CREDIT PERFORMANCE, RISK MANAGEMENT PRACTICES AND PROFITABILITY OF COMMERCIAL BANKS OF NEPAL

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Abstract

The objective of this study is to assess the effect of Credit performance and Risk Management practices on the profitability of Nepalese commercial banks. Commercial banks play an important role in the financial system of the country but they are also highly prone to risks especially the credit risk which directly affect the stability and performance of the bank. Yet, there is a little agreement in the literature on the impact of credit risk management factors such as solvency and nonperforming loans (NPLs) on the banking performance of banks in Nepal, despite a number of empirical studies being conducted globally. In this context the present study aims to cover such void and to determine the effects of the CRM practices in operational efficiency and profitability measures such as the ROA and Esp. This study is descriptive and causal-comparative in methodology with a quantitative approach. Data were collected from secondary sources among which were annual reports of all twenty commercial banks of Nepal without exception along with some survey responses from bank officials, and stakeholders for the fiscal year 2081, Chaitra. Statistical techniques like correlation, regression and descriptive statistics were used to analyses financial rations and risk indicators. Nepal's commercial banks are well capitalized and profitable, but they are confronted by credit risk. Our average CAR is 12.7%, significantly higher than the regulatory minimum ensuring robustness particularly in a COVID-19 environment. The average net profit is Rs. 9.58 billion and net income is Rs. 7.19 billion, however, the profit is quite concentrated in a couple banks (Nabil Bank Ltd., Global IME Bank ltd., Nepal Investment Bank ltd.). Credit risk is still a worry, with an overall average Non-Performing Loan (NPL) ratio of 3.5%, but half of banks have between 4–6% NPLs, and only 20% stay below 2% NPLs. Correlation analysis reveals that CAR has a significantly negative relationship with NPL (-0.35) but NPL's association to profit is weakly positive (0.22).

Keywords: *Credit Performance, risk management, Nepalese commercial banks, capital adequacy, non-performing loans, profitability*

Introduction

Banking is the backbone of the modern economies as they enable investors and contributors of resources and management of liquidity within the important sectors of the economies that include agriculture, manufacturing, service, trade, tourism, education, and health and information technology. Banks promote economic growth, innovation, and creation of jobs through mobilization of deposits and the allocation of credit and also acts as intermediaries which ensures that national financial flows are aligned with development objectives. Because of the roles that they play in the process of channeling resources to productive activities, they are incorporated in the national and regional systems of policy. Nevertheless, since the efficiency and stability of banking processes are closely intertwined with the general well-being of the economy, the industry is very susceptible to the systemic risks. In response to this, regulators are specifically focused on exercising sensible oversight to stabilize financial systems and safeguard the interests of the stakeholders (Poudel, 2018). In Nepal, commercial banks prevail in the financial system and play a major role in the economic activity, however, their fundamental roles of taking deposits and giving loans also put them at risk as concerns credit risk. Describe as the likelihood of a borrower or counterparty defaulting, credit risk poses the greatest risk in the operations of the bank. Poor credit risk management cuts profitability and solvency, whereas effective credit risk management (CRM) serves the sustainability and resilience (Poudel, 2018).

Though they are very crucial, Nepalese commercial banks have continued to experience challenges in their control of credit risk. Large amounts of non-performing loans (NPLs) undermine profitability and spin the industry, and overexposure to risks increases vulnerability to the system (Sigdel and Deswal, 2024). Banking institutions also face risks of liquidity, market, operational, reputational and regulatory, and external shocks like natural calamities or cyberattacks are other sources of unpredictability. The COVID-19 crisis showcased all these failures putting the quality and liquidity of assets under increased strain. This interference also supported the regulatory efforts, including consolidation according to the strategy of the Grande fusion, which would provide resilience (Upreti & Kulshrestha, 2022). Even though international studies have highlighted the influence of capital adequacy, the role of NPLs, and loan loss provisions in determining the profitability (Iqbal and Suhong, 2024; Temba et al., 2024a, 2024b), in Nepal, the evidence base is inconclusive. Although the results of certain studies indicate that capital buffers ratios increase stability and profitability, others point at the discrepancies in the relationship between CRM and financial performance. This research gap is exemplified by this division in this viewpoint.

