

Evaluation of financial strength of joint venture commercial banks and domestic commercial banks in nepal: using camels framework

¹Kabi Raj Acharya and ²Surendra Kumar Vyas

¹Lecturer, TU, Kathmandu, Nepal; Ph.D.
Research scholar RTU, Kota, India
E-mail: achkabi5@gmail.com

²Professor, Rajasthan Technical
University (RTU), Government
Engineering College Bikaner
E-mail: vyasksurendra@gmail.com

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Abstract

This study aims to compare the financial strength of joint venture and domestic commercial banks in Nepal using data from mid-July 2011/2012 to mid-July 2019/2020. The financial strength analysis is based on the CAMELS (capital adequacy, asset quality, management quality, earning performance, liquidity, and sensitivity to market risk) framework. A descriptive research design has been used. This paper finds that Nepalese joint venture banks are financially sound with higher asset quality, management quality, earning performance, and liquidity than Nepalese domestic banks. Nepalese joint venture banks can cash in on higher IT infrastructure or better investment culture from its foreign collaboration and thus perform better compared to domestic commercial banks.

Keywords: Joint venture banks, domestic commercial banks, financial strength, CAMELS framework, Nepal

1. Introduction

The financial sector is a significant sector that plays a crucial role in a nation's economic growth and advancement. Bank and Financial Institutions (BFIs) play a significant role in a country's economic advancement by transforming deposits into productive investments. All economic activities, such as revenue collection, expenditures, imports, and exports, are directly or indirectly channeled through BFIs. Since the financial strength of a nation depends on the strength of BFIs, this paper aims to evaluate the performance of financial institutions, especially by comparing the performance between joint venture banks (JVB) and domestic commercial banks (DCB) in Nepal using CAMELS.

Nepal's first formal bank, Nepal Bank Ltd, was established in 1937 AD. After financial liberalization, several private-sector BFIs were established. As of mid-July 2022, there are 125 BFIs, of which 26 are commercial banks, 17 are development banks, 17 are financial companies, and 65 are micro-finance financial institutions. The central bank of Nepal, namely Nepal Rastra Bank (NRB), has full power to license, regulate, inspect, supervise, and monitor BFIs. NRB mandates BFIs to reveal financial reports in a homogeneous style. NRB initiated monitoring, supervising, and controlling the financial sector in 1990 by issuing directives. NRB has adopted the CAMELS rating system to evaluate the financial strengths of BFIs. Following NRB's approach of using the CAMELS framework, this paper examines the financial condition of JVB and DCB.

A joint venture is a legal business agreement where two or more firms sign up to use their property to achieve unique goals. Joint venture banks can bring capital and new products, technology, and human resources from abroad. JVB has collaboration agreements with foreign banks. Thus, they could be more able to provide better services to their clients and thus perform better. On the other hand, domestic banks are rooted in national culture and identity. Thus, they may have a greater desire to better serve the nation and its people. The desire may lead to better performance. Thus, a question arises - Are JVB and DCB economically and financially different? This paper evaluates the financial soundness of both types of banks in Nepal.

2 Review of literature

2.1 CAMELS framework

BFIs require regular evaluation of their financial strength to manage the trust and assurance of shareholders in the financial system of a country. International Monetary Fund and World Bank focus on renovating the financial sector of their member countries. These institutions conduct routine health checkups through on-side and off-side supervision to enhance the morale of the private sector. The strength of the financial sector depends on the fitness of individual BFIs, and their health depends upon several internal (micro) and external (macroeconomic) factors or variables. Therefore, the fitness of individual BFIs should be evaluated routinely to understand the passion for such a reaction. The CAMELS rating system is officially known as the Uniform Financial Institutions Rating System. The Federal Financial Institutions Examination Council adopted this rating system in 1979.

