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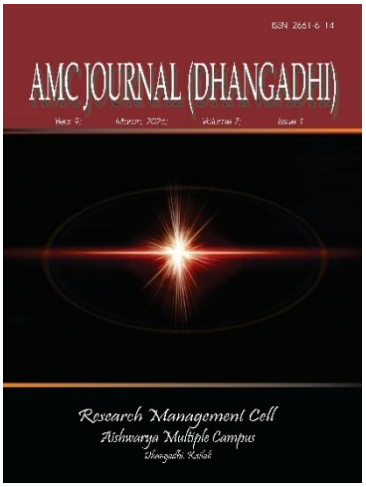
# Do Intangible Assets Drive Profitability? An Empirical Analysis of Nepalese Commercial Banks

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## Abstract

Intangible assets such as software, goodwill, trademarks, human capital, intellectual assets and copyrights are increasingly recognized as critical drivers of competitive advantage and profitability in modern business organizations. This study investigates the impact of investment in intangible assets on the profitability of Nepalese commercial banks. Employing an ex post facto research design, the analysis is based on panel data from 19 commercial banks over eight years (from 2074/75 to 2080/81), corresponding to 2017/18 to 2023/24, yielding 152 observations. A Quantile regression model is used to assess the relationship and impact, with net profit after tax (NPAT) as the dependent variable, investment in intangible assets as the independent variable, and bank size as a control variable. Additionally, bank age and ownership type are incorporated as moderating variables. The results reveal that investment in intangible assets has a positive and statistically significant impact on profitability (NPAT) at the 50th percentile and above. Furthermore, age and size of the banks also positively influence NPAT, while ownership type does not exhibit a significant effect on NPAT. These findings highlight the significance of investing capital in intangible assets for strategic importance. Banks' period of experience (age) also proves earning capacity with their physical and intellectual resources. Banks' policymakers can rethink the investment size and nature of intangible assets to contribute to bank profitability. The study has not categorized the intangible assets into individual components. Each component of intangible assets may contribute in profitability individually, which has not been covered in this.

***Keywords:*** firm size, intangible assets, profitability, sustainability, commercial banks

## Introduction

Profitability in commercial banks is critically important from multiple perspectives. Bank profits protect and enhance shareholders' interests, strengthen public confidence in deposit safety, and support financial stability. Moreover, sustained profitability enables banks to efficiently mobilize and allocate financial resources, thereby contributing to the smooth functioning of economic activities and overall economic growth of the country (Laeven and Levine, 2009). Banks are supposed to be very critical institutions which are driven toward profitability by various internal as well as external economic

factors. Enrichment in intellectual capital (human, structural and relational capital) is the most pertinent element posed by every commercial bank. One of the most prevalent intellectual capital components is intangible asset which comprises software, goodwill, trademarks, human capital, intellectual assets and copyrights. Such intangible assets are increasingly recognized as critical drivers of competitive advantage and profitability in modern business organizations. In the era of the fourth industrial revolution (Industry 4.0), intangible assets play a critical role in strengthening the value chain of the banks, thereby enabling strategic motives and profits to be sustained. Khan et al., (2018) have also highlighted the role of intellectual capital on financial performance and sustainable competitive advantages. Furthermore, in the global context of a competitive business environment, compiling such assets has been an issue in achieving predetermined objectives. Milala et al., (2024) have examined the role of intangible assets in profitability and found a positive impact of intangible assets (software and other human capital assets) on profitability. In the knowledge economy, companies tend to invest their capital in R&D, acquisition of patent rights, copyright, trademark and other installations of software to have better operational efficiency (Vakulchyk, 2019). Under the heading of internal business processes, Kaplan and Norton (1996) attempted to introduce the concept of intangible assets. These processes include learning and growth (L&G), business-led initiatives to boost employee productivity, research and development (R&D), and software for other innovations. Companies invest a substantial amount of capital in tangible assets as well as in intangible assets so that the companies hold competitive strength and impact on profitability. Intara and Suwansin (2024) have tested variables belonging to intangible assets, namely, identifiable intangible assets, goodwill, and research and development (R&D), to contribute to firms' value addition. The results showed a positive contribution to the aforementioned variables. In their analysis of the effects of intangible assets and liabilities on profitability, Haji and Ghazali (2018) found that intangible assets had a positive effect while intangible liabilities had a negative one. The study's foundation was a resource-based view.

