Assessment of Internal Credit Risk Grading System Quality in Ethiopian Commercial Banks

By: Rekik Girma Azene

A Research Project Submitted to the College of Business and Economics in Partial Fulfillment of the Requirements for the Degree of Master in Business Administration: Financial Service

Advisor: Tefferi Ghebray (DBL)

Addis Ababa
October 2021

ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
GRADUATE PROGRAM
STATEMENT OF DECLARATION

I, Rekik Girma, hereby declare that this research work entitled; *"Assessment of Internal Credit Risk Grading System Quality in Ethiopian Commercial Banks"* submitted by me for the award of the Degree of Master in Business Administration is my own original work and that all sources of materials used for the study have been duly acknowledged.

Rekik Girma _____ _____

Signature Date

ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
GRADUATE PROGRAM

This is to certify that this thesis prepared by Rekik Girma, entitled; *"Assessment of Internal Credit Risk Grading System Quality in Ethiopian Commercial Banks"* and submitted to the College of Business and Economics in partial fulfillment of the requirements for the Degree of Master in Business Administration complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Approved by:

Dean, Graduate studies_____ Signature_____ Date_____

Advisor Tefferi Ghebray (DBL) Signature _____ Date_____

Internal Examiner: _____ Signature_____ Date_____

External Examiner: _____ Signature_____ Date_____

ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
GRADUATE PROGRAM
ENDORSEMENT

This thesis is submitted to the School of Graduate Studies of Addis Ababa University College of Business and Economics for examination with my approval as a university advisor.

Tefferi Ghebray (DBL) _____ _____
Signature Date

Acknowledgement

My sincerest thanks go to the almighty God for his fatherly love, support, and protection during my study period.

Throughout the research, I am grateful to my adviser, Dr. Tefferi Ghebray for his constant direction, advice, invertible suggestions, and mentorship.

I would also like to thank my father, Dr. Girma Azene, for his inspirational role, constant support, editing, advice, and encouragement, as well as my mother, W/o Yeshi Tadesse, who is always my pillar of strength and showers me with her unconditional love.

Last but not least, I want to express my gratitude to my husband, Eyoel Mitiku, for his unwavering support and love, as well as my children, Atnasia and Yodahe, for their love, support, and understanding of their mother's hectic schedule.

Table of Contents

List of Tables

List of Figures

ABSTRACT

The major purpose of this study is to thoroughly examine the quality of the internal credit risk grading system utilized by 17 commercial banks in Ethiopia and establish whether it varies among institutions. A descriptive inquiry was conducted for the primary study, utilizing two mutually supporting self-administered questionnaires, and yearly reports were reviewed on the components to identify the variance issue. Data were gathered from experts and mid to senior level credit and risk managers at the banks under examination who worked in their respective head offices. Two hundred twenty-nine surveys were gathered from purposefully selected commercial banks using two independent and separate questionnaires. A quantitative technique was utilized to arrange the two sets of data, perform the analysis, and provide a report on the research's findings, which were stated statistically using percentages, frequency, mean, and standard deviation scores. It is found that with the exception of Wegagen and Buna International Bank, which were rated good and ranked first and second, the others were rated marginal or unsatisfactory. Besides, it is found that ICRGS quality does not vary across banks taking into account their respective ownership structure, market size, asset value, deposit, and profitability. As a result, the National Bank of Ethiopia should consider adopting a standard with quantifiable metrics that all banks should utilize to increase the level of ICRGS quality for individual banks as well as at the industry level, and it should be examined on a regular basis. Commercial banks should also ensure that an effective ICRGS system is in place in order to increase the quality of their ICRGS.

Key Words: Commercial Banks, Credit Risk, Credit Risk Management, Quality of Internal Risk Grading System

CHAPTER ONE
INTRODUCTION

1.1. Background of the Study

Internal Credit Risk Grading System (ICRGS) is an important instrument for promoting bank security and soundness by facilitating informed decision-making (Supervision, 1999; Kabir et al., 2010; Chaibi and Ftiti, 2015), and measuring and managing credit risk (Supervision, 1999; Tracey and Carey, 2000; Weissova et al., 2015). Besides, it helps in mitigating credit losses to the required level (Ali, 2012), and differentiating good and bad credit applicants (Shi et al., 2019). Such values could only be useful to commercial banks if the ICRGS is well-structured (Supervision, 1999), well-managed (Kabir et al., 2010; Mohammad and Onni, 2015), and its quality is evaluated (Krahnen and Weber, 2001; Weissova et al., 2015; Kiptoni and Kiprop, 2018). The ICRGS is designed to promote accuracy, integrity and consistency throughout the rating organization (McDonald and Eastwood, 2000; Tracey and Carey, 2000; Santos, 2017) if it is realistically applicable (Tracey and Carey, 2000), efficient (Faruq et al., 2016; Oyama and Yoneyama, 2005; Mohammad and Onni, 2015), and robust enough to withstand any foreseeable problems in the measurement of risks (Santos, 2017; Ali, 2012; Mohammad and Onni, 2015), rather than assuming its benefit through its mere existence.

In spite of its importance, it has become difficult to achieve its fullest value (Tracey and Carey, 2000; Ali, 2012). The problem becomes even more severe, particularly for commercial banks due to the potentially conflicting staff incentives and complex nature of the rating system (Tracey and Carey, 2000), the system's need for continuous support and involvement of senior management and regulators, and the dynamic and complex nature of commercial banks that expose them to a greater risk day by day (Ali, 2012).

Despite its importance in managing and mitigating credit risk (Supervision, 2000; Weissova et al., 2015; Ali, 2012), literatures on the practical applicability of internal credit risk grading system are not very comprehensive and rich (Ali, 2012), and as far as the knowledge of the researcher is concerned, studies on the quality of internal credit risk grading system are limited and theoretical. There is also an ongoing need for the use of internal credit risk grading system (Ahmed, 2018; Ali, 2012; Faruq et al., 2016), and assessing the quality of ICRGS is an important subject due to the complex and dynamic nature of commercial banks (Ahmed, 2018; Ali, 2012), and the forward-looking nature of credit risk models (Máková, 2019). This study, therefore, is set to investigate the quality of ICRGS and its realistic applicability for the effective credit risk management of commercial banks in Ethiopia.

1.2. Problem Statement

Even though ICRGS is an important tool for the effective management of credit risk (Supervision, 2000; Tracey and Carey, 2000; Weissova et al., 2015), its realistic applicability is difficult to achieve (Tracey and Carey, 2000; Ali, 2012). The problem becomes severe for financial institutions, like commercial banks. Commercial Banks are different from other financial institutions in the process of implementing ICRGS because credit is their main activity and managing credit risk is a guarantee for their survival (Bekhet and Eletter, 2014; Kabir et al., 2010; Mohammad and Onni, 2015). Failing to effectively manage credit risk will contribute to bank failure (Mohammad and Onni, 2015), and a transfer of credit risk in the financial system will result in systemic risk (Nijskens and Wagner, 2011) leading to failure of the entire banking industry.

In the absence of its realistic applicability (Tracey and Carey, 2000), efficiency (Faruq et al., 2016; Oyama and Yoneyama 2005; Mohammad and Onni, 2015), and well-management (Kabir et al., 2010; Mohammad and Onni, 2015), the importance of ICRGS will not be value adding to commercial banks. Its assessed quality (Krahnen and Weber, 2001; Weissova et al., 2015; Kiptiony and Kiprop, 2018), accuracy, integrity and consistency throughout the rating organization (McDonald and Eastwood, 2000; Tracey and Carey, 2000), and robust nature (Santos, 2017; Ali, 2012; Mohammad and Onni, 2015), also have a value adding effect on the importance of ICRCS. Because the preceding studies stress the importance of the presence and practical applicability of ICRGS, the primary purpose of this research is to evaluate the quality of internal credit risk grading systems used by commercial banks in Ethiopia, and to establish if the degree of ICRGS quality varies between commercial banks.

1.3. Research Questions

The study is guided by the following sub-research questions:

1. What qualities do Ethiopian commercial banks' internal credit risk grading systems (ICRGS) have?
2. Does the level of ICRGS quality vary across banks taking into account their respective ownership structure, market size, asset value, deposit, and profitability?

1.4. Objectives of the Study

1.4.1. General Objectives

The primary purpose of this research is to evaluate the quality of internal credit risk grading systems used by commercial banks in Ethiopia, and to establish if the degree of ICRGS quality varies across the commercial banks.

1.4.2. Specific Objectives

The particular aims of this study are to:

1. Assess the quality of ICRGS in Ethiopian commercial banks vis-à-vis internationally recognized quality criteria; and
2. Determine if the degree of ICRGS quality varies across the banks taking into account their respective ownership structure, market size, asset value, deposit, and profitability.

1.5. Significance of the Study

The concept of ICRGS is not quite a familiar subject under the context of Ethiopia as the regulatory body of financial institutions, National Bank of Ethiopia is still in the phase of implementing Basel I (even if the concept of internal risk grading system is introduced as a requirement in its Revised Bank Risk Management Guideline) while the concept of internal rating has become an issue in Basel II recommendations.

With this being the current circumstances and as the objective of the study is to assess the quality of ICRGS of commercial banks in Ethiopia, the researcher hopes that the finding from this study will have the potential to make contribution to the current knowledge about the operation of commercial banks in Ethiopia concerning the concept and understanding of ICRGS in the banking Industry. It is also expected that the finding of this study will provide basis for further research in the area.

The researcher also hopes that the finding from this study will contribute to practice, further study and useful policy implications worth of discussion points and triggers for consideration by stakeholders including the National Bank of Ethiopia and commercial banks perhaps in their efforts to further review the existing directives, policies and procedures in the risk management programs of commercial banks in Ethiopia.

1.6. Study Scope and Limitation

If time, funding and availability of data were not the major issues; the researcher would have chosen to make a complete assessment in the quality of ICRGS of all financial institutions performing under the jurisdiction of Ethiopia. However, unfortunately these three factors are the major drawbacks in which the researcher cannot do much to control to complete the study with the available and tight time frame, availability of funding and the amount and quality of data that could be gleaned from various financial institutions. Therefore, the researcher has chosen to make special attention and focus and propose to limit the assessment of ICRGS quality in the existing commercial banks in Ethiopia. The hope is the study will bring out findings that may be more generalizable and an indicative in the operationalization of the wider financial institutions in Ethiopia.

Other limitations and risk in this study were while claiming non-closure in the industrial operational secrecy; target banks for this study were not willing to reveal and provide information about their credit policies, procedures, and credit risk management guidelines or programs. Moreover, the directors and managers of credit risk management and credit appraisal processes did not provide accurate information about their grading system.

1.7. Organization of the Study

The study is organized into five portions. The first chapter deals with an introduction; problem statement; research questions; study objective; implication and practical contribution; study scope and restriction. The second chapter portrays the literature review, while considering: conceptual understanding of terms; empirical literature findings; research gap and conceptual framework. The third chapter gives an overview of research design and methodology through describing: introduction, research approach and design; sampling approach; data source and tools for collection; data reliability; data analysis technique, description of operational definition and measurement, quality of ICRGS, and requirements for the quality of ICRGS. The Forth part deals with analysis of the study with introduction, demographic information, and data presentation, analysis and interpretation. Finally, the fifth part wraps up the research with summary of major findings, conclusion, and recommendation.

CHAPTER TWO
LITERATURE REVIEW

2.1. Introduction

The previous chapter examined the study backdrop, issue statement, guiding research questions, general and particular study objectives, what impacts and knowledge contribution the study aimed to achieve, the scope and constraints of the research, and how the study is organized.

This chapter evaluates the relevant material in five key categories. The first section deals with chapter introduction, the second with conceptual understanding of the study subject, and the third with empirical research based on evidence from other countries as well as Ethiopia. Finally, the chapter concludes with the development of a conceptual framework based on the operational definition and measurement of globally accepted ICRGS quality parameters.

2.2. Conceptual Context

2.2.1. Credit Risk

Credit risk as described by the Supervision (2000) is "the potential for a bank debtor or counter-part will fail to fulfill its payment obligation under the contract." A breach of contract that have been agreed upon between a borrower and a bank leading to potential default of scheduled loan repayment by the borrower or counterpart represents a heightened credit risk to the bank and a violation of contract agreement by the borrower. Defaulting in the repayment of the bank loan can occur either because of unwillingness or lack of ability on the side of a borrower to meet its obligation to the bank under the loan contract.

It has been suggested that credit risk is an overpoweringly critical issue and a serious concern in the banking industry because of its very severe consequences and the probability of its appearances that may lead to perhaps an inevitable failure of the banks. It is therefore very important that the concept of credit risk should be clearly understood and be dealt with accordingly by commercial banks because of its spreadable nature (Supervision, 2000). Even though it is necessary due to the nature of the business, it may be feasible to measure, tightly regulate, and monitor as much as possible on a regular basis. The rationale for this is to ensure the industry's overall stability and to be safe guarded from the risk in issue, as well as to lessen its unprecedented repercussions in banking operations.

2.2.2. Credit Risk Management

Credit risk management is a mechanism of mitigating a credit risk through the establishment of a system that sufficiently identify, measure, closely track and manage the routine day to day operations of the bank. According to the National Bank of Ethiopia (2010), efficient credit risk management is the method of handling the activities of an institution that creates exposures to credit risk in a way that significantly decreases the probability that these activities will adversely affect the profits and resources of a bank. Therefore, the required way of managing credit risk for banks by the regulatory body is through setting a limit to risk exposure at different levels of management.

The NBE also puts a credit risk management guideline for all banks to follow and sets requirements on them. The guideline obliges banks to give an oversight responsibility for Boards and Senior Management, put in place credit policy and procedure as well as to set credit exposure limits; measure, monitor and control credit risk; and place internal controls for risk management function. (National Bank of Ethiopia, 2010). Therefore, the directive in this matter stipulates that there is a built-in serious supervision and monitoring mechanism on the banking industry the supervisory body on matters pertaining to the regulation of credit risk.

2.2.3. Internal Credit Risk Grading System

Supervision (1999) stated that credit risk management has 17 principles. The 10^{th} principle deals with the establishment of a system that grade borrowers as part of the maintenance of the effective method of credit management, assessment and control. The principle can be interpreted to mean as while controlling credit risk, banks can build and use internal risk rating systems. The ranking system should be in accordance with the design, scale and sophistication of the operations of the bank. Of course, this principle has been already adopted and owned by the National Bank of Ethiopia and NBE has set a standard that it is an obligation of the banks that they should put in place an internal credit rating system that should be an integral part of bank's credit risk measurement, monitoring and control function.

As part of the credit risk measurement, monitoring and control process, Supervision (1999) argued that internal risk rating system is considered to be an important tool to monitor the quality of individual as well as a portfolio quality. It gives vital information for the bank's management about the individual as well as the overall loan portfolio concentration and signals them in advance if they will be exposed or not.

As so many literatures are suggesting, the terms scoring, rating and grading are interchangeably used in relation to internal credit grading system. It is therefore deemed necessary to clarify the concepts so as to avoid any confusion that might arise along the way. According to Dudian and Maciuca (2010), when we want to study the qualitative form of credit risk, we use credit rating and the quantitative method of credit risk is studied through scoring. Most literatures use rating and grading interchangeably but there is a general consensus that rating is commonly used for external rating agencies while the term grading is used for credit assessment made by banks in particular and financial institutions in general.

