices and to establish the effect of credit risk management practices on profitability of energy supply companies in Kenya. Diagnostic tests, findings and discussion of the results are presented in the chapter.

### **4.2 Response Rate**

The study had a sample of 60 energy supply companies. A total of 60 questionnaires were issued where 48 were successfully filled and returned translating to 80 percent response rate. This implies that the study was successful in data collection hence the findings of the study can be used to draw conclusions and recommendations for the energy supply companies.

### **4.3 Results from the Pilot study**

Cronbach's reliability test results were as shown in the table below;

Table 4.1: Reliability Test Results

<b>Factor (Scale)</b>	<b>Number of Items</b>	<b>Cronbach Alpha</b>
Profitability	6	0.82
Credit Policy	8	0.78
Credit Collection Practices	8	0.89
Customer Credit Appraisal	8	0.91
Customer Information System	8	0.96

**Source: Researcher 2021**

Credit Policy, Credit Collection Practices, Customer Credit Appraisal, Customer Information System

The alpha can take any value from zero (no internal consistency) to one (complete internal consistency). According to Mugenda and Mugenda (2007) the Cronbach's Alpha for a variable should be greater than 0.7 for the instrument to be deemed as reliable. From the analysis, the Cronbach's alpha values for Credit Policy, Credit Collection Practices, Customer Credit Appraisal, Customer Information System were all above 0.70 . The data collection instrument was therefore reliable and acceptable for the purpose of the study,

#### **4.4 Demographic Information Findings**

The respondents were asked questions aimed at gathering personal biodata that assisted in determining the suitability of the participants in the survey. This section contains the findings on the demographic information.

##### **4.4.1 Gender of the Respondent**

Table 4.2. Gender

	<b>Frequency</b>	<b>Percentage</b>
Male	36	76
Female	12	24
<b>Total</b>	<b>48</b>	<b>100</b>

Source: Researcher, 2021

The results on the gender of the respondent reveal that 76 percent of the respondents were males whereas 24 percent were females. This was an indication that the study involved respondents from the two genders.

#### 4.4.2 Age of the Respondent

The age categories each one representing a certain range of age was evaluated. The responses were subjected to analysis using frequencies and percentages and the results are illustrated in Table 4.3.

Table 4.3: Age of respondent

	<b>Frequency</b>	<b>Percent</b>
18-25 years	4	8
26-35 years	22	46
36-45 years	14	29
46 and above	8	17
<b>Total</b>	<b>48</b>	<b>100.0</b>

Source: Researcher, 2021

The results reveal that 46 percent were between 26-35 years old, another 29 percent were between 36-45 years old 17 percent 46 years and above while 8 percent of the respondents were between 18-25 years old. This confirms that most of the respondents were experienced and quite conversant with the organizations' credit risk management practices.

#### 4.4.3 Respondent's level of education

It was also necessary to establish whether the respondents had attained the relevant education. The participants were provided with options ranging from secondary education to postgraduate level and requested to indicate the most advanced education they achieved. The data on level of education was analyzed using percentages and frequencies. The results are presented in Table 4.4

**Table 4.4: Educational qualification**

	<b>Frequency</b>	<b>Percent</b>
Secondary Level	2	5
Diploma Certificate	24	49.
Graduate	15	31
Post graduate	7	15
<b>Total</b>	<b>48</b>	<b>100.0</b>

Source: Researcher, 2021

It was clear from the research findings that 31 percent of the respondents had degree level of education, 15 percent, graduate education whereas 49 % had Diploma qualifications. This implies that a vast of the respondents had appropriate qualifications and therefore had relevant knowledge that could inform the study.

#### **4.4.4 Duration in Current Job**

The researcher wanted to find out the duration the respondents had served in their current positions. The respondents were provided with different options with regards to the number of years served. They were required to indicate the category that best represented the duration they had served.

**Table 4.5: Duration of service**

	<b>Frequency</b>	<b>Percent</b>
Less than 1 year	10	25
2-4 years	21	40
More than 5 years	17	35
<b>Total</b>	<b>48</b>	<b>100.0</b>

The research findings that are presented in figure Table indicate that approximately 40 percent of the subject had been in the company for a period of 2-4 years, 35 percent for more than 5 years while 25 percent had been in their positions had served less than one

year. Thus the employees had garnered adequate experience hence their information could be relied upon in drawing important conclusions concerning this study.

#### 4.4.5 Number of Employees

The study explored the number of employees working for energy companies in Kenya.

This was in a bid to ascertain the size of the company and the scale of operations.

