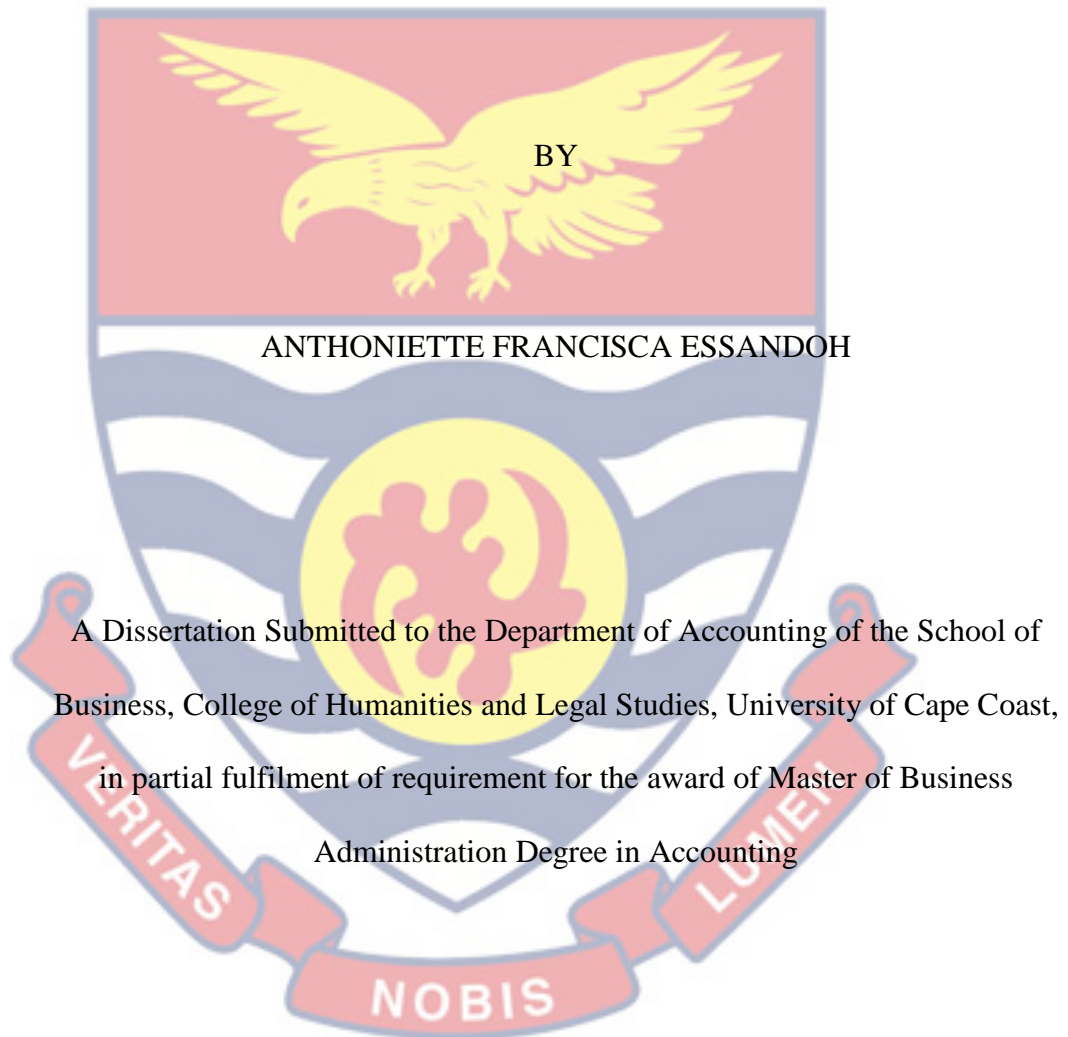


UNIVERSITY OF CAPE COAST

CREDIT RISK AND PROFITABILITY OF SOME SELECTED CREDIT  
UNIONS IN GHANA



November 2018

## DECLARATION

### Candidate's Declaration

I hereby declare that this dissertation is the result of our own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's signature ..... Date .....

Name: Anthoniette Francisca Essandoh

Index number: SB/SAC/16/0001

### Supervisor's Declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of project work laid down by the University of Cape Coast.

Supervisor's signature ..... Date .....

Name: Rev. George Tackie

## ABSTRACT

The paper aims to examine the impact of credit risk on the profitability of credit unions in Ghana. The specific objectives are: to examine the methods of measuring credit risk, examine the factors that influence credit standards of credit union, examine the relationship between credit risk and profitability and to assess the credit risk management strategies adopted by credit unions in Ghana. The research design adopted by the study was a descriptive research design. A sample size of 60 out of the population of 400 credit unions in Ghana was used. A self-administered questionnaire was used as the instrument for the collection of data. The study found out that the use of ratio of non-performing loans to total loans, levels of bad debt written-off and increase in provision for loan losses are methods common in measuring credit risks to all credit unions. It was revealed that there is a negative relationship between credit risk and profitability. The findings revealed that cost of risk associated with the loan, business cycle, availability of interim financing mechanism are some of the conditions that influence the credit standards of credit unions in Ghana. The study found that availability of lending policies, different credit terms for different customers and holding guarantors responsible for the loss and taking over collateral are management strategies towards risk management. It is also recommended that credit unions must develop a framework that consistently measures credit risk. Management of credit unions must provide regulations on credit risk, monitoring mechanisms and credit granting processes to loan/credit officers and also government through the Bank of Ghana can develop and enforce some standard credit guidelines that will influence the credit policies of credit unions.

## ACKNOWLEDGEMENTS

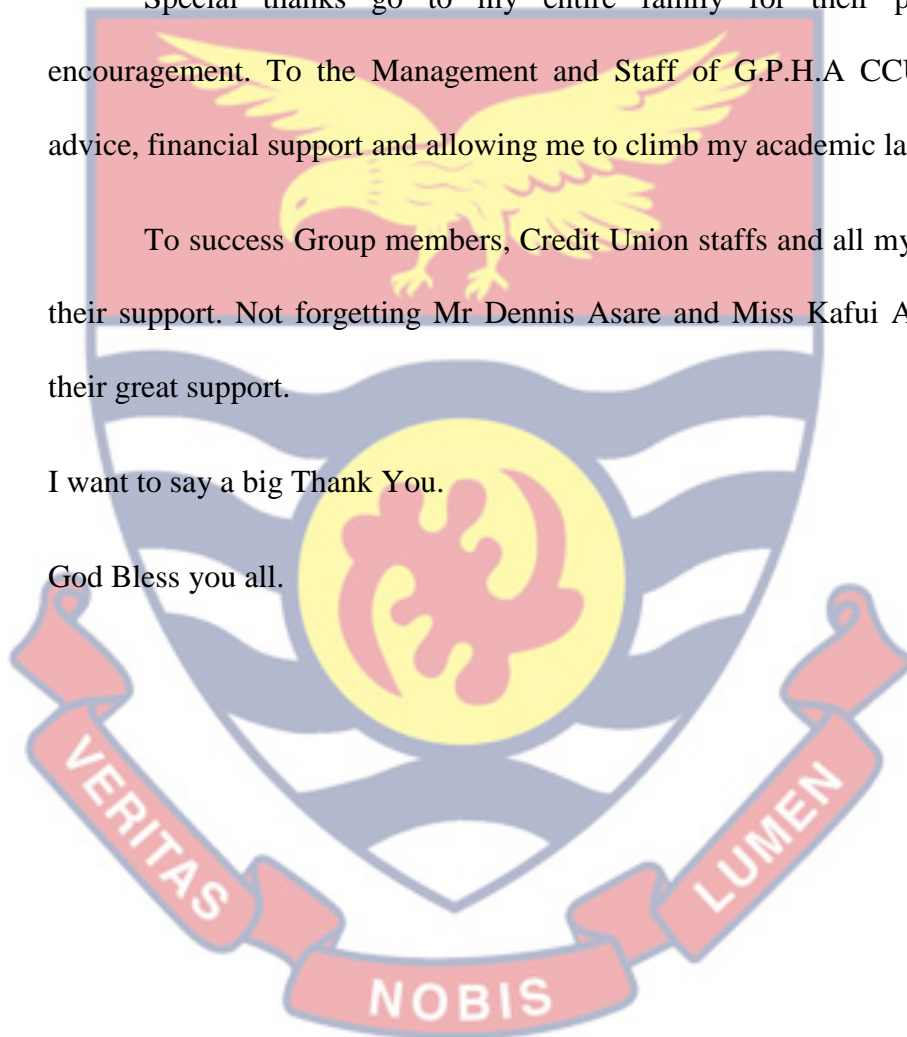
I particularly appreciate the marvellous guidance and support given to me by my supervisor, Rev. George Tackie a Senior lecturer at the Department of Accounting of the University of Cape Coast, for his time and coaching skills in coming out with this dissertation successfully.

Special thanks go to my entire family for their prayers and encouragement. To the Management and Staff of G.P.H.A CCU, for their advice, financial support and allowing me to climb my academic ladder.

To success Group members, Credit Union staffs and all my friends for their support. Not forgetting Mr Dennis Asare and Miss Kafui Akumani for their great support.

I want to say a big Thank You.

God Bless you all.



## DEDICATION

To my Husband John Arthur Graham, and children: Clara, Osborn, Judah,  
Cecelia and Doxa.

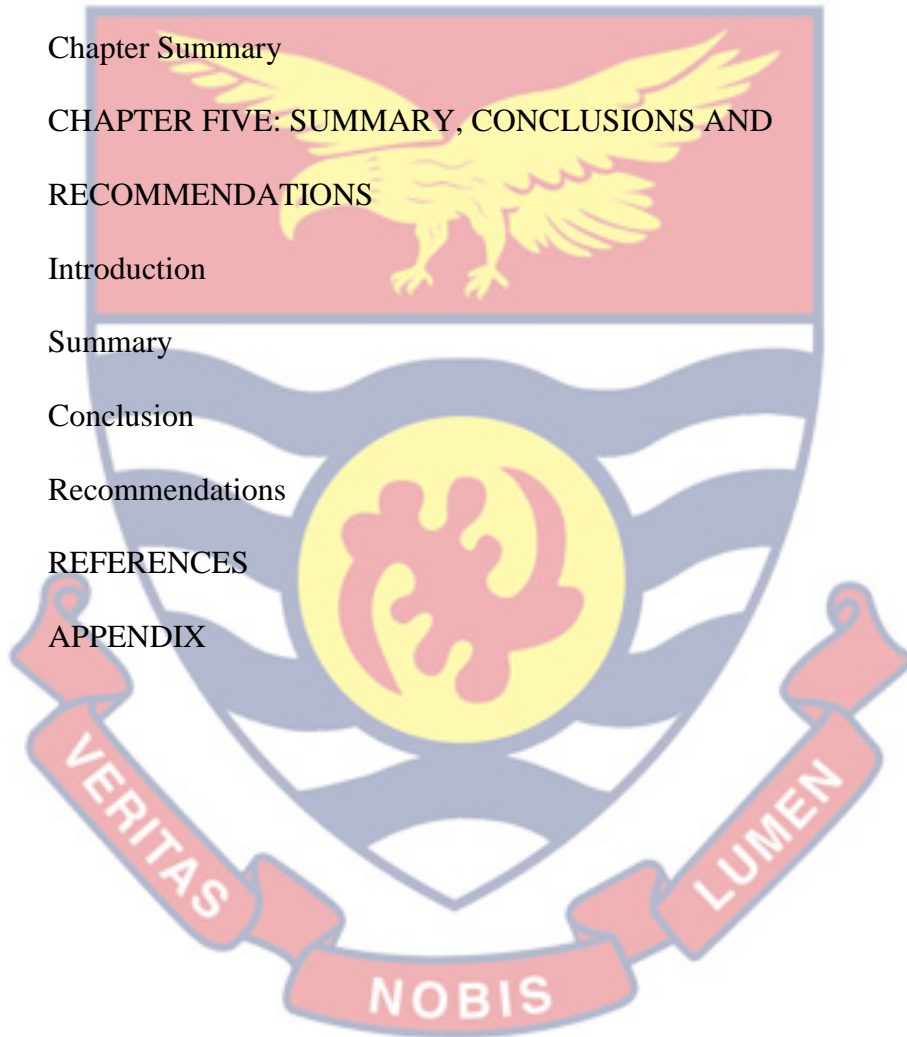


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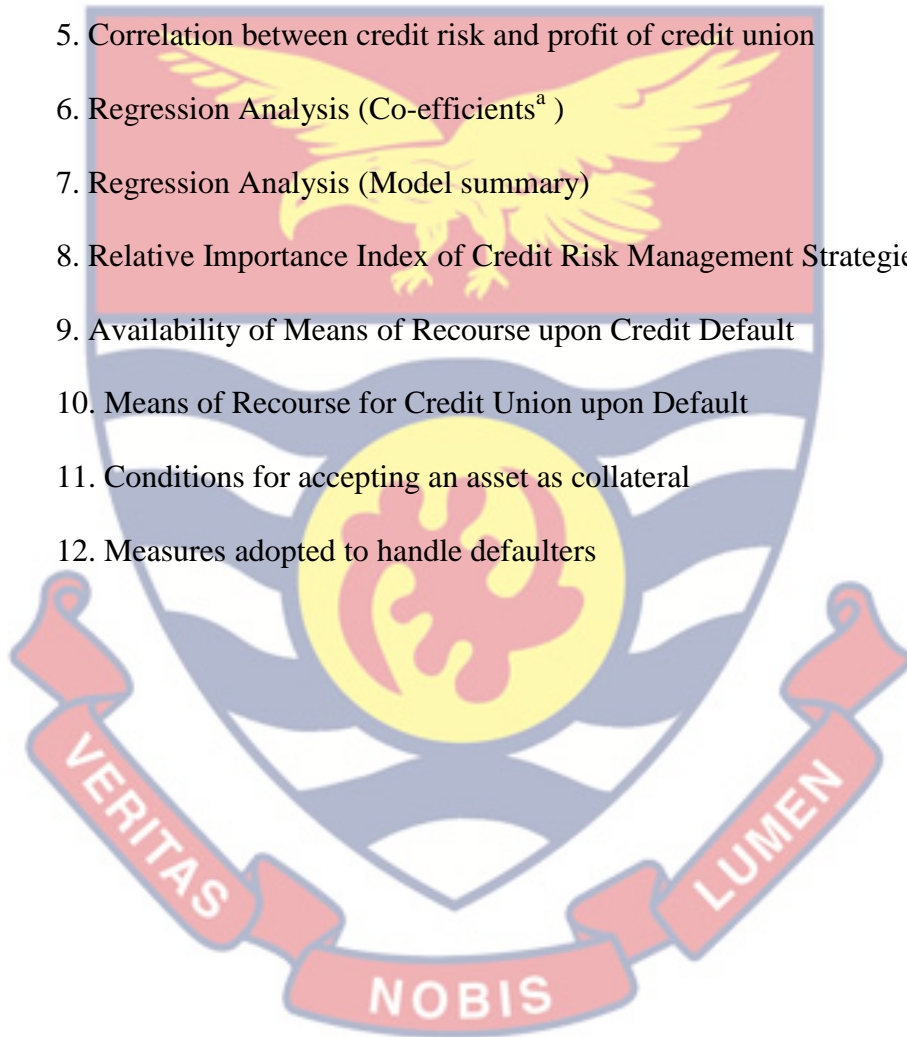
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## CHAPTER ONE

### INTRODUCTION

#### Background of the Study

Public participation in creation of capital cannot be underestimated in the economy of every country. Capital creation is undertaken through the banks and non-bank financial institutions in the form of deposits, savings, bonds and treasury accounts (Heydari & Abdoli, 2015). The ability of banks to create capital is dependent on the banks' ability to recycle the capital created through lending and investment. Understanding the portfolio of risk associated with lending to a customer as well as the future risk the financial institution is prepared to bear becomes paramount (Hull, 2007). Credit risk hence is a risk that banks and financial institutions carefully monitor due to its impact on the firm's survival (Afriyie & Akotey, 2013).

