



Effect of internal governance mechanisms on credit risk in Cameroonian banks: results of the quantitative survey

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Abstract: The literature on banking governance highlights credit risk as one of the main causes of bank failure. The objective of this article is to measure the effect of internal governance mechanisms on the credit risk of Cameroonian banks. Through a quantitative approach applied to all banks operating in Cameroon in 2023 and using a questionnaire to collect data, the article aims to shed new light on the issue of credit risk from the perspective of banking governance theory, by answering the following question: What is the influence of internal governance mechanisms on the credit risk of Cameroonian banks? The results reveal that internal governance mechanisms exert a significant influence on credit risk in Cameroonian banks and that they depend largely on local specificities. This study provides relevant insight to monetary authorities on the consideration of sociological and anthropological aspects in the control of credit risk in banks in a developing country.

Keywords: Mechanisms, Credit risk, Banking, Cameroon.

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1 Introduction

Risk management has been the subject of extensive research in recent years, highlighting the wide range of banking risks, which can be classified into four categories: financial risks, operational risks, business risks, and contingent risks (Greuning & Bratanovic, 2004). Credit risk, which is a type of financial risk, is considered the primary risk faced by a bank (Caprio and al., 1998). It refers to the borrower's inability to pay the interest due or to repay the principal according to the terms specified in the loan agreement (Greuning & Bratanovic, 2004). It manifests itself in the volume of non-performing loans or doubtful receivables (Godlewski, 2005). However, this credit relationship between the bank and the borrower is characterized by information asymmetry, contractual incompleteness, and stakeholder opportunism (Idrissi & Rhajbal, 2024).

Significant advances in our understanding of banking crises over the past few decades have been made through various research studies. These studies were driven by the considerable costs that banking crises impose on various economic actors. This research concludes that failing banks are those that have accumulated non-performing loans and that credit risk is the primary cause of bank failure, as it negatively affects their profitability and competitiveness and leads them into financial distress (Vazquez and al., 2012).

The Basel Committee on Banking Supervision, in its 2010 report, attributes bank failures primarily to risk management, internal controls, opaque banking structures, and a lack of transparency. On the other hand, the European Banking Authority (EBA) maintains that weak governance mechanisms, particularly insufficient oversight of management, are among the underlying causes of the financial crisis. These findings align with those of the European Commission, which argues that banks' excessive risks were caused by ineffective control mechanisms. This situation has necessitated banking reforms focused on the need for an appropriate risk governance structure capable of facilitating the identification, measurement, monitoring, and control of risks, to ensure they are managed effectively. Thus, the problem

Although Laouane and Torra (2024), suggest the existence of several internal and external governance mechanisms capable of mitigating credit risk in banks, many studies yield mixed results regarding the effectiveness of these mechanisms in managing credit risk, especially since their effectiveness varies depending on the study context (Adjibade, 2022).

Thus, while Derbel and Boujelbene (2019), argue that internal governance mechanisms-specifically ownership structure and the board of directors-play a significant role in bank governance and risk mitigation, as they align the interests of management with those of bank shareholders; the work of Johnstone, Li and Rupley (2011) emphasizes internal governance mechanisms such as the board of directors, internal audit, and external audit as key determinants in preventing and correcting risks in banks.

On the other hand, Couppey-Soubeyran (2009), argues that various bank governance mechanisms revealed failures and did not prevent the 2007–2008 crisis. Furthermore, the study conducted by Deh (2023), on banks in the West African Economic and Monetary Union shows volatility and a dichotomy in the influence of certain variables of internal governance mechanisms on the performance of these banks and credit risk coverage.

To this end, we have adopted a quantitative methodological approach. We will use data collected via a questionnaire administered to bank credit officers. This study is structured around three main sections. We will present the theoretical framework of our study in order to formulate our hypotheses. We will then highlight the methodological elements of the empirical research and, finally, present the results.

