

Evaluating the Effectiveness of Credit Risk Management Practices in the Commercial Banks of Paro Dzongkhag

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Abstract

Credit Risk Management (CRM) is essential for the stability and profitability of commercial banking institutions. This study evaluates the effectiveness of CRM practices implemented in commercial banks in Paro Dzongkhag, Bhutan. The information was collected through structured questionnaires distributed to all the relevant employees of five commercial banks located in Paro Dzongkhag. Results indicate that overall, respondents regard the CRM practices of the banks as effective; high scores were given to practices like collateral enforcement, credit limit setting and monitoring, systematic loan evaluation, and compliance with well-defined credit policies, hence showing strong pre- and post-loan supervising practices. The basic appraisal processes, such as creditworthiness assessment and regular credit scoring, were also rated positively, indicating a well-developed assessment system. On the other hand, lower ratings were observed in the areas of early warning systems aimed at detecting potential defaults, integration between credit officers and risk management units, and staff training on credit risk policies. These findings indicate that, although the institutions have strong policy underpinnings, much more remains to be done to improve proactive risk identification, interdepartmental cooperation, and continuous employee growth. In general, the paper finds that CRM practices among Paro Dzongkhag commercial banks are highly successful; however, the mitigation of the risks by the banks could be enhanced by enriching them with early warning systems, coordination procedures, and training systems, which can serve as practical recommendations to the decision makers of the commercial banks in Bhutan.

Keywords: Credit Risk Management, Commercial Banks, Paro Dzongkhag, Loan Monitoring, Risk mitigation, Banking Practices

1. Introduction

Credit risk management (CRM) is critical for the financial stability of institutions, as it can significantly affect profitability when borrowers default on their debt obligations (Baesens et al., 2009). It arises when a borrower fails to repay the loan principal or interest, which forces banks to carefully examine the borrower's creditworthiness by studying its determinants, including income stability, current debt obligations, and the ability to repay (Noman et al., 2014). Banks can develop a prudent lending policy, reduce the risk of default, and preserve financial stability through thorough credit assessments.

Banks face a range of risks that may significantly impact their performance and sustainability. Maximization of shareholder wealth requires reasonable management of cash flows and resources. Therefore, CRM performs a significant task in the effective allocation of funds and the safeguarding of assets (Brown & Moles, 2014). Credit activities are a major source of income for commercial banks in Bhutan and are therefore especially vulnerable to credit risk (Olorunsola & Emeka, 2023). As a result, the efficiency of managing credit risk is indispensable to the profitability and stability of these banks (Orangi, 2017). The commercial banks in Paro Dzongkhag are finding it increasingly difficult to cope with the changing economic environment, emerging regulatory requirements, and rising non-performing loans (NPLs).

This study aims to evaluate the state of CRM practices among the commercial banks located in Paro Dzongkhag. This paper reviews the existing literature, identifies CRM practices vital

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to financial institutions, evaluates their effectiveness, and finally provides recommendations to enhance CRM in practice.

2. Problem Statement

Bhutan relies on the commercial banking sector to support its economic growth and stability. However, credit risk remains a significant challenge to the financial health of banks. Despite the development of formal CRM structures, there remains concern about their effectiveness in responding to changing market dynamics and rising NPLs (Funso et al., 2012). The pressure is increasing on commercial banks in Paro Dzongkhag to maintain sound CRM systems while promoting economic growth. Consequently, reviewing current CRM practices is essential to identify strengths, weaknesses, and opportunities for improvement. This paper attempts to fill this knowledge gap by examining the efficacy of CRM activities in commercial banks located in Paro Dzongkhag.

3. Research Questions

1. What CRM practices are implemented by commercial banks in Paro Dzongkhag?
2. How do employees perceive the effectiveness of CRM practices in reducing credit risk and minimizing loan defaults?