Credit unions in recent times have grown significantly around the world and contributed significantly to providing financial intermediary services to locations where banks do not see tendencies of high profitability (Gupta, 2006). Credit unions across the world have been able to raise access to capital, saving and improved economic standards of host communities as well as members of the unions (Parthasarathy, 2008). Contemporary credit unions have transcended in terms of number of credit unions and the asset mix of portfolio and made credit unions more lucrative (Sant & Schroeder, 2012).

Credit unions are different from banks in several ways including but not limited to regulation, governance structures, business activities, investments and obligations to customers and the state. Singh (2006) argues that credit unions are discrete from banks because credit unions cannot do

business with the general public, provides capital for persons and communities who may not meet the requirement of securing capital from banks and are exempted from taxes in some countries. In most cases members of credit unions are more likely to be low and middle income earners (Singh, 2006). This implies that the extent of risk credit unions can take is hugely limited due to limitations on capital accumulation and investment portfolios.

Credit unions have sprung up greatly in Ghana in the last decade, spreading throughout the ten regions of Ghana with an estimated number of over four hundred (400) registered credit unions under the regulation of Ghana Co-Operative Credit Unions Association (CUA, 2016). The Ghanaian banking sector has faced strong regulations and changes that has heightened the competition between banks and non- bank financial institutions to meet the regulatory changes especially relating to minimum capital requirement (Boateng, Nortey, Barnie, Dwumah, Acheampong & Sampane, 2016). Considering the size and capital of credit unions, surviving the competition requires sustainable profitability levels. These require observing the variables that influence the profitability of credit unions as well as the variables that predispose credit unions to surviving the storm of competition in the banking industry.

Several studies including (Domingo & Thiagarajan, 2014; Duffie & Singleton, 2003; Kithinji, 2010; Heydari & Abdoli, 2015; Afriyie & Akotey, 2012) have cited credit risk as a key factor inhibiting the profitability of banks and non-bank financial institutions. Domingo and Thiagarajan (2014) explains credit risk as the potential of a borrower unable to meet obligations of agreed terms. Domingo and Thiagarajan (2014) further explain that the lender losses

both principal and interest which obstruct cash flows and affect profits of the financial institution. Afriyie and Akotey (2012) argue that managing and monitoring credit risk is one smart way of improving performance, profitability and survival of credit unions.

The extreme effect of credit risk on financial institutions has necessitated government and financial institutions to develop stringent mechanisms to mitigate credit risk. In most cases in the retail banking, credit unions have mostly gone unnoticed and have suffered some impacts of credit risk (Levisauskaite & Kauplyte, 2005). In order to avoid the European and Asian experience of devastating liquidation of credit unions (Nemcova, 2004), the study seeks to examine the impact of credit risk on the profitability of credit unions in Ghana.

### **Problem Statement**

The issue of credit risk is very fundamental to every financial institution due to its impact on profitability, credit rating and performance. Over the years several approaches have been developed to mitigate the incidence of credit risk and position financial institutions to minimize the tendencies of loan default. Furthermore, worldwide structural increase in bankruptcy, competitive margins of loans, as well as off-balance sheet instruments with inherent default risk (Mckinsey, 1993; Altman & Saunders, 1996) have also contributed to the immense attention that has been giving to credit risk.

Measuring credit risk has changed overtime as the financial market changes in order to factor all variables that has the tendency of resulting in loan default. The existing methods of measuring risk included the following:

Probability of Default, Expected Loss, Credit Value at Risk, subject/expect judgement, and accounting based credit- scoring a financial institution among others adopts must be contingent on its organization, borrower and the business environment (Altman & Saunders, 1996). These methods of measuring credit risk are mostly faced with data quality. Results presented for the data analysed can limit the quality of output the methods can give for effective decisions. For this reason, most credit unions in Ghana are unable to use the methods to assess credit risk properly and this results in lack of expansion due to high loan default. This stands to reason that when the beta and alpha should can be tempered with. The amount of risk and borrowers' banks are exposed to are different from non-bank financial institutions like credit unions and that methods of computing credit risk will be different but the existing methods credit risk management have not carefully come out with the appropriate method for computing credit risk for non-banks financial institutions that are also exposed to credit risk. There is the tendency that where a wrong method is applied, it might give a wrong signal about credit risk which may have diverse effect on the firms' profitability. Also, there is a continuous unresolved contention about the measurement of credit risk, which has posed serious threat to managers and regulators of financial institutions regarding the method to compute the optimal capital needed to protect the partners who share credit risk (Duffie & Singleton, 2003). This study seeks to examine the method of measuring credit risk among credit unions and its predictive capabilities.

Furthermore, The Basel Committee on Banking and Supervision (2000) and Ahmed & Ariff (2007) posited that lowering of credit standards

resulting in non-performing loans is the main cause of problems several banks faced especially around Sub Saharan African countries. Considering the structure of credit unions in Ghana where majority of credit unions are owned by churches or collection of workers who share similar economic positions (CUA, 2016), there is the tendency of lowering credit standards and portfolio risk management in order to make loans available to all members, which may result in predisposing the unions to credit risk.

Also, Bank of Ghana grants permission for credit unions to invest a minimum of 18% of the union's asset (CUA, 2016). Some studies on credit unions in Ghana including Afriyie and Akotey (2012) have focused on loan default as the main cause of credit risk among credit unions and have not extensively looked at the tendency of such investment resulting in credit risk. Mendoza and Rivera (2017) have cited that the causes of credit risk go beyond non-performing loans but some investments where returns have not been ascertained also constitute credit risk. The study seeks to examine the extent of such investment contributing to credit risk among credit unions in Ghana.

In as much as the existing literature may be flooded with publication of credit risk, one common similarity with them is that the concentration was on commercial banks and larger financial institutions. It is therefore imperative to examine the concept credit risk from the aspect of credit unions in order to present a unique status of credit risk and profitability among credit unions.

In light of the above issues and the need to examine the concept of credit risk within the non-bank financial institutions such as credit unions which many a time, may not be key areas of focus to regulatory institutions,

that this study seeks to examine the impact of credit risk on profitability of credit unions in Ghana.

### **Purpose of the study**

The study aims at evaluating the effect of credit risk on profitability of credit unions in Ghana. It seeks to identify the major forms of credit risk credit unions face, assess the influence of credit uncertainties on the profitability of the credit unions and identify the measures adopted to manage the credit unions' credit risk. It would also find out the methods financial institutions use in recovering debts and discuss the challenges of credit risk management practices of the credit unions.

### **Objectives of the study**

The central aim of this study is to examine the impact of credit risk on the profitability of credit unions in Ghana. Specifically, this study seeks to;

1. Examine the methods for measuring credit risk among credit unions in Ghana.
2. Examine the factors that influence credit standards of credit unions in Ghana.
3. Examine the relationship between credit risk and profitability of credit unions in Ghana.
4. Assess the credit risk management strategies adopted by credit unions in Ghana.



### Research Questions

1. What are the methods of measuring credit risk among credit unions in Ghana?
2. What standards are used to grant credit to members of credit unions in Ghana?
3. What is the impact of credit risk on the profitability of credit unions and what variables influence credit risk among credit unions in Ghana?
4. What strategies are adopted to mitigate credit risk among credit unions in Ghana?

### Significance of the Study

The research study intends to provide an insight into credit risk and its effect on profitability. In addition, the study will also help the apex body and board of directors of credit unions in Ghana to rely on the findings of the study to put in place appropriate measures that will reduce the credit risks and hence ensure greater performance. The study further intends to serve as a reference material and guide for upcoming researchers in credit risk of credit unions. The recommendations of this study are envisioned, when implemented by credit unions, to assist them in managing credit risk.

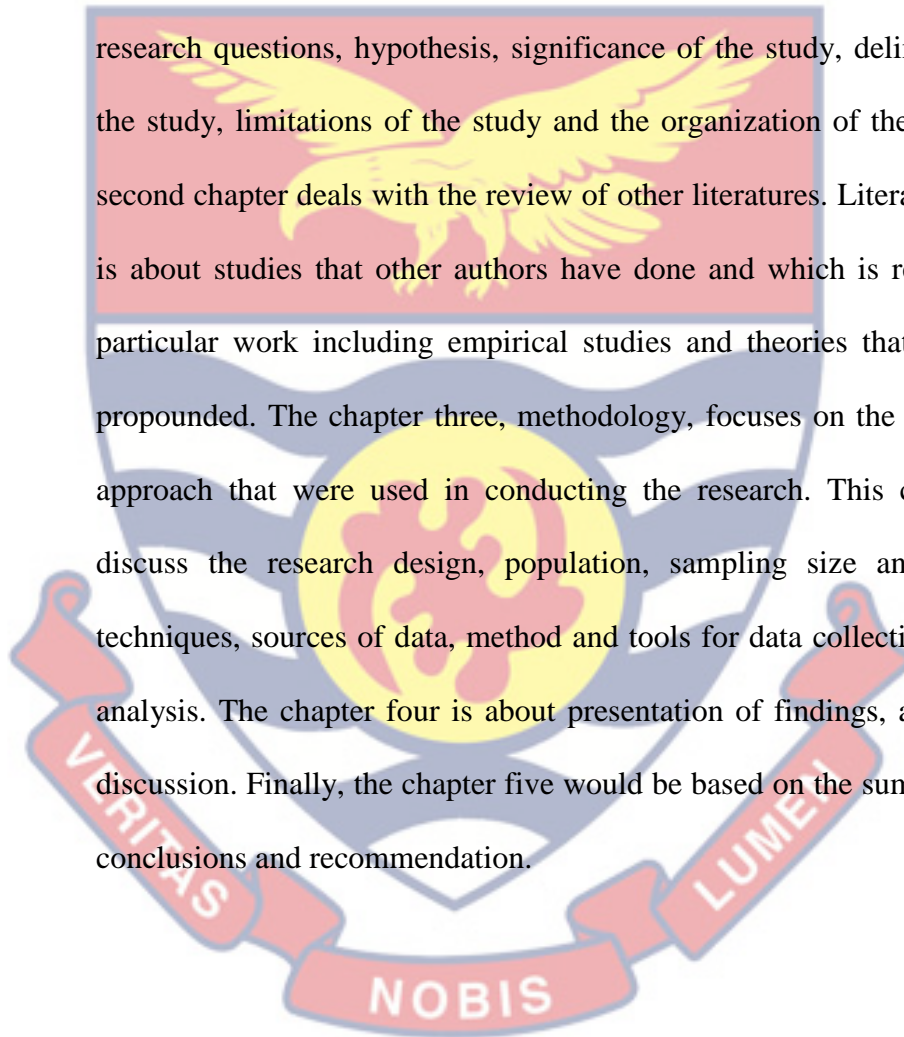
### Limitations of the study

A major constraint envisaged to be encountered during the execution of this research work is the reluctance of the selected credit unions providing their financial statements that will be used to examine credit risk and its effects on the institution's profitability. Further, the cost involved in carrying out the study is expected to be high since the credit unions are many and are situated at far distances apart. The constraint of time will not permit all

members of the population to be reached as in order to give an accurate result as wished.

### **Organization of the study**

This research work is grouped into five chapters. The first chapter which is the introduction talks about the background of the study, statement of the problem, purpose of the study, objectives of the study, the research questions, hypothesis, significance of the study, delimitations of the study, limitations of the study and the organization of the study. The second chapter deals with the review of other literatures. Literature review is about studies that other authors have done and which is relevant to a particular work including empirical studies and theories that have been propounded. The chapter three, methodology, focuses on the method and approach that were used in conducting the research. This chapter will discuss the research design, population, sampling size and sampling techniques, sources of data, method and tools for data collection and data analysis. The chapter four is about presentation of findings, analysis and discussion. Finally, the chapter five would be based on the summarization, conclusions and recommendation.



## CHAPTER TWO

### LITERATURE REVIEW

#### Introduction

This chapter concentrates on examining existing literature on credit risk and its relationship with financial institutions profitability. This chapter utilizes all research, publications and articles on credit risk from the last two decades to ascertain if past variables influencing credit risk in contemporary time have influence on credit risk and consequently on profitability. This chapter consists of review of literature on definitions of the key concepts, types of credit risk, review of literature on objectives of the study, conceptual framework and conclude with gaps in the literature.

#### Definition of Concepts

This section considers definition of key concepts of the study which include credit risk, profitability and credit union.

#### Credit risk

Several studies have approached credit risk from several perspectives which have resulted in different definitions to the concept. To the Basel Committee on Banking Supervision (2000), credit risk is defined as the potential that a bank's borrower or counterparty may fail to meet its obligation with respect to the agreed terms. This definition extensively suggests that loans constitute the most proportion of credit risk variables among banks and financial institutions. This definition corroborates the definition by Domingo and Thiagarajan (2014), who define credit risk as the tendency of a borrower failing to meet their obligations according to agreed conditions. Domingo and Thiagarajan (2014) explains that credit risk results in the loss of principal and

interest of the lenders which results in reduction of cash flows and high collection cost. The definition does not consider other off-balance sheet invest to constitute credit risk.