In contrast, Ionita and Dinu (2021) found that intangible assets, such as R&D and patents, do not have a positive impact on sustainable growth and a firm's value. However, IT programs positively impact a firm's value but not its sustainable growth in Romanian companies. According to Chappell and Jaffe (2018), intangible investment has been supposed to be associated with growth and performance efficiency, but not productivity or profitability in New Zealand's firms. The results of the panel data regression model reveal that intangible assets can affect the performance of companies positively if firm size, age, leverage, physical capital intensity, market share, risk, industries and dummy year are controlling variables (Bhatia & Aggarwal, 2018). According to Tahat et al. (2017) and Ahmed and Alhadab (2017), intangible assets, such as goodwill and research and development, positively impact firms' financial and market performance, with goodwill positively affecting both current and future performance. According to Bontempi and Mairesse (2015), intellectual capital, customer capital, and intangible assets have the highest marginal productivity, with accounting information of intangible investments being crucial for estimating their impact on productivity. Tahat et al. (2017) have described how intellectual capital significantly impacts firms' performance in US multinational firms, supporting both the resource-based and stakeholder views of the firms. Brown and Kimbrough (2011) showed the findings of their research that intangible investments, particularly separable recognised intangibles, can effectively differentiate firms from rivals, with the success of this strategy depending on effective protection mechanisms. Bagna et al., (2021) also showed their positive research findings about investment in patents and intangibles for European companies' growth and profitability, but the way a firm creates, assembles, and renews these patents significantly influences this effect. Bistrova et al.,

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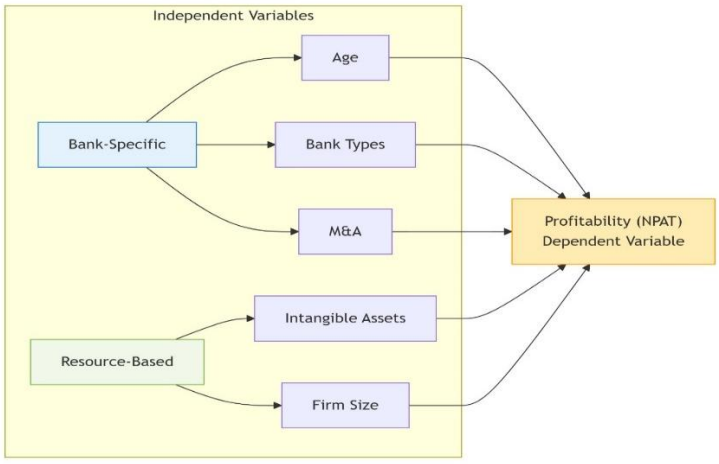
(2017) concluded their finding that higher investments in intangible assets, over 10% of total assets, lead to higher margins in Central and Eastern European companies, but only if the investments are substantial. Zhang and Tu (2022) have reported their research findings that intangible assets have a greater promotional effect on private agro-food enterprises' productivity than state-owned enterprises, but have a lesser impact on state-owned enterprises due to budget constraints and incentive mechanisms. Uribe (2025) has presented their findings, highlighting that investment in high knowledge-intensive intangibles, such as research and development, significantly contributes to a country's economic complexity.

The study has intended to describe the current position of profitability of Nepalese commercial banks aligned with the banks' asset size, including intangible assets. There are various discrepancies in Nepalese commercial banks from the perspective of age gap, firms' size, investment in intangible assets and ownership types. This study also seeks to comprehend the role of banks' resource-based competitive strength in generating profitability.

The paper is organized as follows: Section one introduces the study by outlining the background, research objectives, and motivation for examining the role of bank-level resources in profitability generation. Section two reviews the relevant theoretical foundations, particularly the resource-based and knowledge-based views, and synthesizes prior empirical literature on intangible assets and bank profitability, leading to the development of testable hypotheses. Section three describes the data and methodology, including the secondary data collected from the official websites of 19 commercial banks over eight years, variable measurement, ownership classification into private, joint-venture, and government-owned banks, and the econometric models employed. Finally, Section four presents the empirical results obtained from pooled OLS and Quantile regression analyses at the 25th, 50th, 75th, and 90th percentiles using STATA. Section 5 discusses the findings in relation to theoretical expectations and existing literature, highlighting differences across profitability levels and ownership structures. Finally, Section 6 concludes the paper by summarizing key findings, outlining managerial and policy implications, and suggesting directions for future research.