Events et al. (2000) mention collected microeconomic indicators to measure the soundness of financial institutions. They use indicators such as capital adequacy, asset quality, earnings, management soundness, profitability, liquidity, and sensitivity to market risk. Hilbers et al. (2000) investigate how monetary authorities in maximum countries use CAMEL to investigate the health of an individual financial institution. Sundararajan et al. (2002) mention that the diversity of risk to which banks are disclosed justifies

the future conditions of the banks' operation that can be specified under the CAMELS framework. The CAMELS framework is a commonly used framework for analyzing the health of individual institutions. It focuses on six vital aspects: capital adequacy, asset quality, management soundness, earning, liquidity, and sensitivity to market risk. The Basel Committee on Banking Supervision for the Bank of International Settlements (BIS) has suggested using capital adequacy, assets quality, management efficiency, earnings, and liquidity (CAMEL) as criteria for assessing a FI in 1988 (ADB, 2002). Dang (2011) explores that scholars usually practice the CAMELS framework to proxy the internal (bank-specific) factors. CAMELS refers to the portfolio of financial indexes that indicate a firm's financial strength, which includes capital adequacy, asset quality, management efficiency, earnings ability, liquidity, and sensitivity to market risk.

Kumar et al. (2013) evaluated the financial performance and soundness of the State Bank Group using the CAMELS approach. They rated various banks by capital adequacy, asset quality, management efficiency, earning quality, and liquidity. Altan et al. (2014) examine the performance and financial soundness of state-owned and private-owned banks in Turkey from 2005 to 2012 using the CAMEL approach and conclude that the performance of these two categories of banks is significantly different. Mahmad and Hashim (2015) studied the performance of domestic and foreign banks in Malaysia from 2008 to 2012 using the CAMEL framework. They concluded that capital adequacy, asset quality, earning quality, and liquidity significantly impact bank performance.

Banks should utilize the CAMEL composite and component rating periodically to resist business fluctuations and vulnerability from outside influences. Similarly, Global Finance Magazine suggested practicing the CAMEL composite and component rating while ranking the best banks (Desta, 2016). Ghazavi and Bayraktar (2018) explore the performance and financial credibility of six Turkish banks from 2005 to 2016 by applying the CAMELS method and conclude that the CAMELS method is the better way to measure the performance of banks. Bashatweh and Ahmed (2020) examine the financial performance of the 13 Jordanian commercial banks by using the CAMELS framework for the period of 2014 to 2018 and conclude that they have a convergence in the rating.

In the context of Nepal, NRB has adopted the CAMELS rating system to evaluate the financial strengths of BFIs. Baral (2005) examines the financial health of joint venture banks using the CAMEL framework. Likewise, Jha and Hui (2012) observe the financial performance of different ownership-structured commercial banks using the CAMEL model.

2.1.1 Capital adequacy

Capital adequacy is one of the well-known determining components that reflect the micro strength (financial health) of BFIs. Capital adequacy ratio (CAR) is also called the capital-to-risk weighted assets ratio. It is highly helpful in preventing the BFIs from being insolvent. This ratio is used to protect depositors from possible losses and build up the stability and efficiency of banks. Capital adequacy reflects the capability of BFIs to take unpredictable losses rising in the future.

Capital adequacy ultimately regulates how well financial institutions can handle shocks to their balance sheets (Hilbers et al., 2000). Baral (2005) reports that joint venture banks are well-capitalized. However, their capital base relative to risk-weighted assets is weak, and it shows that the financial health of joint venture banks needs to be strong to manage balance sheet shocks.

In the Nepalese context, core capital (Tier- 1 capital) includes paid-up equity share capital, proposed stock dividend, irredeemable non-cumulative preference shares, share premium, general reserve, retained earnings, unaudited cumulative profit of current year, capital redemption reserve, capital adjustment reserve, dividend equalization reserve and other free reserves to the limit specified by NRB. Similarly, supplementary capital (Tier- 2 capital) includes redeemable preference shares, subordinated term debt, hybrid capital instruments, general loan loss provision, investment adjustment reserve, assets revaluation reserve, exchange equalization reserve, and other reserves (NRB, 2007). Dang (2011) mentions that capital adequacy is determined based on the capital adequacy ratio, which exposes the internal strength of the bank to carry on losses during a period of crisis. Hamal and Adhikari (2020) conclude that there is no significant mean in capital adequacy, earning performance, and liquidity but a significant mean difference in asset quality and management quality between public and joint venture banks.

