Effect of Credit Information Bureau and Appraisal Methods on performance of Commercial Banks in Mwanza Region

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Abstract— This study intended to identify the effect of credit information bureau and appraisal methods on performance of commercial banks in Mwanza Region. Specifically, the study intended to assess the effect of Credit Reference Bureaus' information sharing on the credit performance of commercial banks, to assess the effect of the credit scoring appraisal method employed on the performance of commercial banks and to assess the effect of non-performing loans on the performances of Commercial Banks in the Mwanza Region. The study was guided by three theories; the theory of asymmetric information, moral hazard theory and multiple - bank lending model. The study adopted a descriptive research design, sampling 105 respondents randomly and purposefully and collected data through questionnaires. The aim is to establish the effect of credit information bureau and appraisal credit scoring methods on the performance of commercial banks in the Mwanza Region.

Results revealed that credit information bureau had a positive, strong effect on the credit performance of commercial banks, and this effect is significant in Mwanza region. Non-performing loans had a positive, weak effect on the credit performance of commercial bank and it was not significant. Finally the credit scoring appraisal approach has a negative, weak effect on commercial bank credit performance. The study concluded that credit information bureau has a significant influence on credit performance of commercial banks and therefore should be used to reduce non-performing loans. The study recommended that banks should continue to use the credit reference bureau's information-sharing services as it enhances their profitability through the reduction of non-performing loans.

Keywords— Credit, information bureau, Appraisal, Performance, Banks.

I. INTRODUCTION

Despite the vast importance of lenders in the banking industry, they have been understood to hesitate to share borrowers' adverse credit information which appear to be dynamics among the Credit Information Bureaus (Tiffany et al, 2010). The challenges in lending activity include weak loan enforcement, unreadily available ability and willingness to repay information of applicants, the poor prospective borrower's background, inadequate behaviour for repayments and inadequate collateral and repayment guarantee (Fredrick W & Ndede S, 2019).

According to Gregory (2010), Credit risk is the possibility that a competitor will be unable to make a payment or fulfil contractual commitments. This results in non-performing loans (NPLs) coming from poorly managed credit risk, eroding bank profitability. This was shown by the global financial crisis of 2007, which resulted in the failure of famous institutions such as the Bear Stern and Lehman Brothers Gregory (2010).

In Asian nations like Pakistan according to Ahmad (2013), the decline in exports caused by the recession and liquidity crisis in the global financial market resulted in the

withdrawal of foreign investment and devaluation of the local currency. Other economic factors, such as the rise in global oil prices, the energy crisis, high per unit costs, and circular debts, among others, resulted in families and businesses being unable to repay their loans (Ahmad, 2013). As a result, the number of nonperforming loans (NPLs) has grown, and when loans become non-performing, banks' liquidity and revenues suffered.

An institution must monitor the behaviour of credit customers to tackle the difficulty of NPLs Gaitho (2013). Prior credit information on potential borrowers can also assist prevent bad debts from occurring. However, because this data is not easily available, banks must develop long-term relationships with their borrowers in order to assess their creditworthiness. Monitoring debtors is expensive for the bank, and the knowledge acquired from a long-term relationship with a borrower gives the bank a competitive advantage (Kiplangat, 2015).

Multiple borrowing and over-deficit increase loan default when financial institutions compete for consumers, unless the financial institutions have access to databases that record key characteristics of clients' borrowing history Gaitho (2013). On the other side, an information monopoly does more harm than good. Borrowers who are aware that banks operate in isolation take advantage of the knowledge asymmetry to rack up several bad loans. As a result, banks are incentivized to exchange credit information in banking sector. Although competition amongst lenders limits information sharing, the impact of competition appears to be minor. Numerous theoretical and empirical studies show that credit information sharing (CIS) has a variety of positive effects. These studies list the advantages of CIS as boosting financial institution transparency, assisting banks in lending wisely, lowering bank risk, and serving as a borrower's discipline against defaulting hence reducing borrowing expenses.

Information sharing is also one of the elements that contribute to the increase or fall of NPLs, according to Ahmad, (2013). According to Jappelli & Pagano (1999) information sharing is also linked to bigger credit markets and lower credit risk. Credit information exchange, then, is unquestionably important in minimizing information asymmetry between banks and borrowers Gaitho (2013). Credit Reference Bureaus (CRBs) or Credit Reporting Agencies (CRAs) were created to enable credit information sharing (CIS) in this respect.

1.1 The Theory of Asymmetric Information

The first theory governing credit bureau information relates asymmetric information which arises when one party has information that the counterparty is not privy to. The theory of asymmetric information postulates that, if a

participant who is advantaged capitalizes on the information, it can lead to market imperfection (Thuo, 2015; Otwori, 2015). The theory was championed by Akerlof in 1970 and it is still in use today. It is argued that buyers use statistical analysis of the market in measuring the value in various classes of goods and its role in credit information sharing (CIS) plays a limiting adverse selection in the credit market. Their study postulates that information asymmetry between lenders and borrowers breeds credit rationing. Each institution has information on its existing clients, but none on prospective applicants. If the credit providers share information about their client's financial performance, only creditworthy customers will be admitted hence they will be able to drastically reduce defaults (Murithi, Wawera & Muturi 2016).