The banking sector also marks the historical developments in Nepal that reflect the resilience and structural transformation. Modernization and supervision were based on the formation of Nepal Bank limited in 1937 and Nepal Rastra Bank on 1956 (Poudel, 2018). During the following decades, the economic development and monetary inclusion were facilitated by the state-owned organizations like the Agriculture Development Bank and Rastriya Banijya Bank. The industry was ushered in by the liberalization period of the 1980s and 1990s, which brought in privates and joint venture commercial banks and opened the scope of financial intermediation and competition (Upreti & Kulshrestha, 2022). Financial inclusion was also enhanced by the attempts to take

banking services in rural and underserved regions in 1970-1989. Over the last few decades, technology innovation and e-banking have revolutionized the modality of service delivery and interaction with customers (Poudel, 2018). Regardless of these accruals, the industry has been struggling with weaknesses. It is proven that a high NPL ratio decreases the profitability, and more significant capital adequacy ratios serve as shock buffers (Sigdel and Deswal, 2024; Pandey and Joshi, 2023). It has always been proposed by the literature of international countries that capital reserves are associated with the enhancement of financial stability, and poor-quality assets and the increase in loan loss provisions harm profitability (Temba et al., 2024a, 2024b). However, the studies targeted at Nepal have been more controversial, and the exact correlation between CRM and the bank profitability has not been reached yet (Pradhan & Shah, 2019). Such deviation points to the fact that further, more recent research is necessary that experiences new aspects of risks, such as the issue of digital transformation and post-pandemic resilience.

In the past, Nepal banks have had poor lending standards, poor portfolio risk management, and an increased vulnerability to system risks. Although regulatory reforms have helped ameliorate some of the shortcomings like an increased capital requirement and merger policies, gaps still exist. Moreover, a majority of the available research in Nepal is either bank-specific, uses an outdated data set, or only considers few measures of performance (Chhetri, 2022; Poudel, 2018). The literature containing a combination of sector-wide analysis with updated financial ratios and the role of the digital banking technologies in enhancing CRM is limited in content. This gap is proposed to be addressed by the current study to focus on the relationship between credit risk management and profitability among all the twenty commercial banks in Nepal. It analyses the effects of CRM practices in the efficiency of operations and finances based on the measurement of profitability (Return on Assets (ROA) and returns by the Earnings Per Share (EPS). The study is guided by two hypotheses, one of which is that there is a positive association between bank performance and capital adequacy ratios, and a negative association between bank performance and NPLs. In addition to the testing of these hypotheses, the study examines digital banking influences on CRM efficiency and reliability, especially during economically challenging periods such as COVID-19. Through correlation, regression, and descriptive analysis of the data of fiscal years 2018/19 to 2024/25, the proposed research aims at elucidating the unanswered problems and offering viable guidance to bank managers, regulators, and policymakers. In the end, the results will show that, even though capital adequacy and quality of loans are also decisive variables, profitability is also conditioned by more general managerial, technological, and regulatory factors (Sigdel and Deswal, 2024, Pandey and Joshi, 2023, Temba et al., 2024a).

Methodology

The data on credit risk management and Nepalese commercial banking profitability had been harvested and processed in accordance with the systematic and coherent approach which relied on the study design. It constituted a descriptive research study and this design was adopted to fulfill the objectives of the study in the knowledge of the researched phenomena. This method aided in the definition of the methods of management of the credit risk and its ramifications. Effects of credit risk management practices on bank

profitability were also tested in the causal-comparative research design. This two-pronged approach enhanced the richness of the analysis by dissecting the credit risk management and bank return constituents. Quantitative study was conducted with the objective of determining trends in credit risk and bank performance. This approach led to numeric and impartial findings regarding the impact of credit risk management on bank profitability by verifying hypotheses and responding to research questions through statistical methods. To accomplish the research objectives, much of the data collection was done from secondary sources, and in the particular cases, from the published annual reports of selected banks. Moreover, further information was collected from the Nepal Rastra Bank's website and other official websites. Very little has been gleaned from the original sources.

Population and Sampling

The term population size of Nepal is referred to the general number of commercial banks in Nepal and in this study special emphasis is provided in the study of commercial banks of Nepal. Nepal has 20 commercial banks till date, as per the latest published data of the Nepal Rastra Bank (NRB). As per the criteria set by the act of 2073, applicable banks and the financial institutions (BFIs) ended up being the resultant stats of the merger and acquisitions among the banks and financial institutions (BFIs). Therefore, the subjects recruited for this study are noted as twenty. There is a reasonable size of the population under study since it is small and identifiable.

Table 1: A list of commercial banks which have been selected for data.

S.N.	Name
1	Nepal Bank Ltd.
2	Rastria Banijya Bank Ltd.
3	Agriculture Development Bank Ltd.
4	Nabil Bank Ltd.
5	Nepal Investment Mega Bank Ltd.
6	Standard Chartered Bank Nepal Ltd.
7	Himalayan Bank Ltd.
8	Nepal SBI Bank Ltd.
9	Everest Bank Ltd.
10	Citizens Bank International Ltd.
11	Laxmi Sunrise Bank Ltd.
12	Sanima Bank Ltd.
13	NIC Asia Bank Ltd.
14	Global IME Bank Ltd.
15	Prabhu Bank Ltd.
16	Kumari Bank Ltd.
17	Prime Commercial Bank Ltd.
18	Machhapurchre Bank Ltd.
19	NMB Bank Ltd.
20	Siddhartha Bank Ltd.