Internal risk grading system can be defined as a system of differentiating borrowers through assessing the quality of individuals, make comparisons between individuals of the same grade and measure the risk level at any given grade level (Foglia & Marullo, 2001). It is a tool that helps to classify loan applicants as high, medium and low risk customers and attaches the likely consequences for each classification by setting a higher or lower loan price, and /or demanding a greater or lesser collateral coverage and so on.

The structure and operationalization of an internal risk grading system consists of a collection of information gathering tools, parameters, methodologies, grading processes, forms, rating software, monitoring and controlling mechanisms. (Foglia & Marullo, 2001). It is after the whole risk grading and loan approval process is completed, among others, that the lending decision be made.

Internal risk grading system, as the name implies, is private in nature to the bank in its process of conducting grading and therefore differs widely across the banks due to so many factors. However, it is important to note that it is an important strategy followed by individual banks in order to safeguard the competitive advantage of their bank and are largely unwilling to share their system of rating with other similar banks or other financial institutions. (Foglia & Marullo, 2001). Any bank in Ethiopia can safely use its own grading mechanism without the risk of breaching the NBE directives because there is no such requirement on Basel as well as in the National Bank's risk guideline to follow similar rating system across the board.

According to Mohammad and Onni (2015), designing a strong internal risk grading system presupposes that commercial bank have to seriously consider the cost of establishing the grading system commensurate to the size of the bank, the feasibility of using the grading system, the availability and efficiency of the needed high-quality information, the likely additional staff benefit requirement, the flexibility and dependability of the grading system. Therefore, the Bank's level of financial strength and share in the banking industry may be the

major driving forces in its decision to use either a simple or complex internal credit risk grading system. In Supervision (1999) opinion, it appears very clear that banks that are larger in size and deals with complicated nature of businesses, are very likely to use an internal credit risk grading system which is complex and complicated while smaller and are dealing with relatively simpler business activities opts for a somewhat simpler grading system. It should also be noted here that there will be a need for a qualified and strong senior management staff in order to oversee the whole process of the grading system of the bank.

Evidences from literature show that internal risk grading can be expressed using either English alphabet letters or Arabic numerals. The critical issue is not on how it is expressed, but rather on the mechanism by which individual borrowers are graded as well as how the overall loan portfolio of a bank is rated correctly and timely using a range of acceptable parameters.

2.2.4. Benefits of Internal Credit Risk Grading System

It has been indicated that internal risk grading systems benefit banks in a variety of ways. One of the major benefits include assisting the banks in understanding the risk they will be taking by dealing with a single borrower, as well as in determining the best mix for their portfolio. Jayadev (2006) claims that internal risk grading can help the banks to better organize loans, to do portfolio measurement, assist them to better evaluate the adequacy of loan loss provisions, analyze profitability, loan pricing, capital allocation, identify loan problems including and help them in their decision to award staff incentives.

According to Krahnen and Weber (2001), internal risk rating offers the banks to build their abilities in the assessment of their customers' credit risk and manage their portfolio in a continuous way. Internal risk grading has a major benefit of being one of the best tools that assist banks in their judgment and determination on the degree of credit risk that each borrower can hold and in attaching the appropriate mitigation mechanism at the time of the loan approval. It is also an instrument that helps the banks in their critical assessment concerning the sector-based risk that each loan request may pose and also to forecast their portfolio's risk level.

It is further suggested that risk rating also assists the banks in many more ways including putting a requirement upon the credit officers to do a critical rating exercise prior to loan approval, to make a sufficient assessment on the risk each loan application imposes on their portfolio and in determining the bank's tolerance for assuming additional risk, and quantitatively measuring the impact of each credit decision on the overall risk management of

the bank (Ali, 2012). The risk grading system functions as a mechanism that discovers flaws prior to the occurrence of an event that may otherwise damage the bank in a variety of ways.

2.2.5. Internal Credit Risk Grading System and Quality

It has been proposed that ICRGS be viewed as a tool that assists banks in making key decisions about the riskiness of individual borrowers as well as the entire portfolio of commercial banks. This is done to assist them in making educated decisions, taking measured risks, and implementing various systems targeted at decreasing assumed and unforeseen hazards.

Although there is no disagreement on ICRGS's roles and benefits in the banking sector's loan management, there have been various ideas and recommendations that it be improved. Rather than just existing, ICRGS must assure and promote accuracy, integrity, and consistency throughout the rating organization (McDonald and Eastwood, 2000; Tracey and Carey, 2000; Santos, 2017), be actually relevant (Tracey and Carey, 2000), and be efficient (Faruq et al., 2016; Oyama and Yoneyama, 2005; Mohammad and Onni, 2015). It should also be robust enough to resist any potential difficulties with risk measurement (Santos, 2017; Ali, 2012; Mohammad and Onni, 2015).

Credit risk ratings are intended to reflect the quality of a credit exposure as well as the loss characteristics of that exposure. But it needs to be a cohesive internal risk rating system that is deeply embedded in the rating system's design and should be a very useful source of differentiating the degree of credit risk in loans and other credit exposures (Jayadev, 2006). To achieve this, an accurate, efficient, practically relevant, and robust credit rating system, which defines a good quality rating system, should be put in place that practically meets and well fits to rating needs of each commercial bank.

In effect this means that there is a need to firmly establish a good quality of ICRGS in the Ethiopian commercial banking sector in order to measure the correct risk level that are associated with individual borrowers as well as the bank's portfolio in order to sufficiently deal with the larger picture of minimizing credit risk, to appropriately evaluate the quality of commercial banks' ICRGS and also to place the required mechanisms for quality improvement (Jayadev, 2006).

2.2.6. Credit Rating Philosophy

The techniques, rules, and criteria used to assign grade to debtors using credit rating systems are referred to as credit rating philosophy (European Banking Authority, 2017). According to Supervision (2005), there are two types of credit rating that are referred as “point in time” and

"through the cycle". Whenever borrowers are evaluated based on the chance of default frequency during the following year, a "point in time" rating system is used, but a "through the cycle" rating system is used when borrowers are graded based on a wide range of possible stress outcomes (Jayadev, 2006). It is therefore recommended that commercial banks should make informed choices on their rating philosophy before designing their respective internal credit risk grading system. This entails that commercial banks should in the first place well informed and choose their appropriate philosophy before creating their own internal credit risk grading system. It should be well understood that point-in-time ratings change from year to year as the borrower's circumstances change, including changes due to economic possibilities, whereas in a throughout-the-cycle rating system, borrowers may be rated based on a wide range of possible stress outcomes (Jayadev, 2006), and commercial banks' ability to define their likelihood of default resides in their decision.

2.2.7. Requirements for the Quality of Internal Credit Risk Grading System

An approach often used for measuring commercial banks' credit risk exposure is the quality of an internal credit risk grading system. To grade the quality of a bank's ICRGS, widely acknowledged metrics are employed; nevertheless, each part of the standards must be weighted and quantified in order to determine the numbers that are labelled as ordinary vs. outstanding ICRGS quality (Krahnen and Weber, 2001).

For banks to have a good quality of ICRGS, the fourteen standards used in evaluating the quality of ICRGS must be completed in full (Krahnen and Weber, 2001). The following are the mentioned requirements, together with their operational definitions and measurement foundations.

Requirement 1 - *Comprehensiveness*:	All previous, current, and prospective clients should be rated by the bank's rating system.
Requirement 2 - *Completeness*:	A bank should rate all of its current customers and continue to rate its previous customers.
Requirement 3-*Complexity*:	A bank should have as many distinct grading systems as it needs while keeping them to a minimum. The rationale for

	selecting a particular number of grading systems should be made public.
Requirement 4- *POD Definition*:	Default probabilities must be properly specified. In addition, the bank must specify what constitutes a default occurrence.
Requirement 5 - Monotonicity:	If two PODs are identical, the ratings must be identical; if company X's POD is smaller than that of company Y, company X's rating must be at least as good as that of company Y; and if a company's rating is better than that of another company, the first company's POD must be smaller than the second company's POD.
Requirement 6 -*Fineness*:	The degree of refinement on the rating system might vary over time. But it should be fine-tuned and thoroughly updated all the times.
Requirement 7 -*Reliability*:	The rating system must be trustworthy. Ratings should be consistent regardless of who assigns them, but they should change as the customer's credit worthiness and macroeconomic factors
Requirement 8 -*Back-testing*:	The likelihood of default (ex-ante) should not differ considerably from the actual default frequency (ex-post).
Requirement 9-*Informational Efficiency*:	Ratings should be informational efficient, which means that they shouldn't be feasible to forecast rating changes based on previous ratings.
Requirement 10 -*System development*:	Over time, a grading system must be upgraded. Changes must be carefully examined, and the benefits must

	outweigh the costs of the change to be placed.
Requirement 11- *Data Management*:	Rating data from the past and present should be well stored, well-kept and should be made freely accessible.
Requirement 12-*Incentive Compatibility*:	The rating procedure must be integrated into the credit business's organization in order to reduce the potential of deception by credit officers.
Requirement 13 - *Internal Compliance*:	Controllers should keep a close eye on the dispersion of rating results, which needs to be supported by random inspections.
Requirement 14 - External Compliance:	The adherence of a bank's management to its agreed-upon rating criteria should be monitored on a continuous or random basis by impartial external controllers who have no specific interest in it.

2.2.8. Determinant Factors of ICRGS Variability

There is no unique credit risk rating method that is perfect for every bank, as long as the risk rating system accurately communicates the risks that the bank takes and enhances solid management practices (occ.gov). Large and complicated banks frequently have more sophisticated and systematic rating systems, whereas small banks with limited credit risk necessitate a less formal and systematic rating system.

Banks are urged to create and use an internal risk rating system in order to control credit risk. However, the rating system must be adequate for the type, size, and complexity of a bank's operations (Supervision, 2000). A bank's size can be measured using the amount of total assets, total revenue, net income or profit (Jan, 2017; Frerichs and Wahrenburg 2003), deposits, and market shares. As a consequence, total asset, total revenue, net income or profit, deposit, and market share are used to determine ICRGS variability across banks.

The risk of a bank varies depending on its ownership structure (Nguyen, 2020). One technique to express ownership structure is to identify the owner. Because the internal credit risk grading system (ICRGS) is the key tool for credit risk management, one of the risk categories, ownership structure, may be utilized as a variable to analyze if ICRGS changes between banks.

The following are the five parameters that are used to determine if the degree of ICRGS quality varies between banks.

2.3. Empirical Literature Review

In this section of the paper, previous published study findings have been explored in order to understand and absorb the main issues relevant to internal risk grading system. The review is done in two sub sections: evidence from overseas countries on the one hand and evidences from Ethiopia on the other hand.

2.3.1. Empirical Evidence from Overseas Countries

At the global level, different studies have been conducted on the quality of internal risk grading system. Most of the studies reviewed by the researcher are from countries such as Bangladesh, Jordan, India, Malaysia, China, Turkey, South Africa, Ghana and Kenya. The empirical findings from these various studies are summarized as below.

According to Tracey and Carey (2000) internal credit risk assessment systems is becoming a significant component of big commercial banks' evaluation and management of credit risk for both single exposure and small to larger business portfolios. According to the findings of a survey on credit risk rating of 50 large US banks, the use of internal ratings has increased over the last decade and is expected to increase even more in the coming years. This may point that a bank's decisions about its internal rating system can have an increasingly important impact on its ability to manage credit risk.

The research emphasized that developing acceptable internal rating system and operational designs are becoming an increasingly difficult challenge. Internal incentives can affect rating judgments due to the prominent role of human judgment in the rating process and the diversity of possible applications for ratings Tracey and Carey (2000). As a result, thorough design of controls and internal review procedures becomes a somewhat permanent and a critical preoccupation for the smooth operationalization of the banking sector anywhere in the world.

The findings of the study also suggest that no single internal rating system is optimal for all banks since bank systems range greatly and primarily due to variances in company mix and the applications to which ratings are applied. Among business mix changes, the proportion of big corporate or institutional loans in a bank's portfolio has the greatest impact on its internal rating system Tracey and Carey (2000). Bank credit cultures, by definition, respond slowly to changes in conditions. It is also emphasized that the quick rate of change in risk management

practice has put further strain on credit cultures in general, and internal rating systems in particular. Due to such circumstances, banks are advised that they should pay close attention in order to help speed the process of adjustment and so alleviate stress.

Internal bank ratings of corporate clients, according to Krahnen and Weber (2001), are intended to assess the likelihood of future borrower defaults. The study created a comprehensive framework for evaluating the quality of standard rating systems, as well as a set of criteria that should be met by effective rating practice. These widely accepted rating principles have the potential to be useful for improving existing rating systems as well as generating certification criteria for internal rating systems.

The research developed fourteen generally accepted criteria, or requirements, as a foundation for determining ICRGS quality of banks in order to establish a solid rating procedure. The requirements are stated as comprehensiveness, completeness, complexity, definition of probability of default, monotonicity, fineness, reliability, back-testing, informational efficiency, system development, data management, incentive compatibility, internal compliance and external compliance.

The widely accepted parameters, in the study, are used to rate the quality of a bank's ICRGS, however each aspect of the requirements must be weighted and quantified so that it will determine the numbers that are tagged as average vs. exceptional management. The research also depicts the significance of rating the quality of ICRGS of banks as comparing divisional performance, monitoring credit risk, and managing the bank's credit portfolio.

Ali (2012), in his study assessing the quality of internal risk rating systems of ten commercial banks in Pakistan in relation to various components of an internal rating system, well described it, the necessity of an internal risk rating system for a successful credit risk management system cannot be overemphasized. It was suggested in the study that the system development and use necessitate a constant support and engagement of commercial bank’s senior management as well as regulators.

The study also suggests that the effort to develop a robust internal risk grading system and efficient credit risk management system that can shield them from unfavorable losses is ongoing, which is especially important in a country like Pakistan, where commercial banks are constrained by a lack of effective administration, technological and human resources, commercial banks in Pakistan are more inherently exposed to credit risk than other countries Ali (2012).The findings from this study indicate that the internal risk rating systems of

commercial banks in Pakistan are generally good but may be improved in environment-specific internal risk assessment techniques and documentation.

According to Dudian and Maciuca (2010), the two main uses of internal risk grading system by the banks are for ensuring effective credit risk management towards achieving a sustainable growth in the bank and for ascertaining a healthy profit. It is an internal risk grading system of the banking industry, among other things, that helps to protect banks from adverse selection and moral hazard in order to make them profitable through the taking of a calculated risk.

Verster et al., (2019) emphasized the importance of internal risk grading system of banks by stating that banks of the emerging economies should not use the unmodified version of external rating agencies but rather figure out a way to identify the methods and parameters used by external agencies and make a decision about the credit worthiness of a client/s based on their own internal rating system.

According to Kiptiony and Kiprop (2018), an updated credit risk management that is based on internal credit rating approach is positively related to the financial soundness of banks. As profit is one of the measures of performance and achievement of the commercial banks, the use of this system has a positive impact on the size of profit earning of a bank. It is therefore very important to recognize the inevitability and practicability of this internal risk grading system in the banking Industry.