**Figure 1**




Research Framework

## Review of Literature and Hypothesis Development

### Resource-based view (RBV)

According to Wernerfelt (1984), RBV theory primarily concerns investment decisions that can be connected with the placement and utilization of an organization's internal resources. According to McGee (2015), the RBV focuses on how capabilities, competencies, skills, and resources contribute to building the competitive advantage. It presents ideas like investment in strategic assets, core competencies, and distinctive capabilities, all of which are thought to be an organization's defining traits. A prominent paradigm in strategic management, RBV emphasizes the significance of firm-specific resources that are rare, valuable, unique, and non-replaceable to gain a competitive edge (Mahoney & Pandian, 1992; Connor, 2002; D'Oria et al., 2021). Grant (1991) defined a firm's resources as all of its tangible assets, which include its land, buildings, equipment, furniture and fixtures, as well as its intangible assets, which include its internal processes, competencies, and information that are used to maximize the organizational wealth. Resource-based theory states that the possession of strategic resources strengthens an organization with a powerful opportunity to develop competitive advantages over its rivals (Barney, 1991). Banks must possess sufficient physical, financial and liquid assets so that their profit-earning opportunities can be materialized. The following hypothesis is proposed: whether total assets contribute to profit maximization or not.

H1: Total assets have a positive and significant effect on banks' profitability (i.e. NPAT)

### Knowledge-Based View (KBV)

According to Takeuchi (2013), knowledge is a human dynamic and a social

process of justifying personal belief towards the truth. There is one school of thought that assumes that every firm is different and follows a different strategy, which is because of their knowledge-based view. Because every business entity and management has a different set of beliefs, values, presumptions, and knowledge based on a particular perspective, they each formulate corporate strategies differently and approach decision-making in unique ways. Ahmed et al., (2022) have also presented evidence for the significant role of intellectual capital on firms' performances.

Tartaro (2023). has also described the concept of knowledge; he argues that human beings obtain new knowledge through their individual, active, and subjective shaping and integration of experience. The decision-making process and effectiveness of the decision-making are totally based on the knowledge-based view. Most of the intangible assets are the products of a knowledge-intensive process.

H2: Intangible assets have a positive and significant effect on banks' profitability (i.e. NPAT)

### Bank Specific Characteristics

While the banking sector in Nepal has seen significant growth, the drivers of profitability remain complex and varied. Existing literature suggests that internal dynamics, specifically the age of the institution, the structural shifts caused by Mergers and Acquisitions (M&A), and the nature of ownership, might play an essential role in capitalizing financial results.

However, there is a lack of consensus on these impacts. For instance, do older banks benefit from institutional experience, or do they suffer from operational rigidity? Does M&A truly create synergistic

value, or does it lead to integration inefficiencies that hamper NPAT? Furthermore, the 'ownership effect', understood as agency theory, also exposes a subject of debate, as the performance gap between state-owned, private, and joint venture-foreign banks varies across different economic environments. There is a need to empirically investigate how these bank-specific factors interact to influence the long-term profitability of banks in the current market context.

There are various firm-specific characteristics, such as age, ownership types, M&A phenomenon, that matter to bank profitability or not. Rahman et al., (2021) have shown the negative impact of age on profitability in some Chinese companies. Loderer et al., (2010) have also shown the decline in profit over the life of the companies. Studies in emerging markets like Ethiopia and Pakistan (Malik, 2011) often find a positive link, claiming that older banks have established brand loyalty, lower cost of funds, and better risk management systems developed over decades. Research showed that age has no significant impact on ROA of Indonesian Islamic banking, but size is accounted for (Humairah et al., 2023). Across Asia (India, Nepal and China) and Europe, empirical evidence shows that state-owned banks are less profitable than private counterparts (Micco et al., 2007; Cornett et al., 2010). However, Atimbire et al., (2024) have exhibited the stagnant result of bank profitability after M&A up to six years due to some cost combination and structural integration. From the above theoretical base and empirical evidences following hypotheses are proposed:

H3: The age of the bank has a significant impact on profitability (NPAT)

H4: Merger and Acquisition (M&A) of commercial banks has a significant impact on profitability (NPAT)

H5: Ownership types have a significant impact on banks' profitability (NPAT)

## Methodology

### Research Design

This study adopts an ex post facto, causal-explanatory research design to investigate the effect of intangible asset investments on firm profitability. In case testing the cause and effect relationship without manipulating any variable, based on a historical period, an ex post facto causal comparative research design is appropriate. Pukon (2024) has also adopted an ex post facto, causal comparative research design for examining cause-and-effect relationships to measure the impact of intangible assets on profitability. The research utilizes a quantitative approach and applies Quantile regression to identify the impact of intangible investments on bnaks' performance over time. The study uses secondary data collected from annual reports, financial statements, and regulatory filings of selected Nepalese commercial banks. The data spans eight years (2074/75 to 2080/81BS), covering 19 companies selected from a population of 20 Nepalese commercial banks. The analysis of panel data has been based on static model specification techniques suitable for longitudinal datasets. Descriptive statistics under this study consists summary of key variables: mean, median, and standard deviation. Panel data regression has tested through Quantile regression at different percentiles (i.e. 25 to 90%). Li (2014) and Chowdhury et al., (2016) have also adopted the Quantile regression model in their study to measure the bank profitability and to overcome the heavy-tailed distribution of data because of some outliers. STATA facilitated the analysis of panel data in order to create a figure for visualization and measure quantile regression.