**Table 4.6: Number of Employees**

	<b>Frequency</b>	<b>Percentage</b>
Below 5	5	2
6-10	8	17
11-20	11	23
Over 20	24	50
<b>Total</b>	<b>48</b>	<b>100</b>

Source: Researcher, 2021

The findings as indicated above reveal that majority of the organizations (50%) had over 20 employees followed by 23% with between 11-20 employees, then 17% with between 6-10 employees while 2% had below five employees. From the results, it is evident that most firms are well established with a broad employee base exceeding twenty to manage operations across the country which is a sign of sustainability.

#### 4.5 Credit Risk Management Practices

The study sought to establish the degree to which various credit risk management practices have been adopted by Kenyan energy supply firms. The respondents were presented with questions related to the different variables and asked to rate in a five point Likert Scale of; 5\_Strongly Agree, 4\_ Agree, 3\_Moderate, 2\_Disagree, 1\_Strongly Disagree

##### 4.5.1: Credit Policy

The study sought to ascertain the robustness of the organization’s credit policy. The respondents asked to rate different statements related to credit policy in the five point Likert Scale. The results were presented in Table 4.7

**Table 4.7: Credit Policy**

<b>Credit Policy</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
The credit policies are reviewed frequently to check for their appropriateness	48	4.2917	.84949
Credit documentations for all transactions	48	4.2083	.71335
Credit terms are well stipulated in the lending policy.	48	4.1083	1.28756
The firm has well laid out credit limits	48	4.1042	.69158
Credits are approved following a specific criteria and protocol	48	3.9375	.83555
The borrower must meet and fulfill minimum documentation requirements before receiving credit.	48	3.9250	.98121
<b>Average</b>	<b>48</b>	<b>4.0958</b>	<b>0.89312</b>

Source: Researcher, 2021

The results as depicted above reveal that the organization as an effective credit policy as depicted by an overall mean of 4.096. The respondents construed to a great extent with all statements including; credit policies are reviewed frequently to check for their appropriateness, all credit transactions are well documented, the firm has well laid out credit limits and the borrower must fulfill minimum documentation requirements before receiving credit.

#### **4.5.2 Credit Collection Practices**

The study measured the degree to which different credit collection practices have been adopted by the companies. The respondents were presented with various statements related



to credit collection and asked to rate in the Likert Scale. The findings were as demonstrated in Table 4.8 below

**Table 4.8: Credit Collection Practices**

	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Collection of credit is done within specified timeframes	48	4.0833	.79448
Collection and credit sales have the responsibility of ensuring the credits are up to date	48	3.8958	.69158
There is continuous monitoring and control of debts	48	3.7500	1.39146
Credit collection is strictly enforced by the firm	48	3.5625	.84818
The firm outsources third-party collectors to help in credit collection	48	3.0833	.89522
<b>Average</b>	<b>48</b>	<b>3.675</b>	<b>0.92418</b>

Source: Researcher, 2021

The results obtained from the study were mixed and varied. While the respondents agree to a large with attributes such as the collection of credit is done within specified timeframes, collection and credit sales have the responsibility of ensuring the credits are up to date and there is continuous monitoring and control of debts as demonstrated by means of 4.08, 3.89 and 3.75 respectively, the majority were uncertain as to whether credit information is strictly enforced by the firm and the firm outsources third-party collectors to help on credit collection as shown by means of 3.562 and 3.083 respectively. The average mean of 3.675 implies that the firm somewhat has intact credit collection practices.

#### **4.5.3 Customer Credit Appraisal**

The study measured the degree to which energy supply companies undertake credit appraisals in Kenya. The respondents were presented with various statements related to

customer credit appraisal and asked to rate in the five point Likert Scale. The results were as presented in Table 4.9 below

**Table 4.9: Customer Credit Appraisal**

	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
The firm evaluates the ability of the borrower to pay debt based on clearly documented procedures	48	4.1292	.84399
The firm considers the condition of the credit	48	4.0208	.83767
The firm collects information to access the attributes of the borrower at the stage of credit appraisal	48	3.7500	1.19396
Nature, marketability, value and quality of collateral in seeking credit	48	3.5417	1.20210
The firm deliberates on the borrowers' credit score using information from credit referencing bureau	48	3.0417	.92157
<b>Average</b>	<b>48</b>	<b>3.6967</b>	<b>0.99986</b>

Source: Researcher, 2021

From the results, most respondents agree that the firm evaluates to pay debt based on clearly documented procedures (M- 4.13, SD- 0.88), followed by the firm considers the condition of the credit (M-4.02, SD- 0.837), then the firm collects information to access the attributes of the borrower at the stage of credit appraisal (M- 3.750, SD- 1.194). On the other hand, the respondents agree to a moderate extent that the nature, marketability value and quality of collateral are crucial in seeking credit (M- 3.5417, SD-1,202) while most were unsure as to whether the firm deliberates on the borrowers' credit score using information from credit referencing bureau as evidenced by a mean of 3.042