Kargi (2011) extends the definition further and explains that credit risk occurs in banks anytime the success of a bank's credit or investment commitment relies on the counterparty. Furthermore, Kargi (2011) explains that credit risk arises anytime bank funds are extended, invested or exposed to actual or implied contractual arrangements whether on or off the balance sheet. The definition by Kargi (2011) brings to the fore the understanding that banks face credit risk through other forms either than loans. These forms can take interbank transactions, options, futures, forwards, equities, and foreign exchange transactions.

Coyle (2000) and Sinkey (2002) define credit risk as the likelihood that a borrower will not pay a loan on time or will not pay at all. Conford (2000) adds to this definition that credit risk is where the actual return of a loan deviates from the expected returns. These definitions bring to bear the tendency of loan delinquency and default, where loan delinquency relates to delay in the payment of loans while default results in non-payment of the loan as cited in the work of Padmanadhan (1988). Haffernan (1996) further explains that credit risk is the risk that an asset or loan becomes irrecoverable in the event of outright default or the risk in the delay of servicing the loan. This implies that the present value of the asset diminishes which undermines the solvency of the bank. Therefore, Bessis (2002) argues that the default of a small number of customers of a credit union can generate significant losses and has the tendency of rendering the credit union insolvent.

The reviewed definitions show that credit risk arises out of the default on the part of a borrower either advertently or inadvertently to meet obligations towards the contractual relationship between the lender and borrower. Moreover, the definitions also show that credit risk is not only related to default of loans but it also occurs where a bank or financial institutions expected returns on an asset or investment commitment deviates from the actual returns. This implies credit risk in contemporary time transcends only loan default but any off-balance sheet investment that its expectations are not realized. Furthermore, the definitions expand the extent of considering an investment to constitute credit risk not to only when there is complete default but a situation where there are delays in the servicing of loans since delays have the tendencies of reducing expected cashflow which affects profitability. Therefore, Anthony, (1997) and Brownbridge, (1999) conclude that credit risk is here there is default or delays in servicing of loans and any investment commitment of a bank or financial institution.

### **Theory of Credit Risk**

The theories underlying credit risk have all arisen out of models that have been used to explain the concept from the perspective of evaluation and pricing (Thakor, 2016). The fundamental idea behind the theory of credit risk is that why does credit risk pricing and evaluation change as the business cycle is also changing (Brunnermier, 2009). These studies argue that as the business cycle changes, how banks and financial institutions evaluate or price risk changes and also related with the macroeconomic variables of the country. Bekaert et al., (2013) found that as the monetary policies of an economy change, the amount of risk banks are willing to be exposed to the changes, is

dependent on how much risk the bank is willing to accept. Asea and Blomberg (2014) also found that the lending standards of banks changes as the economy changes from boom to recession in a study of two million loans over commercials from 1977-1993. These characteristics were not peculiar to only commercial banks but were also characteristic of non-bank financial institutions as evident in the work of Brunnermier (2009).

### **Credit union**

A credit union is “a member-owned financial cooperative, which is democratically controlled by its members, and operates for the main purpose of promoting thrift, advancing credit at highly competitive rates and also provides other related financial services to its members” (O’Sullivan, 2003). O’Sullivan (2003) however notes that “many credit unions also provide certain services which are intended to champion community development and sustainability.

Credit union systems worldwide differ significantly in terms of total system assets and average institution asset size. According to Villarreal (2014), this ranges from “volunteer operations with a small amount of assets to institution with assets value of billion US dollars and several hundreds of thousands of members”. Credit unions exist alongside some other financial institution including mutual and/or co-operative organizations who also engage in cooperative banking, such as building societies.

Diekmann (2012), tries to establish the difference between Credit unions and other banking institutions by stating that “Credit unions differ from banks and other financial institutions in that those who have accounts in the credit union are its members and owners, and they elect their board of

directors in a one-person-one-vote system regardless of their amount invested". Diekmann (2012) again notes that Credit unions are "not-for-profit" because "their purpose is to serve their members rather than to maximize profits". The World Council of Credit Unions (WOCCU) (2012), notes that "a credit union's revenues (from loans and investments) must exceed its operating expenses and dividends (interest paid on deposits) in order to maintain capital and solvency". According to Diekmann (2012), "surveys of customers at banks and credit unions have consistently shown a significantly higher customer satisfaction rate with the quality of service at credit unions". Thus, he observes the higher satisfaction level of clients in credit unions by stating that "credit unions have historically claimed to provide superior member service and to be committed to helping members improve their financial situation".

### **Development of Credit Unions in Ghana**

In Africa, Ghana was the first country to start the credit union system (WOCCU, 2009). The idea of credit union system came in 1920 when the Department of cooperatives realized the need for popular credit and savings facilities in Ghana and therefore introduced savings and Loan societies in the southern sector. These societies existed for government employees and some farmers with a specific reference to cocoa farmers. The management of these societies was so poor that it lost its popularity in no time and couldn't make any impact on people's lives.

The Department of co-operatives and the co-operative Banks were dissolved by the Convention Peoples Party (CPP) government in 1961, because the government did not have political interest in these savings and

Loan societies. The Department of Cooperatives was re-vamped just after the overthrow of the CPP government in 1966. At that time, the savings and Loans societies were left with only five (5) in the whole country.

The idea behind the changes in the pricing and evaluation of credit risk over different business cycles is premised on three building blocks. The first is that banks can choose between a relatively safe loan and a potentially more profitable risky loan, with public observability of the type of loan chosen (Thakor, 2016). The probability of success (repayment) of the loan depends on the realization of a macroeconomic state: there is a high probability of a “skill” macroeconomic state in which outcomes are influenced by the a priori unknown skills of banks and a small probability of a “luck” macroeconomic state in which these outcomes are purely exogenous. No one knows at the outset which state governs the economy, but there are common prior beliefs about the probabilities of the luck and skill states (Thakor, 2016). Where the outcomes are practically driven by luck, banks prefer to invest in (and can raise financing for) only safe loans. If outcomes are skill-driven, banks will prefer to and would be able to fund more profitable risky loans if these banks are viewed as being skilled enough (Thakor, 2016).

This building block generates a setting in which banks initially invest in safe loans, and after experiencing successful repayment on these loans they switch to riskier loans, conditional on agents believing that outcomes depend on bankers’ skills. That is, initial success leads to an upward revision in the skills of bankers via rational learning and these higher skill assessments enable riskier lending. There is symmetric information at all dates about whether



outcomes are luck-driven or skill-driven and how skilled the bank is if outcomes are skill-driven (Thakor, 2016).

The second building block is that there are multiple time periods and the realization of the macro uncertainty can change from one period to the next. That is, conditional on initial success with loan repayment and agents believing that the success was skill-driven, banks are able to invest in riskier loans. However, if beliefs about whether outcomes are skill-driven or luck-driven remain intertemporal static, then investors will always continue to fund successful banks and risk-taking will keep rising with no financial crisis. It is only when beliefs can switch from a skill regime to a luck regime that previously-sanctioned risk taking can fall out of favor with investors, so this possibility of regime switching is an essential aspect of sudden changes in risk assessments (Thakor, 2016).

While adding this second building block is necessary, it is not enough to generate a drop-in lending associated with a change in risk assessments. The reason is that if agents shift their beliefs about whether outcomes are skill-driven or luck-driven, then banks will also switch at that point to loans that investors will support given the new beliefs. By making their loan portfolio choices move lock-step with the beliefs of their financiers, banks can avoid a reduction in lending.

Considering the first and second building block, interim re-financing then becomes a key requirement rendering it the third requirement. This is why we need the third building block – interim refinancing risk. For each time period, it is endogenously shown that the bank will fund itself with debt that is of shorter maturity than its loans. The reason for this is the important

contribution of Calomiris and Kahn (1991) which rationalized demand deposits as a source of discipline on bankers. Withdrawal risk for the bank then arises from the regime shift pertaining to the macro uncertainty occurring before the loans for that period mature. Because each bank faces withdrawal risk only due to the realization of a systematic-risk variable, the inability of one bank to refinance itself is accompanied by a similar experience for all banks that have invested in that asset, so this risk reassessment actually generates a crisis Calomiris and Kahn (1991).

The analysis assumes that there is a time-invariant probability that outcomes are skill-determined in every period, and that the realization of this macro uncertainty in any period tells investors whether outcomes are skill-based or luck-based. This presents a two form of learning that is macro uncertainty, which is based on observing aggregate bank failures. The other is about the skill of an individual bank, which is based solely on observing the loan repayment or default outcome related to that bank Calomiris and Kahn (1991).

### **Methods of Measuring Credit Risk**

Several methods have been developed to unravel how credit risk can be computed in order to serve as a guide for prediction. Duffie and Singleton (2003) asserts that contemporary risk managers and market regulators of financial institutions face a bigger challenge since there is disagreement about the right method for computing credit risk as well as the optimal capital to protect affected stakeholders. Altman and Saunders (1996) explains that the method of computing credit risk has evolved significantly in the world wide structural, leading to increase in the issue of bankruptcy, competitive margins

and declining value of fixed assets and increase in off-balance sheet instruments. This has resulted in the development of new models for measuring credit risk that seek to go beyond the evaluation of individual loans but focused on credit scoring and early warning systems as well as credit concentration risk and credit risk pricing (Altman & Saunders, 1996). The methods of measuring credit risk examined in the study includes expert system and subjective analysis, accounting based credit scoring methods and other new models that have been designed.

### **Expert system and subjective analysis**

Expert systems and subjective analysis is one of the oldest mechanisms used to evaluate credit risk. It is normally referred to as the banker “expert” in evaluating corporate loans (Altman & Saunders, 1996). This system makes use of the information of the borrower including reputation, capital, capacity and collateral) to assess credit risk on corporate loans in order to reach a judgment whether to grant the loan or to reject the loan applications. The problem with this method is that it makes judgment, based on the perception of the loan officer, lack predictive capacities, and exposes the financial institution to greater harm. Cited in the works of Rajan (1994) and Ruckes (2004), it is argued that expert system and subjective analysis has higher tendencies reducing loan standards and credit standards. This is because the final decision rest on loan officer, who has the tendency to lower credit standards and subject the business to crisis.

### **Accounting-based credit scoring systems**

The shortcomings in the expert system and subjective method has called for several methods that integrates key variables related credit risk to

ascertain who merits a credit but not based on the subjective perceptions of the loan officers. Using this approach, the computation can be multivariate or univariate. In a univariate accounting based credit scoring systems, the financial institution decision-maker compare various key accounting ratios of the potential borrower against industry or group norms. Where a multivariate model analysis is used, key accounting variables are combined to generated and weighted to produce a credit score or probability of default measure. If the probability of default measure or the credit score is below the set bench mark, the loan applicant is either rejected or subjected to strict scrutiny (Altman & Saunders, 1996).

#### **Other new methods of measuring credit risk**

The accounting- based credit scoring method has been successful over the years in determining credit risk in different time periods and jurisdictions. Amidst the impact of the accounting-based credit scoring method on predicting credit risk, it has been criticized to be predominantly based on book- value accounting data which is measured by using discrete variables (Altman & Saunders, 1996). This makes it difficult for the method to identify some subtle and sudden changes in borrowers' condition which are reflected in capital markets values.

Furthermore, the accounting-based model use a linear approach to determine credit risk tendencies but the world capital market is not linear and hence it is difficult for the method to integrate market conditions that relax the assumption of linearity among explanatory variables. Also, the accounting-based model bankruptcy prediction model in most cases have an underlying theoretical model which explanatory capacities are mostly simple and may not

be suitable for contemporary complex market determinants of credit risk (Altman & Saunders, 1996; Hull & White, 1995). Most bankruptcy models explain the tendency of bankruptcy with strong theoretical underpinning of “ruin models” that assume that where a bank’s market value of assets falls below its debt obligation to creditors. This simplicity in the model cannot be used in a multivariate market condition.

The new class of models that measure credit risks with strong theoretical underpinnings integrate implied probability of default from the term structure yield between default free and risky corporate securities (Mendoza & Rivera, 2017). To Altman and Saunder (1996), the new models of measuring credit risk apply a more neutral approach that is focused on applying non-linearity in determining credit risk and drops the assumption that variables connected to loan default are independent and linear. The new models attempt to establish correlation between hidden models that have predictive and explanatory capabilities in a non-linear direction.

### **Measuring Credit Risk on Off-Balance Sheet Investments**

The work of Kargi (2011) cites that credit risk is not limited to only loan default and other investment where the expected returns deviate from the actual returns. This makes it very imperative for banks and non-bank financial institutions to derive mechanisms to measure credit risk arising out of such investment. The Bank of Ghana (2006), gives permission for credit unions to invest some portion of their funds into other ventures, therefore measuring credit risk among credit for such investments has become very paramount. Furthermore, the expansion of these instruments in contemporary have shown signs of default properties and rendered it a critical area of interest. Studies by

Koppenhover (1992) and Altman and Saunder (1996), have pointed out that the impact of credit risk of such instruments have called for banks and financial institutions to hold adequate capital reserves to cover the cost of credit risk from the off-balance sheet instruments.

Saunders (1996) argued the measurement of probability of default among off-balance sheet does not differ from on- balance sheet. However, the differences between the measurement of default loans and off-balance sheet credit risk lies in the fact that where the counter-party face the challenge of financial stress, it only becomes default on out-of-money contracts. That is where the counterparty in an off-balance sheet instrument investment with a financial institution, the financial institution has recourse to other instruments for the said counterparty.

Furthermore, Saunders (1996) explains that the loses that arise from off-balance sheet instruments in most cases are less than the cost that arises out of credit risk on loan default. Saunders (1996) explained that in the event of a loan default, the financial institution loses the principal and the interest. Therefore, measuring credit risk of off-balance sheet does not necessarily differ from the on-balance sheet credit risk but the losses incurred may result in the differences between the on and off balance sheet. Therefore, the Relative Importance Index gives a result that effectively measure the credit risk that credit unions are exposed to. This technique is used to determine the relative importance of the various causes and effect of delays in loan repayment. This method is most important to the study because accessibility to data quality can be controlled since, it involves the collection of primary data and information obtained on first hand reflect the mind of the respondents and

what they think about the problem under study and the researcher has the ability to control the data collected by editing in order to provide quality information. Also, the measure of credit risk identified above works best with primary data and this will be discussed into details in the next chapter.