This study employed a census sampling technique. All 20 commercial banks operating in Nepal were included in the analysis based on the availability of complete secondary data for the chaitra-end financial period. The census approach eliminates sampling error and ensures that the findings sampling error and ensures that the findings are fully representative of the entire population of Nepalese commercial banks.

Data Collection Procedure

The information used in this study was gathered from two main sources: banks\' annual reports, quarterly reports and responses by banks to a questionnaire. All samples from questionnaire are collected from banks upper management/ Head/officers / Branch Managers/ Risk Head/officers/ Finance Head/officers of the selected commercial banks. The study comprised the data collected from reports of 20 commercial banks of Chaitra, 2081 as well as included the merged/acquired commercial banks.

Data Analysis Tools

This study was based on quantitative research design with disproportionate stratified sampling since the data were heterogeneous thus the sampling technique and procedure were applicable and confirmed with the recommendation given. The selection of instruments depended on the aims of the study and data. Different financial ratios were analyzed using various descriptive and inferential statistical approaches.

Consistency and central tendency in descriptive statistics were measured with the standard deviation and the coefficient of variation. Mean was used as a measure of central tendency. The normality of the data distribution was examined by skewness and kurtosis. Statistical graphics were used for data presentation. The correlation and correlation matrices were generated in order to evaluate the strength of the association between the variables. Statistical parameters were calculated with the data analysis tool pack in Microsoft Excel and SPSS.

Results and Discussions

Table 2: Summary Table of Profitability Status of Nepal Commercial Banks

Metric	Mean	Min	Max	Std Dev
Capital	18.95	9.43	36.13	7.54
Net Profit	9.58	0.86	37.41	10.15
EPS	15.38	1.18	34.60	7.69
PE Ratio (times)	23.37	0	179.44	37.11
CAR (%)	12.70	11.29	16.76	1.16
NPL (%)	3.50	0.68	5.49	1.46
ROA (%)	0.77	0.06	1.92	0.44
ROE (%)	7.63	0.7	15.12	3.79

Source: Fieldwork, 2024

Table 2 is indicative of the financial policy of 20 commercial banks of Nepal and summarizes average (mean), minimum, maximum and standard deviation for several critical parameters. This table gives an overview of the capital structure, profitability, and income generation, earnings per share, market valuation and risk level for the entire sector.

Capital figures in billions of Rupees, with a mean of Rs18.95 billion. The minimum capital of a bank is Rs. 9.43 billion and the maximum capital held by a bank is Rs. 36.13 billion. The relatively large standard deviation of 7.54 scores shows that capital size varies significantly across banks with a large spread for small and large institutions. The variation is also high for Net Profit. The average profit for the banks is Rs 9.58 bn, the least profitable bank has a net profit of Rs 0.86 bn and the most profitable has a net profit of Rs 37.41 bn. The standard deviation is very high here at 10.15, revealing the fact that profitability differences in the sector are large. Net income is another, common earnings metric with an average of Rs 7.19 billion, a minimum value of Rs 3.57 billion and a maximum value of Rs 13.03 billion. With a standard deviation of 2.76, that means that most of the banks are pretty close to the average and a few banks are extreme outliers.

Earnings Per Share (EPS) EPS is another important measure used to determine the price of a company's shares among investors. It averages 15.38. There is large size distribution the EPS varies from the minimum value 1.18 to the maximum value V value 34.60 and a standard deviation of 7.69. That's one more observation indicating that some banks create solid value for stockholders but that the value they create is much less irresistible on an EPS level at other banks. The Price-Earnings (PE) Ratio allows us to examine, as of 2016 Q4, the Degree of Earnings Capitalization of banks in Canada, taking the average of 23.37 times, but with a very wide range that, from a minimum of 0 (perhaps indicating that some banks could be unprofitable or undervalued) up to 179.44 times, which is a very high standard deviation of 37.11. This implies wide divergences as to how the market ratio prices these banks in their earning. On the risk side, the Average CAR is in a good state of health with a mean of 12.70%. All banks are at or above the regulatory minimum. CARs vary from 11.29% to 16.76%, the standard deviation is 1.16, indicating that most banks can have a well space of capital. Finally, the Non-Performing

Loan (NPL) ratio mean is at 3.50%, ranging from at least 0.68% meaning excellent quality for the loan to at most 5.49%, and a relatively high standard deviation (of 1.46). This indicates that though the average credit risk is moderate, some banks are significantly more exposed to bad loans. To summarize, the data reveal that Nepalese commercial banks on the whole are profitable and adequately capitalized. Yet the profit, quality of profit, market value, and the performance of loans as to these banks differ significantly with a few being two to three times riskier and volatile as compared to the entire sector.

Furthermore, the table shows that banks earn an average return on assets (ROA) of 0.77%, with values ranging from 0.06% to 1.92%, and the standard deviation of 0.44, indicating that asset-based profitability is relatively low but quite stable over the period or across

firms. In contrast, the average return on equity (ROE) is much higher at 7.63%, ranging from 0.70% to 15.12%, with a larger standard deviation of 3.70, which suggests that returns to shareholders are high but also more volatile than ROA.