#### **4.5.4 Customer Information System**

The researcher purposed to access the effectiveness of customer information systems among energy supply firms in Kenya. The respondents were presented with various

statements related to customer information system and asked to rate in the five point Likert Scale. The results were as presented in Table 4.10 below

Table 4.10: Customer Information System

	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
The firm has a database for storing credit information	48	4.321	1.09135
There is reliable network in the firm to facilitate credit processing	48	3.8542	1.01036
Credit scoring is undertaken automatically from the system	48	3.7083	1.21967
The firm frequently updates the credit information system based on emerging demands	48	3.5000	1.20283
The firm uses automated credit appraisal systems	48	3.4792	1.05164
<b>Average</b>	<b>48</b>	<b>3.7725</b>	<b>1.11517</b>

Source: Researcher, 2021

It can be construed from the findings that majority of the firms have a database for storing credit information (M- 4.32, SD- 1.091). Additionally, the respondents agree that there is reliable network in the firm to facilitate credit processing (M-3.854, SD- 1.010) and that credit scoring is undertaken automatically from the system (M- 3.708, SD- 1.21). However, the respondents were neutral on whether The firm frequently updates the credit information system based on emerging demands and the firm uses automated credit appraisal systems as shown by means of 3.50 and 3.47 respectively.

#### **4.6 Diagnostic Tests**

Diagnostic tests including normality tests, homoscedasticity tests and multicollinearity tests were among were performed prior to performing regression analysis. To determine normality of the distribution, Shapiro-Wilk test was used and complemented by

Kolmogorov-Smirnov test. Test of Breusch-Pagan was employed to determine homoscedasticity while tolerance and VIF were used to test for multi-collinearity.

#### 4.6.1 Normality Test

**Table 4.11: Normality Test**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Profitability	.099	48	.200*	.951	48	.080
Credit Policy	.207	48	.000	.713	48	.000
Credit Collection Practices	.316	48	.000	.735	48	.000
Customer Credit Appraisal	.276	48	.000	.770	48	.000
Customer Information System	.173	48	.004	.895	48	.001

a. Lilliefors Significance Correction

Both the Kolmogorov-Smirnov and Shapiro-Wilk significance values for the variable profitability are greater than the  $\alpha$  value (0.05) as indicated in Table 4.11. Therefore, the variable's data is normally distributed. However, both Kolmogorov-Smirnov and Shapiro-Wilk significance values for the credit policy, credit collection practices, customer credit appraisal and customer information system in exchange rate variables are lower than the  $\alpha$  value (0.05). Therefore, the variables' data series are not regularly distributed. Standardization is the cure for non-normal data; thus, the data series of all variables were thus standardized as a means to correct distribution non-normality.

#### 4.6.2 Test for Homoscedasticity

Test for homoscedasticity for all of endogenous variables used in this research is summarized in Table 4.12 Breusch-Pagan test was used to determine the results. In SPSS, there is really no explicit Breusch-Pagan heteroscedasticity test. Nonetheless, there is a less straightforward way to go about it. The residuals, both standardized plus unstandardized are transformed through squaring and the resulting variable is then regressed with all of the study's predictor variables.

**Table 4.12: Test for Homoscedasticity**

<b>Model</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
1	Regression	.008	4	.002	.536	.710 <sup>b</sup>
	Residual	.131	43	.004		
	Total	.139	47			

a. Dependent Variable: Profitability

b. Predictors: Credit Policy, Credit Collection Practices, Customer Credit Appraisal, Customer Information System

Because the significance value achieved in the results given in Table 4.12 (0.710) is greater than the critical value (0.05), the data series for all the entire response variables are homoscedastic, as demonstrated by the findings. Thus, the predictor variables utilized in the study had constant variance.

#### 4.6.3 Test for Multicollinearity

Table 4.13 shows the results for VIF and tolerance to ascertain multi-collinearity test.

Table 4.13: Multicollinearity Statistics

<b>Model</b>	<b>Collinearity Statistics</b>	
	<b>Tolerance</b>	<b>VIF</b>

1	Credit Policy	.595	1.679
	Credit Collection Practices	.563	1.776
	Customer Credit Appraisal	.922	1.084
	Customer Information System	.965	1.037

a. Dependent Variable: Profitability

Table 4.13 findings reveal all of predictor variables used for the research are more than 0.1 in tolerance, while the VIF value fall between 1 and 10. Thus, the predictor variables in the research do not exhibit multicollinearity.