Furthermore, with credit information sharing, lenders can expand the acceptance criteria and hence the ability to spur business growth and monitor their portfolio to adjust their decisions appropriately based on the alerts about the deterioration of the debt serviceability capacity of the borrower.

The concept of asymmetric information is based on comparison of market quality with uncertainty (Akerlof, 1970). To demonstrate the presence of information asymmetry, Akerlof utilizes the famous "lemon" dilemma in the automotive industry, where new and used cars are sold. He claims that a buyer can only get a decent notion of a car's quality after having it for a while. Used vehicle sellers, on the other hand, have a better understanding of the automobile's quality than new car purchasers. As a consequence, new cars and decent cars must sell at the same price since a consumer cannot distinguish between a decent car and a "lemon." Because they both sell for the same price, the poor automobiles eventually push out the excellent ones. As a result, the market's quality of goods is damaged.

Information asymmetry causes a slew of other issues in addition to weakening the market's products and services. Insider trading has been highlighted as one of the repercussions of information asymmetry in recent research, such as the work by (Akerlof, 1970). Knowledge asymmetry can lead to excessive lending and inefficient credit allocation. Information asymmetry increases the cost of external borrowing and decreases the long-run level of steady state investment capital and production.

Information sharing through Credit information Bureaus is expected to reduce or removal information asymmetry between borrowers and lenders, and thus prevent excessive lending and inefficient credit allocation. Excessive lending and inefficient credit allocation is likely to affect the loan or credit performance of the lender negatively due to increased default rates.

1.12 Moral Hazard Theory

The moral hazard problem is the second hypothesis which states that borrowers are motivated to default unless there are negative implications for future credit requests. Failure to access borrowers' prior credit profiles fosters moral hazard, which may lead to lenders imposing disciplinary interest rates, in the end causing the credit market to collapse (Christopher, Kadima & Juma, 2020). According to Gichimu (2015), Credit information sharing drives borrowers to fulfil their contractual commitments. As a result, borrowers are more inclined to meet their loan responsibilities as they know that when they default, they would be "black" listed, from proper borrowing in the future. The scenarios show that defaulting carries a significant cost about interest rates even omission from prospect borrowing, so knowledge sharing technique aids borrowers in overcoming the moral hazard issues they confront (Bernado, Pagano & Piccolo, 2014).

Moral hazard as defined by Nayyar (1990) as the issues that arise from the buyer's incapacity to witness the seller's behaviour. Furthermore, because it is difficult to determine service quality, the service is irreversible, and the service outcome is unclear due to external circumstances, it is hard for the buyer of services to assess if the seller's activities were suitable and adequate. The distinction between moral hazard and adverse selection is that adverse selection occurs before the transaction because one party has insufficient knowledge about the attributes of the other. Moral hazard, on the other hand, occurs after the transaction has occurred since the borrower or buyer may engage in behaviours that the lender is unaware of. This study intended to assess if information sharing through Credit information Bureaus and credit appraisal methods can prevent moral hazards behaviour of borrowers by prior determination of their suitability for the purpose of the loan and thus ensure positive credit performance of the lender.

In their lending activities, banks confront both adverse selection and moral hazard issues. Moral hazard occurs when a lender is unable to monitor a borrower's behaviours that impact the likelihood of repayment (Japelli & Pagano, 2000). A borrower may be tempted to misallocate cash for personal gain or engage in unproductive ventures that solely serve to boost personal power or status. If the projects fail, the lender will lose money. The bank faces a moral hazard as a result of the borrower's opportunistic behaviour (Japelli & Pagano, 2000).

Mishkin (1999) points out that lenders frequently place limits on borrowers to ensure that they do not participate in activity that makes it less likely that they would repay the loan. Nonetheless, such limits are costly to enact and manage, and their scope is unavoidably restricted.