2 Theoretical Framework and Research Hypotheses

2.1 Definition of the Concepts of Governance Mechanisms and Credit Risk

Bank credit risk refers to the possibility of financial losses that a bank may incur in the course of its activities. These losses may stem from various uncertainties, such as borrowers' failure to repay loans, fluctuations in interest or exchange rates, or errors in operations. According to Heem (2000), credit risk is the probable loss incurred by the bank in the event of the borrower's failure to repay the loan. Internal mechanisms encompass

all internal means (rules, processes, and structures) through which a banking organization can be managed and controlled.

Bank governance refers to the set of mechanisms that enable the management and control of a bank, in order to ensure its stability and compliance with laws and regulations. It encompasses decision-making processes, resource management.

2.2 Links Between Internal Governance Mechanisms and Bank Credit Risk

Banks are complex hubs of agency problems and conflicts of interest that interact and influence risk-taking (Boussaada & Labaronne, 2015). Empirical studies examining the link between internal governance mechanisms and bank risk address this issue from the perspective of either ownership concentration (Haw and al., 2010) or board characteristics (Pathan, 2009).

Regarding risk-taking and performance in relation to internal governance mechanisms, Jensen (1993), asserts that the optimal size of a board of directors for effective operation should be seven or eight members. Andres and Vallelado (2008), on the other hand, argue that the optimal size for an effective board of directors should be nineteen (19) members and that beyond this threshold, the board is no longer effective as a governance mechanism. Booth, Cornett and Tehranian (2002), conclude that compared to non-financial firms, the average size of a bank's board of directors should be sixteen (16) members. Greuning and Bratanovic (2004), demonstrate that ultimate responsibility for risk management within banks lies with the board of directors. However, a study conducted by Hashagen, Harman and Conover (2009), reports that poor risk governance and a lack of risk management expertise at the board level are the main determinants of recent crises. Similarly, the findings of Boussaada (2012), reveal that internal governance mechanisms have not, to date, fulfilled their role of overseeing and ensuring the sound management of Tunisian banks; on the contrary, they have contributed to imprudent credit risk management.

However, it seems to us that an analysis of banks' credit risk is incomplete if it does not take into account the specific characteristics of the context under study. Exploratory studies conducted by Fotso and al., (2024), identified ten (10) governance mechanisms that contribute to credit risk in Cameroonian banks: concentration of ownership, know-your-customer (KYC) practices, shared credit responsibility, regular credit committee meetings, the dual-signature principle, internal control mechanisms, executive shareholding, credit insurance, credit limits by industry sector, and the digitization of credit procedures. Internal control mechanisms thus constitute the system par excellence dedicated to protecting shareholders' interests and, consequently, to maximizing value.

Indeed, certain characteristics-namely opacity and regulation-limit the effectiveness of external governance mechanisms and sometimes render them ineffective (Adams & Mehran, 2005), thereby assigning a predominant role to internal mechanisms. Lobe (2010) and Salas and Saurina (2003), further argue that the control of risks faced by banks, particularly credit risk, falls to internal governance mechanisms. However, the few studies examining the link between internal governance mechanisms and banks' credit risk remain controversial. Furthermore, they have focused on American, European, and Asian banks (Haw and al., 2010; Pathan & Skully, 2010). In our study, we aim to enrich the debate by examining the Cameroonian banking sector. To this end, we propose the following hypothesis:

Hypothesis 1: Internal governance mechanisms have a positive influence on credit risk in Cameroonian banks.

According to Fama (1980); there is a hierarchy of governance mechanisms, the most effective of which are:

- Financial markets;
- The labor market;
- The board of directors;
- Financial incentives;
- Peer oversight.