### **Credit Standards of Credit Unions in Ghana**

Credit standards of banks and non-bank financial institutions relate to the conditions under which financial institutions will grant or reject the loan application of an applicant. Many a time banks have been subjected under strong criticism for changes in their lending policies. Ruckes (2004) asserts that where there is economic downturn, banks implement a more restrictive lending policy and a more flexible lending policy during economic booms. Many writers have criticized banks to have a more stable lending policy that cover all business cycles.

Ruckes (2004) found that the changes in the lending policy of financial institutions are mostly related to the lenders demand side. Different economic phases are related to different information collection and processing as well as credit competition in the market which results in development of different lending policies. This implies that when there is high market competition for credit, the standards for granting credit is very high and vice versa. Moreover, banks compete over granting credit to unknown customers which requires proper scrutiny of the applicants' ability to service the debt. Under severe conditions of recession, banks are risk averse because the number of creditworthy firms reduces significantly. The aim of banks in such a situation is to identify the firms who have the high probability to service the credit extended to them since the effect of default can cause crisis. The restrictive

attitude of banks towards borrowers can be explained that although there are several banks and non- bank financial institution, but during the recession periods most lenders are unwilling to grant credit and also indicate that there is less competition with respect to pricing of credit. Therefore, as the economic outlook improves, the proportion of creditworthy applicants may result in lessening of the lending policies.

To Ruckes (2004), the common methods banks and financial institutions adopt to examine the quality of a borrower are screening the information they have ascertained on the client and seek expert advice after screening a particular applicant. Ruckes (2004) explains that sometimes banks and financial institutions may scan the environment and consider the approach competitors have adopted to determine the competitiveness of their lending policies.

Ruckes (2004), also explains that holding other factors constant, when the cost per loan extended is low, the credit standards of a bank or financial institution is lessened. This explains that if a bank incurs a lot of cost per each loan granted, they are more likely to increase the credit standards in order to reduce the associated cost as well as future tendencies of default. Therefore, the review concludes that the economic outlook of a country influences the credit standards of financial institutions.

### **Profitability**

Mendoza and Rivera (2017) define profitability as the earning ability of a business entity. Mendoza and Rivera (2017) explains that profitability is a key requirement and critical step towards wealth maximization of shareholders.



Bessis (2002) defines profit as the surplus left over from revenue after covering expenses. Profitability is the measure of profit generated on an ongoing basis. Profit is generally measured in monetary terms. Profitability ratios show a company's overall efficiency and performance. Ratios that show returns represent the firm's ability to measure the overall efficiency of the firm in generating returns for its shareholders (Bessis, 2002).

Many studies have approached the concept of profitability by considering the Return on Assets and Return on Equity. These studies include the work of (Abbas et al., 2014; Akhtar et al., 2011; Ali et al., 2011; Aremu et al., 2013; Erina and Lace, 2013; Flamini, McDonald & Schumacher, 2009; Gizaw, Kabede, & Selvaraj, 2015; Iloska, 2014; Kargi, 2011; Kolapo, Ayeni & Oke 2012; Obamuyi, 2013; Poudel, 2012; Roman and Danuletiu, 2013). These studies focused on the ratio of net income to net asset as the determinant of profitability. Other studies including Naceur (2003) and Aremu, Ekpo & Mustapha (2013) have used net interest margin to compute profitability of a bank. Therefore, the study concludes that the ability of a bank to earn more than how much it spent on its asset as the extent of profitability of the bank.

### **The Impact of Credit Risk on the Profitability of Credit Union**

The profitability of a bank has been linked to credit risk. Several studies have found a negative relationship between credit risk and the profitability of banks. Most studies have shown that when firms are able to manage credit risk, they have the tendency to improve the profitability. Staikouras and Wood (2004) found out that credit risk has a significant negative influence on the ROA when they used Ordinary Least Squares (OLS) and fixed effect model of regression in studying the determinants of

profitability of 685 banks in 13 European economies. Likewise, Ali et al. (2011) learned that credit risk has negative effect on ROA when they examined 22 commercial banks in Pakistan. This finding is consistent with the study of Kargi (2011) who concluded that credit risk has a significant negative impact on ROA based on the study of six banks in Nigeria. Likewise, Iloska (2014) identified loan loss provision as a driver of profitability that exhibited a negative relationship with ROA as a result of a study of 17 banks in Macedonia. Moreover, Erina and Lace (2013) and Abbas et al. (2014) have the same conclusion that credit risk negatively affects ROA and ROE. Erina and Lace (2013) made the conclusion when they used linear regression model in studying 31 commercial banks in Latvia. Furthermore, Abbas et al. (2014) came up with the same inference in their research of 21 banks in Pakistan.

Flamini et al. (2009) derived the same results when they investigated 389 commercial banks in 41 Sub-Saharan Africa economies through the application of the General Method of Moments (GMM). When Kolapo et al. (2012) used panel model analysis for five commercial banks in Nigeria, they concluded that credit risk has significant impact on ROA. Moreover, Gizaw et al. (2015) deduced that credit risk has significant impact on profitability when they studied 18 Ethiopian commercial banks. Finally, Aremu et al. (2013) resolved that credit risk is a significant driver that affected bank profitability both in the long run and the short run and observation made when they used the co-integration and Error Correction Mechanism (ECM) in the First Bank of Nigeria.

Caprio and Klingebiel, (2003), in their study entitled “episodes of systemic and borderline financial crises” found out that the problems faced by

Asia's banking systems were the legacy of years of bad lending practices fueled by inadequate supervision and regulation that led to rapid lending growth and excessive risk taking. This clearly shows the role of credit risk affecting the functioning of the overall economy.

### **Mechanisms for Controlling Credit Risk among Credit Unions in Ghana**

Credit risk management among credit unions have become more important not only because of the financial crisis that the world is experiencing currently, but also as a crucial concept which determines banks' survival, growth and profitability (Afriyie & Akotey, 2012). Because credit granting is one of the key sources of income generating activity in credit unions, the management of the risk related to credit affects the profitability of the credit union.

Hull (2007) explains that one of the basic formation of every organization, most importantly a banker is to understand the portfolio of risk it faced currently and the risk it plans to take in future. Oldfield and Santomero (1997) posited that risks facing all financial institutions can be segmented into three separate types from a management perspective. In the review of Sinkey (2002), modern risk management in the banking industry can be highlighted by five verbs and these are; identify, measure, price, monitor and control. This process of risk management is very much important to the credit union industry since most of their clients are susceptible to co-variant risk, market risk and credit risk. Afriyie and Akotey (2012) asserts that there are risk that can be avoided or eliminated, risk that can be passed on to another party of the lending contract and risk that can be actively be managed by the lender (credit

union). This shows that central to the idea of risk management of credit risk relates to the ability to allocate the risk to the best party who can bear the risk.

Abor (2005) argues that risk management has received extensive attention from both the corporate world and the academia, because, as Shimpi (2001) puts it, it is the life blood of every organization and corporate officers to deal with it decisively wherever it appears. Risk management is an orderly process for the identification and assessment of pure loss exposure faced by an entity and the adoption of the most and appropriate technique to cater for such exposure (Redja 2008). Schmist and Roth (1990) also defined risk management as coherent activities which are undertaken to minimize the negative impact of uncertainty regarding possible losses. From the forgone, the process of risk management includes identification, measurement, administration of selected techniques and control.

The risk associated with the business of banking can be grouped as credit risk, market risk (which consist of foreign exchange risk, liquidity risk and interest rate risk), operational risk which sometimes include legal risk and most recently strategic risk (Asare-Bekoe, 2010; Cooperman, Mills & Gardener, 2000). Credit risk in the banking industry is mostly caused by adverse selection and moral hazards due to information asymmetry. The credit risk situation of a bank can be exacerbated by inadequate institutional capacity, inefficient credit guidelines, inefficient board of directors, low capital adequacy ratios and liquidity, compulsory quota-lending as a result of government interference and lack of proper supervision by the central bank (Sandstorm, 2009; Laker, 2007; Kithinji, 2010).

The basic principles underlying credit risk management have been outlined by various authors like Santomero and Babbel (1997); Dowd, Chaplin & Kelliher (2008), and Lindergren (1987) as (i) the establishment of a clear risk policy and a reporting structure; (ii) underwriting authority and loans limit; (iii) allocation of responsibility and accountability; (iv) prioritization of the lending process and systems; and (v) the timely communication of risk information to top management. According to Santomero and Babbel (1997) these principles are set up “to measure risk exposure, define procedures to manage these exposures, limit exposure to acceptable levels and encourage decision-makers to manage risk in a manner consistent with the firm’s goals and objectives”.

Theoretical and empirical evidence elsewhere suggest that credit risk management is a predictor of bank’s performance. For instance, non-performing loans, an indicator of credit risk can reduce the value of a bank and destabilizes the credit system. As Padmanabham (1998) and Agu (1998) put it loan default reduces the resources base of a bank for further lending, weakens staff moral and affects the borrower’s confidence. The cost of managing overdue loans tends to be very high and this can reduce banks profitability levels. In some cases the cost on unpaid loans are shifted to other customers or borrowers in the form of high interest margin charged on loans.

Nair and Fissha (2010) indicated in a similar study of the Ghanaian rural banking industry that, the degree of loan delinquencies or impaired loans in an RCB’s loan portfolio is often considered the best leading indicator of the institution’s financial performance. Nair and Fissha, further revealed that the percentage of loan portfolio that was in default (among the sample banks) for

more than one month was 16 percent. This is too high and unacceptable given the global average of 3 percent for the worldwide micro-banking industry (MIX, 2008). In addition, the proportion of loans in default for more than one year was 3.5 percent, compared with 1.5 percent for the global micro banking industry. This according to Nair and Fissaha is an indicator of large loan losses which may never be paid back.

Thiagarajan (2013) in her study entitled “Determinants of Credit Risks in the Commercial Banking Sector of Belize,” stated that banking in modern economies is all about risk management because the economic repercussions of a bank failure could be catastrophic on the entire financial system. The study reported that the non-performing loans not only affect the banking industries but the economy as a whole. When the default rate is very high, it holds up capital that would have been used for economic growth thus having some serious negative impacts of the entire system.

These makes it very imperative to examine the credit risk management practices among credit unions where there may be less formalized style of management and structures different from commercial banks.

### Conceptual Framework

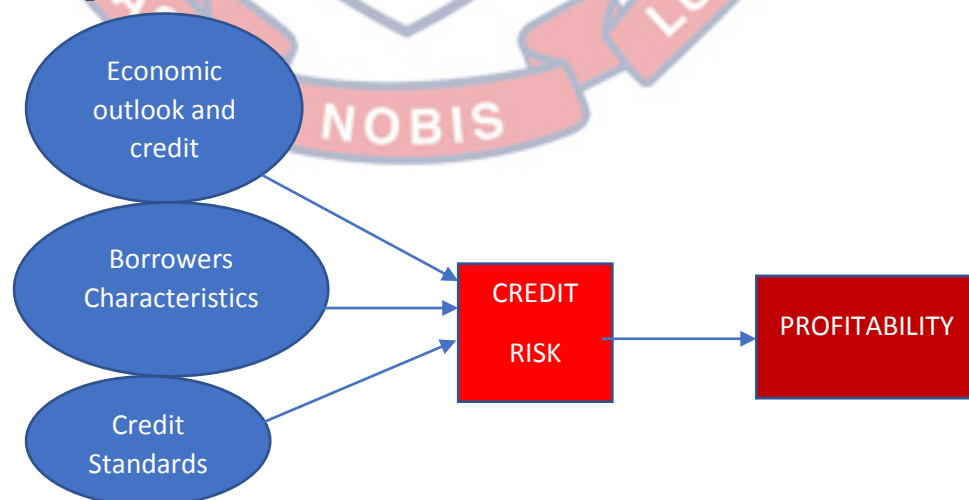


Figure 1: Conceptual Framework

From the figure above, it was deduced from literature that return on assets, borrowers characteristics and credit standards have some amount of influence on credit risk. Economic outlook is the forecasted expectation of how well the economy will perform during an upcoming quarter, year or other time period. Understanding of this phenomenon is very useful in credit risk estimation. The economy within which the financial institution operates can increase or decrease the credit risk of giving out loans. Where the economy is performing well, money in circulation becomes stable and people who go in for loans are able to pay back with less payment default hence, in an economy like this, credit risk is reduced and this increases the profitability of the financial institution. Borrowers characteristics in this context describes a customers' behaviour towards loan repayment. Borrowers characteristics is sometimes referred to as credit history. This refers to borrowers' reputation or track record for repaying debts. This information appears on the borrowers' credit report generated by credit bureaus. Information from these reports helps lenders evaluate the borrower credit risk. Many lenders have a minimum credit score requirement before an applicant can be eligible for a new loan approval. The minimum score mostly used is the Fair Isaac Company (FICO) score which ranges from 300 – 850. The rule is that, the higher the score, the higher the likelihood of receiving an approval. Credit standards are the policies that are set in place to guard against loan defaults and reduce high credit risk and increase profitability. These standards also check for credit ratings of the bank or credit company and customers. Where a customer is not creditworthy the credit rating is scored low but where a customer is creditworthy the credit is scored high. These are checks and balances that are put in place to mitigate

loses in profitability. Where credit standards are high, they eventually affect the credit risk and this increases profitability, but where credit standards are weak and low, credit risk increases and where default loan increases, the bank or credit facility run into bankruptcy. In the context of this research, the aforementioned conditions affect credit risk.

Credit risk is defined in this research as the net charge-off. The net charge – off ratio was used to measure credit risk. A charge – off is a debt that is deemed unlikely to be collected by the creditor because the borrower has become substantially delinquent after a period of time. A net charge – off rate/ratio is the cedi amount representing the difference between gross charge – offs and any subsequent recoveries of delinquent debt. It is often a percentage representing that amount of debt that a company believes it will never collect compared to the average receivables. Profitability is also operationalized as the return on asset (ROA) which is the ratio net income and total loans to borrowers (which is classified as the total asset).