1.3 Adverse selection theory

Akerlof (1970) was the first to use the Lemon Principle to analyse adverse selection. He cited the outrageous rates charged by a local moneylender to his clients as an example. The image demonstrates India's high interest rates. The prime interest rate at large banks is between 6% - 10%, whereas the interest rate at a small money lender is between 15% - 50%. The considerable interest rate differential between the two entities is due to the methods of enforcing the transaction contract or intimate knowledge of the borrower's character. As a result, if a middleman tries to arbitrate between the two moneylenders' prices, he is likely to attract all of the "lemons" (Akerlof, 1970). Adverse selection happens in financial transactions, particularly in the banking industry, when possible negative credit risks borrowers are the ones who actively seek out a loan (Kiplangat, 2015). Lenders are frequently unable to detect the features that cause unfavourable selection issues, and as a result, credit is rationed or exorbitant borrowing rates are charged. Those who wish to take significant risks, on the other hand, are more inclined to take out a loan, even if it has a high interest rate loan (Kiplangat, 2015). Finally, in the case of capital markets, partially informed lenders are hesitant to provide loans with high interest rates because they believe that borrowers with high interest rates are more likely to fail. This method of separating good from bad credit risk in order to address the issue of adverse selection is inefficient and, in the end, will lower the number of loans that the lender would otherwise provide loan (Kiplangat, 2015). Therefore to avoid adverse selection outcomes, a lender ought to review the borrower's information through credit appraisal selection methods and information provided by the Credit Information Bureaus. The two factors are likely to regulate the interest rates charged to a particular borrower and thus reduce the risk of loan default.

1.4 Multiple Bank Lending Model

The model contends that the ability to get information about an applicant's financial performance with other lenders over some time makes it possible to identify risk and be able to objectively measure risk at that point of application. In the context of multiple-bank Operations under a "dark" environment limits, objective assessment as the lenders are not able to determine the total exposure of an applicant and hence it is difficult to determine the capability to repay. For example, Bennardo *et al* (2014) argue that credit sharing information enables individual lenders to access the overall indebtedness of borrowers hence reducing the risk of over-borrowing and if the information is well shared, the credit market will expand because the risk caused by over-indebtedness is reduced hence uncertainty of non-repayment is drastically reduced

(Agbloyor, Kwado & Gyekedako, 2017). Therefore, information sharing through Credit Information Bureau and credit appraisal methods are used by the lenders to discover borrowers who have multiple loans from different lenders, and be able to act accordingly and appropriately.

1.4 Non-performing loans

Commercial banks make up a significant portion of any country's financial institutions. As a result, changes in this sector's performance have negative consequences for the country's economy. Deposits are collected by commercial banks, which at times are loaned to borrowers as loans. A bank's actual or alleged refusal of paying depositors' money when needed may induce panic resulting in insolvency (Kinanga, 2016).

Credit amounts are the main component of commercial banks' assets and source of credit risk because they are used to earn interest revenues. When a debtor fails to meet their commitments in terms of loan repayment, credit risk arises. It includes both potential and existing earnings risks stemming from the obligator's failure to meet the agreed-upon contract requirements (Kipchumba, 2015). This demands the banks putting in place mechanisms for detecting, monitoring, measuring, and controlling credit risks, as well as providing suitable compensation in the event of risk incurrence (Gichimu, 2015).

Non-performing loans continue to become the most damaging factor in the development of the financial sector. According to the World Bank's (2020) report, Kenyan commercial banks performed poorly, with a non-performing loan rate of 14.92 per cent, higher than the global average of 11.07 per cent, and a five-year average of 11.07 per cent. This is a major source of concern, which is why the research focused on credit control policies as well as loan performance in Kenyan commercial banks. Loan performance accounts for more than ten times a bank's equity, so it accounts for a significant share of the credit risk.

A loan portfolio refers to the entire amount of money distributed as loans to various borrowers under various credit packages. Personal loans, business loans, salary loans, and group guaranteed loans are examples of lending products. Loan performance includes payment rates, the number of borrowers, the amount of security pledged, and the rate of arrears recovery (World Bank Report, 2020).

The fraction of NPLs to total loans determines how well a loan performs. The amount of money borrowed on which planned payments have not been received for 90 days is referred to as non-performing loans (NPLs) (Bank for International Settlements, 2016). A performing loan, on the other hand, is one in which both the principal and interest payments are current and the loan is scheduled to be paid off in full within 90 days. As a result, banks and other institutions are focusing on lowering nonperforming loans (NPLs) because of the danger of the principle and interest not being recovered. Tanzanian commercial banks have a higher rate of nonperforming loans (NPLs) than the global average (World Bank, 2019).

Non-performing loans have continued to expand sharply over the years, according to Marobhe and Pastory (2015), despite increased attempts to reduce non-performing loans. The great non-performing loans (NPLs) levels reflect the existing high risk of credit in the banking sector, which causes marketplace and liquidity challenges. NPLs are mostly caused by inefficiencies in the credit management techniques used by banks (Kipchumba, 2015).

Following the global financial crisis of 2008 and 2009, the Basel III 2017 standards examined credit scoring systems adopting international credit management methods and conducting frequent credit risk assessments among peer banks and equivalents. The banking sector is required to uphold standards of financial control and proactive credit management techniques to reduce non-performing loans as a result of Basel III 2017 criteria (Nshala, 2017).