On the other hand, Anderson and Campbell (2004), argue that internal governance mechanisms-particularly ownership structure and the board of directors-play a primary role in managing banks' credit risk. Fotso and al., (2024), however, argue that the executive's labor market and executive compensation have no influence on

banks' credit risk in the Cameroonian context. Furthermore, agency theory suggests that a compromise or a certain combination of oversight mechanisms helps align the interests of both parties in an agency relationship. Furthermore, according to Barabel and al., (2013), for the structural contingency school, the environment or certain contingency variables constrain organizations in their choices and require them to take adaptive measures or risk extinction. Based on the foregoing, we formulate the following hypothesis:

Hypothesis 2: The extent to which internal governance mechanisms influence credit risk in Cameroonian banks varies depending on the specific mechanism.

3 Study Methodology and Demographic Characteristics of the Surveyed Units

3.1 Methodological Approach

Our approach is quantitative and aims to measure the effect of internal governance mechanisms on banks' credit risk. However, contrary to standard practice, the approach is positivist. The goal is to confirm and measure the influence of banks' internal governance mechanisms on their credit risk. The aim is to develop a risk model that approximates the social reality or lived experience within Cameroonian banks.

To test our research hypotheses, we conducted a survey of certain executives at Cameroonian banks. The questionnaire served as our data collection tool. The aim was to gather respondents' opinions on the ability of internal governance mechanisms to reduce banks' credit risk. Our sample consists of the eighteen (18) banks operating in Cameroon in 2023. We adopted convenience sampling due to its ease and objectivity.

The internal governance mechanisms studied were based on the previous exploratory research by Fotso and al. (2024). This variable was measured through specific questions on a 5-point Likert scale ranging from 1 "Strongly Disagree" to 5 "Strongly Agree." These questions reflect the role that banks' internal governance mechanisms play in covering banks' credit risk. The items were derived from a combination of the results of the literature review and secondary data from the responses of participants in the exploratory survey by Fotso and al., (2024).

The measurement instruments were developed using exploratory and confirmatory factor analysis with SPSS V.20 and AMOS V.23 software. More specifically, SPSS V.20 enabled us to conduct exploratory factor analysis to identify the strongest relationships among the study variables, while AMOS V.23 allowed us to confirm the data corresponding to our measurement model.

3.2 Characteristics of the Banks and Respondents

Table 1 on page 4 lists the names of banks operating in Cameroon in 2023, as well as the number of respondents for each surveyed bank.

Table 1: Names of banks and frequency of respondents.

Bank names	Absolute frequencies	Relative frequencies
ACCESS BANK	13	4,6
AFRILAND F. BANK	21	7,4
BANGE BANK	17	6
BANQUE ATLANTIQUE	24	8,5
BC PME	2	0,7
BGFI	22	7,8
BICEC	17	6
CBC BANK	21	7,4
CCA	16	5,7
CITIBANK	3	1,1
ECOBANK	25	8,8
LA REGIONALE BANK	22	7,8
NFC BANK	19	6,7
SCB	9	3,2
SGC	13	4,6
STANDARD CHARTERED BANK	2	0,7
UBA	19	6,7
UBC	18	6,4
Total	283	100

Source: Quantitative survey

With the exception of BC-PME and Citibank, which together account for less than 2% of respondents, the percentages for the other banks range from 4% to 9%.

3.3 Characteristics of the interviewees

In terms of their roles, the most common positions, in order of prevalence, are: credit managers (39.9%), client managers (31.1%), branch managers (11%), internal auditors (5.3%), operations managers and collection officers (2.8% each), and finally other positions such as ambassadors, international operations officers, fund managers, portfolio managers, clearing managers, and customer knowledge managers, each accounting for less than 2% (Table 2, page 5).