As Jacobson et al., (2006) stated, not only the use and practicability of internal credit rating for larger banks should be well emphasized, but also the way they are implemented must be well thought because of their figurative impact on credit loss distribution and capital structure of the commercial banks. Under normal circumstances, internal credit risk grading system is conducted on both individual and overall business portfolios of the bank. The system is useful to promptly identify the overall capital requirement of credit loss and its distribution on the loan portfolio so that the healthiness of the bank's portfolio could be readily checked.

According to the study finding of Jayadev (2006), it was indicated that in order to estimate credit risk capital needs, banks' internal credit rating models must offer the chance of default and loss given default. This study was carried out and examined the current condition of internal credit rating procedures in Indian banks. As the findings from this study have suggested, the components of internal rating systems as well as their design and operation differed substantially between institutions. The range of grades and the risks associated with each grade were also observed to differ amongst the studied banks. The finding from this study

has also revealed that lending decisions may differ between banks, and there are also differences in their rating systems.

2.3.2. Empirical Evidences from Ethiopia

To the best of the researchers' knowledge, there have been very few or no directly connected studies on the quality of commercial banks' internal credit risk grading systems in Ethiopia. Since internal risk grading system is part of credit risk, the empirical findings on credit risk management that are more or less relevant are summarized below.

Malede (2014) has suggested that credit risk has an influence on commercial bank lending and therefore commercial banks should give a greater importance on the management of credit risk as it weakens their capacity to grant loan and in effect affect their level of profitability. He further indicated on the importance of internal risk grading system and recommended that this should be an integral part of the credit risk management system of the financial institution and commercial banks in the country.

Asfaw and Veni (2015) indicated that the development of a credit risk atmosphere and appropriate regulation of credit risk has a substantial and influential impact on the standard of credit risk management activity and on credit risk management concepts and practices. Concerning the subject matter, there is little or no difference between the government and private banks in the operationalization of credit risk management system. It is important to note here that establishing an effective credit risk environment and adequate credit risk control is very important for commercial banks so as to be protected from failure and one way of doing that is through the establishment of an effective, timely and economical internal risk grading system.

Credit risk measurement has a huge impact on the financial performance of commercial banks, according to Gizaw et al., (2015), and their recommendation is to strengthen the framework of credit risk management to sustain their profitability.

According to Dessie (2016), it is suggested that both macro-economic and bank specific factors affect credit risk which put a pressure on the banks to diversify their lending activities by opting for more profitable sectors in order to avoid or reduce the associated credit risks. Therefore, the importance and practicability of internal risk grading in diversifying the loan portfolio will be critical for the commercial banks to earn more profit.

Taye (2016) states that, financial sector development and inflation has positive significance effect on credit risk of commercial banks. He further suggests that the management of commercial banks should follow a flexible approach in dealing with macroeconomic factors so as to minimize the provisioning requirement of funds for credit loss. As internal risk grading system classifies loans into different classes and provisioning will be based upon it, the importance and practicability of effective credit rating will be unquestionable.

2.4. Research Gap

By definition, internal credit risk grading system is considered as a system in use by commercial banks consisting of a set of collection of information gathering tools, parameters, methodologies, grading processes, forms, rating software, monitoring and controlling mechanisms.

Despite the importance of ICRGS in the extant literature as an important tool in managing and mitigating credit risk (Supervision, 2000; Tracey and Carey, 2000; Krahnen and Weber 2001), literatures on the practical applicability of internal credit risk grading system are not very comprehensive and rich (Ali, 2012), and as far as the knowledge of the researcher is concerned, studies on the quality of internal credit risk grading system are limited and are largely theoretical in nature.

There is also an ongoing need for the use of internal credit risk grading system (Kiptiony and Kiprop 2018; Ali, 2012; Faruq et al., 2016), and assessing the quality of ICRGS is an important subject due to the complex and dynamic nature of commercial banks (Ahmed, 2018; Ali, 2012), and the forward looking nature of credit risk models (Máková, 2019). This study, therefore, is set to investigate the quality of ICRGS and its realistic applicability towards ensuring prudent and effective credit risk management systems in the commercial banks of Ethiopia.

2.5. Conceptual Framework

Internal bank ratings of corporate clients, according to Krahnen and Weber (2001) are intended to assess the likelihood of future borrower defaults by developing a comprehensive framework for evaluating the quality of standard rating systems and, in this way, setting criteria that should be met by effective rating practice. In order to build a robust rating method, they have set in place fourteen widely acknowledged criteria, or standards, which are utilized as a foundation for assessing ICRGS quality of banks. These generally acknowledged characteristics are used

to assess the quality of a bank's ICRGS by weighing and measuring the aspects that impact it, resulting in values that are labeled as ordinary vs. outstanding ICRGS quality.

The determinant factors for determining if the degree of quality of ICRGS varies between banks are ownership structure, asset value, deposit, profit, and market share. As a result, the variables are operationally defined and assessed in order to assess the performance of commercial banks' ICRGS quality in relation to the aforementioned parameters.

The conceptual framework of this study may be defined as the link between the quality of the internal risk grading system and the factors used to assess it. The fourteen requirements defined for this study are utilized to examine the quality of the internal credit risk rating system. Comprehensiveness, completeness, complexity, definition of probability of default, monotonicity, fineness, reliability, back-testing, informational efficiency, system development, data management, incentive compatibility, internal compliance, and external compliance are the requirements. In order to achieve the values in the internal credit risk grading system's quality, the requirements are measured by assigning weights to each general factor ranging from 100 percent to 100 percent and assigning weights to each specific factor within each general factor ranging from 100 percent to 100 percent. The conceptual structure of commercial banks' ICRGS quality and the requirements used to measure it are presented below.

Figure 2-1 Conceptual Framework

CHAPTER THREE
RESEARCH DESIGN AND METHODOLOGY

3.1. Introduction

The previous chapter addressed important existing literature with conceptual understanding; empirical study based on data from other countries and Ethiopia; and developed a conceptual framework based on the operational definition and measurement of globally used ICRGS quality parameters. This chapter discusses the research strategy and approach. The first section depicts the chapter introduction, the second section deals with research approach and design, the third section depicts sampling approach using sampling size and technique, the fourth section depicts data source and tools for collection, the fifth section deals with data reliability, and the sixth section depicts data analysis technique. Finally, the chapter ends with the operational definition and evaluation of ICRGS quality and the fourteen requirements on the one hand, and the determinants of ICRGS quality and the degree of ICRGS quality on the other.

3.2. Research Approach and Design

The primary goal of this research is to look into the quality of commercial banks' internal credit risk grading systems in Ethiopia and determine whether it varies across banks. A descriptive research approach is used for the purpose of this study. This will largely focus on the collecting of both primary and secondary data. The first set of data is concerned with a fact-finding inquiry that will rely on the gathering of vital information from professional respondents from banks who are regarded conversant on the subject matter via two well-structured sets of questionnaires. The second type of data is concerned with gathering secondary data from yearly reports. The design is to glean and organize the information in the form of quantitative data with the aim of explaining the collection of circumstances outlined by Mishra and Alok (2017).

According to Crouh et al., (2001), both qualitative and quantitative measurements can serve as the foundation for an internal rating system. Many authors in the field propose using both quantitative and qualitative measuring procedures to define grading schemes. However, due to the need for measuring and weighting the general as well as specific requirements for the evaluation of ICRGS quality of commercial banks, as stated by Krahnen and Weber (2001), and the need to compute the quantitative values of ownership structure, asset value, profit,

market share, and deposit to determine whether it varies across banks, this study is primarily descriptive with a quantitative data collection, analysis, description, and interpretation of the data.

The descriptive research design and quantitative data collection for the purpose of this study are justified mainly because the study's main objective is to determine the quality of ICRGS, which is a quantitative phenomenon (Ali, 2012; Bank of Bangladesh, Version 2.0; and Tracey and Caray 2000), and its undertaking is to determine the quality of commercial banks' ICRGS based on the study's findings and determine whether it varies across banks.

3.3. Sampling Approach

The sampling approach used by the researcher is expressed with the help of the sample size and sampling technique that is applied in the course of conducting the study. The sample size and sampling techniques used in this study are explained hereunder.

3.3.1. Sample Size and Sampling Technique

If time and resource were not the main constraint, a census approach would have been the best method of choice for the collection of data for this study. As clearly understood, a census inquiry, as the word implies, is a complete study of everything in the population, and it encompasses all objects, leaving no portions or features unaccounted for (Mishra and Alok, 2017).

The sample size utilized in this study is classified into four major categories. The first group represents the sampling size for banks, while the second represents the sampling size for expert commercial bank staffs. In the third category, the sample size of persons in managerial positions is indicated, while the sampling size of commercial banks' audited financial reports is presented in the fourth.

3.3.1. 1. Commercial Banks

According to the National Bank of Ethiopia's official report for 2021, Ethiopia has one government-controlled, seventeen privately owned, and one cooperative commercial bank. The sample sizes for banks taken for this study are seventeen commercial banks. The new banks that have been licensed during the middle of 2020 and 2021 are purposefully excluded from this study because of the main reason that they have been operational for less than two years and did not establish a risk management framework in general, and credit risk and

internal credit risk grading procedures in particular, until now so as to be considered for this study.

3.3.1. 2. Experts

Census as a data collection approach may be used and considered as practical and realistic in situations when the whole population is manageable in terms of numbers, resources, and time. However, due to the impossibility of using a census in this study, the researcher used a purposive selection of respondents, which comprised all credit relationship, evaluation and risk professionals located in the headquarters of Ethiopia's 17 commercial banks in Addis Ababa. This purposeful sampling size was chosen for the principal reason that these are the experts who are anticipated to know the weights of general as well as specialized ICRGS quality standards since these are the specialists that commercial banks utilize to evaluate loan applications and thus are able to attach appropriate weights to each general and specific requirement in the quality of ICRGS.

Therefore, the overall population of experts in this study is 120. However, 20 questionnaires were not returned owing to a demanding work environment and respondents' absences. This provides the study with 100 study subjects from the expert group. There were 44 credit experts, 17 credit analysts, 24 risk experts, 8 risk officers, and 7 credit relationship managers among the 100 research subjects.

3.3.1. 3. Managers

Due to the impossibility of using a census in this study, the researcher used a purposive selection of respondents, which comprised all managerial staffs if credit relationship, appraisal and risk management divisions located in the headquarters of Ethiopia's 17 commercial banks in Addis Ababa. This purposeful sampling size was chosen for the primary reason that these are the personnel who provide the final credit decisions on the level of risk of all individual credit requests as well as portfolio mixes and unquestionably use ICRGS quality standards as their base for their decisions and have superior knowledge on the subject. They also have the most up-to-date and in-depth knowledge of their respective bank's internal risk grading system. Therefore, the overall population of managerial staffs in this study is 150. However, 21 questionnaires were not returned owing to a demanding work environment and respondents' absences. This provides the study with 129 study subjects from the expert group. There were 16 credit directors, 26 credit mangers, 8 risk directors, 25 risk managers, 41 credit relationship managers and 13 Senior Risk Officers among the 129 research subjects.

3.3.1. 4. Annual Reports

One of the study's particular aims is to determine whether the level of ICRGS quality varies between banks. The researcher employed a purposeful selection of five consecutive years' audited annual reports from 2015/16 to 2019/20 to analyze this. The 2020/2021 annual report is removed because the financial reports for the specified year have not yet been audited and are thus not publicly available.

3.4. Data Source and Tools for Collection

The methodology for the collection of primary data for this study has involved the preparation of two sets of but mutually supportive questionnaires to be self-administered by the selected respondents. The first set of questionnaire is designed to gather quantitative data on the weights of general and particular requirements of the quality of ICRGS from experts in the credit and risk management divisions in the 17 commercial banks of Ethiopia. The second set of questionnaire is designed to gather responses on the qualitative contents of the requirements using a Likert scale of 1-5 from the management staffs of all commercial banks operating in Ethiopia's credit and risk management processes.

It has been proposed that the primary data collecting technique is focused mainly with acquiring data for a specific research topic (Hox and Boeije 2005). In order to generate a more trustworthy answer for the main study topic at hand, the researcher has opted to employ a primary data gathering technique. For the collection of the first set of data, the study employed a self-administered questionnaire to be completed by credit relationship, credit evaluation, and risk management experts from all commercial banks included in the study.

Similarly, for the collection of the second set of data, the study employed another self-administered questionnaire to be completed by directors and managers of credit relationship, credit appraisal, and risk management divisions of commercial banks licensed by NBE to perform banking services in Ethiopia during the study period.

In the first set of self-administered questionnaire, professionals from the credit and risk management departments were asked to weight both general and specific requirements for ICRGS quality. They were also asked to assign a weight to each of the fourteen general requirements out of a hundred marks and also to weigh each of the three specific requirements out of a hundred grades.

The directors and managers of credit relationship, credit appraisal, and risk management divisions were asked to state their level of agreement or disagreement to determine whether

their internal risk grading system is comprehensive, complete and complex. They were also requested whether they define default in their context, their system is monotones, fine, reliable, back-tests the rating system, determines its informational efficiency, system development, data management, and whether it offers incentives to credit risk graders. They are also asked specific questions to determine whether they examine their grading system and are also asked how frequently they do it in order for the bank to align itself with the sector's current and increasing needs.

The method used to obtain secondary data for this study included collecting five sets of data from the annual reports of 17 commercial banks on total assets, total profit, total income, gross profit, and total deposit. In order to produce a trustworthy image for the specific study topic at hand, the researcher has opted to adopt a secondary data gathering technique. The annual report for five consecutive years, which comprises the audited financial statements of the commercial banks under scrutiny, is available on the official websites of the individual institutions.

3.5. Data Reliability

To make sure the reliability of the measurement scales, Cronbach's alpha was used in the calculation. Where by a higher value of above 0.7 indicated that the variables were reliable while the values above 0.9 are regarded as most reliable but anything below 0.7 was regarded inconsistent with the reliability scales as according to George and Mallery (2003), who suggested that in order for a scale to be reliable, the Cronbach's alpha value should be above 0.7. The following table indicates the scale reliability of each constructed variables.

Table 3-1 Reliability Analysis Result

Variables	Cronbach's Alpha	No. of Items	Remark
Comprehensiveness	0.715	3	Reliable
Completeness	0.719	3	Reliable
Complexity	0.731	3	Reliable
Definition of Probability of Default (POD)	0.790	3	Reliable
Monotonicity	0.780	3	Reliable
Fineness	0.729	3	Reliable
Reliability	0.778	3	Reliable
Back-Testing	0.898	3	Reliable
Informational Efficiency	0.777	3	Reliable
System Development	0.857	3	Reliable
Data Management	0.851	3	Reliable
Incentive Compatibility	0.860	3	Reliable
Internal Compliance	0.892	3	Reliable

External Compliance	0.856	3	Reliable

Table 3-1 shows the reliability test for the constructed requirements (comprehensiveness, completeness, complexity, definition of probability of default, monotonicity, fineness, reliability, back-testing, informational efficiency, system development, data management, incentive compatibility, internal compliance, and external compliance). The reliability test for comprehensiveness consisted of three questions and the result is 0.715 representing 71.5% scale reliable. The reliability test result for completeness consisted of three questions is 0.719 indicating that 71.9% reliable. The reliability test result for complexity was 0.731 indicating that 73.1% reliable. The reliability test result for definition of POD was 0.790. Generally, the reliability value for each variable has Cronbach Alpha value above 0.70 and reliable. Thus, all constructed variables are reliable and acceptable range of Cronbach's Alpha Coefficient. Based on the examination of the research scales and constructs, it can be concluded that each variable represents a reliable construct.