According to Otwori (2015) most banking institutions were uninterested in rapid credit rescue and, as a result, a drop in non-performing loans. The term "debt collection" refers to the process of pursuing unpaid loans. A small number of clients have been established to fulfil payments, while some do not pay at all. This has led to the creation of policies that an organization should follow to avoid non-performing loans. These policies may include a debt recovery policy. The debt collection policies aim to stimulate the non-payers to pay therefore avoiding non-performing loans. This is because of lacking strict debt collection policies, which result in overdue collection amounts and, as a result, NPLs (Mbulu, 2016).

A non-performing loan (NPL) is one that has not been paid for ninety days or longer. In the start and progression of financial and banking crises, the magnitude of non-performing loans is a critical 32 elements (Tiffany and Greenidge, 2010).

The collapse of the sub-prime mortgage industry in August 2007 is blamed for the present global financial crisis, which started in the United States. According to Grosvenor *et al* (2010) any commercial banks with greater risk appetite and willingness to make loans with a higher probability of default tend to record higher losses. Furthermore, the number of nonperforming loans (NPLs) in the United States began to rise significantly in the early 2000s. NPLs are therefore an indicator of a country's financial stability, as well as the banking system's stability. It is obvious from the foregoing that the capacity to anticipate, monitor, and manage non-performing loans is critical. NPLs are a measure of a bank's credit risk,

External causes such as weak economic conditions, internal issues such as poor lending decisions, or both might contribute to this. The NPL-to-asset ratio is a metric used to assess the asset quality and financial health of a bank. A high percentage in the current financial crisis may indicate that banks are unhealthy since they are exposed to the core causes of the problem.

According to the Federal Reserve, controlling nonperforming assets (NPAs) is crucial for both individual bank performance and the economy's financial climate (Kiplangat, 2015). Due to the nature of their business, commercial banks are vulnerable to the risk of borrowers defaulting. Prudent credit risk assessment and adequate reserves for poor and suspect loans are essential. can help banks mitigate their risk.

II. MATERIALS AND METHODS

The chapter discusses the data collection and analysis framework. The study design specifies how these methodologies were chosen, how the data was treated, and how the results were interpreted using quantitative data.

2.1 Population

A population can be defined as "a collection of objects, cases, or items that share certain common observable qualities that distinguish them from other populations". A population, according to Creswell (2014), is described as a group of people, services, elements, and events, which are being studied. The study's participants are 22 commercial banks, two credit reference bureaus, and Tanzania's central bank.

Table 2. 1 Selected banks

SN	Institution operating in Mwanza	Category	Employees
1	Amana Bank	Commercial Banks	10
2	Azania Bank	Commercial Banks	12
3	CRDB Bank	Commercial Banks	35
4	Diamond Trust Bank Tanzania,	Commercial Banks	9
5	Equity Bank (Tanzania),	Commercial Banks	10
6	Exim Bank (Tanzania),	Commercial Banks	11
7	KCB Bank Tanzania	Commercial Banks	9
8	Mkombozi Commercial Bank	Commercial Banks	12
9	National Microfinance Bank,	Commercial Banks	45
10	TPB Bank Plc,	Commercial Banks	12
11	Access Bank Tanzania,	Commercial Banks	8
12	Letshego Bank Tanzania,	Commercial Banks	5
13	Akiba Commercial Bank ,	Commercial Banks	7
14	Bank of Africa Tanzania Limited,	Commercial Banks	11
15	Bank of Baroda Tanzania Limited,	Commercial Banks	10
16	Ecobank,	Commercial Banks	10
17	First National Bank of Tanzania ,	Commercial Banks	12
18	Habib African Bank,	Commercial Banks	10
19	NBC Bank ,	Commercial Banks	10
20	NCBA Bank Tanzania ,	Commercial Banks	12
21	Stanbic Bank Tanzania Limited,	Commercial Banks	13
22	Standard Chartered Bank	Commercial Banks	13
23	Credit info Tanzania	Credit Information Bureau	15
24	Dun & Bradstreet Credit Bureau Tanzania	Credit Information Bureau	11
25	Bank of Tanzania (BOT)		30

Source: Researcher, 2021.

2.2 Sample Size and Sampling Technique

A sample of 105 employees in total was drawn from the population of 330 Employees from 22 Commercial banks' branches and 2 credit information bureaus. Since the type of study was quantitative, the study involved more than one institution, and then individuals had equal and independent chances of being selected as members of the sample. In addition to that, the study used the purposive sampling in drawing the needed individual believed to be reliable for the study as indicated in table 3.1 below.

Purposive sampling's power rests in its ability to identify examples with a lot of information for in-depth study linked to the core issues being investigated (Kombo and Tromp, 2006). Also, the study sampled workers from credit reference bureaus using random sampling, as shown in table 3.2 below.