Table 2: Characteristics of the bank employees interviewed

Roles of respondents	Absolute frequencies	Relative frequencies
INTERNAL AUDITOR	15	5,3
BRANCH AMBASSADOR	1	0,4
COLLECTION OFFICER	8	2,8
INTERNATIONAL OPERATIONS OFFICER	1	0,4
HEAD OF OPERATIONS	8	2,8
INTERNATIONAL CONTROL	3	1,1
BRANCH MANAGER	31	11
CLIENT MANAGER	88	31,1
CREDIT MANAGER	113	39,9
FUND MANAGER	4	1,4
PORTFOLIO MANAGER	2	0,7
SETTLEMENT OPERATIONS	2	0,7
RECONCILIATION OFFICER	1	0,4
KYC MANAGER	2	0,7
QUALITY MANAGER	4	1,4
Total	283	100

Source: Our survey

4 Results and Discussion

4.1 Results:

The conceptual research model encompasses the constructs of governance and credit risk. These constructs consist of several dimensions that are assessed by the bank executives we surveyed. However, the questionnaire, as a data collection tool in this study, is primarily used for qualitative purposes, emphasizing the assessment of various salient categories on an ordinal scale, selected following an analysis of the respondents' accounts of their experiences regarding the reduction of bank credit risk.

Table 3: The assessment of various salient categories on an ordinal scale

The salient categories	Answers					
	Absolute Frequencies			Relatives Frequencies		
	NON	OUI	Total	NON	OUI	Total
Assessment of the "Know Your Customer" indicator	220	63	283	77,7	22,3	100,0
Assessment of the "Credit Ceiling by Sector" Measurement Indicator	242	41	283	85,5	14,5	100,0
Assessment of the "Shared Credit Responsibility" Measurement Indicator	216	67	283	76,3	23,7	100,0
Performance indicator: "Regular holding of credit meetings"	196	87	283	69,3	30,7	100,0
Performance Indicator: "Internal Control Mechanisms"	174	109	283	61,5	38,5	100,0
Performance Indicator: "Principle of Dual Signing of Documents"	158	125	283	55,8	44,2	100,0
Credit Insurance" Performance Indicator	237	46	283	83,7	16,3	100,0
Performance indicator "Digitization of credit procedures"	194	89	283	68,6	31,4	100,0

Source: Quantitative survey

4.1.1 Assessment of the scope of internal governance mechanisms

Firstly, Assessment of the scope of internal governance mechanisms include three (3) categories divided among eight (8) measurement indicators. Since the questionnaire items were phrased in the negative, "Strongly disagree = NO" corresponds to agreement in the affirmative, and "Strongly agree = YES" corresponds to disagreement in the negative.

The “Internal Credit Management” category comprises four (4) indicators, namely: customer knowledge, credit limits by industry sector, shared responsibility for credit decisions, and regular credit committee meetings.

- Assessment of the “Know Your Customer” indicator

Respondents were asked the following question: “Know Your Customer increases credit risk in the bank.” The results are presented in Table 3 on page 5.

77.7% of respondents disagree with this statement, while 22.3% agree. Therefore, Know Your Customer (KYC) practices help reduce credit risk in Cameroonian banks.

- Assessment of the measurement indicator “Credit limits by industry sector”

Respondents’ opinions address the following question: “Credit limits by industry sector increase banks’ credit risk”. The table 3 on page 5, shows that 85.5% of respondents disagree with this statement, while 14.5% agree. Thus, for the majority of respondents, capping credit by industry sector helps reduce the credit risk of Cameroonian banks.

- Assessment of the indicator “Shared Responsibility for Credit Decisions”

Respondents were asked the following question: “Shared responsibility for credit decisions increases banks’ credit risk”. The results obtained attest to the fact that, majority of respondents, shared responsibility for credit decisions helps reduce the credit risk of Cameroonian banks (76.6% of respondents reject this statement and 23.7% of respondents agree with it) (see Table 3, page 5).

- Assessment of the performance indicator “Regular holding of credit meetings”

Respondents were asked the following question: “Does the regular holding of credit meetings increase banks’ credit risk?”. The table page 5, shows that 69.3% of respondents reject this proposal, compared with 30.7% who approve it. In conclusion, for the majority of respondents, holding regular credit meetings helps reduce the credit risk of Cameroonian banks.

Also, the “Credit Control” category includes two (2) indicators: internal control mechanisms and the dual-signature requirement for documents.