4. Rationale of the study

The research is relevant to a large number of stakeholders, including commercial banks, policymakers, researchers, and academia. It facilitates understanding of CRM practices and their role in promoting financial stability, reducing NPL, strengthening the risk-management framework, and driving economic growth in Bhutan.

5. Literature Review

5.1 Credit Risk Management in Commercial Banks

Commercial banks operate through lending, one of the most important avenues for earning revenue and profit, with credit risk as a key risk. Credit risk arises when borrowers fail to make payments required under their loan agreements, resulting in unpaid loans and potentially causing losses for banking institutions. Thus, efficiently managing credit risk (CRM) has emerged as a key pillar of modern banking principles, empowering banks to recognize, measure, track, and manage potential credit risk in their portfolios, ensuring the soundness and stability of these portfolios.

CRM refers to a set of policies, procedures, and techniques for analyzing borrowers, tracking loan performance, and reducing the risk of default. According to Afriyie et al. (2018), the effective application of CRM components helps banks reduce credit risk by developing sound policies, establishing a proper evaluation process, and monitoring their credit activity. The study highlighted the necessity of the strategies and mechanisms used by the individual bank for the effectiveness of a CRM system.

5.2 Credit Policies and Risk Identification

An effective credit risk management framework is based on a clear and comprehensive credit policy. Credit policies set criteria for what will and will not be considered for lending, what the borrower is eligible and ineligible for, how the loan will be evaluated for approval, and the level of lending risk. Well-designed policy frameworks contribute to cohesion in lending

decisions and can play a crucial role in the effective identification of risk prior to loan approval.

Good credit risk management starts with a systematic credit risk identification and assessment process, in which banks can, in the initial phase, identify potential credit risks (Brahmaiah, 2022). It emphasized the need for systematic procedures to identify risks and monitor assets to ensure asset quality and minimize exposure to NPLs. Kattel (2017) also noted that a comprehensive screening process in credit approval is necessary, as commercial banks use different methods and approaches to determine and convert credit risk.

5.3 Credit Appraisal and Creditworthiness Assessment

In assessing credit risk, the most important step is the credit appraisal, as it helps banks determine whether borrowers can afford and are willing to repay their debt. The credit appraisal process should include the evaluation and analysis of both financial and non-financial data, creditworthiness analysis, and proper use of the risk assessment methods.

Agaba et al. (2022) found that loan assessment and loan appraisal mechanisms are important factors that positively affect loan performance and loan portfolio quality, as they enable banks to identify and manage the risk of loanable transactions.

The employment of credit scoring systems has also come to play an important part in modern-day credit risk management. Credit scoring models allow banks to predict an individual's risk when lending and enhance uniformity in lending decisions. Good credit scoring informs decision-making and enhances the effectiveness of credit appraisal processes.

5.4 Risk Monitoring and Early Warning Systems

Credit risk management isn't just about making the loan; it is a process that must be ongoing for the life of the loan with borrowers. By monitoring activities, banks can identify when borrower behavior is changing and see new credit risks early, before they become major repayment issues.

According to Brahmaiah (2022), "Continuous monitoring and control mechanisms are key to effective credit risk management." Regular loan reviews, risk account monitoring, and follow-up on risk accounts help banks to take timely corrective actions when financial distress is detected.

Moreover, the significance of early warning systems has increased in today's banking environment. Cheng et al. (2024) found that an early warning system enables banks to detect potential defaults early and implement proactive risk management measures. Such systems enable more effective monitoring and help achieve better credit risk outcomes.

5.5 Credit Risk Mitigation Measures

Commercial banks use several risk reduction techniques to reduce the amount of loss that may result from defaulting borrowers. Common measures include collateral requirements and limits, risk-based pricing mechanisms, and more.

Collateral acts as a safeguard against lending losses by providing the bank with an added measure of security in the event the borrower defaults on the loan. Likewise, credit limits are used to help avoid excessive concentration of credit risk and to ensure prudent lending. As highlighted by Afriyie et al. (2018), effective risk mitigation measures are a key ingredient to a successful credit risk management (CRM) system.