Model Specification:

Model 1: NPATit = αit +β1Int.Assetit. +εit

Model 2: NPATit = αit+ β1 firm size/TAit +εit

Model 3: NPATit= αit + β2 ageit + β3banktypesit+ β4 (dummyvariables)it +εit

**Table 1**

*Variables and Operational Definitions*

| Name of variables | Var. id | Variable definition | Sources |
|---|---|---|---|
| age | age | Age of the company (Each preceding ye calculated by subtracting one from succeeding year). | Mansikkamäki (2023); Warusawitharana(2018). |
| Capital structure | banktypes | 1,2, and 3: ( 1 for "Joint venture"; 2 for "public ltd.bank" and 3 for "government ownership" banks | Zhang et al., (2001); Banerjee & Velamuri (2015); Ahmed et al., (2022). |
| NPAT (Rs in billion ) | NPAT | Net Profit After Tax (Rs. Billion) | Bhattarai, (2020); Ebe et al., (2023). Mondol & Wadud (2022); Ahmad & Matemilola (2013) |
| Intangible assets (Rs in million) | Int.Asst | Intangible assets comprise software, patent, copyright and additional acquisition values after merger and acquisition, taken from the audited balance sheet and amounts are in Rs. Million. Defined as per NAS 38 and NFRS note no. 4.14 | Zelalem & Abebe (2022); ZHu & Hatakeda (2023). |
| Total assets (Rs in billion) | firmsize | Total asset from the audited balance sheet of the banks and amounts are in Rs. billion. | Alathamneh et al., (2025); Yadav (2021). |
| Dummy variables | Dummy1 | 0 for "Before Merger"; 1 for "After Merger" and 2 for "No Merger" | Zhu et al., (2023); Gachigo et al., (2023). |

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## Results and Analysis

**Table 2**

*Descriptive Summary*

| Variables | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| Year (obs. Years) | 152 | 2077 | 2.299 | 2074 | 2081 |
| Age of Banks | 152 | 26.461 | 19.026 | 2 | 87 |
| Banktypes | 152 | 1.895 | .642 | 1 | 3 |
| NPATs (in Billion) | 152 | 2.6 | 1.418 | .028 | 8.935 |
| Int.Asst (In Million) | 152 | 173.262 | 237.372 | 2.16 | 1120.15 |
| Firm Size-Total Assets (in Billion) | 152 | 245 | 119.2 | 73.5 | 651.0 |

**Table 2** presents a summary of the dataset comprising 152 observations from 19 Nepalese commercial banks over eight years (fiscal years 2077/ to 2081). Company age was calculated as the number of years since establishment and recorded in reverse order within the panel dataset—beginning with the most recent year (e.g., 40) and decrementing by one for each preceding year, thereby capturing the firm's age at each observation point. The banks are classified into three ownership types: type 1 (Joint Venture), type 2 (Public Limited), and type 3 (Government-Owned). Net profit after Tax (NPAT) ranges from Rs 0.028 billion to Rs 8.935 billion, with a mean of Rs 2.6 billion. Investment in intangible assets varies from Rs2.159 million to Rs1, 120 million, averaging Rs173 million. Total assets held by these banks range from Rs 73.5 billion to Rs 651.0 billion, indicating substantial variation in institutional size within the sample. Based on merger history, three dummy variables are created: dummy '0' denotes the period before merger history, dummy '1' represents the period after merger and dummy '2' represents the period for period banks having no merger history.

**Table 3**

*Shapiro-Wilk W test for Normal Data*

| Variable | Obs | Prob>z |
|---|---|---|
| NPAT | 152 | 0.000 |
| Int.Asst | 152 | 0.000 |
| Firm size (Total assets) | 152 | 0.000 |

The values of prob>Z are less than 0.05(Z< 0.05). It means that all three variables, NPAT, investment in intangible assets and firm size (total assets), are not normally distributed. There is a need to perform a test of robustness.