### **Conclusions**

The review of existing literature shows that majority of the existing works focused on commercial banks and financial institutions engaged in investment activities but little attention has been channeled to credit unions. Moreover, there is limited literature on the method of measuring credit risk among credit unions. Therefore, assuming wider scope of applicability of these methods makes it seemingly untenable since the structures and size of commercial banks are very much different from credit unions. Furthermore, the definition of the concept of credit risk seems to overemphasize on loan default and disregard credit risk arising from investments undertaking by



credit unions. Furthermore, many of the research available on measurement of credit risk are Eurocentric where economic variables are different from Sub-Saharan Africa. These make this study imperative to examine the impact of credit risk on profitability of credit unions to unearth the issue of credit risk in the industry of credit union, its measurement and management strategies.



## CHAPTER THREE

### RESEARCH METHODOLOGY

#### Introduction

This chapter focuses on the approach that will be used to conduct this study. It reveals the research design, population, sampling procedure, the tool and method for collecting data and data analysis.

#### Research Approach

Researchers adopt different analytical procedures or approach based on their research philosophy. These differences in analytical procedures and research approach could basically be classified into three. These are quantitative, qualitative and mixed approach (Creswell, 2013). Researchers may select a specific approach based on its appropriateness to answer the research question as well as the research problem.

This study employs quantitative approach. The quantitative approach is more suitable because the study seeks to observe the outcome of one variable (healthcare delivery) by manipulating other variables (financial management constructs). The literature provides investigation of this nature requires quantitative approach (Creswell, 2013). Additionally, the study seeks to use hypotheses to answer the research questions and this is possible when the study explores numerical data. The use of numerical data to measure constructs requires quantitative approach (Cameron & Sankaran, 2015). This makes the quantitative approach more suitable for this study. The approach is applied empirically in this study by developing scale instrument capable for measuring each of the financial management practice variables and quality of health care quantitatively (Johnson & Onwuegbuzie, 2004).

## Research Design

Research design simply refers to the method of addressing the research hypotheses and answering the research questions. Saunders, Lewis & Thornhill (2000) define research design as the general plan of how the research questions would be answered. It also involves the specific data analysing techniques or methods the researcher intends to use. Similarly, Durrheim & Tredoux (2004) explained study design as a strategic framework that serves as a bridge between research questions and the execution of the research strategy. Similar to the research approach, researchers have different types of research design to choose from (Saunders & Thornhill, 2009). However, it is advised that the choice should be guided by principles such as the research approach, problem and research questions (Creswell, 2013). Therefore, referencing to the study problem and approach applied in this study, survey design is adopted.

The adopted the descriptive research designs. Descriptive studies are carried out purposefully to describe characteristics or functions (Malhorta, 2007). In descriptive studies, more emphasis is placed on studying a situation or a problem in order to give details to the relationships between two or more variables (Saunders, Lewis & Thornhill, 2000). The choice of descriptive design is appropriate over the others designs because of the chance to produce data based on real-world observations (empirical data) in a short time for a fairly low cost. Again, the design allows the results of the study to be generalized from the sample perspective, to the entire population (Anlo, 2012). As stated by Leedy (2001), descriptive design produces a study analysis and the results that give high level of reliability. Again, this design is

suitable for this study because it provides opportunity to extensively describe the case of credit risk among credit unions in Ghana and establish a relationship between the independent variable (credit risk) and profitability (dependent variable).

### **Population**

Population according to Saunders (2009) is a full set of cases from which a sample is taken. Lim and Ting, (2012) opined that study population is any unit of group that has a common set of characteristics from which data can be collected. According to Groebner, Shannon, Fry and Smith (2008), population is a set of all objects or individuals of interest or the measurements obtained from all objects or individuals of interest. Mason, (2007) also described a population as an entire group about which some information is required to be ascertained or a main focus of a scientific query. Base on this, it is believed that all individuals or objects within a certain population usually have a common, binding characteristic or trait for which the descriptions of its members are the same. In addition, Indrayan (2008) pointed out that the study population should provide information for synthesizing the research of a number of studies and for secondary analysis. This can only be done if the researcher set some boundaries in selecting the respondents for the study. Therefore, the population of this study was all credit unions in Ghana. There are seventy (70) registered credit unions in Ghana (CUA, 2016).

### **Sample Size and Sampling Techniques**

A sample is a representation of the targeted population and is an important feature of any empirical study in which the goal is to make inference about a population (Israel, 2013). Sampling is necessary because in

conducting a research study, it is practically impossible, time-consuming and too expensive to test every individual in the entire population dealing. Hence, there is the need to get a fair representation of the people. To achieve this then sampling techniques become important. As defined by Kraska & Neuman (2011) a sampling is the process of selecting a sample as a subset from a defined population. Also, it is described as the act or technique of selecting an appropriate sample that will serve as representative portion of the study population with the aim of determining parameters or characteristics of the entire population (Lenth, 2011). The study also adopts sampling procedures in this study. One important element of sampling procedure is sample size. According to Lenth (2011), sample size has implication on the findings and the conclusions. The study therefore follows the sample size model developed by deVaus (deVaus, 2002) to estimate the appropriate sample size. The deVaus model is expressed as:

$$S = \frac{N}{1+N(e)^2} \quad (1)$$

Where:

S = Sample Size

N = Target population

E = Confidence Level

Given a significance level of 5% and a margin of error of 5%, and the target population of 70, the sample size is determined as:

Substituting the data on these variables in the study, the sample size is determined as:

$$S = \frac{70}{1+70(0.05)^2} \approx 60 \quad (2)$$

Thus, the minimum sample size is given as 60 staff.

The selection of the minimum sample size of 60 is done using two cluster sampling technique. The study first divided the population into clusters and the clusters were randomly selected and then the credit unions were randomly selected from each cluster to build the minimum required sample size. The random sampling was done based on the random sampling technique. This technique was then used to select risk management officers/loan officers of the credit unions to ascertain information on the credit standards and risk management practices adopted by the credit unions. A total of 60 credit unions were selected to make up the sample size of the study.

#### **Data Collection and Questionnaire Design**

Deciding on the data needs and collection techniques is one of the most important aspects of any research. This depends on the research question(s) and the focus of the study. There is no readily available data relevant to answer the research questions, therefore, the data needs about financial management practices and quality health care would be collected from primary source. As defined by Hague (2006) primary data are raw data that researchers collect from specific respondents or participant specifically for the purpose of the research. In other words, it is original in nature and directly related to the issue which the researcher gathers through various methods like interviews, surveys, questionnaires etc. It is normally referring to as the afresh information. Thus, the data needed for this study is primary data which are numerical in nature. The collection of these data requires appropriate data gathering technique suitable for the research problem, research objectives and research questions (Bryman, 2006). In this regard the study employs

questionnaire. This instrument or data collection technique supports not only the research approach but also the design. It is able to provide close-ended questions which could be used to measure variables quantitatively.

Questionnaire is one of the most widely used instruments for collecting data for quantitative based studies. As defined by Amedahe (2002), questionnaire consists of a list of questions relating to the aims of the study, hypotheses and the research questions to be verified and answered to which the respondents are required to answer by writing, ticking, marking or circling the response. Also, Sarantakos (2005) explained it as a series of questions that allow a smooth transition from one topic to the other that usually refer to the same issue. It helps a researcher to obtain better range of information within a limited time frame. However, this can be achieved when the questionnaire is properly constructed and responsibly administered. As argued by Hawkes and Rowe (2008), a well-designed questionnaire is effective in gathering information on both the overall performance of the test system as well as information on specific components of the system such information about the practices, conditions, opinion, and the attitudes of the subjects. Based on this the researcher adopts a useful method for checking the detail on the relevant methodological features. Moreover, participants are given elaborated instructions as to how the questionnaires are to be completed and returned. To minimize bias in formulating and asking the question, a clear instruction for ensuring confidentiality of data was carried out.

In order not to deviate from the study objectives, the researcher first defined and described the phenomenon distinctly in order to identify the construct to be measured (Bannister & Remenyi, 2003; Punch, 2009). Also,

the researcher ensured confidentiality by directing that the respondents should not write their names on the questionnaire and invited participants willingly to share their understandings, experiences as well as opinions. As a result, a large better range of information within the time frame was expected to be covered. Since most studies that uses semi-structured questionnaires lacked specific information on question wording and phrasing which may affect the reliable of the data, the questionnaire is designed and questions formulated by following some existing questionnaires and the general literature.

The items on the questionnaire used to measure the study variables were grouped into three sections, A to C. The section A contains close-ended questions and deals with personal demographics and work experiences of the respondents. Section B and C gather data on the three key financial management practices: budgeting, financial accountability and financial control and quality health care delivery. Likert-scale questions are employed in measuring all the four variables. According to Yates, Edman & Aruguete (2004), Likert-scale is the most widely and reliable means to measure qualitative attributes or constructs with quantitative metric units. The scale is easy to construct though potent in quantitative measurement. It is constructed and operated by grouping similar statements, questions or items together to measure a variable and combining the respondents' score on the items into a single index. The study follows Scheuren (2004) suggestion to achieve desiring scale by ensuring that high scoring and low scoring respondents differ in their responses in respect of each of the items selected for constructing the index. 5-item scale is used to measure knowledge of credit risk, 7-item scale each is also used to measure credit standards of credit unions and 7-item scale



was used to measure credit risk management. Respondents were asked to rate the items on each scale on 1 to 5. '1' = strongly disagreement and '5' strongly agree. Pre-testing is also conducted after the instrument is designed to ensure reliable and valid results. As defined by Bird and Howes (2008), Pre-testing is valuable method that give researchers the assurance that they have captured the specified information among a smaller subset of target respondents. It also helps to test the adequacy of the questionnaire. It is used in this study to validate the instrument and allow the study to identify whether respondents understand the questions and instructions, as well as the meaning of questions is the same for all respondents. This is also done to enhance the internal consistency, validity and reliability of the questionnaire.

### **Reliability Test**

The reliability and validity of quantitative study depends on instrument construction. Therefore, following pre-test to ensure validity, the study also employs other technique to test reliability. According to Silverman (2004), reliability is the degree to which the findings of the research are independent of accidental circumstances. Muijs (2011) also defined reliability as the extent to which measurements are repeatable –when different persons perform the measurements, on different occasions, under different conditions, with supposedly alternative instruments which measure the same thing. In sum, reliability is consistency of measurement (Bollen, 1989), or stability of measurement over a variety of conditions in which basically the same results should be obtained.

It is believed that data obtained from behavioural research studies are influenced by random errors of measurement (Neuman & Kreuger, 2003;

Salkind, 2012). For that reason, the researcher can cancel out, on the average, over repeated measurements on a single person. Although it is rare to have perfect reliability, however, some researchers have suggested some procedures that help researcher to increase the reliability of measures (Rosnow & Rosenthal, 1991). One mean to test reliability generally is the use of Cronbach alpha coefficient which is also used in this study. The Cronbach alpha coefficient is widely used as a reliable procedure to indicate how well various items are positively correlated to one another (Sekaran & Bougie, 2010). When the alpha of the scale for measuring a variable is 0.7 and above, then it is more reliable, however, a lesser alpha below 0.7 has reliability in doubt (Santana, Mengod, & Artigas, 2009).

### **Data Analysis**

Data analysis is one of the major components of any research whether quantitative or qualitative or both. The purpose of all this is to summarize data so that it is easily understood and provides the answers to the study questions. According to Creswell (2008), data analysis is a process that demands drawing conclusions and explicating the findings in words about a study. However, the approach and method adopted can have influence on the results and conclusion of the study. This therefore means that the careful and necessary utilization of the right data analysis techniques can have great impact on the outcome of the research. Hence, the information gathered from primary sources is further interpreted and analysed. In this direction, the appropriate statistical method and tool used should be suitable for the study objectives as well as the study approach to provide answer to the study questions and the hypotheses developed in the research.

Another factor that the researcher considered is spending substantial time on the data analysis phase of the survey. This is because a rushed of ten caused some important aspects of the data missed and sometimes gives wrong analyses which lead to both inaccurate results and misleading conclusions (Wright, 2003). Therefore, a manual analysis is carried out to mainly edit and code the responses. The coding involved grouping answers of a similar nature or with similar meaning into one set of answers and giving them a particular number called a code. For instant, answers with “yes” in a given questionnaire would be coded as number one and answers with “no” would be coded as number two for each questionnaire. Again, ‘very strong agreement’ is coded 5 and ‘very weak agreement’ is coded 1. The coding assisted the study to get the total number of responses for each of the questions. This also helps to organise and represent the data in a tabular form to show the percentages and mean scale of the variables using the figures and numbers obtained. Editing is done in order to discard unwanted and irrelevant information, verify the data and check for consistency.

Since the study specifically employs quantitative approach, the Statistical Package for Social Sciences (SPSS) is used for data entry and analysis of the data collected. Tables, graphs and charts are used to present outcomes of the analysis. It has the variable view and data view. The variable view is the first stage where data coding format is input to pave way for the second and main data input stage. Each of the variables are measured using mean scale on 1 to 5. The study subsequently employs multivariate regression to analyse the objectives 3 and answer the relevant research questions. The

Relative Importance Index to measure objectives 1, 2, and 4. This is modelled as:

$$ROA = \alpha_1 + \beta_1 \text{Credit Risk} + \epsilon_i \quad (3)$$

Where:  $\alpha$  is the constant

ROA denotes Return on Asset = Net Income/Total Assets

Credit Risk = Net Charge off/Total Loans to Members

$\epsilon$  is the error term

$\beta_1$  is the coefficient credit risk. This coefficient would present the magnitude and direction of the relationship between credit risk ROA and form the basis for answering the research questions and the hypotheses. The Relative Importance Model is used to determine the relative importance of of the various causes and effects of delay and it is also modelled as:

$$RII = \frac{\sum W}{(A * N)} \quad (3)$$

Where: W is the weighting given to each factor by the respondents (ranging from 1 to 5), A is the highest weight (i.e. 5 in this case), and N is the total number of respondents. The higher the value of RII, more importance was the method of measuring credit risk, factor that influence credit standards of credit unions and risk management strategy adopted by credit unions.

### Ethical Considerations

Anyone involved in collecting data from population has an ethical duty to respect each individual participant's autonomy. According to Partington, (2003) an ethic is a philosophical term derived from the Greek word ethos, which means character or custom and connotes a social code that conveys moral integrity and consistent values. In other words, it is considered as what is wrong and what is right when conducting research. Therefore, the two

important ethical issues to adhere to when conducting a survey are confidentiality and informed consent. Thus, the respondent's right to confidentiality should always be respected and any legal requirements on data. This study therefore explains the caution it would take to avoid any harm to participants in the light of sensitivity of the research theme concerning responses about the assessment of the financial practices in the Ghana health service. The study explains to respondents the nature of study and stated that participation is voluntary. All participants are assured of their privacy and how confidential the data are kept.