Another instrument that plays an important part in moving banks to risk-based pricing is profiling. Interest rates charged by banks can be set according to the borrower's risk level. Banks can charge interest rates that reflect the borrower's risk level, enabling them to manage the risk of loss and still make a profit. Agaba et al. (2022) emphasized that incorporating risk management factors into the lending process will improve overall lending.

5.6 Training, Coordination, and the Effectiveness of Credit Risk Management

Policies and procedures are certainly important aspects of credit risk management, but they also require that the staff responsible for implementing them have the capacity to do so. Staff are kept up to date with changing regulations, new risk trends, and best practices through regular training programs.

According to Afriyie et al. (2018), institutional support, employee skills, and effective staff coordination during the lending process are crucial to the successful implementation of the CRM system. Effective interaction and cooperation between credit officers and risk management teams help build a culture of sharing, enhance risk decision-making, and strengthen risk control.

Research and development have consistently demonstrated that effective credit risk management practices can lead to better loan performance and reduced credit risk. Agaba et al. (2022) reported that the effective use of CRM is positively associated with loan performance. Based on these, the following elements have been identified as necessary prerequisites for ensuring CRM effectiveness: clear credit policies, a reliable appraisal system, continuous monitoring, risk control measures, and institutional support systems.

5.7 Research Gap in the Literature

While various studies have investigated credit risk management processes and their performance across banking contexts, most prior research has focused on the CRM-performance link or the CRM-profitability or loan performance link. In addition, several studies have been conducted in countries such as Ghana, Kenya, Nepal, Uganda, and India, yet there is limited empirical evidence on how credit risk management practices are perceived by employees of commercial banks in Bhutan.

Specifically, the literature lacks studies on the adoption of existing credit risk management practices, such as staff capacity-building programs, early warning systems, risk assessment tools, monitoring systems, credit appraisal processes, credit policies, and risk-based pricing strategies, in commercial banks in Paro Dzongkhag. Hence, the aim of this study is to address this contextual void by reviewing the credit risk management practices adopted by commercial banks in Paro, Dzongkhag, and to assess their perceptions of the effectiveness of CRM in reducing credit risk and loan defaults in their banks.

6. Research Methodology

The systematic methods used to gather, analyze, and interpret data to meet the research goal are referred to as research methodology. The present study is quantitative and evaluates the CRM practices undertaken by commercial banks in Paro Dzongkhag, as well as checks with employees on their perceptions of the effectiveness of their strategies for managing credit risk and minimizing loan defaults. In this section, the research design, study population, data collection, and data analysis are discussed.

6.1 Research Design

Descriptive research was chosen as the appropriate research design, as it allowed the researchers to examine and describe the prevailing credit risk management practices among

commercial banks in Paro Dzongkhag. In particular, the various aspects of CRM, such as credit policy, risk identification, risk appraisal, risk assessment, risk assessment tools, credit risk monitoring, credit risk personnel and staff training, collateral requirements, pricing for credit risk, and coordination among credit risk personnel, were addressed.

Furthermore, an analytical design has been employed to examine the relationships among the aspects of CRM practices and employees' perceptions of their effectiveness. The data collected were analyzed using statistical techniques, including descriptive statistics and Pearson correlation.

6.2 Study Population and Survey

The study covered all employees directly involved in the CRM practices of five commercial banks in Paro Dzongkhag. All 63 employees were targeted for data collection. Hence, this is a population/census study. However, during data collection, 13 employees were unavailable due to short-term training programs or study leave. Therefore, collecting data from the remaining 50 employees constitutes a census survey. Because the census approach observes the entire target population, sampling bias is minimized, making the results more representative. Being a location-focused study in Paro Dzongkhag, the small number of employees was manageable, and all 50 employees participated in the research.