3.6. Data Analysis Technique

The quantitative technique was employed by the researcher for data analysis and presentation of the study outcomes. The relationship between ICRGS quality and its requirements, as well as the degree of ICRGS quality and its determining factors of variance among banks, is statistically stated using percentages, frequency, mean, and standard deviation scores. SPSS was used for data entry, recording, analysis, and output production, allowing the researcher to create tabular and visual presentations as needed.

The result of the analysis from data coming from the first category of questionnaires was to point towards the weights of general and particular needs that helps in determining the most prevalent requirements on the quality of ICRGS. Accordingly, the result of the analysis that was generated from the data set coming from the second category of questionnaires provided organized information on the quality of ICRGS in each commercial bank in the form of response of agreed, disagreed, or neutral to each system need. In terms of the overall research results, it provided information on the cumulative impact of the first and second outputs that clearly pointed and determined the value of ICRGS quality in a particular commercial bank in Ethiopia considered in this study.

The analytical data collected from secondary data gave an orderly collection of information on the criteria determining whether the degree of ICRGS varied between banks. The outputs given

by banks vary depending on their ownership structure, asset value, profit, deposit, and market share.

3.7. Operational Definitions and Measurements

For the purposes of this study, the quality of the internal risk grading system and its requirements are chosen based on the concepts and on the results of empirical studies that have been conducted on the quality of ICRGS. Because of the foundation for evaluating each should be specified before considering the link between them, the following sections are included for the purpose of elaborating such important points.

3.7.1. Quality of ICRGS

The quality of an internal credit risk grading system is a measurement tool that demonstrates a commercial bank's capacity to estimate the possibility of default of individual borrowers while also managing their portfolio.

This being the main point of interest and foundation for the purpose of this study, the researcher has made a choice to employ the fourteen standards to assess the quality of the internal credit risk assessment system in her study about the 17 commercial banks of Ethiopia. Each of the fourteen general standards is further measured by three particular requirements to establish the quality of ICRGS. The general requirements are weighted on the basis of 100%, whereas the specific requirements of each general requirement are also weighted out of 100%.

In this study, the quality of the internal credit risk grading system is examined using mean scores and their related interpretations of fourteen requirements ranging from very low, low, medium, high, and very high.

3.7.2. Requirements of Quality of ICRGS

The general requirements for ICRGS quality are further subdivided into three specific requirements, each of which is measured separately. The general requirements are all accounted for at 100%, and the specific requirements of each general requirement are weighted at 100%. For the purpose of this study, the criteria are defined and measured as follows.

Requirement 1: Comprehensiveness

The bank’s credit rating system should rate all its past, current and future customer.

Requirement 2: Completeness

The bank rates all its current clients, continues in rating its past customers and maintains a rating database.

Requirement 3: Complexity

The bank has diversified rating systems but uses few rating systems as possible and makes the reason for choosing the rating system transparent.

Requirement 4: Definition of Probability of Default

The bank's probability of default is well-defined, both transparent and reasonable and defines what it considers to be a default event.

Requirement 5: Monotonicity

The bank makes sure that if two PODs are equal, the ratings should also be equal, if the POD of one company is smaller than the other, the rating of the first company is as good as the second one and if the rating of a company is better than that of another company, the POD of the first company should be smaller than the POD of the second one.

Requirement 6: Fineness

The bank's decision as to how many categories of ratings it should have is a function of its intended use, its loan pricing is correlated with its rating categories and the less riskiness and riskiness of the bank's credit is correlated with its grading categories.

Requirement 7: Reliability

The bank's probability of default is true, it makes sure that the rating is the same as to by whom and at what point in time the rating is done and its credit rating change when clients creditworthiness change.

Requirement 8: Back-Testing

The bank makes sure that its probability of default should not be different from the realized default frequency, the realized default frequency default rates within any given rating category should be larger than the higher rating category and the realized default frequency default rates should increase with the time horizon.

Requirement 9: Informational Efficiency

The bank makes sure that it is not possible to predict rating changes based on rating history, all the available information is shown in the rating and the rating system should cope with the known biases.

Requirement 10: System Development

The bank's rating system is improved over time, the modification of the rating system should be considered carefully, and the benefit of revising the rating system should out way the benefit.

Requirement 11: Data Management

The bank's past and present rating data are maintained, and the rating data are easily available for users or stakeholders.

Requirement 12: Incentive Compatibility

The bank's credit rating system is owned by the credit function, the critical values that trigger action in the grading system are followed and recorded and the incentive conflicts that may arise between the loan officer and the grading process is clearly separated.

Requirement 13: Internal Compliance

The bank's ICGRS is approved and overseen by the Board of Directors, result is constantly monitored by its internal audit function and the audit function itself is assisted by a random inspection using its inspectors.

Requirement 14: External Compliance

The bank's rating system complies with Basel Accord II, the regulatory requirements of NBE, and with other relevant laws and regulations of the country.

3.7.3. Factors Determining the Variance of ICRGS Quality across Banks

The elements that determine whether the degree of quality of ICRGS differs across the bank will be operationally defined for the purposes of this study, and their measuring instrument will be detailed below.

A. Ownership Structure

The ownership structure of a bank refers to whether the bank is state-owned, privately owned, or cooperatively owned. It is calculated depending on bank holdings. The ownership structure of banks will be determined only by who holds the majority shareholding; if it is private, it will be private; if it is government, it will be state-owned; and if it is co-operative, it will be co-operative bank.

B. Asset Value

A bank's asset value is expressed with the outstanding balance of loans and securities, as well as the outstanding balance of securities, both debt and equity, and outstanding loans. It is stated in birr and is measured in total amount.

C. Deposit

A bank’s deposit value is expressed in demand deposit, saving, fixed time and IFB deposit. It is stated in birr and is measured in total quantity.

D. Profit

A bank’s profit value will be expressed in the net effect of total income and total expense. It is stated in birr and is measured in annual basis. Banks often measure use gross profit for measurement of profit. Therefore, gross profit is used in this study.

E. Market Share

The market share of a bank can be measured in terms of total loan size, total income, number of clients, or number of branches. Due to data inconsistencies in Ethiopian commercial banks' annual reports, the researcher chose to calculate market share based on total income. Total income can be expressed in both birr and total amount.

CHAPTER FOUR

DATA ANALISIS AND PRESENTATION

4.1. Introduction

The previous chapter addressed the research strategy and approach through chapter introduction, research approach and design, sampling approach, data source and tools for collection, data reliability, and data analysis technique and operational definition of ICRGS quality and its parameters as well as factors determining the variance of ICRGS quality level across banks.

This chapter describes ICRGS quality, its criteria, and the elements that determine ICRGS quality variance. Two distinct and different questionnaires were utilized for primary data collection, with the purpose of analyzing the quality of Ethiopian commercial banks' internal risk assessment systems, while audited yearly financial reports were used for secondary data gathering.

For the data collected on ICRGS quality of Ethiopian commercial banks', the first questionnaire was targeted exclusively at the credit and risk experts working in the head office of the seventeen commercial banks in Ethiopia are included in this study in order to obtain data that would sufficiently provide information on the weights of the parameters of ICRGS, while the second category of questionnaires was targeted at the top and mid-level management staffs of the credit and risk divisions of the head offices of similar banks in order to find answers on the quality of ICRGS of their respective commercial banks.

The data analysis for this study is divided into four categories. The first category deals with the respondents' demographic information. The second one is a descriptive analysis on the responses of the first study group concerning on the parameters used to measure the quality of ICRGS. The respondents were asked to assign a weight to each general and specific criterion in order to demonstrate the importance that experts choose to place on each element.

The third category is a presentation on the study results with regard to the quality of ICRGS in the studied seventeen commercial banks of Ethiopia. For this particular study, the researcher has devised forty- two research questions based on a five-point likert scale to evaluate the research main issues. The respondents were asked to mark their degree of comprehension, understanding and actual practice of their particular bank's ICRGS on a five-point scale ranging from "strongly disagree" to "strongly agree."

The fourth category is a descriptive examination of the collected data on ownership structure, asset value, profit, deposit, and market to see if the degree of quality of ICRGS varies between banks.

4.2. Response Rate and Missing Data

Of the total 120 study subjects in the first category, 100 successfully completed the questionnaires yielding a response rate of 83.3%. The remaining 20 respondents did not return the questionnaires. Among the 2nd group, 129 out of 150 respondents successfully completed the questionnaire providing a response rate of 86%. The remainder 21 was non-respondents. The researcher attempted to raise the response rate by regularly appearing in the office and even consulted the HR department and respective managers to get the missing surveys, but owing to the frantic work environment, all efforts were fruitless.

Even if the efforts to raise the response rate were unsuccessful, and some questionnaires were not returned, there are no apparent differences between respondents and non-respondents. As a consequence, it is possible to conclude that the respondents reflect the population of banks surveyed.

4.3. Demographic Information

4.3.1. Experts' Demographic Information

The analysis below is based on the demographic information gathered from the first category of respondents.

Table 4-1 Experts Profile

Item	Categories		Frequency	Percent	Valid Percent	Cumulative Percent
Age		Under 30	15	15.0	15.0	15.0
	Valid	30-40 years	68	68.0	68.0	83.0
		41-50 years	15	15.0	15.0	98.0
		51 to 60 years	2	2.0	2.0	100.0
		Total	100	100.0		
Education		Degree	35	35.0	35.0	35.0
	Valid	Masters	65	65.0	65.0	100.0
		Total	100	100.0		
		< 5 years	19	19.0	19.0	19.0
	Valid	5 to 10 years	50	50.0	50.0	69.0
		10 to 15 years	24	24.0	24.0	93.0

Experience in Bank		15 to 20 years	4	4.0	4.0	97.0
		>20 years	3	3.0	3.0	100
		Total	100	100.0		
Position		Credit Experts/ Senior credit Officer	44	44.0	44.0	44.0
		Credit Analyst/Credit Officer	17	17.0	17.0	61.0
		Risk Expert/ Senior Risk Officer	24	24.0	24.0	85.0
		Risk Officer	8	8.0	8.0	93.0
		CRM	7	7.0	7.0	100.0
		Total	100	100.0		
Experience in Position		< 2 years	29	29.0	29.0	29.0
		2 to 5 years	50	50.0	50.0	79.0
		6 to 10 years	21	21.0	21.0	100.0
		Total	100	100.0		

Source: Own computation and survey, 2021

According to Table 4.1, the majority in this first group of respondents (experts) were between the ages of 30 and 40 (65%), a secondary level of education (masters) (65%), have 5 to 10 years of banking experience, maintained their jobs for 2 to 5 years (50%). Moreover, in terms of their work assignments, a good proportion of (44%) are credit specialists who in the researcher's believe are capable of assigning weights to the parameters of ICRGS that measure its quality.

4.3.2. Managers' Demographic Information

The analysis below is based on the demographic information gathered from the second category of respondents.

Table 4-2 Management Profile

		Frequency and Percentage			
Respondents Age		Frequency	Percent	Valid Percent	Cumulative Percent
	Under 30	14	10.9	10.9	10.9
Valid	30-40 years	74	57.4	57.4	68.3
	41-50 years	38	29.5	29.5	97.8
	51 to 60 years	3	2.3	2.3	100.0

	Total	129	100.0		
	Degree	59	45.7	45.7	45.7
Valid	Masters	70	54.3	54.3	100.0
	Total	129	100.0		
	Credit Director	16	12.4	12.4	12.4
	Credit Manager	26	20.2	20.2	32.6
	Risk Director	8	6.2	6.2	38.8
	Risk Manager	25	19.4	19.4	58.2
Valid	Customer Relationship Manager	41	31.8	31.8	90
	Senior Risk Officer	13	10.1	10.1	100.0
	Total	129	100.0		
	Less than 5 years	14	10.9	10.9	10.9
Valid	5 to 10 years	59	45.7	45.7	56.6
	10 to 15 years	40	31.0	31.0	87.6
	15 to 20 years	6	4.7	4.7	92.3
	More than 20 years	10	7.8	7.8	100.0
	Total	129	100.0		
	less than two years	40	31.0	31.0	31.0
Valid	2 to 5 years	63	48.8	48.8	79.8
	6 to 10 years	21	16.3	16.3	96.1
	More than 10 years	5	3.9	3.9	100.0
	Total	129	100.0		

Source: Own computation and survey, 2021

As presented in Table 4.2, the majority of the second group of respondents (managers) are between the ages of 30 and 40 (57.4 %), are between the ages of 40 and 50 (29.5 %), and only 10.9% and 2.3% are under the age of 30, and between the ages of 51 and 60, respectively. As the response clearly demonstrated, the major proportion of data for this study was obtained from respondents aged 30 to 40, which may be considered to be well experienced age group who responded to the survey questionnaire with a reasonable care and maturity.

In terms of their professional background, 54.3 % of this group had a second level or master education, while 45.7 % have at least a first degree (BA level). This may more likely demonstrate that commercial banks' credit and risk departments have a relatively better

professional workforce that are able to better grasp the questions and dwell on the responses in a professional manner.

In terms of work assignments, customer relationship managers (31.8 %), credit managers (20.2%), and 19.4 % are risk managers. The remainder 12.4 % is credit directors, 10.1 % are senior risk officers acting as risk managers, and 6.2 % are working as risk directors. As per their response, the majority of respondents work as managers and directors of credit units that are entrusted with managing and dealing with credit risks, and thus are better equipped to comprehend and answer the questions about the quality of ICRGS.

As to the managers work experience, between 5 to 10 years of banking experience (45.7 %), worked between 10 to 15 years (31.0 %), more than 20 years banking experience (7.8%), 4.7% had a work experience of 15 to 20 years. Moreover, of the total 129 respondents in this group, reported having a work experience of less than five years (10.9%). This finding suggests that the major proportion of respondents in this group have sufficient years of work experience to understand the banking sector and deal with issues as they appear in a fair and more professional manner.

From the total 129 study subjects in the second group nearly two-third i.e. 48.8% held their managerial positions for 2 to 5 years, 31% for less than 2 years, 16.3 % 6 to 10 years, and only 3.9 % held their managerial position for over ten years. This response implies that working in a managerial role appears dynamic. Their modest experience in their present role, on the other hand, may have helped them to grasp the credit grading system they face in their daily work and also been able to recognize the challenges associated with it.

4.4. Descriptive Statistics

4.4.1. Weights of ICRGS Requirements

For the purpose of this study, a total of fourteen requirements have been developed and were split into three statements to assess the quality of commercial banks' internal risk grading system. The respondents in the first study group were asked to assign weights on each general requirements and grade them out of 100% and each general requirement is split into three specific requirements and each statement under the specific requirements are also weighted out of 100%. The result is presented in table 4.3.