- Assessment of the “internal control mechanisms” indicator

Respondents’ opinions address the following question: “Do internal control mechanisms increase banks’ credit risk?”. For the majority of respondents, internal control systems serve as a mechanism for reducing credit risk at Cameroonian banks (61.5% of respondents disagree with this statement, compared to 38.5%).

- Assessment of the measurement indicator “Principle of dual signature for documents”

Respondents’ opinions address the following question: “The principle of dual signature for documents increases banks’ credit risk”. The results show that, 55.8% of respondents reject this proposal, compared to 44.2% who approve it. For the majority of respondents, the principle of dual signature for documents in banks is a factor in reducing credit risk in Cameroonian banks.

Finally, the “Credit Insurance and Digitalization” category includes two (2) indicators: the digitalization of control procedures and borrower insurance.

- Assessment of the “Credit Insurance” indicator

Respondents’ opinions address the following question: “Borrower insurance increases banks’ credit risk”. 83.7% of respondents reject this proposal, compared with 16.3% who approve it. In conclusion, for the majority of respondents, the borrower’s insurance is a powerful mechanism for reducing credit risk in Cameroonian banks.

- Assessment of the performance indicator “Digitization of credit procedures”

Respondents’ opinions address the following question: “Does the digitization of procedures increase banks’ credit risk?”. The frequency table show that, for the majority of respondents, the digitization of credit procedures is a factor in reducing credit risk in Cameroonian banks (68.6% disagree, compared to 31.4% who agree).

4.1.2 Presentation of Results from Factor Analyses

Below, we present the results from the exploratory and confirmatory factor analysis of all measurement instruments, as well as the tests regarding validity and reliability. Items with correlation coefficients below 0.5 in each of the exploratory factor analyses were removed to improve the reliability of the results.

Bourque and al., (2019), note that an item is considered significant when its factor loading is greater than 0.5. The scale of internal mechanisms to be subjected to factor analysis includes: customer knowledge, shared responsibility for credit decisions, credit limits by industry sector, regular credit meetings, internal control mechanisms, dual signature of documents, digitization of credit procedures, and credit insurance.

For the exploratory factor analysis, we employ principal component analysis here due to the multivariate nature of the data, whose relationships are explored simultaneously. However, it would be advisable to test the stability of the factor structure using the correlation matrix, which reveals a lack of correlation among the factors in the factor structure that includes all items related to governance mechanisms. Thus, we perform principal component analysis using an orthogonal factor rotation (Varimax), which yields three (03) factors with eigenvalues greater than 1, accounting for 78% of the variance (Table 4, page 7).

Table 4: Results of the exploratory factor analysis of internal mechanisms.

Items	Factors			Quality of representation
	F1	F2	F3	Comm.
MECA_IN21	,862			,836
MECA_IN36	,855			,792
MECA_IN31	,854			,765
MECA_IN41	,721			,763
MECA_IN10		,939		,920
MECA_IN9		,929		,909
MECA_IN29			0,863	
MECA_IN4			0,795	
Explained variance (%)	34,89 %	22,83 %	20,68%	78,40%
Alpha de Cronbach	0,872	0,874	0,553	
KMO Index	0,742			
Bartlett's test statistic	0,000			

Source: Based on exploratory factor analysis

The factor structure identified in the literature is partially confirmed. The table below summarizes all the factors identified following the quantitative survey of bank employees.

Table 5: Summary of categories of internal governance mechanisms

	Category: INTERNAL CREDIT MANAGEMENT	
	Number of items: 04	Loadings
MECA_IN21	Knowing the customer increases credit risk	,862
MECA_IN31	Sharing responsibility for credit decisions increases credit risk	,854
MECA_IN36	Setting credit limits by industry increases credit risk	,855
MECA_EX41	Holding regular credit meetings increases the impact on credit risk	,721
	Category: CREDIT CHECK	
	Number of items: 02	Loadings
MECA_IN9	Internal control measures increase bank credit risk	,929
MECA_IN10	Requiring dual signatures on documents increases bank credit risk	,939
	Category: CREDIT INSURANCE	
	Number of items: 02	Loadings
MECA_IN4	The digitization of credit procedures increases credit risk	,795
MECA_IN29	Credit insurance increases credit risk	,863