6.3 Data Collection

Five commercial banks operating in Paro Dzongkhag were visited, and a structured questionnaire was used to gather primary data from their employees. The concepts and practices identified in the CRM literature were used to design the questionnaire, which included statements to assess CRM practices. The instrument used was a five-point Likert scale (Strongly Disagree =1 to Strongly Agree =5) for the respondents to describe their level of agreement with each statement. They covered topics such as credit policy, credit risk identification, creditworthiness assessment, credit risk tools, credit scoring, monitoring of loans, early warning systems, requirements for collateral, credit limits, risk-based pricing, coordination between the members of a credit team, and training of staff, to evaluate the effectiveness of CRM practices.

6.4 Data Analysis Tools

Data collected were coded and analyzed using the Statistical Package for the Social Sciences (SPSS). To summarize the respondents' perceptions of the effectiveness of CRM practices, descriptive statistics are provided as the mean and standard deviation. The Pearson correlation analysis was also used to explore relationships between aspects of CRM practices and employees' perceptions of their effectiveness.

7. Study Results and Findings

The descriptive statistics show that overall, the respondents feel that the current CRM practices are well established and well implemented. Most of the variables used in this study were rated with a mean value of 4 or higher.

Collateral management has been represented by the requirement of adequate collateral before loan approval, with the highest mean score (Mean = 4.40, SD = 0.904), indicating that lending that requires adequate collateral before approval is generally considered a crucial credit risk management practice. Likewise, the effective use of credit limits to minimize risk (4.26, 0.829) and the regular monitoring of loans for signs of risk (4.18, 0.800) were highly rated by respondents. The findings indicate that credit risk management in participating

commercial banks is viewed as relatively more serious and intensified, involving both preventive and monitoring measures.

The findings also provide evidence of positive impressions about fundamental credit appraisal activities. Banks have proper credit policies (Mean = 4.14), a thorough creditworthiness evaluation process (Mean = 4.10), a regular credit-scoring process (Mean = 4.04), and appropriately detect credit risks prior to loan approval (Mean = 4.02). The results suggest that structured pre-loan procedures are well-entrenched in commercial banks.

But relatively lower mean scores were reported for training on credit risk policies (Mean = 3.44, SD = 1.198), early warning systems for detecting potential debt problems (Mean = 3.82), and coordination between credit officers and the risk management team (Mean = 3.84). While the values remain above neutral, they indicate areas for improvement to further reinforce existing credit risk management practices. Training and policy updates had a relatively high standard deviation, indicating a range in perceptions of the quality and uniformity of training opportunities provided to employees.

Overall, the descriptive results show that commercial banks are implementing various CRM practices, including policy formulation, credit appraisal, risk tracking, collateral management, and risk control mechanisms.

The study also evaluated employees' perceptions of the impact of CRM practices on reducing credit risk and minimizing loan defaults. A mean value of 3.88 (SD=0.961) for this statement indicates high levels of perceived impact of current CRM measures among respondents in reducing loan defaults.

Pearson correlation was used to explore the relationships among different aspects of CRM practices. Several positive and significant relationships were found among different aspects of CRM practices, suggesting that these aspects are correlated and reinforce one another.

The importance of adhering to an established credit policy was strongly correlated with proper credit risk identification ($r = 0.800$), thorough creditworthiness assessment ($r = 0.819$), and assessment of creditworthiness by considering both financial and non-financial risk factors ($r = 0.821$). These findings imply that there is a relationship between respondents' perceptions of credit appraisal practices and their perceptions of policy frameworks, with strong perceptions of policy frameworks positively correlating with strong perceptions of credit appraisal practices.

The loan monitoring appeared to show the same effect, with credit risk identification having a positive correlation with creditworthiness assessment ($r = 0.816$), risk assessment tools and models ($r = 0.730$), and loan monitoring practices ($r = 0.680$). Consistency between activities of pre-loan-side and post-loan-side risk management (relationships).