Table 4-3 Average Requirement Weights

No.	Requirements	Average Weight in %
	Comprehensiveness	**8.33**
1	The bank's credit rating system rates all its past clients.	2.6023
2	The bank's rating system rates all its current clients.	3.4120
3	The banks rating system will rate all its future customers.	2.3157
	Completeness	**8.11**
4	The bank rates all its current clients.	3.564345
5	The bank continues rating its past customers.	2.110222
6	The bank maintains a rating database.	2.435433
	Complexity	**7.19**
7	The bank has as many different rating systems for different types of companies as possible.	2.627945
8	The bank uses as few rating systems as possible.	2.096604
9	The bank makes the reason for choosing the rating system transparent.	2.465451
	Definition of Probability of Default (POD)	**7.7**
10	The bank has clearly defined probability of default.	2.85824
11	The bank's definition of probability of default is both transparent and reasonable.	2.58104
12	The bank clearly defines what it considers a default event.	2.26072
	Monotonicity	**6.805355**
13	The bank makes sure that if two PODs are equal, their ratings should also be equal.	2.2207305
14	The bank makes sure that if the POD of one company is smaller than that of another company, the rating of the first company is higher than that of later company.	2.228194
15	The bank makes sure that if the rating of a company is better than that of another company, the POD of the first company should be smaller than the POD of the second one.	2.3564305
	Fineness	**6.95107**
16	The bank's decision as to how many categories of ratings it should have is a function of its intended use.	2.3799405
17	The bank's loan interest is correlated with its rating categories.	2.2336755
18	The riskiness of the bank's credit is correlated with its grading categories.	2.337454
	Reliability	**7.92**
19	The bank's probability of default is true.	2.607264
20	The bank makes sure that the rating is the same regardless of by whom, and at what point in time, the rating is done.	2.495592
21	The bank's credit rating changes when clients' creditworthiness changes.	2.817144
	Back-Testing	**6.47702**
22	The bank monitors whether there exists a clearly defined back testing methodology that calibrates disparity of estimated/forecasted probability and realized default frequency.	2.385075
23	The bank monitors whether the realized default frequency rates within any given rating category should be larger than the higher rating category.	2.056681

24	The bank monitors that the realized default frequency rates should increase with the time horizon.	2.035264
	Informational Efficiency	**6.626685**
25	The bank makes sure that it is not possible to predict rating changes based on rating history. It additionally takes forward looking indicators (macro and sectorial factors) into account.	2.062593
26	The bank makes sure that all the available information is shown in the rating.	2.493543
27	The bank makes sure that the rating system should cope with the known biases.	2.070549
	System Development	**6.81681**
28	The bank's rating system is improved over time.	2.529234
29	The bank makes sure that the modification of the rating system should be considered carefully.	2.258877
30	The bank makes sure that the benefit of revising the rating system should out way the cost.	2.028699
	Data Management	**7.06**
31	The bank maintains past rating data.	2.206956
32	The bank maintains present rating data.	2.250022
33	The bank's past and present rating data are easily available for users or stakeholders.	2.603022
	Incentive Compatibility	**6.246875**
34	The bank's credit rating system is owned by the credit Unit	2.3225
35	The bank makes sure that the critical values that trigger action in the risk grading system are followed and recorded.	1.929375
36	The bank makes sure that the incentive conflicts that may arise between the loan officer and the risk grading process is clearly separated.	1.995
	Internal Compliance	**7.00299**
37	The bank's ICGRS is approved and overseen by its Board of Directors (top management).	2.507477
38	The bank's ICGRS result is constantly monitored by its internal audit function.	2.507477
39	The bank's audit function is assisted by a random inspection using its inspectors.	2.507477
	External Compliance	**7.15**
40	The bank's rating system complies with Basel Accord II.	2.29801
41	The bank's rating system complies with the regulatory requirements of NBE.	2.29801
42	The bank makes sure that the rating system complies with other relevant laws and regulations of the country.	2.29801

Source: Own computation and survey, 2021

The weights assigned to each criterion demonstrate the significance and influence it has on the overall quality of ICRGS. The weights assigned by the credit and risk experts to each criterion, as well as the overall requirement, are averaged across the number of experts in this study. As a consequence, the larger the weighted average value of the requirement, the greater will be the relevance and influence on the quality of ICRGS results. The findings from this study with regard to the expert weighting on the requirements in their order of significance are shown in the table 4.3.

Table 4-4 Average Weight Results of the Requirements in their Order of Importance

Comprehensiveness	8.33%
Completeness	8.11%
Reliability	7.92%
Definition of POD	7.7%
Complexity	7.19%
External Compliance	7.15%
Data Management	7.06%
Internal Compliance	7.00%
Fineness	6.95%
System Development	6.82%
Monotonicity	6.81%
Informational Efficiency	6.63%
Back Testing	6.48%
Incentive Compatibility	6.25%
Total	100.4%

Source: Own computation and survey, 2021

The finding suggests that experts have assigned greater weights to comprehensiveness, completeness, dependability, POD definition, and complexity. However, the same experts have assigned the lowest weights to incentive compatibility, back testing, informational efficiency, monotonicity, and system development.

Krahnen and Weber (2001) emphasize the importance of the first seven criteria, which are comprehensiveness, completeness, complexity, POD definition, monotonicity, fineness, and reliability in setting the generally acceptable principles in the quality of ICRGS of banks. However, the study's findings placed lower importance to monotonicity and fineness from the more important category by assigning a lower weight to the two and replacing them with data management and external compliance.

4.4.2. Presentation of the Descriptive Statistics on ICRGS Requirements

Table 4.5 displays the average mean of the fourteen requirements and is intended to demonstrate the degree of influence that each condition has on the value and the quality of ICRGS in the studied commercial banks in Ethiopia

Table 4-5 Descriptive Statistics of the Requirements in the Quality of ICRGS

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Comprehensiveness	129	1.00	5.00	3.07	1.81
Completeness	129	1.00	5.00	2.9121	.91051
Complexity	129	1.00	4.67	2.9535	.85670
Definition of POD	129	1.00	5.00	3.1395	.81618
Monotiicity	129	1.33	5.00	2.9225	.71018
Fineness	129	1.00	5.00	2.9251	.86627
Reliability	129	1.00	5.00	3.0078	.91046
Back – testing	129	1.00	4.67	2.5633	.95815
Informational Efficiency	129	1.00	4.67	3.0258	.79014
System Development	129	1.00	5.00	3.0284	.86103
Data Management	129	1.00	5.00	3.0439	.87835
Incentive Compatibility	129	1.00	5.00	3.0439	.91418
Internal Compliance	129	1.00	5.00	3.1499	.83952
External Compliance	129	1.00	5.00	3.2429	.84754

Source: Own computation and survey, 2021

The Range of Mean Analysis

The likert scale 1-5 was used to get the mean value. The results of the computation of the mean values of each requirement were then interpreted based on Moidunny's (2009) viewpoint. The five levels of the range of the mean value vary from very low, low, medium, high, and very high.

Table 4-6 Guideline for Mean Range Interpretation

Mean Score	Interpretation
1.00 – 1.80	Very Low
1.81 – 2.60	Low
2.61 – 3.20	Medium
3.21 – 4.20	High
4.21 – 5.00	Very High

The values in table 4.5 indicate the total respondents' perceptions of the fourteen requirements for ICRGS quality, as well as their mean. Looking into the specifics of the data it can be observed that external compliance (mean=3.2429) has the greatest score on the quality of ICRGS. Internal compliance (mean= 3.1499) comes in second, followed by POD definition (mean=3.1395), comprehensiveness (mean=3.0700), data management and incentive compatibility (mean=3.0439 each), system development (mean=3.0284), and informational efficiency (mean=3.0258) in their order of importance.

The finding as presented in the table also show that back-testing has the lowest score (mean = 2.5633), followed by completeness (mean=2.9121), monotonicity (mean=2.9225), fineness (mean=2.9251), complexity (mean=2.9535), and reliability (mean=3.0078).

As can be clearly observed, the finding show that only external compliance has higher weight (effect) on the quality of ICRGS, with values ranging from 3.21 to 4.20. With the exception of back-testing, the rest have a medium weight (effect) on the quality of ICRGS ranging from 2.61 to 3.20, whereas back-testing has a low weight (effect) in the computation of the quality of ICRGS of commercial banks ranging from 1.81 to 2.60.

As the finding may indicate about the respondents' perceptions, it can be concluded that external compliance has the highest weight in the value of quality of ICRGS of commercial banks in Ethiopia. This finding indicates that banks are more concerned with meeting regulatory requirements of internal credit risk grading system rather than making their internal credit risk grading system comprehensive, complete, complex, truly defining POD, monotonous, reliable, and back- testing, which are given more weight that would improve their quality of ICRGS (Krahnen and Weber, 2001).

Internal compliance, definition of POD, incentive compatibility, data management, comprehensiveness, system development, informational efficiency, and reliability has a relatively higher weight. This research indicates that when the weight is in connection to

technology innovation, management information system, or requirements that require a test and are sophisticated in nature, experts have a propensity to provide less weight. Despite the fact that a good quality internal credit risk grading system necessitates efficiency, accuracy, informational efficiency, realistic applicability, and robustness to withstand any foreseeable problems in risk measurement (Kabir et al., 2010; Chaibi and Ftiti, 2015; Faruq et al., 2016), the weights given to requirements that meet these qualities are low.

Complexity, fineness, monotonicity, and completeness have the least weight (effect) on the quality of ICRGS in the operation of credit rating in the studied Ethiopian commercial banks, whereas back-testing has the lowest weight (impact). This shows that the weight given in the assessment of commercial banks ICRGS quality is very low. This implied that Ethiopian commercial banks do not prioritize requirements that require checking of their work, which is a critical component of ICRGS effectiveness, and do not prioritize making the system complete, complex, fine, and monotonous, which would have improved the quality of their internal credit risk grading system rather than just sticking to routine credit transactions.

4.4.4. Results and Interpretation on the Quality of ICRGS

In this section, the responses on the requirements of the quality of ICRGS for each bank is aggregated and averaged using SPSS to show the level in the quality of ICRGS in each commercial bank included in this study. The result of the analysis is presented as follows.

Table 4-7 Quality of ICRGS Performance of Commercial Banks in Ethiopia

Banks	Quality of ICRGS Performance (in percentage)
Awash Bank	63.03
Abay Bank	54.93
Addis International Bank	55.42
Birhan Bank	64.83
Buna International Bank	71.52
Bank of Abyssinia	61.04
Commercial Bank of Ethiopia	67.05
Cooperative Bank of Oromiya	47.79
Dashen Bank	67.21
Debub Global Bank	48.94
Enat Bank	46.32
Lion International Bank	43.47
Nib Bank	68.10
Oromiya International Bank	61.06
United Bank	61.54
Wegagen Bank	71.85
Zemen Bank	58.76
Overall	59.52

Source: Own computation and survey, 2021

As presented in table 4.7, the highest average score (71.85%) belongs to Wegagen Bank, which is closely followed by Buna International Bank (71.52%). In this measure, those banks that have scored between 68% and 55% are Nib Bank (68.10%), Dashen Bank (67.21%), Commercial Bank of Ethiopia (67.05%), Birhan Bank (64.83%), Awash Bank (63.03%), United Bank (61.54%), Oromiya International Bank (61.06%), Bank of Abyssinia (61.04%), Zemen Bank (58.76%), Addis International Bank (55.42%), Abay Bank (54.93%). Of the Seventeen commercial banks included in this study, four banks scored less than 50% in their ICRGS quality assessment. Those banks are Debub Global Bank (48.94%), Enat Bank (46.32%), Cooperative Bank of Oromiya (47.79%) and Lion International Bank (43.47%). The overall industry average score of commercial banks in Ethiopia with regard to the quality of ICRGS is 59.52%.

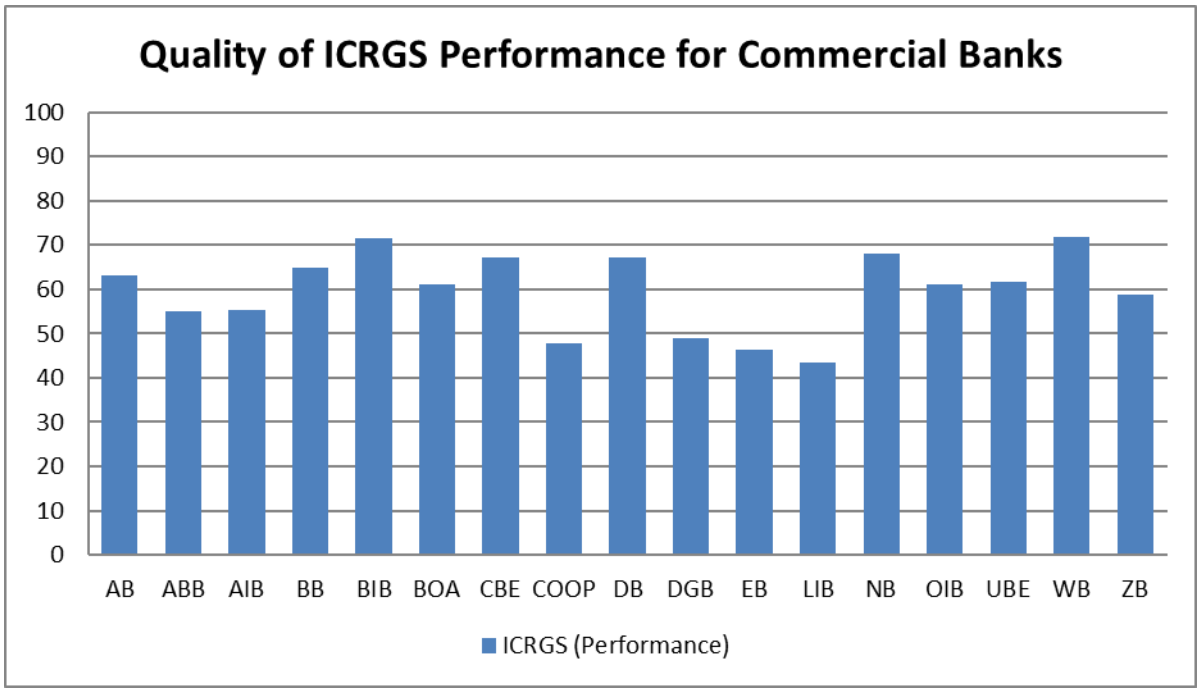

Figure 4-1 ICRGS Performance of Commercial Banks in Ethiopia

Analysis on the Guide Line of the Quality of ICGRS

The findings were combined and averaged to show the overall quality of ICRGS at each commercial bank in Ethiopia included in this study. These data were then evaluated based on a scale ranging from excellent to good and marginal to poor (Bangladesh Bank, Version 2.0).

The following ranges are used for interpretation because the Bangladesh Bank is a supervisory organ of commercial banks in the jurisdiction of Bangladesh, like NBE in Ethiopia, with the authority to establish a regulatory guideline for banks to strictly follow in setting their

respective ICRGS, and Bangladesh is a developing country that faces many challenges similar to Ethiopia.

As a result of these considerations, the researcher believes that the total score ranges that may be utilized for a single borrower as well as banks in Bangladesh can be used to evaluate the quality of ICRGS values appropriately with the range and grade the banks.

Table 4-8 Quality of ICRGS Rating Interpretation

Rating	Total Scores
Excellent	≥80%
Good	≥70% to< 80%
Marginal	≥60% to <70%
Unsatisfactory	<60%

As presented in figure 4.1 and the interpretation of the guideline in the quality of ICRGS of commercial banks in table 4.8, Wegagen Bank with a total score of 71.85 % and Buna International Bank at 71.52 % fall between the range of 70% to 80% and are thus rated as good in their quality of ICRGS while the average value of the industry is 59.52% which is unsatisfactory. This finding suggests that, even in the absence of a clear regulatory guideline and in the face of numerous challenges to perform as a bank as a result of various factors, some banks can develop a good ICRGS quality system that is internally motivated to mitigate risk and intern improve their performance.