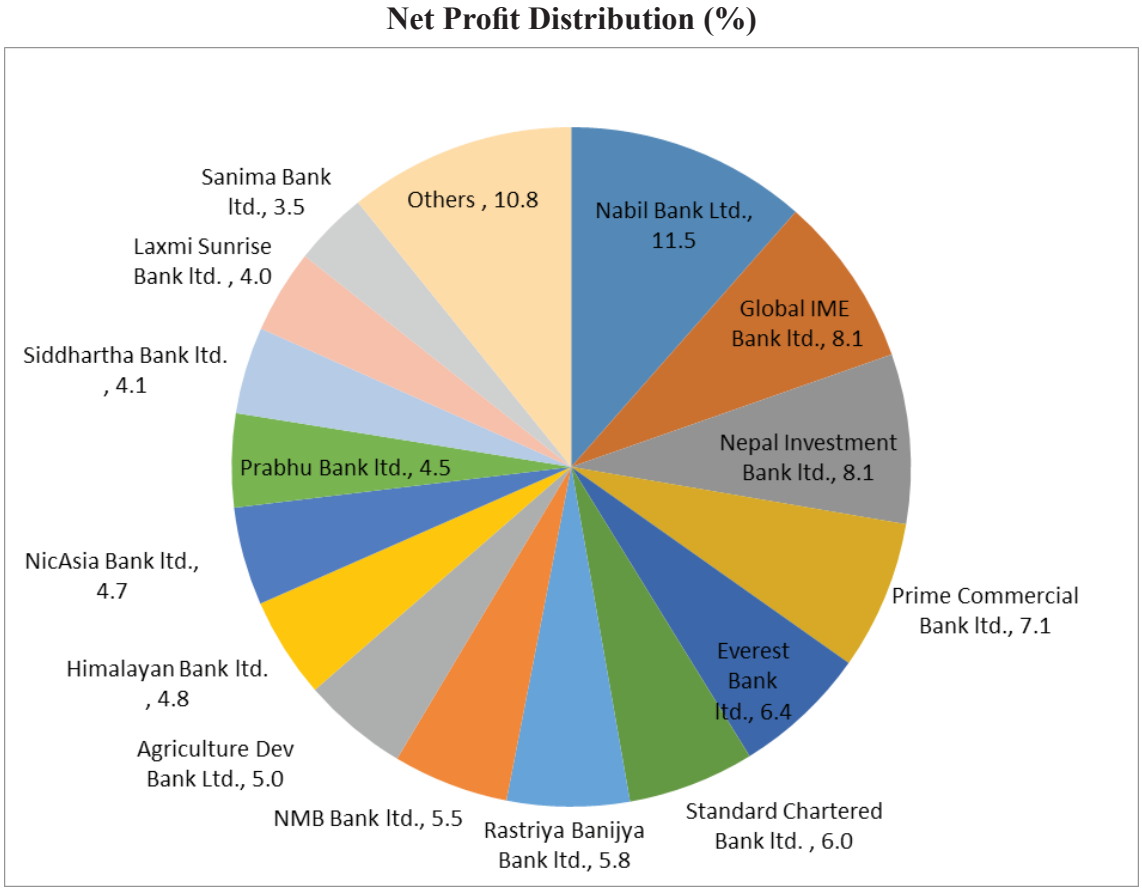

Figure 1: Net Profit Distribution among Nepalese Commercial Banks (Top 15)

Figure 1 presents the histograms of total earnings across Nepalese private banks. As indicated by the chart, profit is distributed over both of large and medium banks with a less but remarkable contribution in "Others" (10.8%). Maximum contribution is made by Nabil Bank Ltd. which has 11.5% stake while Global IME bank ltd and Nepal investment Bank limited contributes with the second highest percentage of 8.1%. Prime Commercial Bank Ltd is the next nearest, with 7.1%, and Everest Bank ltd and Standard Chartered Bank ltd have 6.4% and 6.0% each. Rastriya Banijya Bank Ltd and NMB Bank Ltd contribute with a significant 5.8% and 5.5%, respectively as well. Other major contributors are Agriculture Development Bank Ltd. (5.0 per cent), Himalayan Bank Ltd. (4.8 per cent), NicAsia Bank Ltd (4.7 per cent), Prabhu Bank Ltd., Siddhartha Bank Ltd, and Laxmi Sunrise Bank Ltd each contributed 4.1 percent and 4.0 percent respectively to the total turnover amount aggregate for the month in review). Sanima Bank Ltd and SBI Bank Ltd contribute 3.5% and 2.9%, while Citizen International Bank Ltd (3.0%), Kumari Bank Ltd (2.6%) and Machhapurche Bank Ltd (2.1%) occupy the bottom tier. The least contribution is from the

Nepal Bank Ltd. 0.3% only. The remaining banks (others category) shown in this figure represent 10.8 of the net profit sum. This means that even though there are many smaller sized banks out there, if you added them all up their share would not exceed the biggest ones. The chart shows a mild upper tail concentration, with the grossing top 3 banks contributing for almost 28% of total net profits (Nabil Bank Ltd., Global IME Bank Ltd., and Nepal Investment Mega Bank Ltd.) and all low performers listed in one smooth line graph.