Table 3. 2 Sample Size Selected from the Targeted Population

SN	Details	Frequency				
		Branch Managers	Loan officers	Recovery Officers	Supervisors	Total
1	Amana Bank	1	6	2	-	9
2	Azania Bank	1	6	2	-	9
3	CRDB Bank,	1	10	2	-	13
4	Diamond Trust Bank	1	6	2	-	9
5	Equity Bank (Tanzania),	1	8	2	-	11
6	Exim Bank (Tanzania),	1	6	2	-	9
7	KCB Bank Tanzania	1	6	2	-	9
8	Mkombozi Commercial Bank	1	6	2	-	9
9	National Microfinance Bank,	1	10	2	-	13
10	TPB Bank Plc,	1	6	2	-	9
11	Credit info Tanzania		-	-	1	1
12	Dun & Bradstreet Credit Bureau Tanzania		-	-	1	1
13	Bank of Tanzania (BOT)		-		1	1
	Total	10	70	20	3	105

Source: Researcher, 2021

2.3 Sampling Techniques

The study employed a multi-stage sample technique to determine the sample size and the number of employees required in each bank. Then the individuals required for each bank were purposively determined and for Credit information Bureau were randomly sampled. Purposive sampling was also be used by the study to select the individuals who were thought to be trustworthy for the study. Purposive sampling's strength rests in its ability to identify examples with a lot of information for in-depth study linked to the core issues being investigated (Kombo & Tromp, 2015). The study used staff from credit reference bureaus and other departments of commercial banks for sampling.

III. DATA FINDINGS AND DISCUSSION

To achieve the above objectives, the study used SPSS v20 to compute frequency, run factor, correlation and regression analysis on a sample of 105 respondents from different commercial Banks in Mwanza. The questionnaire was used for data collection and 97 questionnaires were returned, thus the response rate was 92.4 per cent (97/105*100). The chapter organization starts with an introduction, followed by demographic information and

finally data are organized according to research specific objectives.

3.2.1 Respondent gender

The sample had 62.6 per cent male and 37.4 per cent female (table 4.1). Therefore, gender, in this case, might have not adversely influenced the study results since male and female respondents responded to the questionnaires.

Table 3. 1 Respondent Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	62	62.6	62.6	62.6
	Female	37	37.4	37.4	100.0
	Total	99	100.0	100.0	

Source, *Research data, 2021*

3.2.2 Respondent Age

Age groups have specific needs, different norms, attitudes and perceptions. Thus consideration of the age factor in sampling was important in this study. The majority (62.5%) were 31 – 40 years age group (refer to table 4.2).

This middle age group is expected to be actively involved in different production activities particularly financial investment. The age group of 41 – 50 years and that of 20 – 30 years were 25% and 12% respectively.

Table 3. 2 Respondent Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 - 30 Years	12	12.1	12.1	12.1
	31 - 40 Years	62	62.6	62.6	74.7
	41 - 50 Years	25	25.3	25.3	100.0
	Total	99	100.0	100.0	

Source, *Research data, 2021*

3.2.3 Respondent Education

Education is the source of skills, competencies, and guidance of human action. It is expected that an educated person is empowered to confront technical aspects of life beforehand. The study sample had more (73.7%) graduates than diploma (13.1%) and Masters (13.1%) (refer to table 4.3). Financial institutions in this case commercial banks human resource recruitment require more bachelor degree holders than any other education level probably on the ground of skills required to perform different tasks of the institutions.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma	13	13.1	13.1	13.1
	Bachelor Degree	73	73.7	73.7	86.9
	Masters	13	13.1	13.1	100.0
	Total	99	100.0	100.0	

Source, *Research data, 2021*

3.2.4 Respondent Work Experience

The study sampled 75.7% of the respondent with 6 – 10 years and above 10 years (refer to table 4.4). The work experience indicates the workers' exposure to the arithmetic's of the institution tasks, challenges and sometimes cycles of the business industry his institution is operating. For this study, experience in loans and exposure to credit information sharing from credit information bureau was paramount.

Table 3. 3 Work Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 - 5 Years	24	24.2	24.2	24.2
	6 - 10 Years	63	63.6	63.6	87.9
	Over 10 Years	12	12.1	12.1	100.0
	Total	99	100.0	100.0	

Source, *Research data, 2021*

IV.   RESULTS AND DISCUSSIONS

Second, correlation analysis was conducted to establish whether there were any association between the independent constructs variables with the dependent variable. Finally a regression analysis using the entry technique was performed to determine the impact of credit reference bureau data sharing, the impact of the credit score appraisal method utilized, on commercial bank credit performance.

The measures of principal component analysis were determined (table 4.5) to enable use of individual variables in the correlation and regression analysis. For variable selection purpose, a cut-off point of 0.7 loadings was used as a threshold measure to retain a variable for further analyses.   After rotation, the variable "CRB reduce information asymmetry between banks" measuring information sharing was dropped. Also the variables

"Credit reporting system in my commercial bank is strong" measuring appraisal method was dropped. Therefore, these variables were not used for regression analysis. The total variance explained in each construct were well above the cut-off point of 50% (Table 4.5). The KMO values were also above 0.5 for appraisal methods and non-performing loans and had patterned variables (Bartlett's Test of Sphericity. $p = 0.000$) meaning that sampling was sufficient for exploratory factor analysis. Measures of sampling adequacy were also proved by the diagonal correlation values of the Anti-image correlation which were above 0.5. The final measure was the determinant which was greater than 0.00001 for all three constructs implying absence or tolerable collinearity.