Nib Bank with the total score of 68.10%, Dashen Bank (67.21%), Commercial Bank of Ethiopia (67.05%), Birhan Bank (64.83%), Awash Bank (63.03%), United Bank (61.54%), Oromiya International Bank 61.06% and Bank of Abyssinia (61.04%) fall in the range between ≥ 60% to< 70% and therefore rated as marginal. Even this finding, when compared to the industry average, is better as it scored marginal while the industry average is unsatisfactory. Even when compared to the industry average, this discovery is superior because it scored marginally higher whereas the industry average is unsatisfactory. As a result, even if their proposed performance is good when hearing their declarations, a clear guideline for ICRGS quality is required to set up one's own tailor-made internal credit risk grading system that is efficient, effective, practical, and robust enough to withstand any foreseeable problems in risk measurement.

The remaining banks, Zemen Bank (58.76 %), Addis International Bank (55.42%), Abay Bank (54.93%), Debub Global Bank (48.94%), Enat Bank (46.32%), Cooperative Bank of Oromiya

(47.79%), and Lion International Bank (43.47%), are all below the 60% and are thus rated unsatisfactory. This finding implies that the banks in this category are rated the lowest in the industry, and in the absence of a clear regulatory standard on how to set up an internal credit risk grading system, and in the face of so many challenges in the financial industry as a result of operating in a developing country, the result is predictable and demonstrates the need for the foundation in commercial banks' internal risk grading systems in Ethiopia.

The results of the analysis in this measure clearly shows that with the exception of Wegagen and Buna International Bank, which are rated good, the remainder banks included in this study are rated marginal or unsatisfactory. It is important to note that ratings are the most important tools that allow banks to measure their credit risk, manage their credit portfolio consistently, and alter their exposure with the identified type of risk. It is also useful to price loans, and even be the basis for the valuation of their asset quality (Tracey & Carey, 2000). From this finding it becomes clear that most commercial banks in Ethiopia failed to have a high quality of ICRGS that will potentially help them achieve these goals. The implication of this low rated quality in the ICRGS of the banks means creating a problem of loan (NPL) that will necessitate additional capital being tied-up or retained as a provision at the National Bank of Ethiopia rather than using such money to invest on some profitable assets.

As the finding may suggest, most commercial banks in Ethiopia are very far from having a well-structured, well-managed, efficient, and robust ICRGS that will promote financial security. There are a number of factors that may lower or hamper the progresses in their quest of improving the quality of their ICRGS. These may include lack of data, lack of information on macroeconomic, lack of information on sector-related behaviors, lack of organized data set on the current credit performance of prospective and current borrowers, doing most of the ratings manually, failing to retain a rating database and also failing to back-test the rating system.

4.4.4. Descriptive Analysis of Variance in ICRGS Quality across Banks

The descriptive analysis of factors determining the degree of ICRGS quality is observed in line with ownership structure, asset value, deposit, profit, and total revenue; total revenue is studied for the objectives of this study to illustrate market share of commercial banks in Ethiopia. Each element will be explored in depth below in relation to the findings of ICRGS quality of commercial banks that were computed in the previous section.

A. Ownership Structure

From the study subjects, Commercial Bank of Ethiopia (CBE) is the only commercial bank owned by the government, while fifteen of them are private and Cooperative Bank of Oromiya is a cooperative bank and owned by co-operatives. When compared to others, Commercial Bank of Ethiopia is rated fifth while privately owned Wegagen and Buna International Bank are ranked first and second respectively. Others ranked from 3rd to 17th, with the exception of CBE, with the cooperatively held Co-operative Bank of Oromiya ranking the 16th. The finding in this regard points that ownership structure, whether owned by government, private or cooperative does not vary in accordance to the value of ICRGS quality. For instance, Wegagen and Buna International Bank both are privately owned and are rated good and stood first and second in their ranking. Commercial Bank of Ethiopia, which is government owned scored 67.05%, is rated marginal and stood 5th. Moreover, Lion International Bank that is privately owned and Bank of Oromiya, a cooperatively owned banks are both rated unsatisfactory and stood 17th and 16th respectively.

B. Asset Value

The average total asset value of the seventeen commercial banks is being used for the analysis of establishing if the quality of ICRGS can vary between commercial banks under investigation over a five-year period beginning in 2016 and ending in 2020.

Table 4-9 Descriptive Statistics of Asset Value in Billion Birr

Banks	OBS	Minimum	Maximum	Mean
ABB	5	6.19	20.2	12.488
AB	5	30.6	89.28	57.964
ADIB	5	2.5	6.5	4.422
BIB	5	6.83	18.87	12.63
BB	5	5.3	16.61	14.468
BOA	5	16.82	56.89	34.2
CBE	5	383.60	819.3	595.94
COOP	5	10.69	52.49	30.538
DB	5	5.5	45.43	24.662
DGB	5	1.3	7.81	3.796
EB	5	3.26	11.16	6.996
LIB	5	8.13	31.78	17.116
NB	5	15.83	42	27.87
OIB	5	11.2	33.83	23.37
UBE	5	17.27	43	29.188

WG	5	16.2	38.2	26.5
ZB	5	7.45	18.5	12.57

Source: Annual Reports of Respective Commercial Banks from 2016 to 2020.

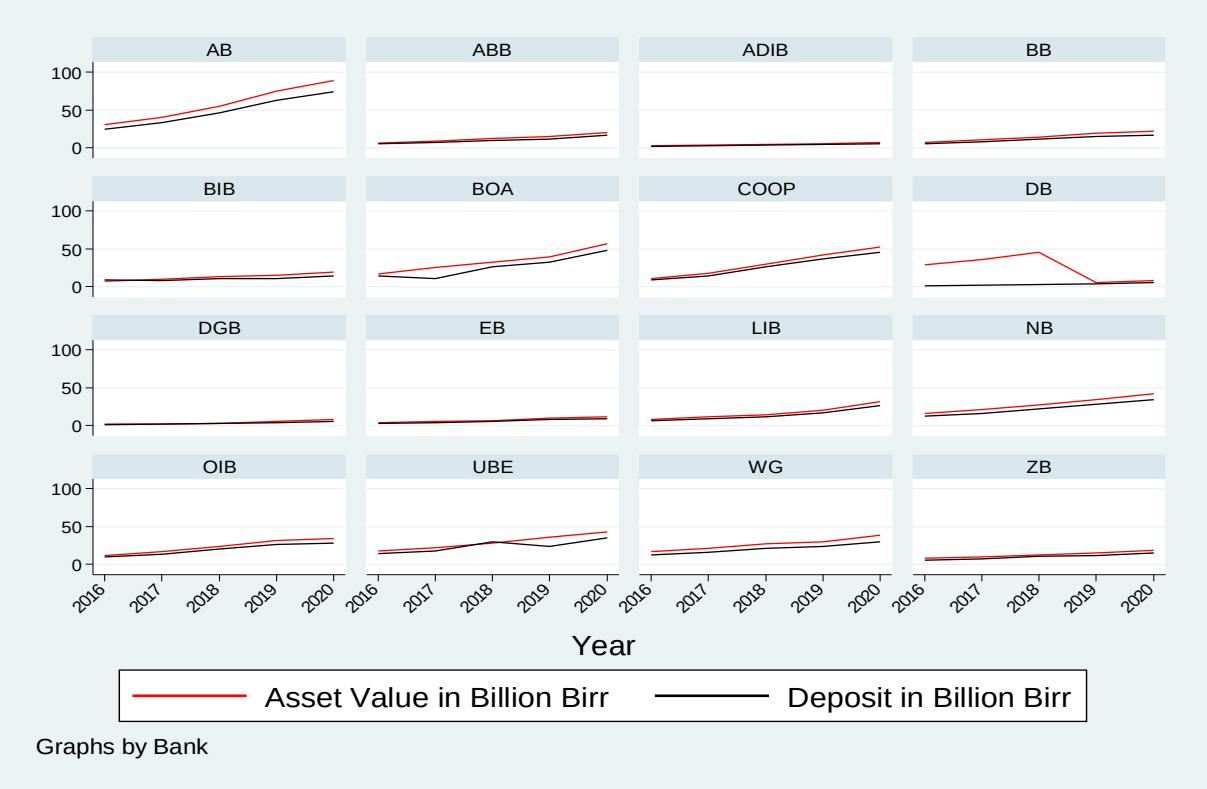

Figure 4-2 Asset and Deposit Value of Private Banks from 2016 to 2020

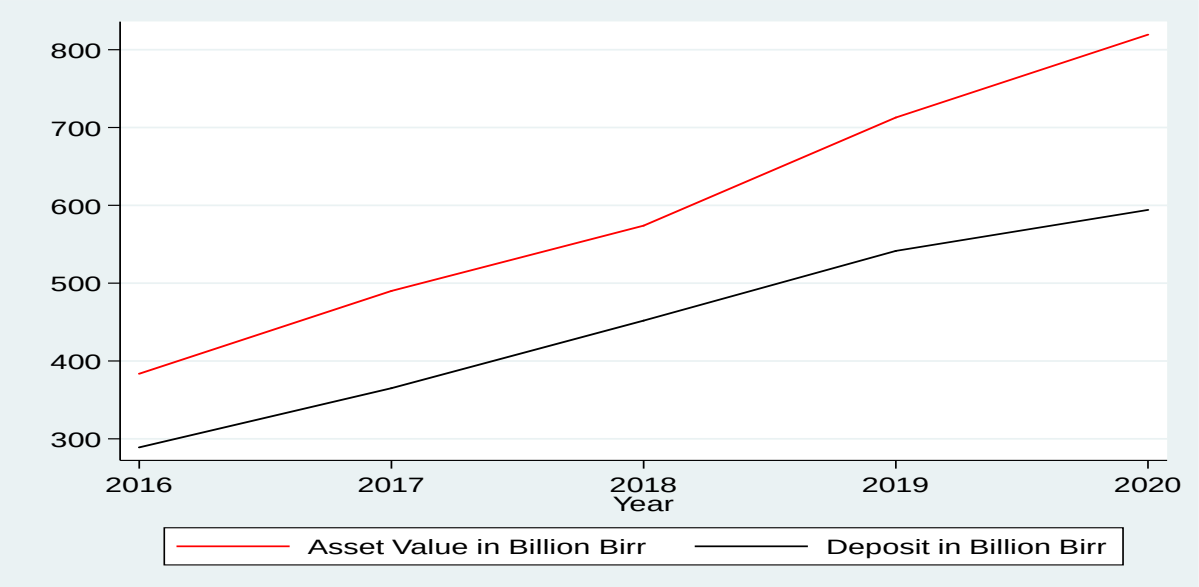

Figure 4-3 Asset Value of CBE from 2016 to 2020

Based on the average total asset value of commercial banks in Ethiopia during the last five years, the top five are: Commercial Bank of Ethiopia (595.94), Awash Bank (57.96), Abyssinia Bank (34.20), Cooperative Bank of Oromiya (30.53), and UBE (29.18), ranked first to fifth. When we compare this ranking to the ICRGS quality performance of internal credit risk grading system, the top five banks are ranked 5th, 7th, 10th, 16th, and 8th, respectively. Wegagen Bank, which is rated seventh, Buna International Bank, which is ranked thirteenth, and Nib International Bank, which is ranked sixth, are ranked first, second, and third in the performance of ICRGS quality, respectively. As a result, the outcomes of this study reveal that the degree of ICRGS quality does not differ between banks based on asset worth.

C. Deposit

The average total deposit figure of the seventeen commercial banks is being used for the analysis of establishing if the quality of ICRGS can vary between commercial banks under investigation over a five-year period beginning in 2016 and ending in 2020.

Table 4-10 Descriptive Statistics of Deposit in Billion Birr

	OBS	Minimum	Maximum	Mean
ABB	5	4.83	16.10	9.778
BOA	5	10.6	47.63	25.97
ADIB	5	1.7	4.8	3.194
AB	5	24.34	74.27	47.974
BB	5	5.3	16.61	11.08
BIB	5	7.53	13.87	10.064
CBE	5	289.04	594.15	448.322
COOP	5	18.49	45.51	26.052
DB	5	0.874	5.29	2.6548
DGB	5	0.87	5.29	2.652
EB	5	2.42	8.38	5.394
LIB	5	6.36	26.13	13.868
NB	5	12.42	34	22.252
OIB	5	9.37	27.73	19.398

UBE	5	13.6	34.77	23.948
WG	5	11.9	30.1	20.34
AB	5	5.49	14.42	9.826

Source: Annual Reports of Respective Commercial Banks from 2016 to 2020.

Based on the average total deposit figure of commercial banks in Ethiopia during the last five years, the top five are: Commercial Bank of Ethiopia (448.322), Awash Bank (47.947), Cooperative Bank of Oromiya (26.052), Abyssinia Bank (25.97), and UBE (23.948), and ranked first to fifth. When we compare this ranking to the ICRGS quality performance of internal credit risk grading system, the top five banks are ranked 5th, 7th, 16th, 10th and 8th, respectively. Wegagen Bank, which is rated 7^{th} , Buna International Bank, which is ranked 13^{th}, and Nib International Bank, which is ranked 6^{th}, are ranked first, second, and third in the performance of ICRGS quality, respectively. As a result, the outcomes of this study reveal that the degree of ICRGS quality does not differ between banks based on deposit value.

D. Profit

The average gross profit figure of the seventeen commercial banks is being used for the analysis of establishing if the quality of ICRGS can vary between commercial banks under investigation over a five-year period beginning in 2016 and ending in 2020.

Table 4-11 Descriptive Statistics of Gross Profit in Billion Birr

	OBS	Minimum	Maximum	Mean
ABB	5	0.19	0.68	0.436
BOA	5	0.38	1.08	0.79
ADIB	5	0.11	0.27	0.17
AB	5	0.99	3.6	2.218
BB	5	0.35	0.71	0.496
BIB	5	0.25	0.63	0.436
CBE	5	10	15.7	13.066
COOP	5	0.24	1.42	0.694
DB	5	0.95	1.8	1.23

DGB	5	0.141	0.67	0.374
EB	5	0.102	0.24	0.187
LIB	5	0.313	0.781	0.518
NB	5	0.459	1.31	0.8002
OIB	5	0.33	1.07	0.746
UBE	5	0.43	1.67	0.746
WG	5	0.48	1.08	0.8102
ZB	5	0.203	0.998	0.5094

Source: Annual Reports of Respective Commercial Banks from 2016 to 2020.