Source: Based on the quantitative survey

Ultimately, the replication of the factor structure in a second sample proves to be stable. It results from an iterative process of item screening aimed at prioritizing the psychometric quality of the measurement instrument

over the breadth of the themes being assessed in the evaluation of internal governance mechanisms. After removing items with correlation coefficients below 0.5, the retained items undergo an internal validity test in which Cronbach's alpha is calculated to construct a measurement scale for the different categories of the mechanisms described above. The selected items are divided into three categories, for which we demonstrate the internal, convergent, and discriminant validities through confirmatory factor analysis (Churchill, 1979).

Confirmatory factor analysis provides the fit indices and indicator values necessary to assess the internal consistency and construct validity of the measurement scale. However, in accordance with the work of (Roussel, 2005), the size of our sample of 283 bank employees led us to use the Maximum Likelihood method. Following this analysis, no items were removed; see (Table 6, page 8).

Table 6: Summary results of the confirmatory factor analysis

	Category: INTERNAL CREDIT MANAGEMENT (GES_CRED)		
	Number of items: 04	Loadings	SMC
MECA_IN21	Knowing the customer increases credit risk	,846	,586
MECA_IN31	Sharing responsibility for credit decisions increases credit risk	,729	,532
MECA_IN36	Setting credit limits by industry increases credit risk	,856	,733
MECA_EX41	Holding regular credit meetings increases credit risk	,765	,716
	Category: CREDIT CONTROL (CON_CRED)		
	Number of items: 02	Loadings	
MECA_IN9	Internal control measures increase bank credit risk	1,034	1,069
MECA_IN10	Requiring dual signatures on documents increases bank credit risk	,535	,557
	Category: INSURANCE AND CREDIT DIGITIZATION (ASS_CR)		
	Number of items: 02	Loadings	
MECA_IN4	The digitization of credit procedures increases credit risk	,828	,686
MECA_IN29	Credit insurance increases credit risk	,535	,286

Source: Based on the quantitative survey

The λ values (from the original sample), calculated using the maximum likelihood method in AMOS, are significant for all items (> 0.5). This indicates that the scale fits the empirical data. Ultimately, confirmatory factor analysis reveals eight (08) items distributed across three (03) categories within the dimension of internal governance mechanisms. The fit of the scale to the empirical data indicates that the model for measuring banks' internal governance mechanisms in their quest to reduce credit risk is well-suited to the data.

The results of this analysis show that internal governance mechanisms have a positive influence on credit risk in Cameroonian banks. This result confirms our first hypothesis (H1).

An analysis of the various relative frequencies above confirms Hypothesis (H2) and the work of Fama (1980), on the prioritization of these mechanisms. There appears to be a prioritization of internal governance mechanisms as a means of hedging banks' credit risk, as follows: credit limits by industry sector (1), credit insurance (2), know-your-customer (3), shared credit responsibility (4), regular credit committee meetings (5), digitization of credit procedures (6), internal control mechanisms (7), and the dual-signature requirement (8).

4.2 Discussion

The main findings of our study highlight the agency theory, which posits that reducing conflicts of interest between the principal and the agent relies on internal incentives. However, executives adopt internal mechanisms in response to external constraints. These mechanisms help promote best practices in transparency and protect shareholders from excessive executive power. The optimal combination of internal and external mechanisms reduces agency costs by limiting managers' discretionary power and aligning their management practices with the pursuit of shareholders' interests. This finding confirms the work of (Greuning & Bratanovic, Op. cit.).

Although our study emphasizes the importance of internal governance mechanisms in the process of reducing credit risk, several studies show that the optimal combination of internal and external governance mechanisms helps reduce agency costs by limiting the managerial power (discretionary authority) of executives and aligning their management practices with the pursuit of shareholder interests. Despite its universality, the coverage of banking risks is a social phenomenon whose intricacies seem to adapt to contextual contingencies. From the foregoing, we arrive at the model below (Figure 1, page 9).