Different types of risks, such as credit, operational, and market, are associated with risk-weighted exposures of BFIs. Capital adequacy measures available capital with BFIs to maintain balance with risk-weighted credit. Tier-1 capital (core/primary capital) and Tier-2 capital (supplementary capital) are added and divided by risk-weighted exposures to calculate the capital adequacy ratio. Generally, a higher CAR is secure, and BFIs like to meet their financial liabilities if unexpected losses occur. CAR is proposed by the regulatory authorities to judge the banking system's health and assure that banks can adopt an equitable level of losses arising from operational losses.

2.1.2 Asset quality

BFIs' solvency positions become at risk when their assets turn defective. Therefore, the indicators of the quality of assets in terms of loans and the health and profitability of corporate sector borrowers are essential for monitoring (Hilbers et al., 2000). Baral (2005) concludes that the asset quality of joint venture banks, on average, is satisfactory. Non-performing assets are far below compared to the combined percentage of commercial banks. NPAR and LLRR indicate the sound financial health of sample banks. Grier (2007) explores that low asset quality is the primary cause of maximum bank failures. In the same way, Olweny and Shiphoo (2011) explore that asset quality and liquidity are the leading causes of bank failures in Kenya. De Bock and Demyanets (2012) observed twenty-five emerging markets in different countries from 1996 to 2010 and concluded that an increase in non-performing loans or credit contracts slows down economic activities.

BFIs can use several indicators to measure asset quality, but in this study, only non-performing loans have been used to determine banks' asset quality. The financial strength of any organization can be ascertained by the quality of the asset maintained by it. Those loans which are either in default or close to default are known as non-performing loans. An increase in non-performing loans is the biggest problem in BFIs. A non-performing loan ratio is the ratio of non-performing credit to total credit; This ratio measures the effectiveness of banks in receiving repayments of loans. The results found that the restrictions on the capital adequacy ratio have influenced the bank's risky investment strategies, and market share and leverage are positively related.

2.1.3 Management quality

A bank's performance depends upon sound management, but it can be challenging to measure. Management soundness can be measured by several indicators like expense ratios, earnings per

employee, and rise in branches (Hilbers et al., 2000). Baral (2005) examines joint venture banks' operating expenses ratio and earnings per employee higher than the industrial average. So, the performance of the management of joint venture banks is satisfactory and healthy compared to the industry. Grier (2007) explores that management is the major critical element in the CAMEL rating system because of its significant role in a bank's success.

Management quality gives on sustainable growth and success of BIFs. Various indicators can be used to ascertain management soundness, but in this study, only earnings per employee have been used. This ratio can be calculated by net income to the total number of employees, and high results show the soundness of management and vice versa.

2.1.4 Earning performance

Chronically unprofitable financial institutions risk insolvency. Likewise, high profitability indicates additional risk-taking. Return on assets, return on equity, Income and expenditure ratio, and fundamental profitability indicators can measure earning performance (Hilbers et al., 2000). Baral (2005) reports that earning indicators ROA, ROE, and PM show that the financial strength of joint venture banks is not so weak. Grier (2007) concludes that consistently healthy earnings are essential for public confidence, balanced financial structure, rewards to shareholders, absorbing loan losses, and providing sufficient provisions and sustainability of banking institutions. Profitability ratios measure the ability of a company to generate profits from revenue and assets.

Earning performance measures the financial strength of BIFs. This study uses ROA, ROE, and EPS as profitability measures.

2.1.5 Liquidity

Liquidity pressures the solvency of BIFs. A high liquidity position means BIFs have minimal risks but adverse effects on profitability. The return on highly liquid assets is nearly nil. There must be an adjustment between liquidity and profitability so BIFs can keep their financial health strong.

Poor short-term liquidity management may drive financially sound institutions toward closure (Hilbers et al., 2000). Baral (2005) examines the liquidity indicators of joint venture banks that have maintained extreme liquidity positions and finds that they adversely affect financial health by deteriorating profitability. Duttweiler (2011) emphasizes liquidity, which expresses the strength to fulfill respective obligations by banks.

Liquidity is an important aspect that reflects BIFs' capacity to meet their short-term liabilities. Banks can meet their financial liabilities by mobilizing short-term deposits or quickly transforming their assets into cash. A high liquidity position indicates that BIFs can hedge against liquidity risk in all rational situations. Both deficit and surplus liquidity positions are problematic in the financial health of BIFs. A liquidity surplus reduces the return on assets. Likewise, a liquidity deficit damages the reputation of banks.