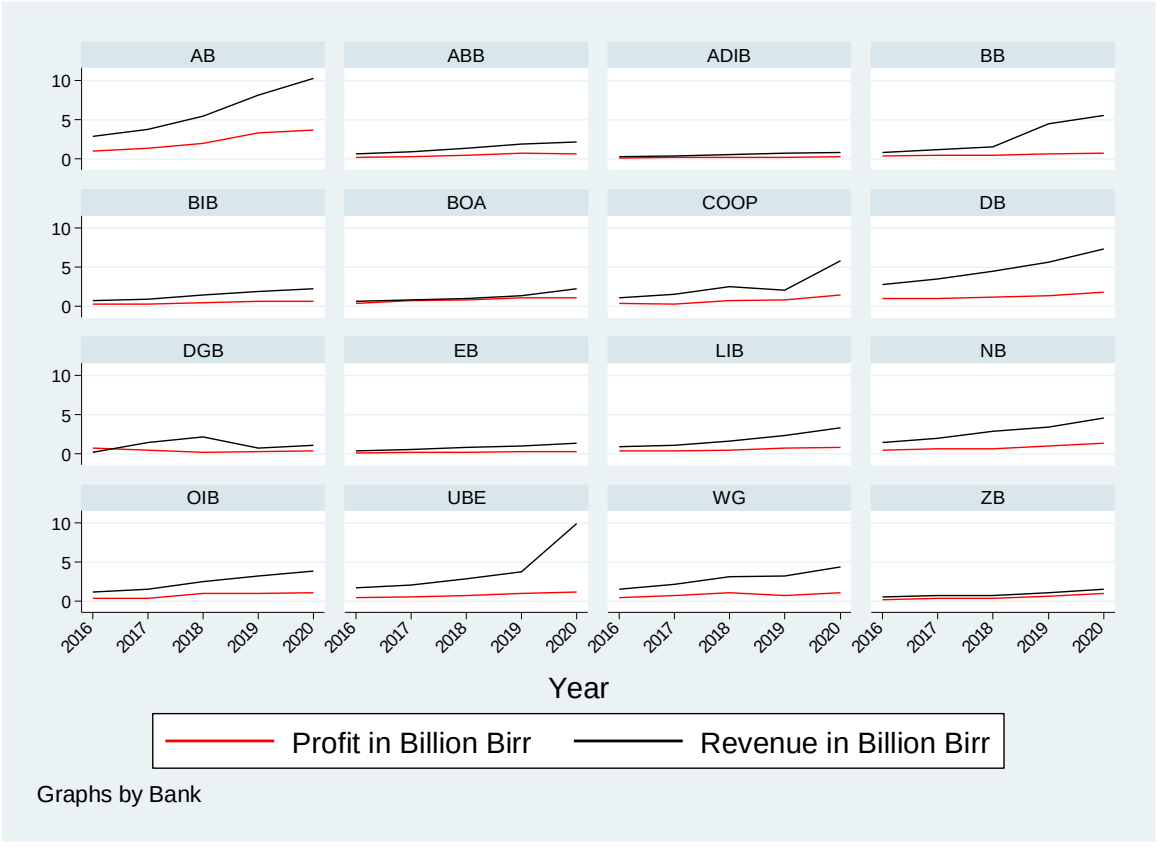

Figure 4-4 Profit and revenue of Private Banks from 2016 to 2020

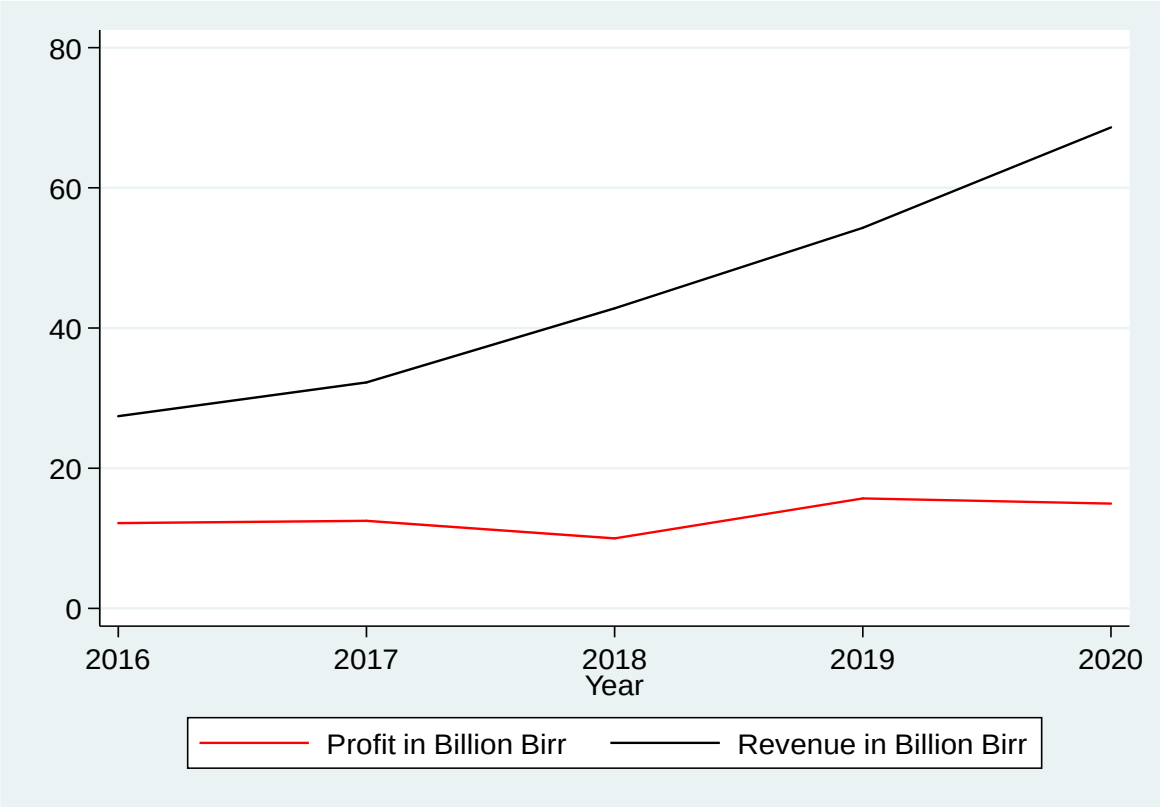

Figure 4-5 Profit and revenue of CBE from 2016 to 2020

Based on the gross profit figure of commercial banks in Ethiopia during the last five years, the top five are: Commercial Bank of Ethiopia (13.066), Awash Bank (2.218), Dashen Bank (1.23), Wegagen Bank (0.8102), and Nib Bank (0.8002) ranked first to fifth. When we compare this ranking to the ICRGS quality performance of internal credit risk grading system, the top five banks are ranked 5th, 7th, 4th, 1rd and 3rd, respectively. Wegagen Bank, which is rated 4th, Buna International Bank, which is ranked 14th, and Nib International Bank, which is ranked 5th, are ranked first, second, and third in the performance of ICRGS quality, respectively. As a result, the findings of this study show that the level of ICRGS quality does not alter dependent on gross profit. It is crucial to notice that, when compared to the other criteria, profit is quite close, since the first, third, and fourth runners in the performance of ICRGS quality are all in the top five profit categories. However, the second runner in terms of ICRGS quality is not among the top five, and the first runner is now the fourth runner in terms of profit.

E. Market Share

The average total revenue number of the seventeen commercial banks is being utilized for the study of determining if the quality of ICRGS can vary between commercial banks under scrutiny throughout a five-year period beginning in 2016 and concluding in 2020. Total

revenue is utilized as a measuring tool since the more income the bank receives, the greater its market share, and vice versa.

Table 4-12 Descriptive Statistics of Total Revenue in Billion Birr

	OBS	Minimum	Maximum	Mean
ABB	5	0.64	2.09	1.352
BOA	5	0.59	2.21	1.168
ADIB	5	0.29	0.83	0.532
AB	5	2.82	10.2	6.05
BB	5	0.79	5.52	2.678
BIB	5	0.74	2.17	1.411
CBE	5	27.43	68.62	45.08
COOP	5	1.1	5.74	2.584
DB	5	2.73	7.29	4.7
DGB	5	0.194	2.15	1.1138
EB	5	0.315	1.33	0.7796
LIB	5	0.91	3.27	1.826
NB	5	1.43	4.55	2.82
OIB	5	1.16	3.84	2.44
UBE	5	1.67	9.91	4.042
WG	5	1.5	4.4	2.86
ZB	5	0.497	1.55	0.8922

Source: Annual Reports of Respective Commercial Banks from 2016 to 2020.

Based on the total revenue figure of commercial banks in Ethiopia, that is used to show the market share of commercial banks for the purposes of this study, during the last five years, the top five are: Commercial Bank of Ethiopia (48.08), Awash Bank (6.05), United Bank (4.042), Birhan Bank (2.678), Cooperative Bank of Oromiya ranked first to fifth. When we compare this ranking to the ICRGS quality performance of internal credit risk grading system, the top five banks are ranked 5th, 7th, 8^{th}, 6^{th} and 16^{th}, respectively. Wegagen Bank, which is rated 5^{th}, Buna International Bank, which is ranked 11^{th}, and Nib International Bank, which is ranked 6^{th}, are ranked first, second, and third in the performance of ICRGS quality, respectively. As a result, the findings of this study show that the level of ICRGS quality does not alter dependent on market share.

CHAPTER FIVE

SUMMARY OF MAJOR FINDINGS, CONCLUSION AND POLICY RECOMMENDATIONS

5.1. Introduction

This section will cover the summary of findings, concluding remarks, and policy suggestions based on the study's findings. The first part includes a summary of the major findings, followed by conclusion and policy recommendations.

5.2. Summary of the Major Findings

The major findings of the study are summarized as follows:

- Experts have assigned higher weights to comprehensiveness, completeness, dependability, POD definition, and complexity. But they also assigned the lowest weights to incentive compatibility, back testing, informational efficiency, monotonicity, and system development;
- On the quality of ICRGS of commercial banks in Ethiopia, external compliance is given the most weight, while back-testing is given the least weight;
- Commercial banks are more concerned with meeting regulatory requirements of internal credit risk grading system rather than making their internal credit risk grading system comprehensive, complete, complex, truly defining POD, monotonous, reliable, and back- testing, which are given more weight that would improve their quality of ICRGS;
- Despite the fact that a good quality internal credit risk grading system necessitates efficiency, accuracy, informational efficiency, realistic applicability, and robustness to withstand any foreseeable problems in risk measurement, the weights given to requirements that meet these qualities are low;
- With the exception of Wegagen and Buna International Bank, which are rated good, the remainder banks included in this study are rated marginal or unsatisfactory, while the industry average for banks under the study is 59.52%; and
- The consequences of having a low rated quality in the ICRGS of the banks means creating a problem of loan (NPL) that will necessitate additional capital being tied-up or retained as a provision at the National Bank of Ethiopia rather than using such money to invest on some profitable assets.

- The degree of ICRGS quality does not differ between banks based on ownership structure, asset valuation, deposit, profit, or market share. However, it is vital to highlight that, when compared to the others, profit is the most likely to alter in tandem with ICRGS quality performance.

5.3. Conclusion

In conclusion, despite the fact that a high-quality internal credit risk grading system requires efficiency, accuracy, informational efficiency, realistic application, and resilience to survive any foreseen issues in risk measurement, the weights assigned to requirements that match these criteria are minimal. Because external compliance is given the most weight, commercial banks are more concerned with meeting regulatory requirements of their internal credit risk grading system than with making their internal credit risk grading system comprehensive, complete, complex, truly defining POD, monotonous, reliable, and back-testing, which were supposed to be given more weight and thus improve their ICRGS quality.

The survey discovered that, with the exception of Wegagen and Buna International Bank, which are rated good, the remaining banks in this study are rated marginal or unsatisfactory, while the industry average for banks under the study is 59.52 percent. The repercussions of having a poor rated quality in the ICRGS of the banks is the creation of a loan (NPL) problem, which would need more capital being tied-up or held as a provision at the National Bank of Ethiopia rather than investing such money in some valuable assets.

According to the study's results, the degree of ICRGS quality does not differ between banks based on ownership structure, asset valuation, deposit, profit, or market share. However, it is vital to highlight that, when compared to the others, profit is the most likely to alter in tandem with ICRGS quality performance.

5.4. Policy Recommendations

Based on the findings of the study, the researcher recommends the following policy recommendations:

- Most banks are rated marginal to poor in ICRGS quality, and one of the main reasons for this is the lack of a standard that includes measurable parameters. Therefore, the National Bank of Ethiopia (NBE), the supervisory organ of Ethiopian banks, may consider developing a standard that includes measurable parameters that all banks

should use to improve the level of ICRGS quality for individual banks as well as at the industry level.

- Low ICRGS quality results in non-performing loans (NPLs), which necessitate additional capital requirements to be tied up or reserved at NBE. Therefore, commercial banks may ensure that they implement an effective ICRGS system that will assist them in identifying the credit risks associated with the banking business, may consider assigning experienced and expert level staffs at credit and risk divisions, and may also ensure that the incentive of the performer and ICRGS does not create a conflict of interest; and

The degree of ICRGS quality does not change amongst banks based on ownership structure, asset valuation, deposit, profit, or market share, according to the study's findings. As a result, the NBE may consider assessing assess the degree of ICRGS quality in relation to the size and complexity of commercial banks and take necessary action.

Reference List

Ahmed, M. (2018). Credit risk management of The City Bank Limited.

Ali, S. B. (2012). Quality of Internal Risk Rating Frameworks at Commercial Banks in Pakistan.

Asfaw, A. H., & Veni, P. (2015). *Empharical Study on Credit Risk Management Practice of Ethiopian Commercial Banks*.

Authority, A. P. R. (2000). *Credit Risk Rating at Australian Banks*. Retrieved from

Authority, E. B. (2017). Guidelines on PD estimation, LGD estimation and the treatment of defaulted exposures. In.

Bangladish, B. o. Guidelines on Internal Credit Risk Rating System for Banks. *Version 2.0*.

Bekhet, H. A., & Eletter, S. F. K. (2014). Credit risk assessment model for Jordanian commercial banks: Neural scoring approach. *Review of Development Finance, 4*(1), 20-28.

Brink, H. I. (1993). Validity and reliability in qualitative research. *Curationis, 16*(2), 35-38.

Chaibi, H., & Ftiti, Z. (2015). Credit risk determinants: Evidence from a cross-country study. *Research in international business and finance, 33*, 1-16.

Denscombe, M. (2007). The Good Research Guide for small-scale social research projects Third Edition. In.

DESSIE, T. (2016). *DETERMINANTS OF CREDIT RISK OF COMMERCIAL BANKS IN ETHIOPIA.* St. Mary's University,

Dudian, M., & Maciuca, M. B. (2010). Internal Ratings Systems: An Empirical Approach. *Studies in Business and Economics, 5*(1), 71-79.

Faruq, T., Mahboob, T., Morshed, M. R., & Quadir, S. E. (2016). Lessons Learned on Credit Risk Grading Model Designing. *World, 6*(2).

Foglia, A., Iannotti, S., & Marullo Reedtz, P. (2001). The definition of the grading scales in banks' internal rating systems. *Economic Notes, 30*(3), 421-456.

George, D. M., & Mallery, Y. P.(2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update.*

Gizaw, M., Kebede, M., & Selvaraj, S. (2015). The impact of credit risk on profitability performance of commercial banks in Ethiopia. *African Journal of Business Management, 9*(2), 59-66.

Gorton, G., & Winton, A. (2003). Financial Intermediation. Handbook of Economics of Finance, 1(1) 431-552. Elsevier.

Hox, J. J., & Boeije, H. R. (2005). Data collection, primary versus secondary.

Jacobson, T., Linde, J., &Roszbach, K. (2006).Internal Rating, Implied Credit Risk and the Consistency of Banks Risk Classification Policies.Journal of Banking & Finance, 30(7), 1899-1926.

Jayadev, M. (2006). Internal credit rating practices of Indian banks. *Economic and Political Weekly*, 1069-1078.