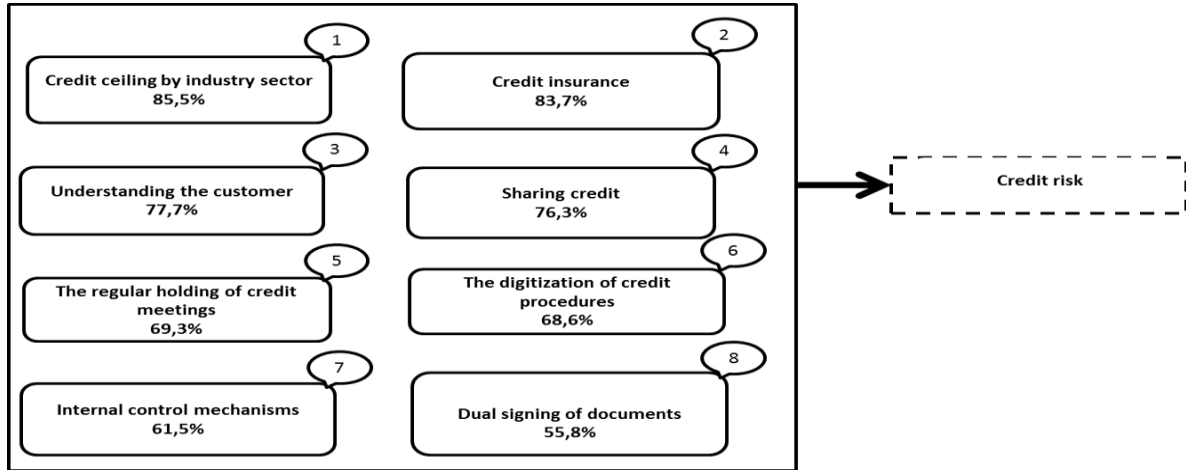


Figure 1. Hierarchical model of internal credit risk mitigation mechanisms in Cameroonian banks (Prepared by the authors based on the quantitative survey).

5 Conclusion

The main objective of this article was to analyze the effect of internal mechanisms on banks' credit risk in the Cameroonian context. Based on a quantitative study of the eighteen (18) banks in operation in 2023, this research revealed a significant relationship between internal governance mechanisms and credit risk in Cameroonian banks.

From a theoretical perspective, this study has contributed to a deeper understanding of risk governance in banks. It highlights the specific nature of credit risk management across countries. From a methodological perspective, this study validates the relevance of the quantitative approach in addressing a management problem. Empirically, the results show that credit risk management in banks is strongly influenced by internal governance mechanisms, which supports the agency theory's assumptions regarding the effectiveness of internal incentives in reducing conflicts of interest within organizations. However, it appears that the management of banking risks through bank governance is a social phenomenon (Laouane & Torra, 2024); which would require an anthropological study or a sociological perspective for a proper understanding (Fotso and al., 2024).

However, despite the methodological rigor of this research, it suffers from certain limitations. It focuses solely on the Cameroonian context, which limits its generalizability. A comparative study with certain countries in the Central African subregion might be useful to strengthen the robustness of the results obtained from this study. Indeed, in recent years, these two countries have been able to reduce their non-performing loan ratios and align with international standards. Examining the factors that may have influenced these banks' credit risk management will allow us to identify the shortcomings of the Cameroonian banking sector and attempt to provide appropriate solutions.

Subsequently, another aspect of this study could, for example, focus on broadening the scope of the research and adopting grounded theory to develop an explanatory model of credit risk in banks across Africa, or even in other countries around the world (Fotso and al., op. cit.). Finally, further research could focus, on the one hand, on the influence of external mechanisms and, on the other hand, on the interdependence of these two dimensions on banks' credit risk.

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