Perceived effectiveness of CRM practices to reduce default rates were positively correlated with credit policies ($r = 0.607$), creditworthiness assessment ($r = 0.654$), risk assessment tools ($r = 0.714$), consideration of financial and non-financial factors ($r = 0.651$), follow-up of risk accounts ($r = 0.742$), collateral requirements ($r = 0.644$) and risk-based pricing ($r = 0.786$). These results suggest a relationship between respondents' perceptions of the strength of these practices and their perceptions of a more effective CRM system that reduced loan defaults.

Table 1.1 Descriptive Statistics

	Mean	Std. Deviation
A. The bank has a clear credit policy in place	4.14	.904
B. Credit risks are properly identified before loan approval	4.02	1.040
C. Creditworthiness assessments are thorough and reliable	4.10	.863
D. Risk assessment tools and models used are effective	4.00	.833
E. The Bank performs regular credit scoring of Borrowers	4.04	.947
F. Financial and non-financial factors are considered during credit evaluation	4.00	.881
G. Loans are regularly monitored for risk signs (e.g., late payments)	4.18	.919
H. Early warning systems are in place to detect possible defaults	3.82	1.024
I. The credit risk team follows up promptly on risk accounts	3.96	.880
J. Adequate collateral is required before loan approval	4.40	.904
K. Credit limits are effectively used to minimize risk	4.26	.965
L. The bank uses risk-based Pricing for loans	3.92	.986
M. The credit risk management practices have reduced default rates	3.88	.961
N. There is a strong coordination between credit officers and the risk team	3.84	.955
O. Training and updates are provided on credit risk policies	3.44	1.198

Results for risk assessment tools and models showed strong positive relationships with creditworthiness assessment ($r = 0.852$), risk accounts and follow-up ($r = 0.808$), and coordination between credit officers and risk management teams ($r = 0.667$). This would indicate that the broader credit risk management processes are fairly connected to assessment mechanisms.

Early-warning systems showed a significant, positive relationship with loan monitoring ($r = 0.642$), follow-up on risk loans ($r = 0.694$), and reduction of loan delinquencies ($r = 0.558$). Similarly, there was a strong association between Coordination between credit officers and risk management teams and the perceived reduction in default rates ($r = 0.779$). There was also a perceived reduction of default rate with credit risk policy training and updates ($r = 0.578$).

The analysis also did not show that perceptions of the banking sector's procedures for handling credit risk differ significantly by years of experience in the banking sector. This indicates that employees' attitudes towards the implementation and use of CRM practices did not differ by their experience level.

In conclusion, the results suggest that effective credit risk management is a combination of sound policy, a robust credit appraisal system, consistent risk monitoring, effective follow-up, risk-based pricing, and employee teamwork throughout the credit management process.

Table 1.2 Correlation Analysis

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A	1														
B	.800**	1													
C	.819**	.816**	1												
D	.759**	.730**	.852**	1											
E	.709**	.621**	.769**	.673**	1										
F	.821**	.691**	.779**	.807**	.710**	1									
G	.706**	.680**	.775**	.773**	.672**	.731**	1								
H	.689**	.502**	.737**	.694**	.723**	.656**	.642**	1							
I	.752**	.715**	.758**	.808**	.615**	.711**	.741**	.694**	1						
J	.755**	.665**	.733**	.732**	.649**	.616**	.649**	.609**	.714**	1					
K	0.216	0.208	0.231	0.257	0.219	0.234	0.198	0.227	0.248	0.208	1				
L	.654**	.559**	.657**	.671**	.506**	.611**	.534**	.592**	.655**	.701**	0.249	1			
M	.607**	.492**	.654**	.714**	.521**	.651**	.603**	.558**	.742**	.644**	0.254	.786**	1		
N	.452**	.373**	.589**	.667**	.459**	.509**	.522**	.450**	.599**	.619**	0.248	.571**	.779**	1	
O	.413**	.288*	.470**	.573**	.470**	.522**	.483**	.582**	.540**	.381**	0.234	.531**	.578**	.598**	1

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

8. Discussion and Interpretation of Study Findings

Based on the findings, the participating commercial banks consider CRM practices effective. The ratings for collateral requirements, credit limits, loan monitoring, and credit appraisal procedures indicate that fundamental risk control mechanisms are well developed across the banks.