#### 4.6.4 Tests for Autocorrelation

The autocorrelation test was conducted using the Durbin-Watson Statistic is presented on Table 4.14.

**Table 4.14: Autocorrelation Test**

Model	Durbin-Watson
1	1.080 <sup>a</sup>

a. Predictors: Credit Policy, Credit Collection Practices, Customer Credit Appraisal, Customer Information System

b. Dependent Variable: Profitability

The Durbin-Watson statistic has a limit of 0 to 4 point. If there is no correlation between variables, a score of two will be obtained. If the values range between 0 to a value less than 2, then there exists a positive autocorrelation or negative when the value ranges from 2 to 4. A score of 1.080 was obtained meaning that the autocorrelation problem does not arise in this scenario.

#### 4.6 Multiple Linear Regression Analysis

The study sought to establish the effect of credit management practices on the profitability of energy supply companies in Kenya. Regression analysis was used to establish the impact. The predictor variables were credit policy, credit collection practices, customer credit appraisal and customer information system while the dependent variable was profitability. The aggregated mean for each of the variables was obtained and used for regression

**Table 4.15: Model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.535 <sup>a</sup>	.286	.220	.81387

a. Predictors: (Constant), Credit Policy, Credit collection Practices, Customer Credit Appraisal, Customer Information System

The Co-efficient of Determination (R Square) shows changes in the response variable as a result of modifications of the predictor variables used in the research model. The results as illustrated in Table 4.15 revealed that R<sup>2</sup> value was 0.286 which suggest that the selected credit management practices explain 28.6 percent of the variance in the profitability of energy supply companies. The remaining 71.4 percent variance in profitability is associated to other factors not considered in the study.

**Table 4.16: Analysis of Variance**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.434	4	2.859	4.316	.005 <sup>b</sup>
	Residual	28.482	43	.662		
	Total	39.917	47			

a. Dependent Variable: Profitability

b. Predictors: (Constant), Credit Policy, Credit collection Practices, Customer Credit Appraisal, Customer Information System

The results shown in Table 4.16 displays that the significance value of obtained in the Analysis of Variance (ANOVA) (0.005) is less than the critical value utilized in the current study (0.05). This means that the model entailing the independent variables (credit management practices) could be reliably used to predict the dependent variables. The critical F-value for this study is 2.64 and the F calculated value is 4.316 is greater than the critical value further affirming the significance of the model

**Table 4.17: Coefficients**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.268	.601		3.775	.000
	Credit Policy	.358	.108	.476	3.311	.002
	Credit Collection Practices	.288	.101	.317	2.854	.006
	Customer Credit Appraisal	.380	.155	.416	2.447	.019
	Customer Information System	-.031	.100	-.044	-.307	.760

a. Dependent Variable: Profitability



From the coefficients Table, the following equation is derived:

$$Y = 2.268 + 0.358X_1 + 0.288X_2 + 0.380X_3$$

The y intercept obtained from the model is 2.268. Therefore, when all factors are held constant, profitability of energy supply firms would be at 2.268. A unit variation in credit policy would contribute to 35.8 % improvement in the profitability of energy firms. Similarly, a unit variation in credit collection practices will produce 28.8 percent positive and significant improvements in profitability. Finally, if customer credit appraisal is varied by one unit, it will translate to 38 percent positive and significant changes in the profitability of energy supply firms in Kenya.

#### **4.7 Discussion of the Findings**

The study's first objective assessed the degree to which credit risk management practices have been utilized by energy supply companies. The findings reveal that all the four credit risk management practices have been greatly adopted by the organization. Precisely, matters related to credit policy such as frequent review of credit policies, credit documentation, credit limit, and requirements for lending were well stipulated in the policies of energy lending firms. Similarly, the firms were found to have clear credit collection practices outlining the timeframes within which the credit is collected, monitoring and control of debts, enforcement of credit collection and outsourcing of third parties to collect credit. On the other hand, the investigator noted that customer credit appraisal was fairly exercised by the firms which entailed the evaluation of the borrowers' ability to pay debts based on all documented procedures and meeting the requirements for credit. However, it was noted that the companies were not fully committed to establishing the borrower's credit score using information from credit referencing bureau. Finally, the

energy supply companies had robust and functional customer information management systems with an automated, firm data base for credit scoring which was frequently updated.

The regression analysis results establish a positive significant association between credit policy and profitability. These results are in agreement with Opiyo et al (2019) who found that review of policies and credit documentation improve performance in debt collection by security companies in Kenya. The results also show a positive and significant association between credit collection and profitability which is in tandem with Cheptum, (2019) who alluded that there exists a positive and significant effect between credit collection and performance since the companies have the capacity to control credit with the support of skilled and experienced managers when proper credit collection practices are in place.