In addition, the confidential right and anonymity of the study is highlighted. It also informed the participants that any data provided by them would only be applied for the study. The research does not impede in the administration of the questionnaires so that respondents answer the questionnaires in the most reasonable time. The study also regards on the ethical issues in reporting. Under no situation does the researcher formulate data to support conclusion made.

### **Chapter Summary**

The research design adopted by the study was a descriptive research design. A probability cluster sampling technique was used to group the country into zones. Random sampling was used to select credit unions while convenient sampling technique was used to select officers for the sample size of 60 credit unions out of the population of 70. The study used both primary and secondary data for its analysis. A self-administered questionnaire was used as the instrument for the collection of primary data for the study. The

data was analysed using the statistical software, SPSS and Microsoft Excel for simplification of results.



## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### Introduction

This chapter focuses on the analysis of data collected and interpretation. A cluster sampling technique was used to group the credit unions into six zones, and a convenient sampling method used to select credit unions who agreed to participate in the study. A total of 60 credit unions and 60 loan officers/executives participated in this study. Questionnaires were sent through emails to the loan officers of the 60 credit unions. The loan officers were those who answered the questionnaires. Therefore, the analysis and interpretation of data is based on the 60 credit unions selected. The discussion will be grouped into analysis of socio-demographics and analysis of objectives.

#### Analysis of Socio-Demographics

Socio-demographics characteristics including sex, level of education, years of experience and membership of professional bodies will be discussed under this section.

**Table 1: Socio-Demographic Characteristics**

|                           | FREQUENCY<br>(n) | PERCENTAGE<br>(%) |
|---------------------------|------------------|-------------------|
| <b>Sex of Respondents</b> |                  |                   |
| Male                      | 46               | 76.7              |
| Female                    | 14               | 23.3              |
| <b>Age of Respondents</b> |                  |                   |
| 25-35years                | 27               | 45.0              |
| 36-45years                | 24               | 40.0              |
| 46-56years                | 9                | 15.0              |

**Level of Education of Loan Officers**

|                |    |      |
|----------------|----|------|
| WASSCE         | 3  | 5    |
| DBS/HND        | 22 | 36.7 |
| DEGREE         | 32 | 53.3 |
| MASTERS DEGREE | 3  | 5    |

**Years of Experience of Loan Officers**

|               |    |      |
|---------------|----|------|
| Below 5-years | 27 | 45.0 |
| 6-10 years    | 33 | 55.0 |

**Membership of Professional Bodies**

|              |           |            |
|--------------|-----------|------------|
| Yes          | 12        | 20.0       |
| No           | 48        | 80.0       |
| <b>Total</b> | <b>60</b> | <b>100</b> |

**Source: Field Survey, Essandoh 2018**

The findings from Table 1 indicate that majority (76.7%) of the loan officers were males. The sex distribution of this study reveals that there are more males than females. It can be inferred that this finding is a reflection of the population distribution of Ghana’s labour force, where there are more males (71.4%) than females (28.6%) (Ghana Statistical Services, 2015). Furthermore, the age distribution from this finding reveal that majority (95%) of the respondents are within the age range of 25years to 45years. The age distribution of the study reflects a youthful population. This finding supports the report by Ghana Living Standard Survey (2010) where the survey reports that majority of the working population in Ghana are in the ages of 25 to 45years.

The study also found a high level of education among the respondents because most of the respondents have tertiary education (DBS/HND 36.7%; Degree 53.3%). This implies that most of respondents have high levels of



knowledge about their work and can also make relevant meaning out of information customers present when seeking credit. Furthermore, significant proportion of the respondents have less than 5 years of experience but majority of the respondents have long years of experience on their job. This shows that the selected credit unions have a blend of new employees and old employees which is a positive sign of organizations attracting new people with high education and blending it with the skills and experience of old employees, thereby avoiding stale knowledge in the organization.

Moreover, majority (80%) of the respondents do not belong to professional bodies. This is a big red light for the selected credit unions because it can be inferred that most of their employees lack modern skills, ethics and knowledge needed to run a financial institution in modern banking environment because high levels of skills, ethics and knowledge are ascertained from professional bodies.

Respondents were asked to explain briefly the method the credit union adopts to measure credit risk. Several methods were given by the respondents, from the use of bad debt levels, occurrence of increase in provision for loan losses, ratio of non-performing loans to the use of computerized systems. Respondents were further asked to select which of the methods listed were more likely to be a good indicator for their credit union. A five-point Likert Scale (1= strongly disagree, 2=disagree, 3=uncertain, 4=agree and 5=strongly agree) was used to measure the extent to which they believe the method they have listed were good measure of credit risk.

### Methods of Measuring Credit Risk

Key to understanding issues related to credit risk is to understand the methods banks and non-bank financial companies adopt to measure credit risk. The method a bank adopts to measure credit risk serves as an indicator for which the organization use to measure its exposure to credit risk. Most commonly used is the Relative Importance Index. The results of the RII is presented and discuss below.

**Table 2: Relative Importance Index on methods of measuring credit risk**

| Method of measuring credit risk                   | 1 | 2  | 3  | 4  | 5  | Weight | RII   | Rank            |
|---|---|----|----|----|----|--------|-------|-----------------|
| Ratio of Non-performing loans to total loans      | 0 | 0  | 0  | 37 | 23 | 263    | 0.877 | 1 <sup>st</sup> |
| Levels of bad debt written –off                   | 0 | 9  | 22 | 22 | 7  | 207    | 0.69  | 2 <sup>nd</sup> |
| Increase in provision for loan losses             | 0 | 15 | 28 | 17 | 0  | 182    | 0.60  | 3 <sup>rd</sup> |
| Use of computerized models to measure credit risk | 1 | 56 | 3  | 0  | 0  | 122    | 0.411 | 4 <sup>th</sup> |

**Source: Field Survey, Essandoh 2018**

Table 2 shows the Relative Importance Index on the methods of measuring credit risk by the selected credit unions. The findings reveal that non-performing loan ratio is the most important (RII=0.877) method adopted to measure credit risk. This is followed by the level of bad debt (RII= 0.697) as the next most important method of measuring credit risk and incidence of increase in provision for loan losses and use of computerized model as the least important measure of credit risk. This implies that the selected credit

unions measure credit risk by looking at the ratio of non-performing loans and total loans. This approach of measuring credit risk falls under the accounting-based credit scoring method. To Altman (1996), this method uses accounting variables to indicate the incidence or probability of credit risk. The ratio of non-performing loans to total loans informs credit officers about the proportion of total loans that payments have delayed, defaulted or are more likely to be defaulted. Altman (1996) explains that the accounting-based ratio helps loan officers to ascertain which category of loan is being defaulted. This serves as a vehicle to investigate the category of loan being defaulted and also the capacity of the defaulters. This approach is more precise in determining credit risk since it provides a clear proportion of total loans that have high probability of being defaulted (Altman, 1996).

The use of bad debt as an indicator of credit risk implies that the credit unions consider the levels of bad loans as an indicator that informs the credit union of the proportion of loans that have been defaulted. Altman (1996) reiterates that this method is also an accounting ratio method where accounting variables are used to determine the risk of losing credit. Hull and White (1995) assert that in spite of the potential of ration of non-performing loans and bad debt to be used as good indicators, it has an inherent risk. These methods rely greatly on book-value accounting data as a measure of credit risk. To Hull and White (1995), book-value accounting data are unable to reveal the situations of the borrower that have resulted in default of the loan. Altman (1996), also adds that this method adopts a linear approach in predicting credit risk. To Altman (1996), the capital market is influenced by

several conditions that may influence the probability of credit risk, therefore applying a unilateral way of measuring credit risk can be highly misleading.

### Credit Standards of Credit Unions in Ghana

The study examined the credit standards credit unions in Ghana apply before granting a credit facility to a customer. The purpose of this objective was to ascertain what conditions credit unions emphasize strongly as key factors necessary for a customer to be granted a loan request. Before, examining the credit standards of credit unions, the study examined the knowledge of the loan officers on the concept of credit risk.

#### Knowledge of credit risk

The study examined the level of knowledge of loan officers on the concept of credit risk. A five-point Likert Scale was designed with series of statement about the concept of credit risk. The respondents were asked to indicate the extent to which they agree or disagree to whether such situations provided constitute credit risk. A Relative Importance Index was adopted to rank the responses to ascertain the statement that respondents believe it clearly defines the concept of credit risk.

**Table 3: Relative Importance Index of Knowledge about Credit Risk**

| Statements   | 1 | 2 | 3  | 4  | 5  | Weight | RII   | RANK            |
|--|---|---|----|----|----|--------|-------|-----------------|
| Credit risk occurs because an expected payment might not occur | 0 | 0 | 3  | 37 | 20 | 257    | 0.857 | 3 <sup>RD</sup> |
| Credit risk includes delay in payment of credit                | 0 | 0 | 0  | 20 | 40 | 280    | 0.933 | 1 <sup>ST</sup> |
| Duration of credit influences credit risk                      | 0 | 0 | 10 | 42 | 8  | 238    | 0.793 | 4 <sup>TH</sup> |

|   |    |    |    |    |    |     |       |                 |
|---|----|----|----|----|----|-----|-------|-----------------|
| Long term loans are more likely to be defaulted     | 10 | 22 | 22 | 6  | 0  | 144 | 0.480 | 5 <sup>TH</sup> |
| Business season has a relationship with credit risk | 0  | 0  | 0  | 36 | 24 | 264 | 0.867 | 2 <sup>ND</sup> |

**Source: Field Survey, Essandoh 2018**

Table 3 shows the relative importance index of the various definitions of credit risk. The study defined credit risk by the criteria that, delay in the payment of credit when an expected payment does not occur or business season resulting in change in borrower’s circumstances rendering the borrower unable to meet their debt obligation. Respondents rank high the definition that credit risk occurs when there is delay in payment of credit (RII=0.933). This means that 93.3% of the respondents agree that credit risk occurs anytime there is delay in the payment of credit. This idea reflects the idea of Coyle (2000) that credit risk occurs when a borrower is unable to pay the credit within the stipulated contractual period. Furthermore, Sinkey (2002) also asserts that a bank or non-bank financial institutions face credit risk anytime payment for credit is delayed. The delay in payment of credit has been cited in the works of Padmanadhan (1988) and Haffernan (1996) to be a key situation under which credit risk may occur. This is also in line with definition of credit risk by Domingo and Thiagarajan (2014).

Moreover, respondents ranked second the idea that change in business season influencing the occurrence of credit risk. From the study, 86.7% of the respondents agreed that changes in business season affect a borrower’s capacity to meet their debt obligation. Ruckes (2004) argues that credit unions are more likely to apply different credit conditions during different business

seasons and this may be the reason why credit risk may be experienced as business seasons change.

Furthermore, 85.7% of the respondents agreed that credit risk can occur when an expected payment does not occur. This implies that where a credit union commits some funds into an investment or to a borrower and the expected payment is not ascertained, it constitutes credit risk. This idea is evident in the work of Kargi (2011) that credit risk constitutes any form of investment undertaking by the bank where the expected payment has not been received. Conford (2000) further adds that where the actual returns deviate from expected returns, it can be concluded that the bank or credit union is faced with credit risk.

It can be concluded that majority of the respondents have high levels of understanding of the concept of credit risk. This implies that the respondents will be able to understand and apply the right credit standard that will reduce the credit union's tendencies of experiencing credit risk.

### **Credit standards of credit unions**

The study examined the conditions that are highly considered before deciding the credit agreement a credit union may develop with a customer. The purpose of this section was to examine the key issues the credit union consider before deciding on a credit agreement in order to reduce the probability of credit risk. Under this section, some statements were presented to respondents and a five-point Likert Scale was used to measure the extent to which they will consider a particular statement before deciding a credit agreement with customers. A Relative Importance Index was used to rank the

extent to which a particular statement was important in deciding credit agreements.

**Table 4: Relative Importance of Factors that influence Credit Standards**

| Statements   | 1 | 2 | 3  | 4  | 5  | Weight | RII   | Rank            |
|--|---|---|----|----|----|--------|-------|-----------------|
| Credit standards change as macro-economic variables change               | 0 | 4 | 41 | 11 | 4  | 195    | 0.650 | 7 <sup>th</sup> |
| Credit unions lend more during boom                                      | 0 | 0 | 0  | 45 | 15 | 256    | 0.853 | 2 <sup>nd</sup> |
| Cost of risk influences credit standards                                 | 0 | 0 | 4  | 24 | 32 | 268    | 0.896 | 1 <sup>st</sup> |
| Customers success with previous loan influences credit standard          | 0 | 0 | 0  | 52 | 8  | 248    | 0.827 | 4 <sup>th</sup> |
| Credit union's success in a type of loan influences credit standard      | 0 | 0 | 1  | 55 | 4  | 243    | 0.810 | 5 <sup>th</sup> |
| Staff capacity to manage risk influences credit standard                 | 0 | 0 | 25 | 34 | 1  | 216    | 0.720 | 6 <sup>th</sup> |
| Availability of interim financing structure influences credit standards. | 0 | 0 | 0  | 45 | 15 | 255    | 0.850 | 2 <sup>nd</sup> |

**Source: Field Survey, Essandoh 2018**

Table 4 shows that the selected credit union rate cost of risk (RII=0.896) as the most important condition considered when deciding credit agreement with a customer. This is followed by availability of interim financing structures (RII=0.850) and when business season is in boom (RII-

=0.850). This implies that when the cost of risk associated with a loan is low, the credit union is more likely to provide flexible or soft loans to the borrower. On the contrary, where the risk associated with the loan is high, the credit standard is more likely to be stringent. This finding is in line with the work Ruckes (2004) where the study of financial institutions concluded that where the cost associated with lending to a borrower is high, the bank or financial institution is more likely to apply stringent credit agreement or standards. On the other hand, where the cost associated with a loan facility is low, the financial institution is more likely to apply flexible credit standards or agreement (Ruckes, 2004). Ruckes (2004) argue that financial institutions always aim at reducing their exposure to risk and they do this by the credit agreement that regulates the loan contract. This implies that credit unions do not have a fixed credit standard but the cost associated with lending the loan facility to the borrower determines the credit agreement or standard.