Therefore, following the measures of principal component analysis the selection of variables with highest loading for regression analysis was made.

Table 4. 4 Measures of Principal Component Analysis

Measure type	Information sharing	Appraisal methods	Non-performing loans
Average loading (retained variables)	0.733	0.74	0.75
Determinant	0.827	0.189	0. 131
Kaiser-Meyer-Olkin	0.423	0.695	0.749
Bartlett's Test of Sphericity	$p = 0.257$	$p = 0 .000$	$p = .000$
Total Variance Explained	59.901%	56.287%	66.833%
Anti – image correlation	> 0.5	> 0.5	> 0.5

Source, *Research data, 2021*

4.1 Reliability Tests

After the Principal Component Analyses, each construct was subjected to reliability tests to ensure that it was internally consistent. The reliability test results (Table 4.6) revealed that measures of non-performing loans had internal consistency above the cut off of 0.7 which indicated "satisfactory" to produce reliable and valid

results. All constructs, CRB's information sharing, nonperforming loans and credit scoring methods produced satisfactory Cronbach's alpha (α) coefficient of .740, .776 and .772 respectively. Given the measures of principal component analysis of same constructs, the study considered them sufficient for regression analysis.

Table 4. 5 Reliability Tests - Cronbach's Alpha Coefficients

Variable	No. of items in the final instrument	Cronbach's alpha coefficient
CRB's information sharing	6	.740
Credit scoring appraisal methods	7	.772
Non-performing loans	8	.761

Source, *Research data, 2021*

4.2 The effects of CRBs' information sharing on the credit performance

Ndungo, Tobias and Florence (2016) asserts that sharing information about client credit behaviour amongst financial organizations has a favourable economic impact. In view of this argument this study intended to establish the effect of CRBs' information sharing on credit performance of commercial banks in Mwanza. The correlation analysis results revealed that the variable "CRB reduce information asymmetry between banks" had a low, positive and significant correlation ($r = 0.265, p < 0.01$) with the variable "CRB reduces credit risk to acceptable levels" and had a high, positive and significant correlation ($r = 0.495, p < 0.01$) with the variable "Use of CRB reduce the borrowing cost by fostering competition". These correlations revealed that reduction of information asymmetry is to a low extent accompanied by reduction in credit risk to acceptable levels and that use of the reduction of borrowing cost due to use of CRB is highly accompanied by reduction of credit risk (table 4.). Therefore, use of credit information bureau was accompanied by reduction of credit risk, and thus improved credit

Performance of commercial banks in Mwanza region.

Table 4. 6 Bivariate Correlations between CRB information

		CRB reduces credit risk to acceptable levels
CRB reduce information asymmetry between banks	Pearson Correlation	**.265**[**]
	Sig. (2-tailed)	.008
	N	99
CRB Increases the Number of repeat customers	Pearson Correlation	-.091
	Sig. (2-tailed)	.371
	N	99
Use of CRB reduce the borrowing cost by fostering competition	Pearson Correlation	**.495**[**]
	Sig. (2-tailed)	.000
	N	99
Credit information sharing from CRB rewards and promotes good credit track record	Pearson Correlation	.194
	Sig. (2-tailed)	.054
	N	99
Loan accessibility is affected by credit information sharing	Pearson Correlation	.093
	Sig. (2-tailed)	.357
	N	99
Credit report predict default risk of potential borrowers	Pearson Correlation	-.037
	Sig. (2-tailed)	.720
	N	99

**. Correlation is significant at the 0.01 level (2-tailed).	
*. Correlation is significant at the 0.05 level (2-tailed).	

In order to ensure cause - effect relationship, the regression analysis was conducted. The regression output through enter method revealed that CRB information sharing has a positive, strong (0.518) effect on credit performance of commercial banks, and this effect is significant at t (3, 95) = 6.110, $p < 0.05$) (Table 4.9). The findings are similar to Muthoni (2014) findings who conducted a study to determine the relationship between credit information sharing and loan defaulting in commercial banks. The study showed that credit information sharing significantly minimizes default rates in banks, thus improving profitability. Similar results were obtained by the study of Koros (2015) on the impact of a credit reference bureau on the credit market performance among commercial banks in Kenya, He established a positive relationship between credit information referencing and credit performance in banks.

Jagongo and Kerage (2015) researched credit information sharing and commercial bank performance in Kenya. The research uncovered a number of important observations; credit information sharing enhances commercial banks' performance in Kenya, information sharing is linked to the scope of loan markets, There is a positive correlation between credit information sharing and banking sector performance as banks share credit information about borrowers, their relative performance improves. Therefore, Mwanza region commercial banks performance have been significantly impacted by credit information sharing through credit information bureaus.