Liquidity is the ratio of credit to deposit, called the credit to core capital plus deposit (CCD) ratio, that indicates the ability of BIFs to convert core capital and deposits into loans. NRB has removed the provision for capital loan deposit (CCD) ratio for BIFs and adopted the credit to deposit (CD) ratio. So, this study focuses on the CD ratio.

2.1.6 Sensitivity to market risk

Regulators define sensitivity to market risk as the strength with which changes in interest, foreign exchange rates, and commodity or equity prices can adversely affect the earnings and financial health of BFIs. Interest rate risk is the most critical market risk for financial strength. If banks fail to manage interest rate risk adequately, their earnings, capital, and liquidity can be damaged.

Banks are involved progressively in diversified operating activities that are the subject of market risk (Hilbers et al., 2000). According to Grier (2007), changes in interest rates, commodity or equity prices, and exchange rates hurt BFIs' earning capacity and capital.

Sensitivity to market risk reflects the degree of change in interest rates, foreign exchange rates, and commodity or equity prices that adversely affect a financial institution's earnings or capital (Dang, 2011). When determining interest rate risk, two different but complementary perspectives are considered. The earning perspective focuses on the sensitivity of earnings in the short run due to changes in interest rates. However, the economic value perspective focuses on the sensitivity of economic values (NRB, 2018).

Aspal and Nazneen (2014) explore that Sensitivity to the Market is resolved by GAP analysis. A bank's GAP is the difference between its assets' value and liabilities that mature during that time. If such a difference is more significant (positive or negative), the interest rate changes will primarily affect net interest income. A balanced position occurs when the amount of reprising assets equals the amount of reprising liabilities (ratio=1). A ratio less than 1 denotes that a bank's liabilities will reprice quicker than assets (liabilities sensitive). In contrast, a ratio of more than 1 denotes that the bank's assets will reprice faster than liabilities (assets sensitive).

GAP= Risk sensitive assets - risk sensitive liabilities.

Net Advances + Net Investments Money at Call = Risk Sensitive Assets

Deposits + Borrowings = Risk Sensitive Liabilities

In summary, the above-reviewed literature represents that the CAMELS model can be applied to measure and evaluate the financial strength of commercial banks.

2.2 Ownership and Financial strength

This study aims to identify the relationship between ownership and financial strength of commercial banks in Nepal. Ownership and financial strength are significant concerns for corporate governance. From the literature, there are three theoretical approaches (cost theory, strategic behavior, and organizational knowledge) to choosing joint ventures.

From the empirical perspective, Kogut (1988) argues that most statements on the motivations for joint ventures are reducible due to evasion of small number bargaining, enhancement of competitive positioning (market power), and mechanisms to transfer organizational knowledge. Likewise, Kogut (1988) proposes that the cooperative aspects of joint ventures must be evaluated in the context of the competitive incentives among the partners and the competitive race within the industry. Chantapong (2005) explores that foreign banks are more profitable than the average domestic banks in Thailand. NRB (2006) points out that the performance of foreign joint venture banks is better than that of domestic banks, as reflected in profitability position, NPA levels, and capital adequacy positions. Likewise, NRB (2006) explores that the portions of interest income to total income are lower in joint venture banks. It indicates that joint venture banks are introducing new products and businesses for income.

Wen (2010) explores that dominant shareholders have the ability and stimulus to intimately guide the management's performance. On the one hand, it can reduce agency costs and appreciate a firm's performance. On the other hand, it can create a problem by ignoring the rights of the minority and affecting the novelty of the management. Farazi et al. (2013) claim that foreign firms accomplish better with high-profit margins and low costs than domestic banks. Ongore (2011) Concludes that foreign ownership has a significant positive impact on firms' performance. Claessens and Van Horen (2012) explore that the foreign bank contributes better performance when from a high-income country and when governance in the host country is relatively weak. Likewise, they perform better when they are larger and have a more significant market share. Jha and Hui (2012) observed the financial performance of different ownership structured eight commercial banks in Nepal from 2005 to 2010 using the CAMEL model and found that public sector banks are significantly less effective than domestic private banks and joint venture banks. However, domestic private banks and joint venture banks are equally effective. Ongore and Kusa (2013) conclude that the financial performance of commercial banks in Kenya is guided primarily by board and management decisions. The literature concludes that foreign banks' performance is better than domestic banks' (Chantapong, 2005; NRB, 2006; Farazi et al., 2013). However, Tufan et al. (2008) point out that domestic banks' performance is better than their foreign counterparts in Turkey.