Furthermore, the next important condition the credit unions consider in deciding credit agreement or standard was availability of interim financing structure. The study found that 85% of the respondents consider availability of interim financial structure as the next important condition to consider before deciding the credit standards for a loan facility. This implies that where the credit union can find a financial structure such as loan reserves, cash flow from the borrower's collateral or cash flow from the borrower's investment, the credit union is more likely to apply a flexible credit standard. On the contrary, where there are no interim financial structures that can be used to recover the debt upon default, the credit union is more likely to apply strict credit agreements. Ruckes (2004) adds that where there is limited interim



financing structure to recover the debt, it increases the cost associated to lending. Therefore, the availability of interim financing structure reduces cost of lending to borrower because it increases the guarantee that the credit facility will not be defaulted.

Moreover, the respondents also consider the business season as a key determinant of credit agreement and standards. The study found that, 85% of the respondents consider business season as an important condition. This implies that during boom business cycle, credit unions are more likely to apply flexible credit agreement. Ruckes (2004) reiterates that the business phase has significant impact on the credit agreement or standard the financial institution applies. Ruckes (2004) argues that during economic boom, many firms become capable of seeking credit because there is more probability that the borrower can meet the loan obligations. Ruckes (2004) further argues that it is not automatic that credit standards are flexible during boom but it can be very stringent. Ruckes (2004) explains that during boom business seasons, there is increased competition for credit facilities. This exposes financial institutions to risk of meeting new customers that they have limited information on their credit ratings. Adverse information between borrowers and lenders may result in applying strict credit agreement and standards. Therefore, boom season can present both a period of strict credit standards and also flexible credit standard. On the other hand, a period of recession always presents application of strict credit standards. This is because during a period of recession, there is a reduction in the number of creditworthy borrowers in the market. This implies that most of the borrowers in a period of recession must be subjected under strict scrutiny and also strict agreement must be applied in order to reduce risk

of default. Ruckes (2004) adds that the restrictive attitude of financial institutions is as a result of low competition for credit which also affects the price for credit. Therefore, the business season or cycle influences the credit agreement and standards financial institutions apply.

Also, the study found that respondents consider the success of a borrower in meeting their debt obligation over a period of time can also influence the credit standards. Altman (1996) explains that financial institutions that use the subjective/ expert judgement in measuring credit risk are more likely to use this condition as a basis of deciding credit agreement. To Altman (1996), the subjective judgement measures a borrower's capacity to meet their debt obligation by considering their credit rating or how the borrower has been able to meet their debt requirements. Contrary to this idea is that where a borrower has low success of meeting debt obligation, credit standards are more likely to be stringent.

Furthermore, the study found that the financial institutions success in managing a particular type of loan can influence the credit standards of the union. Ruskes (2004) argues that when a financial institution has the capacity to manage a particular loan or credit facility, it reduces the risk the financial institution is faced with and also influence the credit arrangement that are designed to reduce the bank's exposure to risk.

Therefore, the credit standards or agreement that regulates the loan contract between the credit union and borrower is influenced by several factors including cost of risk, availability of interim financing and business cycle. Other important factors from the study are borrower's credit worthiness,

credit union’s expertise in the type of loan and staff ability to manage the credit facility.

**Relationship between Credit Risk and the Profitability of Credit Unions**

The study examined the relationship between credit risk and profitability of the credit unions. Several studies have found that there is a relationship between credit risk and profitability. This study sought to examine how credit risk affects the profits of the credit unions. The sample size of 60 credit unions was used to compute the correlation. The independent variable was credit risk and the dependent variable was profitability. Credit risk was measured by the ratio of net charged off (impairment) and total loans/advances made to customers. The dependent variable (profitability) was measured by the Return on Assets (ROA) which is computed as the ratio of net income and total assets of the company.

**Table 5: Correlation between credit risk and profit of credit union**

|                    |                     | credit risk | Profit   |
|--------------------|---------------------|-------------|----------|
| <b>Credit risk</b> | Pearson Correlation | 1           | -0.364** |
|                    | Sig. (2-tailed)     |             | 0.004    |
|                    | N                   | 60          | 60       |
| <b>Profit</b>      | Pearson Correlation | -0.364**    | 1        |
|                    | Sig. (2-tailed)     | 0.004       |          |
|                    | N                   | 60          | 60       |

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

**Source: Field Survey, Essandoh 2018**

Table 5 shows that there is a negative relationship between credit risk and profitability of credit unions with a correlation co-efficient of (-0.364). This means that as the credit risk of a credit union increases it results in a decrease in the profitability of the credit union. This implies that the extent to

which a financial institution loses the advances granted to customers' results in impairment of their profitability or return on assets. The findings of this study therefore imply that credit risk has a negative impact on the profitability of the credit union. This finding is in line with the study conducted by Staikouras and Wood (2004) where credit risk was found to have a negative relationship with the Return on Assets of some selected European banks. Ali et al., (2011) also found a negative relationship between credit risk and the Return on Assets of 22 commercial banks. Kargi (2011) also found a significant negative relationship between credit risk and the return on assets of some selected financial institutions. Kargi (2011) argues in the study that as the credit risk of financial institutions increased, the profitability of such financial institutions diminished significantly and that most the financial institutions losses have been attributed to credit risk. Also, Iloska (2014) also finds a negative relationship between credit risk and return on assets of 17 financial institutions and concludes that the only factor shielding profitability of the financial institutions was high provision for loan losses. Iloska (2014) therefore concludes that credit risk has a negative influence on the profitability of financial institutions.

Moreover, Erina and Lace (2013) also found a negative relationship between credit risk and profitability of financial institutions. The study of Abbas and Rana (2014) also supports the findings of Erina and Lace (2013) where it was found that credit risk of some selected financial institutions impacted negatively on the return on assets of the firms. Kolapo (2012) found a negative impact of credit risk on the return on assets of five commercial banks using a panel regression model. Also, the work of Gizaw et al. (2015)

also found a negative relationship between credit risk and the profitability (ROA) of 389 financial institutions. Aremu, Ekpo and Mustapha (2013) concludes that credit risk affects the profitability of financial institution both in the long run and short run.

Furthermore, in a Ghanaian context, Boahene, Dasah and Agyei (2012) also investigated the impact of credit risk on the profitability (ROA) of financial institutions. The findings of their study of the impact of credit risk on the profitability of some selected Ghanaian banks revealed that credit risk have negative influence on the healthy and sustainability of Ghanaian Banks. Also, Boahene et al., (2012) found that credit risk accounted significantly to the losses of some financial institutions in Ghana. Also, Afriyie and Akotey (2013) found a negative relationship between credit risk and the profitability of financial institutions in Ghana.

A regression analysis was conducted to ascertain the extent to which credit accounted for changes in the profitability of the credit unions. A Linear regression was conducted to determine how credit risk affected profitability (ROA).

$$ROA = C + \beta CR$$

Where; ROA = return on assets

CR= credit risk c= constant

**Table 6: Regression Analysis (Co-efficients<sup>a</sup>)**

| Model |             | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig.  |
|-------|-------------|-----------------------------|------------|---------------------------|--------|-------|
|       |             | B                           | Std. Error | Beta                      |        |       |
| 1     | (Constant)  | 0.048                       | 0.008      |                           | 5.917  | 0.000 |
|       | credit risk | -1.448                      | 0.486      | -0.364                    | -2.980 | 0.004 |

a. Dependent Variable: profit

Source: Field Survey, Essandoh 2018

**Table 7: Regression Analysis (Model summary)**

| Model | R                  | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|--------------------|----------|-------------------|----------------------------|
| 1     | 0.364 <sup>a</sup> | 0.133    | 0.118             | 0.06116                    |

a. Predictors: (Constant), credit risk

**Source: Field Survey, Essandoh 2018**

Table 6 and 7 shows a regression analysis of credit risk and profitability. The regression analysis shows that credit risk accounts for 0.118 (approximately 12%) changes in the profitability of the credit unions. This shows that credit risk has significant impact on the changes in the profits of the credit unions.

**Credit Risk Management Strategies of Credit Unions in Ghana**

The study also examined the credit risk strategies adopted by credit unions in Ghana. Several credit risk management strategies were presented to respondents to select the most important strategies that can help mitigate the incidence of credit risk. Some statements were presented on a five-point Likert Scale and respondents were asked to choose the extent to which they agree or disagree that a particular strategy was important to management of credit risk among credit unions. A Relative Importance Index was used to analyse the responses provided and the responses were ranked based on their order of importance.

**Table 8: Relative Importance Index of Credit Risk Management Strategies**

| Statements   | 1 | 2  | 3  | 4  | 5  | Weight | RII   | RANK            |
|--|---|----|----|----|----|--------|-------|-----------------|
| Lending processes are guided by a credit policy  | 0 | 0  | 0  | 22 | 38 | 278    | 0.926 | 1 <sup>st</sup> |
| Different credit terms are applied to customers and small business   | 0 | 0  | 0  | 30 | 30 | 270    | 0.90  | 2 <sup>nd</sup> |
| There is a management system that monitors debtors and bad debt  | 0 | 0  | 0  | 35 | 25 | 265    | 0.883 | 3 <sup>rd</sup> |
| An effective credit assessment of each individual customers before granting credit                         | 0 | 0  | 0  | 42 | 18 | 258    | 0.86  | 4 <sup>th</sup> |
| A special department set-up for credit control   | 0 | 19 | 40 | 1  | 0  | 162    | 0.54  | 5 <sup>th</sup> |
| The operational management are effective in monitoring the creditworthiness and credit limits of customers | 0 | 24 | 36 | 0  | 0  | 156    | 0.52  | 6 <sup>th</sup> |
| An internal operational management is set-up to monitor process of granting credit and collection          | 0 | 36 | 22 | 0  | 0  | 146    | 0.487 | 7 <sup>th</sup> |

**Source: Field Survey, Essandoh 2018**

Table 8 shows that, guiding lending with policy, different credit terms, special management systems that monitor's and effective credit assessment of each individual customer before deciding granting of credit were very

important strategies to manage credit risk. The study found that the respondents rate lending policy as very important to manage credit risk. This implies that when credit unions have a lending policy, it ensures consistency in maintaining the standard of lending and also reduces loan officers' tendency to use their discretion in deciding to grant credit to customers. Fatemi and Foolad (2006) argues that when there is a lending policy that guides granting of credit, it reduces the vulnerability of both the financial institution and customer becoming victim of credit risk. Adjeitsey (2015) adds that the prevalence of credit risk in most cases can be attributed to weak lending policies which lead to increasing the vulnerability of both the credit union and the customer.

Furthermore, respondents also agreed that applying different credit agreements to different customers and small business was very important in managing credit risk among credit unions. Different customers have different credit scoring or credit rating which explains their tendencies of meeting their debt obligation. If a customer has failed in meeting debt obligation per the loan agreements, such a customer may need a stringent credit agreement because there is the tendency that they are more likely to default future loans granted. On the other hand, if a customer has high credit score and have a positive track of meeting debt obligations on time, such customer can be giving a flexible credit agreement. Rene (2000) concludes that customers with low credit standing are more likely to default debt, hence needs a strict credit agreement.

Also, respondents agreed that a special management system that monitors debtors and bad debt is very important to managing credit risk.



Monitoring debt in financial institutions is key to reducing the incidence of default. When there is a special management system that monitors debt, they are able to generate an aging report that do not only keep track of debt that have not been redeemed but also keep up with the current situation of debtors and reasons that have led to the delay in payment of debt. This helps the credit union to keep track of the businesses of customers from which the cash flow will be used to meet the debt obligation. Cornette and Saunders (2005) added that an effective management system that maintains proper records of debt and debtors help to reduce the incidence of credit risk.

Moreover, an effective credit assessment of each individual customer before granting of credit is important to maintaining credit health. Respondents agreed that proper screening of customers before granting of loan help to ascertain how vulnerable to defaulting credit. Miller (1996) adds that the choice making procedure in deciding to grant loan is very important because it determines the capacity of the borrower to meet debt obligation. It serves as a vehicle to source greater information about the viability of the venture the borrower aims at investing the credit. Irukwu (1998) concludes that an effective credit assessment process helps to reduce misfortunes that are more likely to result in credit risk.

Therefore, availability of lending policy, customer-based credit agreement, special debt monitoring management system and effective credit assessment are very important to management of credit risk.

### **Other Credit Risk Management Mechanism**

The study examined some other credit management strategies the credit unions adopted to reduce the incidence of credit risk. The study examined whether the

credit unions have means of recourse upon the default of credit. Adjeitsey (2015) argues that when there is a means of recourse upon default of debts, credit risk is less likely to occur.

**Table 9: Availability of Means of Recourse upon Credit Default**

| Response | Frequency (n) | Percentage (%) |
|----------|---------------|----------------|
| Yes      | 60            | 100            |

**Source: Field Survey, Essandoh 2018**

Findings from the study show that all the credit unions who participated in the study have means of recourse upon credit default. This implies that credit unions have available means of retrieving credit extended to customers in order to reduce losing of credit.

The study further examined the means of recourse credit unions adopt to reduce the tendencies of loan loss.

**Table 10: Means of Recourse for Credit Union upon Default**

| Means of Recourse | Frequency (n) | Percentage (%) |
|-------------------|---------------|----------------|
| Guarantors        | 47            | 78.3           |
| Collateral        | 13            | 21.7           |
| <b>Total</b>      | <b>60</b>     | <b>100</b>     |

**Source: Field Survey, Essandoh 2018**

The findings from Table 10 show that most of the credit unions resort to guarantors and collateral upon default of credit. This implies that capacity of guarantors is critical in assessment of credit process before credit is granted. This study also adds that since most credit unions resort to guarantors upon credit default, it is very imperative to also examine the credit standing of guarantors before granting credit. This is because if guarantors have low credit

standing, it increases the vulnerability of the credit union of experiencing credit risk.

Moreover, the study examined the conditions under which the credit union accept an asset as collateral.

**Table 11: Conditions for accepting an asset as collateral**

| Conditions                         | Frequency (n) | Percentage (%) |
|------------------------------------|---------------|----------------|
| Evidence of ownership/Registration | 47            | 78.3           |
| Size of Collateral                 | 13            | 21.7           |
| <b>Total</b>                       | <b>60</b>     | <b>100</b>     |

**Source: Field Survey, Essandoh 2018**

The study found that the credit unions consider evidence of ownership and registration of the asset as the most important condition before accepting an asset as collateral. Moreover, they also consider the size of collateral to ascertain if the asset value whether in the present or future can be used to defray the debt.

The study also examined the measures the credit unions adopt to handle defaulters when guarantors and collateral means failed to defray the debt.