4.3 The effects of the credit scoring appraisal method on the credit performance

Mburu (2016) states that credit scoring estimates at the time it is carrying out the request, what will be the behaviour of credit to maturity. However, this predictive model did not come up without criticism or rather mixed perception as of its suitability to the purpose it was created for. From this ground the study intended to establish effect whatsoever the appraisal method has on credit performance of commercial banks. The study date was tested for correlation of the appraisal method and credit performance of commercial banks. The correlation output revealed that the variable "CRB reduces over reliance on collateral for loan appraisal" had a medium, positive and significant correlation ($r = 0.412$, $p < 0.01$) with the variable "CRB reduces credit risk to acceptable levels" and that the variable "CRB influences use of historical trends in lending and repayment" had a low, negative, and significant correlation ($r = 0.243$, $p < 0.05$) with "CRB reduces credit risk to acceptable levels". These correlations revealed that decrease of over reliance on collateral for loan appraisal due to use of CRB was accompanied with reduction in credit risk. Also the results revealed that use of historical trends in lending and borrowing as influenced by CRB was accompanied with increase in credit risk. This however is abnormal observation where the appraisal method aspects are negatively related to credit performance.

Table 4. 7 Bivariate Correlations between Scoring Method and credit performance

		CRB reduces credit risk to acceptable levels
CRB reduces over reliance on collateral for loan appraisal	Pearson Correlation	**.412****
	Sig. (2-tailed)	.000
	N	99
CRB emphasises cash flow and liquidity	Pearson Correlation	.010
	Sig. (2-tailed)	.918
	N	99
Credit reporting system in my commercial bank is strong	Pearson Correlation	-.172
	Sig. (2-tailed)	.089
	N	99
Bank has asymmetric information between borrowers and lenders	Pearson Correlation	.003
	Sig. (2-tailed)	.976
	N	99

CRB emphasises cash flow and liquidity as a method of appraisal	Pearson Correlation	-.188
	Sig. (2-tailed)	.062
	N	99
CRB encourages use of credit rating for appraisal	Pearson Correlation	-.100
	Sig. (2-tailed)	.322
	N	99
CRB influences use of historical trends in lending and repayment	Pearson Correlation	**-.243**[*]
	Sig. (2-tailed)	.015
	N	99

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

*. Correlation is significant at the 0.05 level (2-tailed).

The regression output through enter method revealed that credit scoring appraisal method has a positive, weak (0.233) effect on credit performance of commercial banks. This effect is significant at $t (3, 95) = 2.844$, $p < 0.05$ (Table 4.9). The study findings are similar to the findings of the study by Chido Makomeke *et al* (2016) who observed a direct relationship between credit appraisal methods with asset quality. The results are also similar to study of Njeru *et al* (2019) which aimed at assessing the effectiveness of credit appraisal on loan performance in commercial banks in Kenya and revealed that lending placed much reliance on use of past information and thus credit referencing and credit history were applied more in credit appraisal. Ndyagyenda (2020) studded the relationship between credit risk management and financial performance of Bank of Africa (U) Ltd in Uganda and She found out that strong credit appraisal puts the milestones for an effective management of credit risk and gives the firms a competitive advantage in the market place, and She concluded that credit appraisal defines a bank's survival and profitability. Therefore, for Mwanza commercial banks Credit scoring significantly predicts to some extent, during loan application stage, of the credit behaviour up to maturity, taking into account the customer's risk, using a predictive model that evaluates payment behaviour using a score that assesses the risk of a borrower or that of the operation (Mburu, 2016). Taking this important role credit scoring systems will rectify the unfairness that would arise if only accepted applications were considered rather than all applicants. The results of this study also confirms the advantage of credit scoring where the same data can be analysed times and again. Furthermore, Yang (2015) adds that credit scoring systems may use the same data to assess and weight the same way even by a different credit analysts, which is a different scenario when judgemental approaches are used.

A multiple linear regression was fitted to explain credit performance of commercial banks in Mwanza based CRBs' information sharing, and Credit score appraisal methods. The overall model explains 30.7% (r^2) and 28.6% (adjusted r^2) variation of credit performance of commercial banks in Mwanza (Table 4.7), and it is significantly useful in explaining credit performance of commercial banks in Mwanza, $F (3, 95) = 14.060$, $p < .05$ (table 4.8).

Table 4. 8 Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | | Durbin-Watson |
					R Square Change	F Change	df1	df2	Sig. F Change		
1	.555[a]	.307	.286	.932	.307	14.060	3	95	.000		2.221

Source, *Research data, 2021*

Table 4. 9 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	36.624	3	12.208	14.060	.000[b]
1	Residual	82.487	95	.868		
	Total	119.111	98			

Source, *Research data, 2021*

This model means that more use of CRBs' information sharing, is likely to impact positively credit performance of a commercial bank by 0.518 factor, this factor was found to be a significant change, $t(3, 95) = 6.110$, $p < .05$ (table 4.9). Secondly, the model show that with more use of credit appraisal methods will improve credit performance significantly, positively and weakly by a factor of 0.233. this impact is significant impact at $t(3,95) = 2.844$, $p < 0.05$(table 4.9).