In light of previous empirical literature, this research aims to evaluate whether the financial strength of joint venture commercial banks and domestic commercial banks in Nepal is sound or not in the CAMELS framework. Furthermore, whether ownership identities substantially moderate the connection between commercial banks' financial strength in Nepal?

3. Methodology

The objective of this study is to evaluate the financial strength of JVB and DCB in Nepal using the CAMELS framework. Until July 2020, 27 commercial banks are in operation in Nepal. Among these 27 banks, three are government-owned, seven are joint ventures, and seventeen are wholly owned by Nepalese investors (also referred to as domestic banks). This study only focuses on joint ventures and domestic commercial banks. Since the government heavily influences the management of government banks, these banks cannot freely decide on the adequacy of the CAMELS framework. Jha and Hui (2012) observed that public sector banks are significantly less effective than domestic private and joint venture banks. Thus, government banks are dropped from the sample. All sample banks are listed in Appendix 1. This study uses a descriptive research design, using financial information disclosed by banks via annual reports from mid-July 2011/2012 to mid-July 2019/2020. Previous studies such as Baral (2005) and Nepal Rastra Bank (2006) examine 1-2 years, and Jha and Hui (2012) examine six years with a sample size of only eight. This study uses an extended period of 9 years with a sample size of twenty-four. The sample period ends in July 2019/20 to remove an unwanted effect of COVID-19 on the performance of banks. Constituents of the CAMELS framework, namely capital adequacy, asset quality, management quality, earning performance, liquidity, and sensitivity to market risk ratios, are calculated using the financial information. Capital adequacy is defined as the ratio of a bank's capital fund to risk-weighted assets; assets quality as the ratio of non-performing credit to total credit; management quality as the ratio of net income to the total number of employees; earning performance as the ratio of net income to total assets or the net income to shareholders equity or the ratio of net income to total shares, liquidity as the ratio of credit to deposit; and sensitivity to market risk as GAP between risk-sensitive assets and risk-sensitive liabilities. The CAMELS framework is then used to analyze the financial strength and ownership identities of JVB and DCB.

CAMELS framework is used by several financial institutions, such as the Asian Development Bank and Nepal Rastra Bank, to examine the companies' strengths. We follow the standard CAMELS approach to examine the financial strengths of Nepalese banks.

Table 1: Variables used in this study

This table describes the dependent variables used in the primary analysis.

SN.	Variables	Description	Measures
1	Capital Adequacy	Capital Adequacy Ratio (CAR)	Capital Fund/Risk Weighted Assets
2	Assets Quality	Non-performing Loan Ratio (NPL)	Non-performing Credit/Total Credit
3	Management Quality	Earnings per Employee (EPE)	Net Income/ Total number of Employees
4	Earning Performance	Return on Assets (ROA) Return on Equity (ROE) Earnings per Share (EPS)	Net Income/Total Assets Net Income/Total Shareholders' Equity Net Income /Total number of Shares
5	Liquidity	Credit-to-debt ratio (CD)	Credit to deposit
6	Sensitivity to Market	GAP	Risk- Sensitive Assets/Risk -Sensitive Liabilities

4. Results and discussion

This section explores joint venture and domestic commercial banks' financial strength in the CAMELS framework.

4.1 Descriptive statistics

This section explores the results of the study and includes descriptive statistics. To minimize the effect of outliers, all variables are winsorized at 1 and 99 percentiles.

Table 2: Descriptive statistics of joint venture banks and domestic commercial banks

This table includes the descriptive statistics of the dependent variables used in the regressions. Each variable's mean, standard deviation, minimum and maximum are included.