**Table 12: Measures adopted to handle defaulters**

| Measures                   | Frequency (n) | Percentage (%) |
|----------------------------|---------------|----------------|
| Use court action           | 35            | 58.3           |
| Write-off debt             | 4             | 6.7            |
| Credit union recovery team | 21            | 35             |
| <b>Total</b>               | <b>60</b>     | <b>100</b>     |

**Source: Field Survey, Essandoh 2018**

The findings from the study in Table 12 shows that management of credit unions resort to court action as the main means of handling defaulters. Moreover, they use credit union debt recovery team from the institutions that meet debtors and arrange means of payment of debt. Moreover, when the debt cannot be recovered, the bank may write-off the debt in their accounts.

### **Chapter Summary**

From the presentation, analysis and discussion of the data collected based on the methodology adopted for the study, it reveals that majority (76.7%) of the loan officers were males. The findings also revealed that non-performing loan ratio is the most important method adopted to measure credit risk. 93.3% of the respondents agreed that credit risk occurs anytime there is delay in the payment of credit. From the results, 86.7% of the respondents agreed that changes in business season affect a borrower's capacity to meet their debt obligation. When the cost of risk associated with a loan is low, the credit union is more likely to provide flexible or soft loans to the borrower. Also, 85.7% of the respondents agreed that credit risk can occur when an expected payment does not occur. The findings implied that credit risk has a negative impact on the profitability of the credit union. When credit unions have a lending policy, it ensures consistency in maintaining the standard of lending and also reduces loan officers' tendency to use their discretion in deciding to grant credit to customers. Furthermore, most of the credit unions resort to guarantors and collateral upon default of credit and also resort to court action as the main means of handling defaulters.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### Introduction

This chapter concludes the study by summarizing major findings, conclusions and some recommendation that will be made from the findings. This chapter will show the limitations the study encountered and the areas for future research.

#### Summary

The study examined sixty (60) credit unions and sixty loan officers participated in the study. The study was dominated by males with few females and this deviates from the proportion of male to females in the national workforce population. Also, the study sample reflected a youthful population with high level of education since majority of the respondents have had tertiary education. The sample shows evidence of a highly experienced workforce because majority of the respondents have more than 5years working experience in the credit union services. On the contrary, majority of the loan officers did not belong to any professional bodies. This challenged their level of expertise with contemporary financial systems, methods and ethics guiding financial sector workers.

The study examined the methods the credit unions employ to measure the incidence of credit risk in their business. The study found that the method common to all the credit unions in measuring credit risk was the use of ratio of non-performing loans to total loans, levels of bad debt written-off, increase in provision for loan losses and use of computerized programmes that reports on delay in payment of loans. The study further asked the respondents to rate the

degree to which one of these methods were important in measuring credit risk. Findings revealed that ratio of non-performing loans and levels of bad debt written-off was the very most important methods and the use of increase in provision for loan losses and use of computerized programmes were rated least important using a Relative Importance Index approach.

The study further examined the conditions that are very important in deciding the nature of credit standard and credit agreement before granting credit to customers. The study prior to this examined the knowledge of the loan officers with regards to the concept of credit risk. A five-point Likert scale was used to examine the extent to which they agreed the statements are important in defining credit risk using a Relative Importance Index (RII). The study found that the respondents had high levels of knowledge about the concept of credit risk and agreed that delay in payment of credit, failure of receiving an expected payment (either from an investment or loan advance) and business seasons to be very important in defining credit risk.

Moreover, the study examined the conditions very important to determining credit standards and agreement before granting loans to customers. The study employed a Relative Importance Index to ascertain the extent to which they regard the conditions as important to determining credit standards. The findings revealed that cost of risk associated with the loan, business cycle (boom or recession), availability of interim financing mechanism, customers' success in meeting debt obligation previous and the credit unions success in a particular loan are the important (from most important) conditions that influence the credit agreement and standards.

The study examined the relationship between credit risk and profitability of credit unions in Ghana. Credit risk was measured by the ratio net-charged off (impairment) to total loans and the profitability was measured by Return on Asset which was defined by the ratio of net income to total assets. A Pearson Correlation co-efficient ( $R = -0.364$ ) showed a negative relationship between credit risk and profitability. This implied that as credit risk increase, profitability of the credit union decreases. A Linear Regression showed an adjusted R-square of 0.118 showed that credit risk accounted for approximately 12% of changes in the profitability of credit unions. At 5% level of significance, the study failed to reject the null hypothesis.

The study examined some strategies that are very important in managing credit risk in order to improve profitability. A Relative Importance Index was employed to examine the extent to which some set of statements were important in credit risk management using a five-point Likert scale. The study found that availability of a lending policy, different credit terms for different customers and small businesses, special management system that monitors debtors and bad debt and an effective credit assessment of borrowers were the important (from most important) components of credit risk management strategies.

Furthermore, the study found that the credit unions had a means of recourse upon default of loans. The dominant means of recourse to recovering the debt was holding guarantors responsible for the loss and taking over collateral. The study also found that ownership and registration of collateral and size of collateral determined if a collateral will be accepted for the loan. Moreover, the credit unions resort to court actions, credit union debt recovery

team and writing-off debts as the measures to handle defaulters when guarantees and collateral fails to recover the debt.

### **Conclusion**

The central aim of this study was to examine the impact of credit risk on the profitability of credit unions in Ghana. On the strengths of the findings of the study, the following conclusions can be drawn.

The findings from the study lays significant evidence and support existing studies that credit risk has a negative impact on the profitability of credit unions. Moreover, the credit standards credit unions adopt have significant influence on the incidence of credit risk and an effective credit risk management strategy have significant capacity to reduce the impairment credit risk cause to the profitability of credit unions.

### **Recommendations**

Some recommendations are made from the findings of the study. These recommendations are aimed at improving the credit risk management systems credit unions adopt.

The study recommends that managements of credit unions must provide regulatory policies for credit/loan officers on credit risk, monitoring mechanisms and credit granting processes. This will help improve their knowledge of how credit risk can be minimized from the credit granting process before the default occurs. Also, management must encourage loan officers to join professional bodies in their field in order to improve their skills and expertise in management of credit facilities.

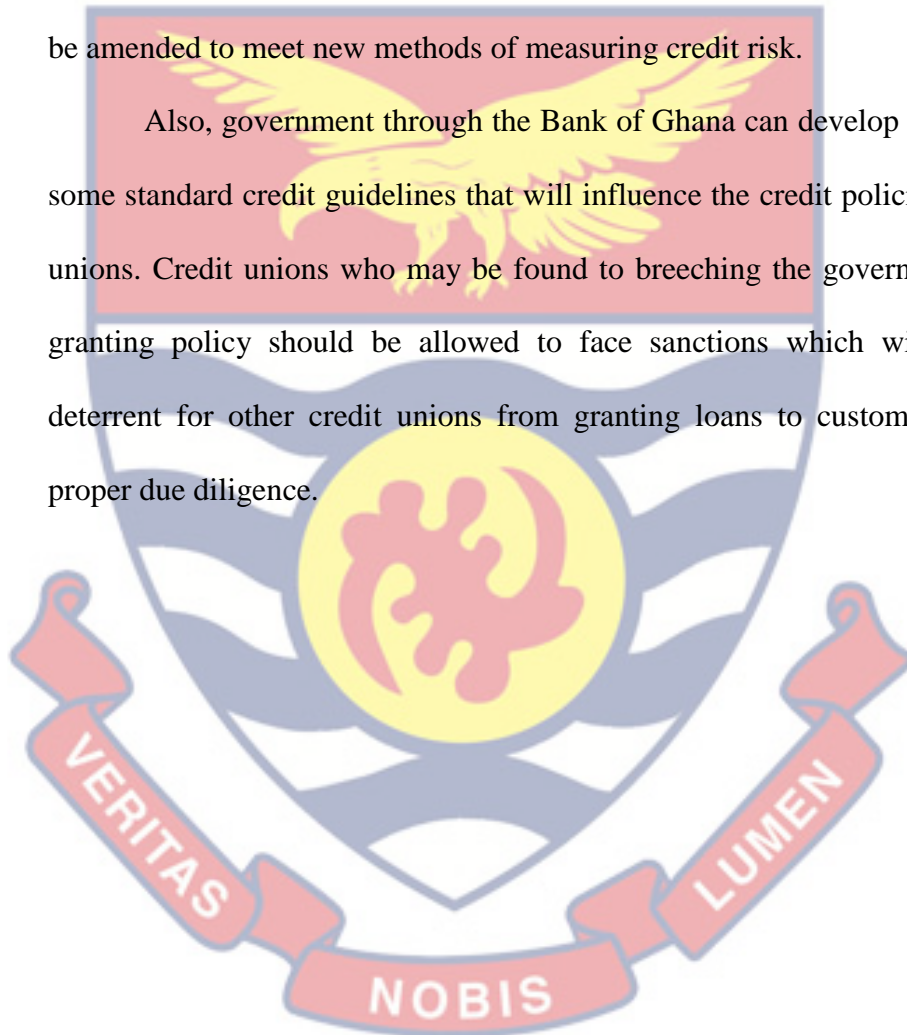
Moreover, the study recommends that credit unions must develop a credit policy for different segment of customers and businesses they do



business with. This will ensure consistency in the application of credit to customers. This limits loan officers from exercising higher discretionary powers and granting loans to customers who do not have maximum capacity to meet debt obligation.

Furthermore, credit unions must develop a framework or method that consistently measures credit risk. This method should be flexible so that it can be amended to meet new methods of measuring credit risk.

Also, government through the Bank of Ghana can develop and enforce some standard credit guidelines that will influence the credit policies of credit unions. Credit unions who may be found to breaching the government credit granting policy should be allowed to face sanctions which will serve as deterrent for other credit unions from granting loans to customers without proper due diligence.



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## APPENDIX

## UNIVERSITY OF CAPE COAST

## SCHOOL OF BUSINESS

## DEPARTMENT OF ACCOUNTING

**The Effect of Credit Risk on the Profitability of Credit Unions in Ghana.****A case of some selected credit unions in Ghana.**

Dear Sir/Madam,

The purpose of this study is to examine the impact of credit risk on the profitability of credit unions in Ghana. This questionnaire will be used solely for academic purposes and all responses received will be protected with the highest form of confidentiality and anonymity. Your voluntary participation in this study will be duly appreciated. Thank You

**Section A: Socio-Demographics****1. Sex**

- Male
- Female
- Other
- Prefer not to say

**2. Age**

- 25- 35years
- 36- 45years
- 46- 55years
- 56 and above

**3. Level of education**

- WASSCE
- DBS/HND
- Degree
- Master's Degree



4. Years of experience

- Below 5years
- 6-10years
- 11-15years
- 16years and above

5. Name of Credit Union

.....

6. Do you belong to any professional association?

- Yes
- No

7. If Yes, please state the name of the professional body.

.....

**Section B: Knowledge of Credit Risk**

You are required to select the extent to which you agree or disagree to the statements below on the five point Likert Scale. **1. Strongly Disagree 2. Disagree 3. Uncertain 4. Agree 5. Strongly Agree**

| Statements  | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 8. Credit risk exist because an expected payment might not occur.     |   |   |   |   |   |
| 9. Credit risk includes delay in payment of credit.                   |   |   |   |   |   |
| 10. The duration of credit influences the incidence of credit risk    |   |   |   |   |   |
| 11. Long term loans are more likely defaulted unlike short-term loans |   |   |   |   |   |
| 12. Business season has a relationship with credit risk               |   |   |   |   |   |

**Section C: Credit Agreement and Credit Standards of Credit Unions**

You are required to select the extent to which you agree or disagree to the statements below on the five point Likert Scale. **1. Strongly Disagree 2. Disagree 3. Uncertain 4. Agree 5. Strongly Agree**

| Statements   | 1 | 2 | 3 | 4 | 5 |
|--|---|---|---|---|---|
| 13. Standards for granting loans change as macro-economic variables change.  |   |   |   |   |   |
| 14. Credit unions are more likely to lend during boom.   |   |   |   |   |   |
| 15. Cost of risk influences the credit standard or agreement with a customer   |   |   |   |   |   |
| 16. A customers success in with previous loans determines the credit agreement for granting loans.   |   |   |   |   |   |
| 17. The credit union’s success in a particular loan (student, funeral, group loan, business loan, etc.) influences credit agreement or standard. |   |   |   |   |   |
| 18. Staff capacity to manage risk surround loans influences credit agreement or standards.   |   |   |   |   |   |
| 19. Credit standard or agreement can be flexible when the credit union has an interim re-financing mechanism                                     |   |   |   |   |   |

**Section D: Credit Risk Management**

You are required to select the extent to which you agree or disagree to the statements below on the five point Likert Scale. **1. Strongly Disagree 2. Disagree 3. Uncertain 4. Agree 5. Strongly Agree**

| Statement   | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 20. Lending process are guided by a credit policy   |   |   |   |   |   |
| 21. Different credit terms are applied to customers and small businesses                                      |   |   |   |   |   |
| 22. An effective credit assessment of each individual customer before deciding to grant credit to aa customer |   |   |   |   |   |
| 23. An internal operational management is set-up to   |   |   |   |   |   |

|  |  |  |  |  |  |
|--|--|--|--|--|--|
| monitor process of granting credit and collection.   |  |  |  |  |  |
| 24. The operational management are effective in monitoring the creditworthiness and credit limits of customers |  |  |  |  |  |
| 25. There is a management system that monitors debtors and bad debt  |  |  |  |  |  |
| 26. There is a special department set-up for credit control.   |  |  |  |  |  |

27. Can you describe the method your organization adopts to measure credit risk?

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28. What are the methods of payment of credit offered to customers by your organization?

- Direct debit
- Collection by loan officers
- Other

29. Are there available means of recourse on the event of credit default?

- Yes
- No

30. If yes to Question 29, please state the means of recourse.

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31. Do you use collateral system?

- Yes
- No
- May be

32. What factors do you consider to accept an asset as collateral? Tick all that applies

- Evidence of ownership / registration
- Size of the collateral
- Nature of collateral
- Other.....

33. Do you have an external body that assess the quality of collateral?

- Yes
- No

34. Do you think the collateral system has helped in debt recovery for your organization?

- Yes
- No
- May be

35. Please give reasons for your answer to Q34.

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36. What measures are adopted to handle defaulters?

- Use court action
- Use third party debt collectors
- Rescheduling the payments
- Write of long outstanding debt
- Credit union recovery team