Table 4. 10 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
	(Constant)	2.013	.465		4.327	.000	1.089	2.936
1	Method of appraisal	.233	.082	.245	2.844	.005	.395	.070
	Credit Information sharing	.518	.085	.529	6.110	.000	.349	.686

a. Dependent Variable: Non-performing loans

Source, *Research data, 2021*

Therefore, the regression model that was fitted to explain the credit performance of commercial banks is given below;

Credit performance = 2.013 + 0.518 (**CRBs' Information Sharing**) + 0.233 (**Appraisal Method**) + 82.487

According to the regression model, the quantity of credit reports drawn by banks owing to the availability of CRBs had a favourable and substantial impact on bank performance. Drawing records from credit reporting bureaus is a strategy done by banks to reduce credit risk. According to the model, banks would become more lucrative if they used credit reports more frequently, which would be aided by credit information sharing Shisia *et al* (2014) who discovered that information sharing has a substantial impact on the actions taken by banks to manage credit risk, such as credit application screening, borrowers' monitoring, and credit risk evading.

V.   CONCLUSIONS & RECOMMENDATIONS

The study established results for two objectives. The findings were arranged considering the impact of CRBs' information sharing and credit scoring evaluation techniques on commercial banks' credit performance in Mwanza. According to the study, we found a significant, strong, and favourable relationship between CRB information sharing and commercial bank credit performance in Mwanza. Second, the study's findings demonstrated that credit score appraisal methodologies had a positive, significant, and modest effect on commercial banks' credit performance in Mwanza.

5.1 Conclusion

The first objective assessed the effect of credit reference bureau's exchanging information and the commercial banks' performance. The results show that the effect on credit reference bureau's information sharing is a strong positive effect which means that CRB's information sharing has strongly improved the commercial banks' credit performance in Mwanza.

The second objective assessed the influence of credit scoring appraisal methods employed on commercial bank's performance in Mwanza, the results showed that there is a weak and positive effect between credits scoring appraisal methods employed on the performance of commercial banks in Mwanza. This suggest that although use of appraisal methods may encounter various challenges and thus fail to provide results expected by the banks, it is important to evaluate the customer prior to a loan issue, and this can significantly help the bank improve credit performance to a certain extent.

Overall, the study concludes that sharing credit reference bureau information and credit appraisal methods helps to reducing default loans and so enhances commercial bank credit performance.

The study shows that credit reference bureau services and credit appraisal methods help banks improve profitability by lowering the frequency of non-performing loans. Transaction costs, competitive information sharing, loan loss and delinquency, and credit evaluation methods that are increased when credit reference bureau services are employed make this feasible.

5.2 Recommendations

Regarding the study's findings, the researcher commends banking institutions to continue utilizing the credit reference bureau's information exchange services as it enhances their profitability through the reduction of non-performing loans. To improve credit information sharing, both financial and non-financial entities should be permitted access to borrowers' credit reports at a low or no cost. This would be assisted by creating an environment that promotes more competitive information sharing. The bank of Tanzania (BoT) should oversee credit reference bureaus to ensure that they provide up to date information on borrowers' histories, which would improve their effectiveness and, in turn, minimize information asymmetry, resulting in less adverse selection. The researcher ran into time constraints because the study was completed in such a short time, a longer time frame would have been preferable because it would have allowed the researcher to collect data from more target institutions. The researcher also advises using panel data with cross-sectional analysis to examine variability across time using panel regression method.

5.2.1 Managerial recommendations

At present, The Bank of Tanzania (BoT) licenses and regulates credit reference bureaus (CRBs). Credit information provided by banks with these entities is private and secret, and it cannot be shared without the owner's permission. CRBs should have strict processes in place to guarantee that this is followed at all times in order to retain their confidentiality.

5.3.2 Policy recommendations

Commercial banks and microfinance institutions should be required to communicate all filed information by the Bank of Tanzania (BoT). In order to reduce information asymmetry in the Tanzania credit market, this study recommends that other institutions offering other types of credit, such as village community banks, share information with Credit Reference Bureaus in order to enrich the database and provide a complete overview of borrowing entities.

To improve credit information sharing, both financial and non-financial entities should be permitted access to borrowers' credit histories at a low or no cost. This would be assisted by creating an environment that fosters more competitive information sharing. The bank of Tanzania should oversee credit reference bureaus to ensure that they provide up-to-date information on borrowers' histories, which would improve their efficacy and, in turn, minimize information asymmetry, resulting in less adverse selection.

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