**Table 4**

*Pairwise correlations*

| Variables | (1) | (2) | (3) | (4) | (5) | VIF | 1/VIF |
|---|---|---|---|---|---|---|---|
| (1) NPAT | 1.000 | | | | | | |
| (2) Int.Asst | 0.239 | 1.000 | | | | 1.72 | .582 |
| (3) Firm size (Total assets) | 0.510 | 0.598 | 1.000 | | | 1.729 | .578 |
| (4) Age of bank | 0.177 | -0.146 | 0.163 | 1.000 | | 1.135 | .881 |
| (5) Banktypes | 0.014 | -0.065 | 0.065 | 0.470 | 1.000 | | |

The pairwise correlation coefficients presented in Table 4 indicate a positive but weak relationship between NPAT and investment in intangible assets (r = 0.239). Additionally, a moderate positive correlation(r=0.510) is observed between NPAT and firm size, measured by total assets. Notably, there is also a moderate positive correlation between intangible assets and total assets(r=.598), which is expected, as intangible assets constitute a component of total assets. Given this level of correlation, there is a potential concern regarding multicollinearity. Therefore, to avoid overlapping effects and ensure robustness, two separate regression models have been estimated: one including intangible assets and the other including firm size.

**Table 5**

Breusch–Pagan/Cook–Weisberg test for heteroskedasticity Assumption: Normal error terms Variable: Fitted values of NPAT

H0: Constant variance

chi2(1) = 72.16

Prob > chi2 = 0.0000