Further, the results support the findings by Makori and Sile, (2017) for it showed a positive and significant association between credit appraisal and performance on grounds that adoption of well implemented credit appraisal practices facilitate efficiency in the performance of loans in their study on the influence of client appraisal on Nairobi based DTSs. However, the study's findings disagree with Odhiambo and Ndede, (2019) who concluded that customer credit reports, information accuracy and volume of lending have a significant positive impact on the bank's financial performance since an insignificant relationship since the study documents an insignificant relationship between customer information system and profitability. The results dispute the findings that information accuracy equips the banks with more information about the clients and thus low likelihood of default.

## **CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS**

### **5.1 Introduction**

The overview of the results, as well as conclusions and suggestions for policymakers and practitioners, are all included in this section. In addition, the study limitations and recommendations for further research are discussed.

### **5.2 Summary of Findings**

The study was informed by two objectives. The results show that all the four credit risk management practices have been adopted to a large degree by the organizations. Precisely, matters related to credit policy such as frequent review of credit policies, credit documentation, credit limit, and requirements for lending were well stipulated in the policies of energy lending firms. Similarly, the firms were found to have clear credit collection practices outlining the time frames within which the credit is collected, monitoring and control of debts, enforcement of credit collection and outsourcing of third parties to collect credit. On the other hand, the investigator noted that customer credit appraisal was fairly exercised by the firms which entailed the evaluation of the borrowers' ability to pay debts based on all documented procedures and meeting the requirements for credit. However, it was noted that the companies were not fully committed to establishing the borrower's credit score using information from credit referencing bureau. Finally, the energy supply companies had robust customer information management systems with an automated, firm data base for credit scoring which was frequently updated.

Multiple regression analysis results depicted that credit risk management practices have a significant association with profitability at 95% confidence level. According to the model 28.6 percent variation profitability can be explained by credit management practices in energy supply companies. The coefficients results demonstrate that credit policy, credit collection practices and customer credit appraisal have a positive and significant impact on profitability of energy supply firms while there exists a negative but statistically insignificant nexus between customer information system and performance

### **5.3 Conclusion**

The study purposed to establish the impact of credit risk management practices on the profitability of energy supply companies in Kenya. In addition, the study explored the extent to which various credit risk management practices have been implemented by the energy supply companies. It was observed that all the four credit management practices namely credit policy, credit collection practices, customer credit appraisal and customer information system have been implemented to a large degree by the energy supply companies. On the association between credit management practices and profitability, the regression model revealed that there is a statistically significant nexus among the variables and therefore credit management practices can reliably be used to predict the profitability of energy supply companies. However, the individual predictor variables had varying effects on performance. While credit policy, credit collection practices and customer credit appraisal produced a positive and statistically significant impact on profitability of energy supply firms, customer information system had a negative but insignificant impact on the profitability of energy supply companies.

#### **5.4 Recommendations**

The study recommends the top management of energy supply firms to collaborate with the credit reference bureau to evaluate the borrower's credit score rating before issuing credit. Utilizing such information would reduce the chances of issuing services on credit to potential defaulters since they will be profiled and credit worthiness reduced thus preventing loss of revenue through client defaulting.

The findings reveal that there was low utilization of third party agents in credit collection. It is prudent that the energy companies fully utilize the services of third party agents such as banks and other agents to ensure effectiveness in collection of debts and cost reductions. Having seasonal parties to aid debt collection will fast track the debt process and will be cheaper in the long-run since the services will only be sort when required as opposed to hiring full time employees to chase after debts.

Additionally, the companies should undertake frequent stem evaluation to access the credit standing of the customers. This can be achieved through automated credit appraisal systems to understand the credit worthiness of clients at any given time. This will enhance debt recovery and prevent risky lending.

Finally, energy supply companies can form a regulating authority for lending that will support and inform the development of policies around credit issuing. The authority will also support trainings on credit issuance and management to the firms to avert financial losses attributed to misguided lending.

### **5.5 Recommendations for Further Study**

The present research has solely included credit policy, credit collection practices, customer credit appraisal and customer information system as the credit risk management practices.

An investigation may be launched to ascertain if other credit management practices influence profitability. Additionally, a research may be carried out to see if there are other variables that moderate, intervene, or mediate the association credit management practices and performance.

This study has only utilized primary data, the study can be followed by studies using secondary data. This may either compliment or criticize the study's findings. Multiple linear regressions was used as the statistical technique. Additional methodologies such as discriminant analysis, components analysis and granger causality may be considered in further studies.