Kabir, G., Jahan, I., Chisty, M. H., & Hasin, M. A. A. (2010). Credit risk assessment and evaluation system for industrial project. *International Journal of Trade, Economics and Finance, 1*(4), 331-341.

Kiptiony, N. K., & Kiprop, I. K. (2018). The effect of internal credit rating based setting of credit terms and conditions on the financial performance of commercial banks in Kenya. *Supreme Journal of Business and Management, 1*(1), 56-70.

Krahnen, J. P., & Weber, M. (2001). Generally accepted rating principles: A primer. *Journal of Banking & Finance, 25*(1), 3-23.

Machoka, O. S., & Jagongo, A. (2020). Competitive information sharing and credit scoring on the performance of commercial banks in Kenya. *International Academic Journal of Economics and Finance, 3*(5), 45-61.

Malede, M. (2014). Determinants of commercial banks lending: evidence from Ethiopian commercial banks. *European Journal of Business and Management, 6*(20), 109-117.

Máková, B. (2019). *Bank-sourced transition matrices: Are banks' internal credit risk estimates Markovian?* (No. 03/2019). IES Working Paper.

Mishra, S. B., & Alok, S. (2017). Handbook of research methodology. *Educreation*.

Mohammad, N., & Onni, A. N. (2015). Credit risk grading model and loan performance of commercial banks in bangladesh. *European Journal of Business and Management, 7*(13), 83-91.

Moidunny, K. (2009). The Effectiveness of the National Professional Qualification for Educational Leaders (NPQEL). *Unpublished Doctoral Dissertation, Bangi: The National University of Malaysia*.

National Bank of Ethiopia, Bank Risk Management Guideline (Revised). (2010).

Oyama, M., & Yoneyama, M. (2005). Advancing credit risk management through internal rating systems. *Retrieved from Bank of Japan: https://www. boj. or. jp/en/research/brp/ron_2005/data/fsk0509a. pdf*.

Santos, M. A. (2017). *Backtesting of a credit scoring system under the current regulatory framework.* Instituto Superior de Economia e Gestão,

Shi, B., Zhao, X., Wu, B., & Dong, Y. (2019). Credit rating and microfinance lending decisions based on loss given default (LGD). *Finance Research Letters, 30*, 124-129.

Supervision, B.C.O.B.(1999). *Principles for the Management of Credit Risk*, Consultative Paper. Basle, July.

Supervision, B.C.O.B.(2005).*Principles for the Management of Credit Risk*, Consultative Paper. Basle, November.

Supervision, B.C.O.B. (2000). *Sound Credit Risk Assessment and Valuation for Loans*, Consultative Paper. Basle, September.

TAYE, S. (2016). *BANK SPECIFIC DETERMINANTS OF PROFITABILITY OF COMMERCIAL BANKS (THE CASE OF COMMERCIAL BANK OF ETHIOPIA).* St. Mary's University,

Treacy, W. F., & Carey, M. (2000). Credit risk rating systems at large US banks. *Journal of Banking & Finance, 24*(1-2), 167-201.

Verster, T., De Jongh, R., Greenberg, S., Fourie, E., & de Wet, D. (2019). A motivation for banks in emerging economies to adapt agency ratings when assessing corporate credit. *South African Journal of Economic and Management Sciences, 22*(1), 1-11.

Weissova, I., Kollar, B., & Siekelova, A. (2015). Rating as a useful tool for credit risk measurement. *Procedia Economics and Finance, 26*, 278-285.

Appendix I

Questionnaire for Experts

Addis Ababa University
College of Business and Economics
Questionnaire to be filled by Credit and Risk Experts of Banks

Dear Respondents:

First, I want to express my gratitude for agreeing to fill this questionnaire despite your incredibly stressful and busy job schedule. I am a graduate student at Addis Ababa University's College of Business and Economics. The aim of my study is solely academic, and I am only interested in thoroughly investigating the quality of Commercial Banks' internal credit risk grading system (ICRGS) in Ethiopia. Please be assured that all information provided in this questionnaire will be kept exclusively confidential, and your personal information will not appear in any of the appraisal or presentation sections. Your bank has been chosen as one of the subjects for this assessment, and you have been carefully picked as one of the experts who can provide useful knowledge as well as share his/her wealth of expert-based opinion as a valuable insight for this study. With due consideration, I insist that you have a truthful response to the questions because it has a significant impact on the results of the evaluation. Finally, I appreciate your patience in filling out the answers to this questionnaire, which is expected to last 20 to 25 minutes. I greatly respect and use your response and professional opinion as input for this research.

General Instructions

- ✓ There is no need of writing your name.
- ✓ In all cases where answer options are available please tick (√) in the appropriate box.
- ✓ For question that demands your opinion, please try to honestly describe as per the question on the space provided.

Researcher: RekikGirma
Contact Address: +251-911-124242 or
+251-911-228014
E-mail:rekikgirmaazene@gmail.com

Thank you in advance for your cooperation.

Part One: Personal Profile

1. What is your current age (in years)?

   o Under 30 years o 30 to 40 years o 41 to 50 years o 51 to 60 years

2. What are your educational credentials?

   o Diploma o Degree o Masters o PHD o Other

   If other, please specify _____

3. How long have you been in the bank?

   o Less than 5 years o 5 to 10 years o 10 to 15 years

   o 15 to 20 years o More than 20 years

4. What is your current position in the bank?

   _____

5. How long have you been in the current position?

   o less than 2 years o 2 to 5 years o 6 to 10 years o More than 10 years

Part Two: Assigning Weights for the Assigned Requirements for the Quality of ICRGS

In the box below, add weights to the requirements and weighing factors. The waiting variables will be used to weight the allocated requirements, which will be calculated out of a total of 100 percent. Weighing factors will be calculated using the weight percentage allocated to each requirement. The specific weight of each given requirement will be weighted out of a hundred percent, and please see the sample table for a visual representation of how the measurements will be performed.

Assigned Requirements for the Quality of ICRGS	Weight (in percentage)	Weighting Factors	Specific Weight (Out of hundred percent)
Comprehensiveness		A bank's rating system should be able to rate all past clients.	
		A banks rating system should be able to rate all current clients.	
		A banks rating system should be able to rate all future customers.	
Completeness		A bank should rate all its current clients.	
		A bank should continue rating its past customers.	

		A bank should maintain a rating database.	
Complexity		A bank should have as many rating systems as possible.	
		A bank should use a few rating systems as possible.	
		A bank should make the reason for choosing the rating system transparent.	
Definition of Probability of Default		A bank should define probability of default.	
		A bank should make sure the definition of probability of default is both transparent and reasonable.	
		A bank should define what it considers to be a default event.	
Monotonicity		A bank should make sure if two POD's are equal the ratings should also be equal.	
		A bank should make sure that if the POD of one company is smaller than the other, the rating of the first company is as good as the second one.	
		A bank should make sure that if the rating of a company is better than that of another company, the POD of the first company should be smaller than the POD of the second one.	
Fineness		A bank should make sure that its decision of how many categories of ratings it should have is a function of its intended use.	
		A bank should make sure its loan pricing is correlated with its rating categories.	
		A bank should make sure that the less riskiness and riskiness of the credit is correlated in the grading categories.	
		A bank should make sure that the probability of default is true.	
		A bank should make sure that the rating is the same as to who and at what point in time the rating is done.	

Reliability		A bank should make sure that the rating changes when creditworthiness changes.	
Back-Testing		A bank should make sure that its probability of default should not be different from the realized default frequency.	
		A bank should make sure that the realized default frequency default rates within any given rating category should be larger than the higher rating category.	
		A bank should make sure that the realized default frequency default rates should increase with the time horizon.	
Informational Efficiency		A bank should make sure that it is not possible to predict rating changes based on rating history.	
		A bank should make sure that all the available information is shown in the rating.	
		The rating system should cope with the known biases.	
System Development		A bank should make sure that the rating system should be improved over time.	
		A bank should make sure that the modification of the rating system should be considered carefully.	
		A bank should make sure that the benefit of revising the rating system should out way the benefit.	
Data Management		A bank should make sure that past rating data is maintained.	
		A bank should make sure that present rating data is maintained.	
		A bank should make sure that the past and present rating data are easily available for users.	
		A bank should make sure that a rating system should be owned by the credit function.	
		A bank should make sure that the critical values that trigger action in the grading system has to be followed and recorded.	

Incentive Compatibility		A bank should make sure that the incentive conflicts that may arise between the loan officer and the grading process should clearly be separated.	
Internal Compliance		A bank should make sure that the ICGRS is approved and overseen by the Board of Directors.	
		A bank should make sure that the results of the ICGRS are constantly monitored by the internal audit function.	
		A bank should make sure that the audit function is assisted by a random inspection by its own inspectors.	
External Compliance		A bank should make sure that the rating system complies with the Basel Accord II.	
		A bank should make sure that the rating system complies with the regulatory requirements of NBE.	
		A bank should make sure that the rating system complies with relevant laws and regulations of Ethiopia.	

Example Table:

No.	Component	Weight	Criteria	Specific Weight	Evaluation Parameters	Score	Result
			1. A bank's rating system should be able to rate all Past clients.	40%	If all of criteria are full filled by the bank and an effective means of monitoring is in place	100%	10%
			2. A banks rating system should be able to rate all current clients.	35 %	If all of the requirements are full filled by the bank	90%	9%
			3. A banks rating system should be able to rate all future customers.	25%	If the first two requirements are full filled	75%	7.5%
					If the first and the third requirement is full filled by the bank	65%	6.5%

					If the second two requirements are full filled	60%	6%
					If the first requirement is only full filled by the bank	40%	4%
					If the second requirement is full filled	35%	3.5%
1	Comprehensiveness	10%			If the third requirement is only full filled by the bank	25%	2.5%

Thank you very much for your patience and co-operation.

Appendix 2

Questionnaire for Managers

Addis Ababa University
College of Business and Economics
Questionnaire to be Filled by Credit and Risk Managerial Staffs of Banks

Dear Respondents:

First, I want to express my gratitude for agreeing to fill this questionnaire despite your incredibly stressful and busy job schedule. I am a graduate student at Addis Ababa University's College of Business and Economics. The aim of my study is solely academic, and I am only interested in thoroughly investigating the quality of Commercial Banks' internal credit risk grading system (ICRGS) in Ethiopia. Please be assured that all information provided in this questionnaire will be kept exclusively confidential, and your personal information will not appear in any of the appraisal or presentation sections. Your bank has been chosen as one of the subjects for this assessment, and you have been carefully picked as one of the experts who can provide useful knowledge as well as share his/her wealth of expert-based opinion as a valuable insight for this study. With due consideration, I insist that you have a truthful response to the questions because it has a significant impact on the results of the evaluation. Finally, I appreciate your patience in filling out the answers to this questionnaire, which is expected to last 20 to 25 minutes. I greatly respect and use your response and professional opinion as input for this research.

General Instructions

- ✓ There is no need of writing your name.
- ✓ In all cases where answer options are available please tick (√) in the appropriate box.
- ✓ For question that demands your opinion, please try to honestly describe as per the question on the space provided.

Researcher: **Rekik Girma**
Contact Address: **+251-911-124242 or**
+251-911-228014
E-mail: **rekikgirmaazene@gmail.com**

Thank you in advance for your cooperation.

Part One: Personal Profile

6. What is your current age (in years)?

   o Under 30 years o 30 to 40 years o 41 to 50 years o 51 to 60 years

7. What are your educational credentials?

   o Diploma o Degree o Masters o PHD o Other

   If other, please specify _____

8. How long have you been in the bank?

   o Less than 5 years o 5 to 10 years o 10 to 15 years

   o 15 to 20 years o More than 20 years

9. What is your current position in the bank?

   _____

10. How long have you been in the current position?

    o less than 2 years o 2 to 5 years o 6 to 10 years o More than 10 years

Part Two: The Quality of Commercial Bank's ICRGS

Please mark the box referring to a number from 1 to 5 scale where 1 = strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = strongly agree to show the degree of your agreement or disagreement with each statement in relation to your bank's ICRGS.

	Comprehensiveness	**1**	**2**	**3**	**4**	**5**
1	The bank's credit rating system rates all its past clients.					
2	The bank's rating system rates all its current clients.					
3	The banks rating system rates all its future customers that will extend business relationship with it.					
	Completeness					
4	The bank rates all its current clients.					
5	The bank continues in rating its past customers.					
6	The bank maintains a rating database.					
	Complexity					
7	The bank has as diversified rating systems as possible.					
8	The bank uses few rating systems as possible.					
9	The bank makes the reason for choosing the rating system transparent.					
	Definition of Probability of Default (POD)					
10	The bank's probability of default is well-defined.					
11	The bank's definition of probability of default is both transparent and reasonable.					
12	The bank clearly defines what it considers to be a default event.					
	Monotonicity					

13	The bank makes sure that if two POD's are equal, the ratings should also be equal.					
14	The bank makes sure that if the POD of one company is smaller than the other, the rating of the first company is as good as the second one.					
15	The bank makes sure that if the rating of a company is better than that of another company, the POD of the first company should be smaller than the POD of the second one.					
	Fineness					
16	The bank's decision as to how many categories of ratings it should have is a function of its intended use.					
17	The bank's loan pricing is correlated with its rating categories.					
18	The less riskiness and riskiness of the bank's credit is correlated with its grading categories.					
	Reliability					
19	The bank's probability of default is true.					
20	The bank makes sure that the rating is the same as to by whom and at what point in time the rating is done.					
21	The bank's credit rating change when clients' creditworthiness changes.					
	Back-Testing					
22	The bank makes sure that its probability of default should not be different from the realized default frequency.					
23	The bank makes sure that the realized default frequency default rates within any given rating category should be larger than the higher rating category.					
24	The bank makes sure that the realized default frequency default rates should increase with the time horizon.					
	Informational Efficiency					
25	The bank makes sure that it is not possible to predict rating changes based on rating history.					
26	The bank makes sure that all the available information is shown in the rating					
27	The bank makes sure that the rating system should cope with the known biases.					
	System Development					
28	The bank's rating system is improved over time.					
29	The bank makes sure that the modification of the rating system should be considered carefully.					
30	The bank makes sure that the benefit of revising the rating system should out way the benefit.					
	Data Management					
31	The bank's past rating data is maintained.					
32	The bank's present rating data is maintained.					
33	The bank's past and present rating data are easily available for users or stakeholders.					
	Incentive Compatibility					
34	The bank's credit rating system is owned by the credit function.					

35	The bank makes sure that the critical values that trigger action in the grading system are followed and recorded.					
36	The bank makes sure that the incentive conflicts that may arise between the loan officer and the grading process is clearly separated.					
	Internal Compliance					
37	The bank's ICGRS is approved and overseen by the Board of Directors.					
38	The bank's ICGRS result is constantly monitored by its internal audit function.					
39	The bank's audit function is assisted by a random inspection using its inspectors.					
	External Compliance					
40	The bank's rating system complies with Basel Accord II.					
41	The bank's rating system complies with the regulatory requirements of NBE.					
42	The bank makes sure that the rating system complies with other relevant laws and regulations of the country.					

43. Do you think there's anything more you can do to improve the quality of the internal credit risk grading system?

_____

_____

_____

_____

_____

_____

44. Is there anything else you would like to say as a final thought?

_____

_____

_____

Thank you very much for your patience and co-operation