Variables	Observations		Mean		Std. Dev.		Min		Max	
	JVB	DCB	JVB	DCB	JVB	DCB	JVB	DCB	JVB	DCB
CAR (%)	63	153	13.31	13.02	2.35	2.01	10.75	10.26	21.08	21.08
NPL (%)	63	153	1.07	1.83	0.91	1.63	0.10	0.01	4.29	8.83
EPE (million rupees)	63	153	2.29	1.21	0.92	0.62	0.24	0.01	4.37	3.03
ROA (%)	63	153	1.95	1.34	0.59	0.55	0.28	0.00	3.25	2.60
ROE (%)	63	153	18.42	12.94	6.16	5.30	2.30	0.08	31.02	29.44
EPS (Rs)	63	153	39.77	19.45	21.17	9.39	2.61	0.09	88.55	47.41
CD (%)	63	153	74.09	84.42	11.00	5.37	49.62	69.23	94.61	94.61
GAP ratio	63	153	0.95	0.98	0.09	0.06	0.72	0.72	1.09	1.11

Source: Annual reports of banks

Table 3: Mean difference between domestic and joint venture banks

This table includes the mean (median) variables related to the CAMELS framework. Column 4 reports the p-value of the mean difference test of each variable between the joint venture and domestic commercial banks.

	Joint Venture	Domestic	Test of difference
Capital adequacy	13.31 (12.90)	13.02 (12.54)	0.389
Non-performing loan	1.07 (0.80)	1.83 (1.47)	0.000
Earning per employee	2.29 (2.25)	1.21 (1.16)	0.000
Return on assets	1.95 (1.94)	1.34 (1.46)	0.000
Return on equity	18.42 (17.28)	12.94 (12.84)	0.000
Earnings per share	39.77 (34.19)	19.45 (18.55)	0.000
Credit to deposit	74.09 (75.32)	84.42 (84.61)	0.000
GAP	0.95 (0.96)	0.98 (0.98)	0.022
Observations	63	153	216

This study finds an average capital adequacy ratio of 13.31% for joint venture banks and 13.02% for domestic commercial banks from mid-July 2011/2012 to mid-July 2019/2020. The p-value of the t-test in Table 3 is 0.389. This non-significant difference in capital adequacy ratio between the joint venture and domestic commercial banks indicates that both types of banks are adequately capitalized. A higher capital adequacy ratio means that banks are financially sound, and this higher ratio also indicates an inability of the bank to utilize its capital correctly. The central bank of Nepal requires all banks to maintain a CAR of 11%. On average, joint venture and domestic commercial banks have more than 11% CAR. This situation indicates that Nepalese banks are financially sound, mainly when the average is only 2% higher than the required minimum.

Apart from CAR, there are significant differences in other constituents of the CAMELS framework. Joint venture banks have an average net income of Rs 2.29 million per employee compared to Rs 1.21 million for domestic banks. Higher earnings for joint venture bank is also supported by higher ROA (1.95 vs. 1.34), higher ROE (18.42 vs. 12.94), and higher EPS (39.77 vs. 19.45). These constituents indicate that joint venture banks are financially stronger than domestic banks. The shared capital, technology, products, and human resources between a foreign bank and its associate in Nepal may have resulted in the increased performance of joint venture banks.

In addition, joint venture banks have a lower non-performing loan (1.07 vs. 1.83). The non-performing loan ratio, the ratio of non-performing credit to total credit, measures the effectiveness of banks in receiving loan repayments. The higher ratio shows the deteriorating quality of assets. Satisfactory asset quality is five to ten percent of a non-performing loan. Because the average NPL of both joint venture and domestic banks is below 5%, both types, on average, have better asset quality. The maximum (in

Table 2) NPL of domestic banks is 8.83%, and this percentage is still below 10%. However, compared to the maximum of 4.29% of joint venture banks, this percentage is higher and shows that some domestic banks could have borderline low-quality assets. Overall, joint venture banks have better credit collection policies.