The current study has been performed in the context of the energy supply companies in Kenya. Thus the study can be carried in other contexts such as retail, banks, SACCOs or other contexts such as East Africa to ascertain if the same findings hold. The study will bring about curiosity among scholars and challenge them into carrying out further studies on credit management practices

### **5.6 Limitations of the Study**

The research was carried out solely in energy supply companies in Nairobi due to time and financial limitations, which does not clearly demonstrate the present outcome if the entire energy supply companies in Kenya was taken into consideration. Additionally, there could be more uncertainty if similar studies were repeated in other nations.

## REFERENCES

- Abiola, I., & Olausi, A. S. (2014). The impact of credit risk management on the commercial banks performance in Nigeria. *International Journal of Management and Sustainability*, 3(5), 295-306.
- Arsyad, L. (2015). *An assessment of performance and sustainability of Microfinance. A casestudy of Village credit institutions in Gianyar, Bali, Indonesia.*
- Basel, (2000). *Reforming Bank Capital Regulation: A Proposal by the US Shadow Financial Regulatory Committee.* Books.
- Battilana, J., & Casciaro, T. (2012). Change agents, networks, and institutions: A contingency theory of organizational change. *Academy of Management Journal*, 55(2), 381-398.
- Bekan, S. (2011). *Measurement of financial performance.* Islamabad: Pakistan Institute of Development Economics.
- Bofondi, M., & Gobbi, G. (2003). *Bad loans and entry in local credit markets.* Bank of Italy.
- Cheptum, F. J. (2019). The Effect of Credit Collection Practices on Financial Performance of Manufacturing Firms in Kenya. *International Journal of Finance and Accounting*, 4(1), 31-55.
- Chijoriga, N. (2013). *Leading Issues in Microfinance. Workshop Report: Sarvodaya Economic Enterprise Development Services (GTE) Ltd.* Hotel Coral Gardenes, Hikkaduwa, Sri Lanka.
- Cooper, D. R., & Schindler, P. S. (2014). *Business research methods (9th Edition Ed.).* New Delhi: Tata McGraw-Hill Publishing Company Limited.
- Coyle, B. (2000). *Framework for: Credit Risk Management.* Global Professional Publishi.
- Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research.* Sage publications.
- Cuevas, C. E., & Fischer, K. P. (2006). *Cooperative financial institutions: Issues in governance, regulation, and supervision.* The World Bank.
- Cuevas, F. (2006). *Research design: Quantitative, qualitative and mixed methods approaches (2nd ed).* Thousand dak, CA: Sage.
- Early, M. (1996). Incorporating economic information into credit risk underwriting. *Credit Risk Modeling*, Chicago: Glenlake Publishing, 155-168.

- Echwa, M., & Atheru, M. G. (2020). Risk Management and Financial Performance of Commercial Banks in Kenya. *Journal of Finance and Accounting*, 4(2), 14-30.
- Fadun, O. S. (2013). Risk management and risk management failure: Lessons for business enterprises. *International Journal of Academic Research in Business and Social Sciences*, 3(2), 225.
- Faulkender, M., & Wang, R. (2006). Corporate financial policy and the value of cash. *The journal of finance*, 61(4), 1957-1990.
- George, A., Ndolo, P., & Shimmon, J. (2019). Review of solar energy development in Kenya: Opportunities and challenges. *Renewable Energy Focus*, 29, 123-140.
- Hanisch, B., & Wald, A. (2012). A bibliometric view on the use of contingency theory in project management research. *Project Management Journal*, 43(3), 4-23.
- Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative studies. *Evidence-based nursing*, 18(3), 66-67.
- Kealhofer, S. (2003). Quantifying credit risk I: default prediction. *Financial Analysts Journal*, 59(1), 30-44.
- Kinde, B.A. (2012). Financial Sustainability of Microfinance Institutions (MFIs) in Ethiopia. *European Journal of Business and Management*, 4 (12), 34-45.
- Koech, E., & Kawenga, J. (2015). Effects of Bancassurance on Performance of MFIs in Kenya. *International Journal of Management and Commerce*, 3(2), 228-233
- Kothari, C., & Garg, G. (2014). *Research Methodology: Methods and Strategy*. New age international
- Kothari, C.R. (2004). *Research methodology: Methods and techniques*. New Delhi: New Age International (P) Ltd Publishers.
- Koulaftis, P. (2017). *Modern Credit Risk Management: Theory and Practice*. Springer.
- Kumar, N & Kabir, M. (2015). *Microfinance and Mobile Banking: The Story So Far*. CGAP.
- Lagat, F. K., Mugo, R., & Otuya, R. (2013). Effect of credit risk management practices on lending portfolio among savings and credit cooperatives in Kenya. *International review of Business Research Papers*. 67(65)117-126.
- Ljungqvist, L., & Sargent, T. J. (2012). *Recursive macroeconomic theory*. Cambridge, MA: MIT Press
- Lohr, S. L. (2019). *Sampling: Design and Analysis: Design And Analysis*. CRC Press.