Table 3: Key Risk Indicators Table

Metric	Mean (%)	Min	Max	Std Dev
CAR	12.70	11.29	16.76	1.16
NPL	3.50	0.68	5.49	1.46

Source: Fieldwork, 2024

Table 3 has included a statistical overview of the two key financial variables, i.e. Capital Adequacy Ratio (CAR) and Non-Performing Loans (NPL) of Nepalese commercial banks. The first table provides an average, and minimum, maximum and standard deviation of each metric, which provides a snapshot of the credit performance and risk management situation in the sector.

Average CAR (measured by the ratio of bank's capital to risk weighted assets) is 12.70%. This indicates on average Nepalese commercial banks are well above the standard regulatory minimum, lending them a substantial margin of safety against financial shocks. In addition, the lowest observed CAR is 11.29%, which is much higher than the majority of the minimum standards, and the highest CAR is 16.76%, corresponding to an extremely well-capitalized bank. A small standard deviation of 1.16 demonstrates significant consistency in CARs and It can be assumed that most banks have the same level of strength.

By comparison, the mean value for the Non-Performing Loan (NPL) ratio, i.e. the ratio of past due or not likely to be repaid loans, is 3.50%. The NPL numbers vary between a low of 0.68% reflecting excellent credit quality for some banks to a high of 5.49%, to show that some institutions are managing noticeably larger credits risks. The standard deviation for NPL is higher than VAR, at 1.46 (This indicates that there is more variability across the banks in loan quality). This seems to point out that, whereas some banks are characterized by sound risk management and strong portfolios, others are subject to higher level of credit risk those where the NPLs are above 5%. At the aggregate level, the KRI Table in general, exhibits that commercial banks in Nepal are broadly sound in terms of capital position, however, as indicated in the Table, the variation in NPL ratios among banks is quite substantial which reflects loosely determined system wide credit risk. The data highlights the need for continued risk surveillance and risk management, particularly for higher NPL banks.

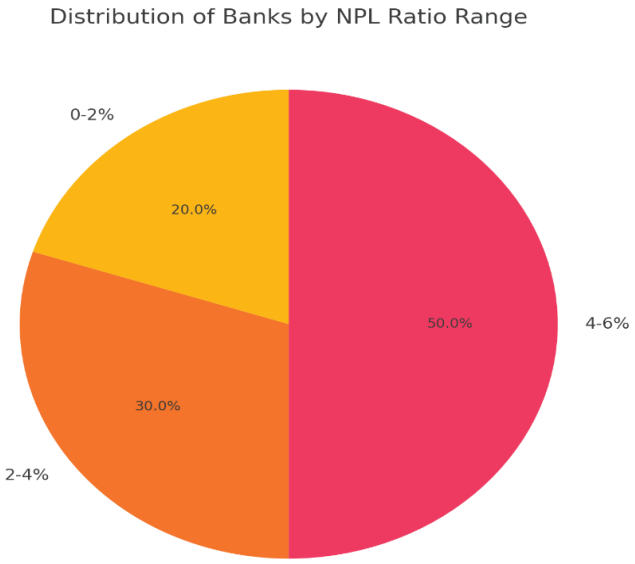

Figure 2: Distribution of Banks by NPL Ratio Range

Figure 2 illustrates how Nepali commercial banks group with each other based on NPL ratio. As well, half of all banks (50%) are in the 4-6% NPL bucket, which is also the largest single bucket. This implies that half of the banks in the sample are coping with relatively high NPLs, which is indicative of high credit risk in the sector. When we move to smaller risks, some 30% of banks have NPL ratios between 2-4%. This clip demonstrates a moderate amount of credit risk. These are banks which are better than the higher one in terms of the management of their loan portfolio but are still experiencing significant loan repayments problems. The last 20% of banks are in the lowest 0-2% part of the NPL ratio spectrum and therefore have the highest asset quality and are the least risky credit institutions. Such banks are more swell-placed when it comes to recovery of loans and overall financial health, given that a large majority of their loans are repaying.