The joint venture banks also have lower CD than domestic banks (74.09 vs. 84.42). Higher CD rates indicate that banks are lending more credit and thus properly utilizing deposits. On the other hand, an excessively high CD indicates a liquidity problem. Banks should balance the liquidity deficit and liquidity surplus. A liquidity surplus hits banks' profitability by diminishing the return on assets, although a liquidity deficit upkeeps banks in terms of higher procuring prices and damaged reputation. The central bank of Nepal requires all banks to maintain a 90% CD ratio. Using 90% as an optimal allocation of deposits, both joint venture and domestic banks are financially sound. Compared to domestic banks, joint venture banks have higher liquidity.

Joint venture banks also have significantly lower GAP than domestic banks (0.95 vs. 0.98). GAP measures market risk sensitivity through variations in interest rates, foreign exchange rates, and equity prices. Market risk arises from trading, non-trading, and foreign exchange activities. The deviation in these measures determines a bank's earning efficiency, and the sensitivity to market risk concludes how negatively the bank is concerned by such a difference. Because both types of banks have a GAP of less than 1, their liabilities recover quicker than assets, i.e., they are liabilities sensitive. Compared to domestic banks, joint venture banks are less liability sensitive.

These univariate analyses show that joint venture banks are financially sound compared to domestic banks.

4.2 Regression analysis

The following model is used to evaluate the financial strength of joint venture banks compared to domestic commercial banks.

$$Y_i = \beta_0 + \beta_1 \text{Joint Venture Banks}_i + \sum_{n=2}^N \beta_n x_{n,i} + \gamma_i + \epsilon_i \quad (1)$$

Where Y_i is a dependent variable that includes one of the CAMELS constituents, joint -Venture Bank is a dummy variable that equals one, if the bank i has a commercial arrangement with a foreign bank $x_{n,i}$ is a vector of bank characteristics such as total assets, long-term debt, total deposit ratio, and PE ratio, γ_i is the year-fixed effects, and ϵ_i is the error term.

The use of year fixed-effects is justified. First, it helps to control for the variation across years. Second, econometrically when a Hausman specification test is run, the test rejects the null hypothesis that a random-effects model can model the effects.

Table 4: The effect of a commercial arrangement with a foreign bank on banks' financial performance

This table includes year-fixed effects regressions to examine the performance of joint venture banks compared to domestic commercial banks. The dependent variables include several measures used in the CAMEL framework. ***, **, and * denote statistical significance at the 1%, 5% and 10% level, respectively.

	(1) CAR	(2) NPL	(3) EPE	(4) ROA	(5) ROE	(6) EPS	(7) CD	(8) GAP
Joint venture bank dummy	-0.211 (0.475)	-0.657*** (0.005)	0.840*** (0.000)	0.471*** (0.000)	4.035*** (0.000)	15.652*** (0.000)	-4.711*** (0.000)	-0.005 (0.642)
Total assets	-2.016*** (0.000)	-0.378 (0.183)	0.479*** (0.000)	0.462*** (0.000)	6.688*** (0.000)	21.342*** (0.000)	0.183 (0.823)	0.028** (0.015)
Long-term debt	-7.211*** (0.002)	-1.501 (0.453)	-2.135** (0.046)	-1.268 (0.109)	-9.356 (0.148)	-15.111 (0.444)	82.493*** (0.000)	0.523*** (0.000)
Total deposit ratio	-6.463** (0.016)	0.316 (0.896)	1.616 (0.141)	0.512 (0.595)	13.467* (0.057)	46.051** (0.028)	-37.636*** (0.000)	-0.479*** (0.000)
PE ratio	0.060*** (0.000)	-0.024 (0.118)	-0.007* (0.070)	-0.018*** (0.000)	-0.193*** (0.000)	-0.307*** (0.000)	0.051* (0.061)	-0.000 (0.374)
Constant	44.497*** (0.000)	7.303* (0.076)	-3.729* (0.069)	-2.875 (0.128)	- (0.000)	-236.578*** (0.000)	54.095*** (0.000)	0.708*** (0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	211	211	211	211	211	211	211	211
Adjusted R ²	0.455	0.083	0.501	0.403	0.548	0.614	0.811	0.418

Capital adequacy ratio

Model 1, Table 4 shows that the joint venture bank dummy is not significantly related to CAR, and the capital adequacy ratio is not different between joint ventures and domestic banks. This result contrasts Baral (2005) and Nepal Rastra Bank (2006), which show that joint venture commercial banks are better capitalized than domestic banks. This discrepancy can primarily be attributed to the difference in time. We cover Nepalese banks from 2012 to 2020, while Baral (2005) and Nepal Rastra Bank (2006) cover banks from 2000 to 2003.