- Maina, S. (2008). Sustainability of Microfinance Institution from Small farmers' Perspective: a case of Rural Nepal. *International review of Business Research Papers*, 8 (7)117-126.
- Meyers, L. S., Gamst, G., & Guarino, A. J. (2016). *Applied multivariate research: Design and interpretation*. Sage publications.
- Mills Jr, D. C., (2008). Risk and concentration in payment and securities settlement systems. *Journal of Monetary Economics*, 55(3), 542-553.
- Mudiri, K (2010). *Credit risk management techniques' Perspective: a case of Rural Nepal*.
- Mugenda, M., & Mugenda, G., (2008). *Research methods: Quantitative and Qualitative Approaches*. Nairobi, Kenya: ACTS Press.
- Mugenda, O.M. & Mugenda, A.G. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: Acts Press
- Mwangi, B. W., & Muturi, W. (2016). Effects of credit risk management on loan repayment performance of commercial banks in Kenya. *International Academic Journal of Economics and Finance*, 2(2), 1-24.
- Nyasaka, F. O. (2017). *The relationship between credit risk management practices and non-performing loans in Kenyan commercial banks: A case study of KCB group limited* (Doctoral dissertation, United States International University-Africa).
- Odhiambo, F. O., & Ndede, F. (2019). Credit Information Sharing Practices and Financial Performance of Commercial Banks in Kenya. *International Journal of Current Aspects*, 3(4), 67-82.
- Opiyo, E., Mwangi, L. W., & Ndede, F. W. (2019). *Credit Risk Management Policies and Debt Collection Performance by Registered Security Companies in Kenya* (Doctoral dissertation, Kenyatta University).
- Otley, D. (2016). The contingency theory of management accounting and control: 1980–2014. *Management accounting research*, 31, 45-62.
- Panapanaan, V., Bruce, T., & Linnanen, L. (2016). Analysis of shared and sustainable value creation of companies providing energy supply at the base of the pyramid (BoP). *Business Strategy and the Environment*, 25(5), 293-309.
- Petrone, D., & Latora, V. (2018). A dynamic approach merging network theory and credit risk techniques to assess systemic risk in financial networks. *Scientific reports*, 8(1), 1-14.

- Quadan, W. (2004). *Efficient Intermediation. Ghana.: International Monetary Fund, Institute of Research and Development.*
- Rutich, B. (2015). Renewable energy market analysis in Kenya. *World Development*, 13(7), 761-787.
- Sangwayire, S. (2016). *Credit risk management mechanisms and financial performance of microfinance banks: A case study of the Urwego opportunity Bank* (Doctoral dissertation).
- Thabo, V. S., & Gichira, R. N. (2003). *Youth Co-operatives Programme*. Report on mission to Kenya, Tanzania and Zambia.
- Turyahebwa, A., (2013). Financial management practices and business performance of small and medium enterprises in western Uganda. *African journal of business management*, 7(38), 3875-3885.
- Verrecchia, R. E. (2001). Essays on disclosure. *Journal of accounting and economics*, 32(1-3), 97-180.

## **APPENDICES**

### **Appendix I: List of Energy supply Companies in Nairobi**

1. Africa Centre for Energy and Environment Solutions (ACEES) Limited
2. African Solar Power Systems Ltd
3. Aggreko Kenya Energy Rentals
4. Alpa Nguvu Solar Systems
5. Ambalian Company Limited
6. American Solar Technology
7. Barefoot Power
8. Berkeley Energy Kenya Limited
9. Blu Chip Solutions - Software Development Company in Kenya
10. Blueflame Water and Energy supply Ltd.
11. BrightGreen Renewable Energy
12. CAMCO Clean Energy
13. Chloride Exide (K) Limited - Automotive & Solar Batteries, Back-up system Solutions
14. Clean energy foundation
15. Collaboration Engineering Solutions and Products (CESP) Africa
16. Daima Energy Services Ltd
17. Davis & Shirliff Limited
18. Delta Energy Systems (K) Ltd
19. DPA (Distributed Power Africa)
20. Eenovators Limited
21. Energy Pak Kenya
22. Energy Saving Solutions
23. Energy supply Africa Limited (ESAL AFRICA)
24. Equator Energy
25. Exstream Energy supply Ltd
26. Generic Energy
27. Go Solar Systems Ltd