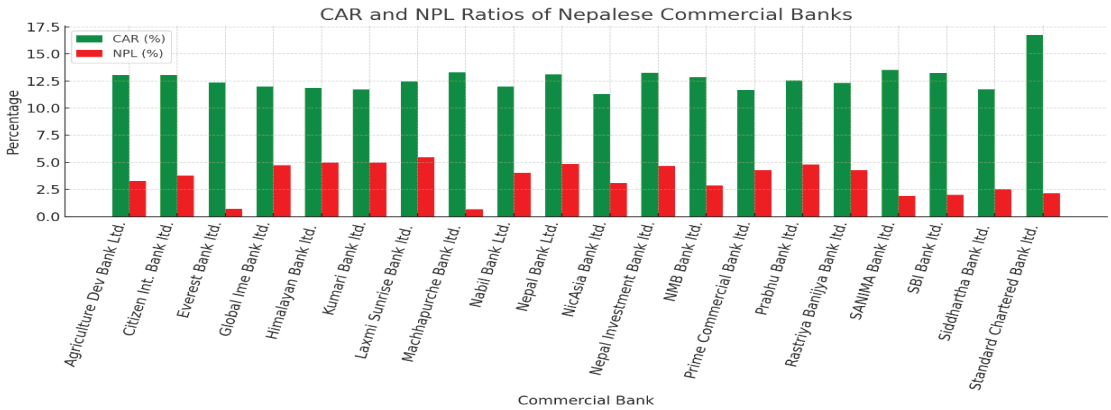

Figure 3: CAR and NPL Ratios of Nepalese Commercial Banks

Figure 3 displays for each bank their Capital Adequacy Ratio (CAR) in green and Non-Performing Loan (NPL) ratio in red, both in percentages. Car is a measure of the financial cushion of the bank against risks, while the NPL measures the percentage of loans not being serviced on schedule.

Most banks have CAR ratios in the range of 11-14%. It is worth mentioning that Standard Chartered Bank Ltd. has achieved an impressive CAR of approximately 16.8%, indicating an excellent capital position. Agriculture Dev Bank Ltd., Citizen Int. Bank Ltd., and Global IME Bank Ltd. have CARs slightly above 12 percent. The rest of the banks are mostly bunched together in the 12%–14% area, in compliance with or slightly above regulatory minimum capital standards.

NPL ratios, which are shown in red, are less than 1% all the way up to slightly over 5%. Machhapuchre Bank Ltd and Nabil Bank Ltd report a very low NPLs, about 0.5%, which means that almost all of the disbursed loans of these banks are recovering timely and it showing strong asset quality. On the other hand, loans of Agriculture Dev Bank Ltd. and Nepal Bank Ltd. pose high risk as their NPL ratio is more than 5%. The majority of the other banks have NPLs between 2-4%, such as NIC Asia Bank Ltd., Nepal Investment Bank Ltd., and Sanima Bank Ltd., demonstrating moderate credit risk profiles.

Some banks for example Prime Commercial Bank Ltd, reflect a balance with a CAR at around 13% and NPL a little over 3%. Rastriya Banijya Bank Ltd., for example, which also tops in net profit carries a CAR of 12.5% and NPL of 4%, indicative of a middle path.

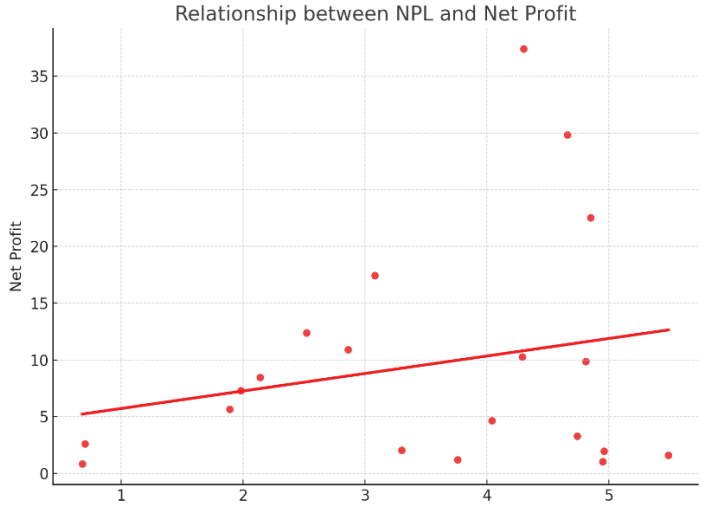

Figure 4: Relationship between CAR and Net Profit

Figure 4 represents the relationship of Capital Adequacy Ratio (CAR) on the x-axis against Net Profit on the y-axis. Each green dot is an observation, for which a given amount of CAR has been tested and the result is the corresponding Net Profit. Data points have CAR values from around 11.5 to 16.8 and Net Profits from just above 0 to

37. When inspecting the distribution, most CAR values are in the low end of the scale, ranging from approximately 11.5 to 14. In this range Net Profit can take on a wide range of values varying from very low levels around 1 to values higher than 20 such in some cases to touch values around 30 and even above 37. This heavy vertical spread at every CAR value shows that Net Profit is indeed the same regardless of the CAR, and that one cannot tell whether it tends to increase or decrease visually.