The results of these studies are consistent with earlier research that emphasized the need to implement appropriate methods for credit appraisal, performance management, and risk management. Afriyie et al (2018) indicated that good credit policies and risk management can help minimize credit risk exposure, and Kattel (2017) observed various credit risk assessment methods used by commercial banks to enhance credit decisions.

Results showed robust positive interrelationships among the different aspects of the CRM, suggesting that CRM practices occur as a system rather than as isolated activities. Those with a more favorable view of the policy frameworks generally had more favorable views of their credit appraisal, monitoring, and risk control. It means that CRM is an effective process that can only be achieved through several complementary practices.

However, while the respondents' attitudes towards the various CRM practices were largely positive, the scores for some of these CRM practices were not high, particularly for coordination, early warning systems, and training, which present opportunities for improvement. Improving resilience in these areas could also strengthen existing credit risk management systems and increase banks' ability to detect new credit risks and manage them before they impact the institution's capital.

In conclusion, the results showed that the commercial banks involved have developed sound credit risk management practices. Still, ongoing professional learning, early warning systems, and facilitation of inter-agency cooperation in managing credit risk are significant for maintaining and developing enhanced credit risk management.

9. Practical Implications of the Study Findings

9.1 Strengthen Training and Capacity Building

The lowest mean score was recorded for training and updates about the credit policies. Commercial banks should, therefore, conduct frequent training programs, workshops, or refresher courses for their employees to keep them up to date on the evolving nature of credit risk, developments in relevant legislation, and best practices in credit risk management.

9.2 Improve Early Warning Systems

While there were positive correlations between the use of early warning systems and loan monitoring, as well as the perceived impact on reduced lending default rates, the implementation of early warning systems was rated lower among respondents than other CRM practices. Banks could therefore benefit from advanced monitoring systems and data-driven risk indicators that enable early detection of credit problems.

9.3 Enhance Coordination Between Credit and Risk Management Teams

The results reveal that coordination between credit officers and risk management teams is positively associated with credit officers' perceived effectiveness in controlling default rates. Fostering links between the lines and improved cooperation in decision-making could enhance the overall effectiveness of CRM procedures.

9.4 Strengthen Risk-Based Pricing Practices

One relationship that showed the most improvement was with risk-based pricing, which was strongly associated with a perceived reduction in default rates. Commercial banks should continue to improve their pricing algorithms to account for borrowers' individual risk levels and market conditions, thereby achieving greater equity across lending decisions.

9.5 Periodically Review Credit Policies and Risk Assessment Procedures

Strong relationships among credit policy, credit appraisal, and effectiveness underscore the need for robust credit policy development. It is suggested that banks regularly review their credit policies and risk assessment methodologies to keep them as relevant as possible over time, in light of changes in economic and regulatory conditions.

10. Conclusion

The study examined how commercial banks in Paro Dzongkhag manage credit risk and how effectively they believe they are conducting CRM activities to reduce credit risk and minimize loan defaults. The study population comprised employees of the five commercial banks in Paro Dzongkhag, and it used a census survey to examine their perceptions across these banks. Overall, the respondents rated the implementation of CRM practices satisfactory. A high degree of agreement was observed on some crucial CRM aspects, such as a clear credit policy, a comprehensive credit appraisal system, collateral requirements, effective use of credit limits, and regular credit monitoring. The findings indicate that commercial banks participating in this study have adopted a structured approach to credit risk management throughout the lending process.

Furthermore, the analysis revealed strong positive correlations among the different aspects of Credit Risk Management. Credit policies, risk assessment tools, follow-up of risk accounts, risk-based pricing, coordination between credit officers and risk management teams, and training efforts were all positively associated with employees' perceptions of the effectiveness of credit risk management practices in reducing loan defaults.