28. Green Network Africa
29. Greenlog Solutions Limited
30. Harmonic Systems ltd
31. Hyperteck Electrical Services Ltd
32. Impact Energy supply Ltd
33. Kenital Solar Ltd
34. Kenya cleaner production
35. Kenya Green energy foundation
36. Kenya Power
37. Kenya Solar Energy Limited
38. Knights Energy
39. Larso power systems ltd
40. Lean Energy supply Ltd
41. LED Power Technologies EA K Ltd
42. Merculex Energy supply
43. Nvision.Energy
44. OFGEN
45. Opibus Ltd
46. Powergen Technologies Ltd
47. Powerpoint Systems (E.A) Ltd
48. Powerware Systems Limited
49. Premier Solar Solutions Ltd
50. Ren Engineering Solutions
51. Renewable Energy supply (RESOL)
52. Rubis Kenya
53. Sess Solutions Ltd
54. Solagen Power Limited
55. Solar World E.A Ltd
56. Solarworks East Africa
57. Suncity Energy supply
58. SunPoynt

- 59. Suntech Ltd
- 60. Sustainable Power Solutions
- 61. Synergetic Energy Partners
- 62. Total energy
- 63. Virunga Power
- 64. Vivo Energy

**Appendix II: Questionnaire**

The information gathered on the credit risks faced by energy supply companies and their impact on profitability will only be used for academic purposes

**SECTION A: BACKGROUND INFORMATION**

**1. Please indicate your gender**

Male  Female

**2. Please indicate your age**

18-25  26-35  36-45  46 and above

**3. Please indicate your highest level of education**

Secondary level  Certificate/Diploma  Graduate  Postgraduate

**4. How long (in years) has your company been operating?**

Less than 1 year  2-4 years  More than 5 years

**5. What is your current number of employees**

Below 5  6-10  11-20  Over 20

**SECTION B: CREDIT RISK MANAGEMENT PRACTICES ADOPTED BY THE ENERGY SUPPLY COMPANIES**

**6. Credit Policy**

Rate in a scale of 1-5 the extent to which the following credit policy practices have been implemented in the Bank by ticking on the appropriate box : 5- Very Large Extent, 4- Large extent, 3- Moderate extent, 2- small extent, 1- Not at all

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Credit documentations for all transactions					
The firm has well laid out credit limits					
Credits are approved following a specific criteria and protocol					
The credit policies are reviewed frequently to check for their appropriateness					
Credit terms are well stipulated in the lending policy.					
The borrower must meet and fulfill minimum documentation requirements before receiving credit.					

## **7. Credit Collection Practices**

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Credit collection is strictly enforced by the firm					
Ccollection and credit sales have the responsibility of ensuring the credits are up to date					
The firm outsources third-party collectors to help in credit collection					
There is continuous monitoring and control of debts					
Collection of credit is done within specified timeframes					

## **8. Customer Credit Appraisal**

Rate in a scale of 1-5 the extent to which the following customer-credit approval practices have been implemented in the Bank by ticking on the appropriate box : 5- Very Large Extent, 4- Large extent, 3- Moderate extent, 2- small extent, 1- Not at all

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
The firm considers the condition of the credit					
Nature, marketability, value and quality of collateral in seeking credit					
The firm deliberates on the borrowers' credit score using information from credit referencing bureau					
The firm collects information to access the attributes of the borrower at the stage of credit appraisal					
The firm evaluates the ability of the borrower to pay debt based on clearly documented procedures					

### **9. Credit Information System**

Rate in a scale of 1-5 the extent to which the following credit information system have been implemented in the Bank by ticking on the appropriate box : 5- Very Large Extent, 4- Large extent, 3- Moderate extent, 2- small extent, 1- Not at all

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
The firm uses automated credit appraisal systems					
There is reliable network in the firm to facilitate credit processing					

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
The firm has a database for storing credit information					
Credit scoring is undertaken automatically from the system					
The firm frequently updates the credit information system based on emerging demands					

### **SECTION C: PROFITABILITY**

Rate in a scale of 1-5 the extent to which the following profitability indicators have been achieved by the firm by ticking on the appropriate box : 5-, 4- Large extent, 3- Moderate extent, 2- small extent, 1- Not at all

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
The firm has registered growth in profitability over the last three years					
There has been growth in net profit earnings of the firm over the last three years					
The firm has recorded consistent growth in income in the last three years					
There has been improvement in return on assets of business over the last three years					



**END**

*Thank you for your time*