Interesting, even for larger CAR values (CAR > 15), there is still the appearance of scattered Net Profits with no visible overall trend up or down. Likewise, for firms or years with CAR values less than 13, Net Profit could vary significantly between the very low single digits and highest observed Net Profit of about 37. In general, this graph shows that movements in the Capital Adequacy Ratio do not correlate in a specific way with movements in Net Profit in the data analyzed. The lack of a trend, the dispersion capable of being explained by a straight line, and the near horizontality of the line, all support the conclusion that there is virtually no linear relationship between these two variables within this sample. This observation is particularly relevant for researchers, as it indicates that, at least for this setting, better (poorer) CAR should not automatically result in predictable profits decreases (increases).

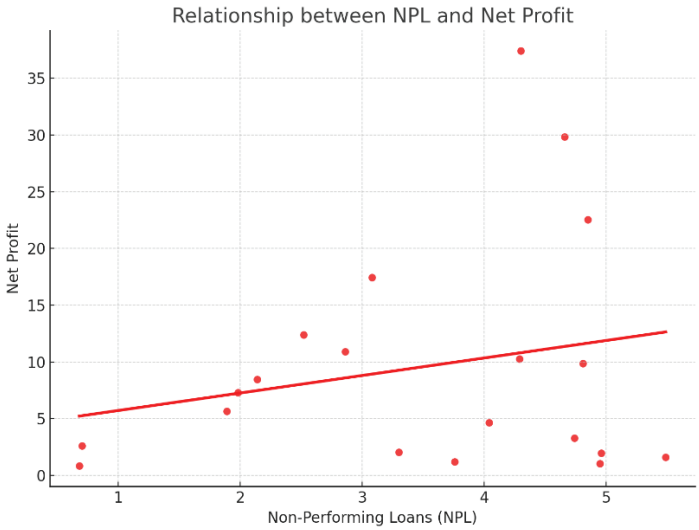

Figure 5: Relationship between NPL and Net Profit

Figure 5 represents a graph plotting Non-Performing Loans (NPL) on the x-axis and Net Profit on the y-axis. Each one of those little red dots correspond to a value of NPL and Net Profit for a particular observation. The red trend line is a guide we use to describe the overall direction of the relationship between the variables.

The graph shows that the NPL distribution varies between just under 1 and roughly 5.5 for various observations. On the other hand, Net Profit varies much more widely, between just over 0 and about 37. That is given the NPL change, there are several data points around the low Net Profit which indicates that several cases have low profit. There

are few observations in which Net Profit is much higher, these are a couple of extreme outliers above 30. The red trend line is upward sloping and signify a weak positive relationship between NPL and Net Profit. It means that when Non-Performing Loans grow, Net Profit grows a little bit, but there isn't a strong relationship. This makes sense given correlation coefficient of 0.22 from earlier correlation matrix which also indicated that there is weak positive correlation between these two variables. Although the trend line is increasing, there exists significant variation in the spread of the data points. For instance, at NPL of about 5, the Net Profit ranges from less than 2 to more than 35 and indicates that high NPL does not necessarily correlate with high or low Net Profit. Correspondingly, at lower NPL a Net Profit can still be highly varying indicating that the factors other than the proportion of the NPL affect the positive performance.

In general, as the scatterplot indicates a weak positive association between NPL and Net Profit, but the large amount of scatter in the points suggests that the relationship is not strong or linear. The trend line gives a general direction but the information makes clear that there are exceptions/the extremes, and the NPL Net Profit ratio is likely impacted by other factors that we don't show in in this the diagram.