The results of table 2 shows Test of Breusch–Pagan/Cook–Weisberg test, here

Mean value of VIF is 1.528 (VIF < 5), which indicates that there is no serious autocorrelation. Similarly, Null Hypothesis ($H_0$): Errors have constant variance (homoskedasticity) and the prob>chi2 =0.000 (Prob>chi2 <0.05), it is concluded that there is heteroskedasticity issues in the data set. Robust standard error is a measure to address the heteroskedasticity.

**Table 6**

*List of sample banks with their bank ID number*

| Bank id | Name of banks | Bank id | Name of banks |
|---|---|---|---|
| 1 | Nabil Bank Ltd. (NABIL) | 11 | NMB Bank (NMB) |
| 2 | Machhapuchhere Bank Ltd. (MPB) | 12 | Prime Commercial Bank Ltd. (PCB) |
| 3 | Rastriya Banijya Bank Ltd. (RBB) | 13 | Sanima Bank Ltd. (SanBL) |

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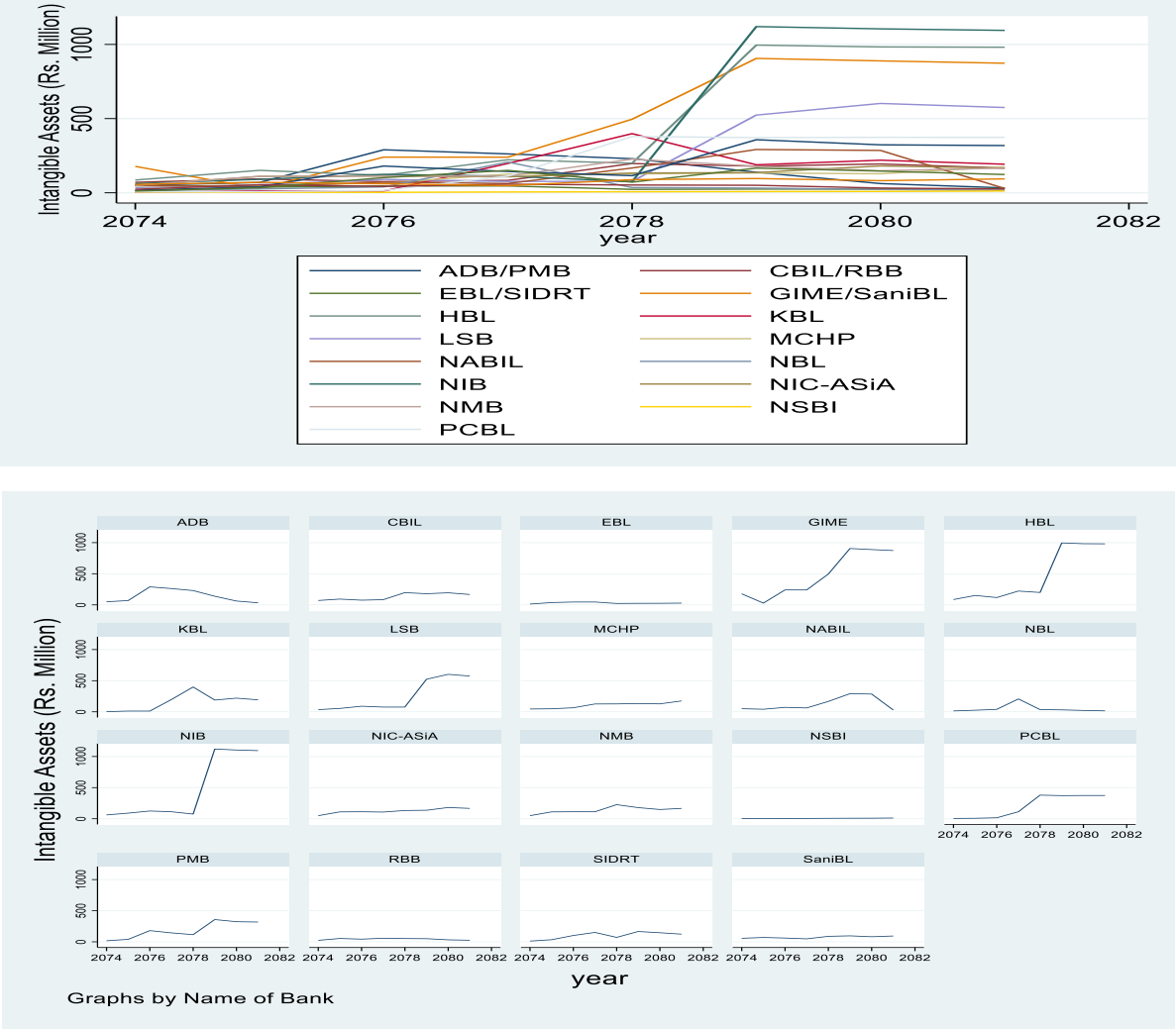
| | | | |
|---|---|---|---|
| 4 | Sidartha Bank Ltd. (SIBL) | 14 | Nepal SBI Bank Ltd. (NSBI) |
| 5 | Citizen Bank International. Ltd. (CBIL) | 15 | Agriculture Development Bank Ltd. (ADB) |
| 6 | Everest Bank Ltd. (EBL) | 16 | Nepal Investment Bank Ltd. (NIB) |
| 7 | Himalayan Bank Ltd. (HBL) | 17 | Parbhu Bank Ltd. (PMB) |
| 8 | Kumari Bank Ltd. (KBL) | 18 | Laxmi Sunrise Bank Ltd. (LSB) |
| 9 | Nepal Bank Ltd. (NBL) | 19 | Global IME Bank Ltd. (GBL) |
| 10 | NIC-ASIA Bank Ltd. (NIC-ASIA) | | |