Overall, the study concludes that credit risk management practices are perceived to make a positive contribution to credit risk management and to minimizing credit losses in the commercial banks of Paro Dzongkhag. Even though it is clear that current practices are widely effective, there remains a need to involve more stakeholders in the core CRM processes in the banking sector, enhance employee training, and implement early warning systems.

11. Limitations of the study

The research is focused on a specific banking environment (Paro), and the findings may not fully represent CRM practices in other parts of Bhutan. The results depend on respondents' perceptions, which may be subject to personal or social desirability bias. The data were collected at a single point in time; hence, the analysis does not reflect changes in CRM practices over time. The research is not based on external factors such as the macroeconomic environment, regulatory developments, or individual borrowers' financial information.

References

- Aduda, J., & Obondy, S. (2021). Credit risk management and efficiency of savings and credit cooperative societies: A review of literature. *Journal of Applied Finance and Banking*, 11(1), 99–120.
- Afriyie, S. O., Yusheng, K., Kaodui, L., Caesar, A. E., & Akomeah, M. O. (2018). Credit risk management system of commercial banks: An analysis of the process. *European Journal of Accounting, Auditing and Finance Research*, 6(6), 1–11.
- Agaba, M., Tamwesigire, J., & Eton, M. (2022). Credit risk management practices and loan performance of commercial banks in Uganda. *Business Perspective Review*, 4(1), 16–28. <https://doi.org/10.38157/bpr.v4i1.394>
- Annor, E., & Obeng, F. (2018). Impact of credit risk management on the profitability of selected commercial banks listed on the Ghana Stock Exchange. *Journal of Economics, Management and Trade*, 20(2), 1–10.
- Arora, A. (2012). The impact of size on credit risk management strategies in commercial banks: Empirical evidence from India. *IUP Journal of Financial Risk Management*, 9(3), 24–40.
- Aryal, S. (2023). Credit risk management and financial performance of commercial banks in Nepal. *Global Scientific Journal*.
- Bhatt, T. K., Ahmed, N., Iqbal, M. B., & Ullah, M. (2023). Examining the determinants of credit risk management and their relationship with the performance of commercial banks in Nepal. *Journal of Risk and Financial Management*, 16(4), Article 235.
- Brahmaiah, B. (2022). Credit risk management and commercial bank performance. *International Journal of Economics and Financial Issues*, 12(2), 67–71. <https://doi.org/10.32479/ijefi.12968>
- Brown, K., & Moles, P. (2014). Credit risk management. Edinburgh Business School, Heriot-Watt University.
- Baesens, B., Van Gestel, T., & Thomas, L. C. (2009). Credit risk management: Basic concepts. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199545117.001.0001>
- Chen, K.-C., & Kao, C.-H. (2011). Measurement of credit risk efficiency and productivity change for commercial banks in Taiwan. *Journal of American Academy of Business*, 16(2), 279–286.