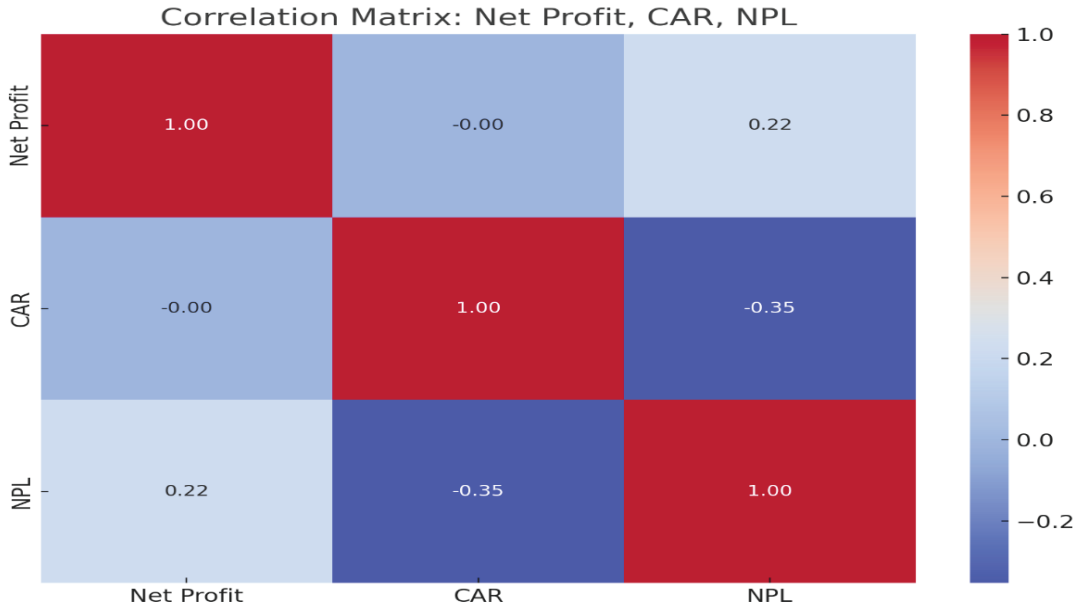

Figure 6: Correlation Matrix Heat Map: Net Profit, CAR, NPL

Figure 6 presents a heat map correlation matrix showing the inter-relationship between three main financial variables (Net Profit, CAR and NPL). The numbers inside each square cell are the correlation coefficients between the two variables indicated by the row and column, varying from -1 to 1. A value of 1 corresponds to a perfect positive linear relationship, -1 corresponds to a perfect negative linear relationship, and a value of 0 implies no linear relationship. Moving down the diagonal from Net Profit to CAR, NPL, we can again see how the correlation is also now always 1.00 for all variables to themselves. The relationship between the variables Net Profit and CAR is -0.00

hence the two variables are essentially not in linear relationship in the data. A possible interpretation could thus be that CY Net Profit does not always complement CY CAR very well. The correlation between Net Profit and NPL, however is 0.22. The positive correlation is very low which means that the more net profits are, the more non-performing loans are, and it is not strong to provide a trend. We turn now to CAR where we find a self-correlation of 1.00. The relationship between CAR and NPLs is noteworthy with a coefficient of -0.35. It is a weak negative relationship, meaning the higher the CAR, the lower the NPLs. It is an intuitive relationship in finance, where more capital is usually associated with better risk management and thus fewer bad loans.

Finally, for NPL, the correlation with Net Profit is 0.22 and with CAR -0.35, as mentioned before. Its self-correlation is also 1.00. The color in the heat map gradient serves to make interpretation easier, true deep reds show strong positive correlations, deep blues for strong negative correlations, and lighter colors for weak or no correlations. This type of visualization is useful to grasp at a glance the type and measure of relationship. 3.5: Conclusion based on matrix Overall, the matrix shows that, of these three money variables, a strong negative relationship is only observed in CAR-NPL, while others pieces indicate either no relationship or weak ones.

Conclusion

The grand analysis of Nepalese commercial banks shows profitable, well capitalized, competitive sector however observes substantial variations and many unrelenting unchallenged in credit risk. The average capital base of banks is healthy at 12.7 percent in terms of average CAR (Capital Adequacy Ratio), providing most banks with ample cushion over regulatory minimums. It is this capital strength that underlines the resilience we have seen the sector display – most recently during challenging economic times, such as the COVID-19 pandemic. Profitability in terms of net profit and net income also depicts promising average figures of Rs. 9.58 billion and Rs. 7.19 billion respectively. The distance however is extensive and only a few banks (those, such as Nabil Bank Ltd, Global IME Bank ltd., and Nepal Investment Bank ltd.) would appear to take off with the amount of total profits with rest merely makes it due to a mediocre performance. Such concentration portrays a competitive skew, and shows market power of a number of leading players. There is the issue of credit risk calculated through Non-Performing Loans (NPL) ratios. Even though the NPL ratio within the sector has a relatively low average of 3.5, approximately 50 percent of the banks currently have NPLs worth 4-6 percent, indicating that their asset quality has still not been restored. Only five banks out of ten banks are in a position to hold NPLs below 2 and this is a sign that there are not numerous banks with good credit management. The correlation analysis adds additional flesh to the bone: we actually have a moderate negative correlation between the CAR and the NPL (correlation coefficient -0.35) hence demonstrating that there is, in fact, less credit risk in banking institutions with greater capital base. Conversely, there is the weak positive correlation between NPL and net 0.22 profit indicating that risk takers do not require greater reward.

These findings are further justified by the scatter plots which point out to the need that there is not a clear linear correlation between CAR and net profit and a weak correlation can

only be observed between NPL and net profit. This highlights the fact that other aspects other than pure capital adequacy (or asset quality), like management, diversification and innovation carry enormous consequences in terms of profitability. In conclusion, it can be said that even though the average Nepal commercial banks have established a healthy capital base and generated a stable profit, the stability of the banking sector is determined by the reduction of higher proportion of low and poor-quality lending and closing the distance between the best and worst performing banks, and improvement in the management of the credit risk. The main aspects that will also have to be concentrated on are sustained compliance to regulations, sustained digitalization and robust governance towards sustained financial health and robustness in the mobile banking sector in Nepal.

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