Asset quality

Model 2, Table 4, shows that the joint venture bank dummy is negatively related to non-performing loans. A non-performing loan is a measure of asset quality, with higher values of NPL indicating lower asset quality. The results show that joint venture banks have lower NPL and, thus, higher asset quality. Grier (2007) points out that poor asset quality is the main reason for bank failures. Joint venture banks in Nepal have better asset quality than domestic banks, and thus, they have a lower probability of failure.

Management quality

Model 3, Table 4, shows a significant positive association between joint venture bank dummy and earnings per employee. A joint venture bank has NRs 0.840 million EPE higher than a domestic bank. Earnings per employee are a measure of management quality, whereby a higher value indicates the soundness of management. Thus, Nepalese joint venture banks have better quality management than Nepalese domestic commercial banks. This finding supports Baral (2005) that joint venture banks have high EPE.

Earning performance

This study measures earning performance in the form of ROA (Model 4), ROE (Model 5), and EPS (Model 6). The joint venture bank dummy is significantly positive on all the measures of earning performance, indicating that joint venture banks perform better than domestic banks. Joint venture banks are more profitable than Domestic banks.

Liquidity

This study measures liquidity in terms of the CD ratio, and a lower CD ratio indicates high liquidity. Model 7, Table 4, shows a significant negative association between the joint venture banks' dummy and CD ratio, which means Nepalese joint venture banks' have higher liquidity than domestic banks. Sensitivity to market risk.

This study measures sensitivity to market risk using GAP. Model 8, Table 4, shows no significant disparity between the joint venture and domestic banks in terms of sensitivity to market risk.

5. Conclusion

Using a sample of the joint venture and domestic banks from mid-July 2011/2012 to mid-July 2019/2020, this study examines the financial strength of Nepalese commercial banks. This paper finds significant differences in asset quality, management quality, earning performance, and liquidity between the joint venture and domestic commercial banks in Nepal. This finding aligns with Baral (2005) and Nepal Rastra Bank (2006), which report that joint venture banks are financially sound compared to other commercial banks. On the contrary, Jha and Hui (2012) reveal that domestic private and joint venture banks are equally effective.

These results show that joint venture banks can introduce new products and businesses in the Nepalese market and thus perform better. They have higher IT infrastructure or better investment culture compared to domestic banks. Thus, this study suggests management of Nepalese domestic banks searches for commercial agreements/collaboration with foreign banks to help improve firm performance.

The paper excludes data during the period of COVID-19. Future researchers can use financial data pre-, during, and post-COVID-19 period and examine how a black swan event such as COVID-19 can affect the financial strengths of foreign and domestic banks.

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Author 1: Conceptualization, Data collection, Modeling, Writing

Author 2: Conceptualization, Writing, Revision, Supervision

7. Appendix

Appendix 1: List of sample banks

SN.	Joint Venture Banks	S.N.	Domestic Commercial Banks
1	Everest Bank Ltd	1	Laxmi Bank Ltd
2	Himalayan Bank Ltd	2	Machhapuchhre Bank Ltd
3	Nabil Bank Ltd	3	Global IME Bank Ltd
4	Nepal Bangladesh Bank Ltd	4	NIC ASIA Bank Ltd
5	NMB Bank Ltd	5	Civil Bank Ltd
6	Nepal SBI Bank Ltd	6	Citizen Banks International Ltd
7	Standard Chartered Bank Ltd	7	Prabhu Bank Ltd
		8	Mega Bank Nepal Ltd
		9	Siddhartha Bank Ltd
		10	Sunrise Bank Ltd
		11	Bank of Kathmandu Ltd
		12	Nepal credit and commercial Bank Ltd
		13	Sanima Bank Ltd
		14	Prime Commercial Bank Ltd
		15	Century Commercial Bank Ltd
		16	Kumari Bank Ltd
		17	Nepal Investment Bank Ltd