- Cheng, Y., Yang, Q., Wang, L., Xiang, A., & Zhang, J. (2024). Research on credit risk early warning model of commercial banks based on neural network algorithm.
- Dabi, R. S. K., Nugraha, N., Disman, D., & Sari, M. (2023). A survey of banks' credit risk management practices in Ghana. *Image: Jurnal Riset Manajemen*, 11(1), 45–58.
<https://doi.org/10.17509/image.2023.005>
- Hurka, R. (2017). The impact of credit risk management on profitability of Nordic commercial banks (Master's thesis, Lund University, Sweden). Lund University.
- Iftikhar, M. (2016). Impact of credit risk management on financial performance of commercial banks of Pakistan. *University of Haripur Journal of Management*, 1(2), 110–124.
- Kattel, I. K. (2016). Evaluating the credit risk measurement practices of commercial banks in Nepal. *IOSR Journal of Business and Management*, 18(3), 132–137.
- Kattel, I. K. (2017). Study of credit risk identification techniques followed by commercial banks in Nepal. *Journal of Advanced Academic Research*, 2(2), 1–17.
<https://doi.org/10.3126/jaar.v2i2.16602>
- Kwabena, A. B. M. (2014). Credit risk management in financial institutions: A case study of Ghana Commercial Bank Limited. *Research Journal of Finance and Accounting*, 5(23), 67–85.
- Mačerinskienė, I., Ivaškevičiūtė, L., & Railienė, G. (2014). The financial crisis impact on credit risk management in commercial banks. *KSI Transactions on Knowledge Society*, 7(1), 5–16.
- Muthoni, M. I., Mwangi, L. W., & Muathe, S. M. (2020). Credit management practices and loan performance: Empirical evidence from commercial banks in Kenya. *International Journal of Current Aspects in Finance, Banking and Accounting*, 2(1), 51–63.
- Nsiah, R. (2017). Assessing the effectiveness of credit risk management processes and its impact on financial performance of credit unions in Ghana. SSRN.
<https://doi.org/10.2139/ssrn.3077209>
- Noman, A. H. Md., Hossain, Md. A., & Pervin, S. (2014). An investigation of credit risk management strategies of private commercial banks of Bangladesh. *GATR Global Journal of Business and Social Science Review*, 2(2), 77–87.
[https://doi.org/10.35609/gjbssr.2014.2.2\(10\)](https://doi.org/10.35609/gjbssr.2014.2.2(10))
- Olorunsola, G., & Emeka Owoh, E. (2023). Credit risk management and bank performance in Nigeria: A conceptual/meta-narrative.
- Orangi, A. M. (2017). The effect of credit risk management on the financial performance of commercial banks in Kenya
- Pradhan, S., & Shah, A. K. (2019). Credit risk management of commercial banks in Nepal. *Journal of Business and Social Sciences Research*, 4(1), 27–37.
<https://doi.org/10.3126/jbssr.v4i1.28996>
- T. Funso, K., R. Kolade, A., & M. Ojo, O. (2012). Credit risk and commercial banks' performance in Nigeria: A panel model approach. *Australian Journal of Business and Management Research*, 2(2), 31–38.
<https://doi.org/10.52283/NSWRCA.AJBMR.20120202A04>

Appendix A

Credit Risk Management Variables and Supporting Literature

Variable	Description	Supporting Literature
A	The bank has a clear credit policy in place	Afriyie et al. (2018); Brahmaiah (2022)
B	Credit risks are properly identified before loan approval	Brahmaiah (2022); Kattel (2017)
C	Creditworthiness assessments are thorough and reliable	Dabi et al. (2023); Agaba et al. (2022)
D	Risk assessment tools and models used are effective	Kattel (2017); Brahmaiah (2022)
E	The bank performs regular credit scoring of borrowers	Dabi et al. (2023); Kattel (2017)
F	Financial and non-financial factors are considered during credit evaluation	Dabi et al. (2023); Agaba et al. (2022)
G	Loans are regularly monitored for risk signs	Brahmaiah (2022); Agaba et al. (2022)
H	Early warning systems are in place to detect possible defaults	Cheng et al. (2024); Brahmaiah (2022)
I	The credit risk team follows up promptly on risk accounts	Agaba et al. (2022); Brahmaiah (2022)
J	Adequate collateral is required before loan approval	Afriyie et al. (2018); Dabi et al. (2023)
K	Credit limits are effectively used to minimize risk	Brahmaiah (2022); Afriyie et al. (2018)
L	The bank uses risk-based pricing for loans	Agaba et al. (2022); Brahmaiah (2022)
M	Credit risk management practices have reduced default rates	Agaba et al. (2022); Dabi et al. (2023)
N	There is strong coordination between credit officers and risk teams	Afriyie et al. (2018); Dabi et al. (2023)
O	Training and updates are provided on credit risk policies	Afriyie et al. (2018); Brahmaiah (2022)

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