**Figure 2**

*Trends in intangible asset investment (Rs. Million) across commercial banks from 2074 to 2081.*




*Note*. Figure 2 illustrates the trend in intangible asset investments across commercial banks over eight years. A noticeable increase in intangible assets is observed after the fiscal year 2078 for banks GIME,

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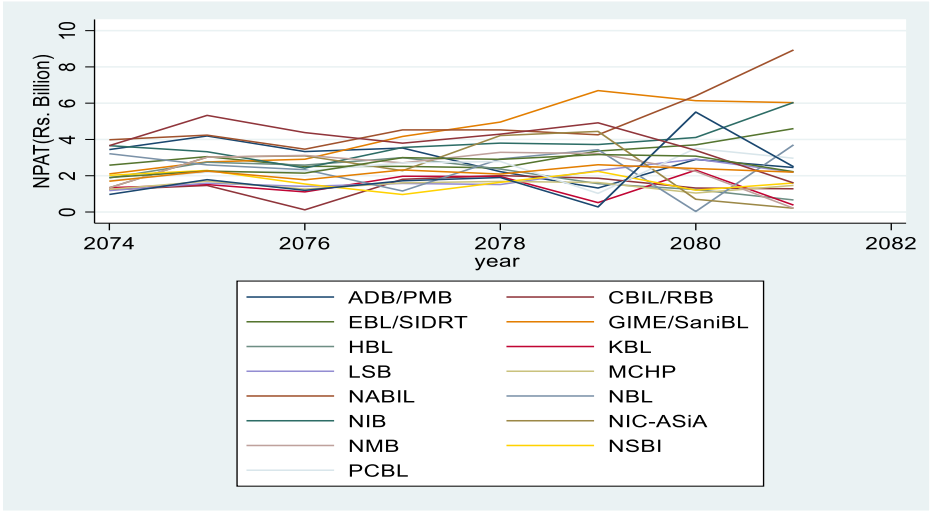
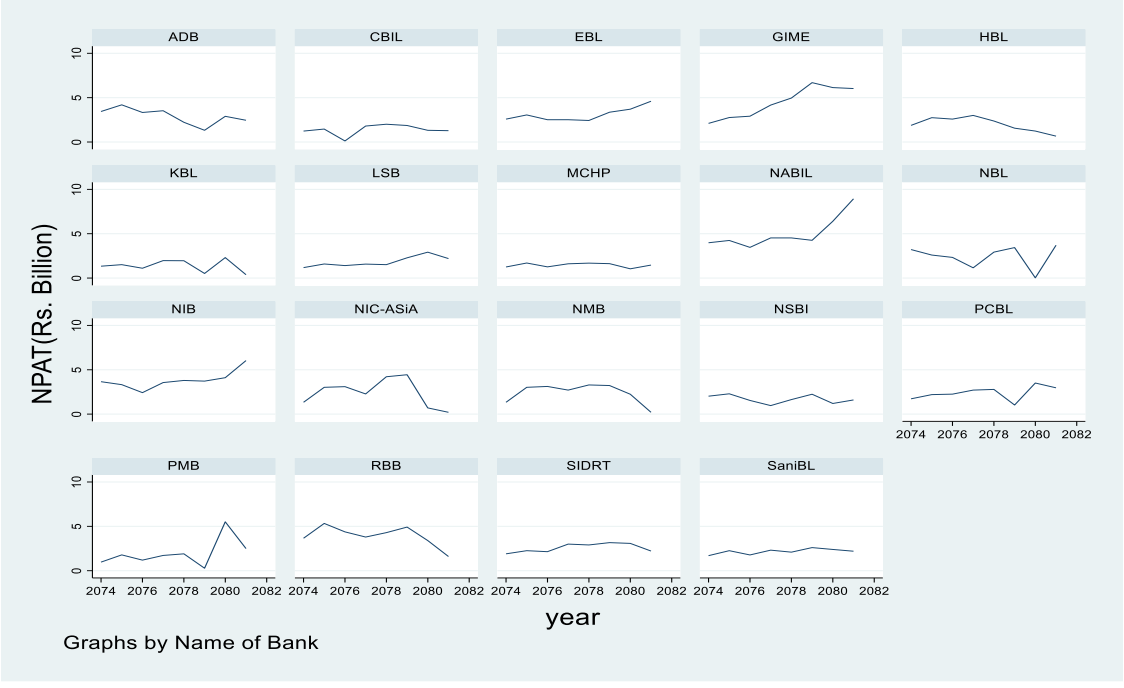
NABIL, PMB, HBL, LSB, PCBL, NIC-ASIA and NIB. Among these, NIS-ASIA, NABIL, HBL, and PACBL have experienced substantial growth in intangible assets, primarily due to mergers and acquisitions. Similarly, other banks tend to increase the investment in intangible components such as software, intellectual property, and digital infrastructure, which may be attributed to strategic shifts and digital transformation efforts undertaken in the aftermath of the COVID-19 pandemic. This trend reflects a broader organizational emphasis on intangible resources as a driver of competitive advantage in the post-pandemic banking environment.

**Figure 3**

*Trends in NPAT (Rs. billion) across commercial banks from 2074 to 2081.*



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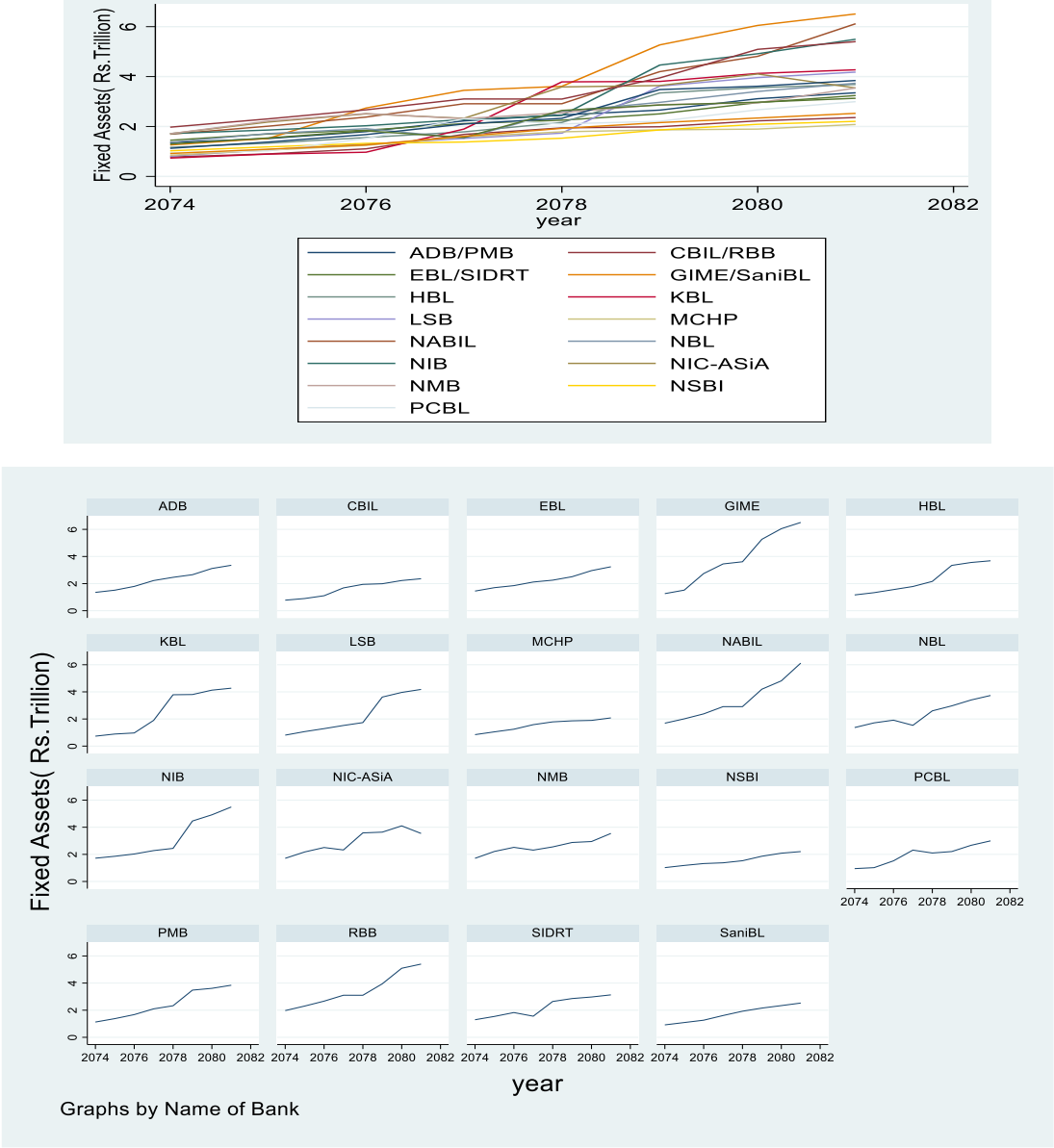
*Note.* All banks are reporting consistent profits (NPATs), as seen in Figure 3. Except for a few banks, the profits of banks NIC-ASIA, NSBI, NBL, PMB, and RBB have higher fluctuation. However, EBL, GIME, NIB, LSB and NABIL have been able to increase their profits over the years. Banks like SaniBl, SIDRT, MCHP, and NMB have shown constant profits.

**Figure 4**

*Trends in firm size/total assets (Rs. billion) across commercial banks from 2074 to 2081.*




*Note.* Figure 4 demonstrates the trend of total assets (Rs. Billion) over the eight years from 2074 to 2081. Total assets of NABIL, HBL, KBL, NIC-ASIA, NIMB, PMB, LSB and GIME have seen a significant increase after having mergers and acquisitions, especially after 2078BS.

**Table 7**

*Regression Analysis of the Impact of Intangible Assets on NPATs, OLS vs. Quantile Estimates*

| NPAT (in Billion) | OLS | Quantile regressions: | | | | |
|---|---|---|---|---|---|---|
| | | At 25% | At 50% | At 75% | At 90% | Results |
| IntAsst (in Million) | .001, (P=.003) ** | 0, (P=.983) | .002, (p=.05) ** | .003, (P=.002) ** | .004, (P=.00) ** | H1=accepted |
| Constant | 2.36 (p=0) ** | 1.133, (P=.04) ** | 1.904, (P=0) ** | 3.059, (P=.00) ** | 3.505, (P=.001) ** | |
| R-squared/ Pseudo R2 | 0.119=11.9% | 0.0121=1.21% | 0.0814=8.14% | 0.1650=16.50% | 0.2737=27.37% | |
| No. of Observations 152 | H1=Accepted | | | | | |

The empirical results indicate a positive and statistically significant relationship between Intangible Assets (IntAsst) and net profit after tax (NPAT). According to the OLS regression results, the coefficient for IntAsst is Rs 0.001 with a p-value of 0.003. This suggests that, on average, a one million increase in intangible assets leads to a Rs 0.001 billion increase in NPAT. However, the OLS model, which focuses on the mean, masks significant variations across different levels of firm profitability. The Quantile Regression results provide a more nuanced view.

At the low percentile (25th Percentile), the impact of intangible assets is negligible and statistically insignificant $\beta = 0$, $p = 0.983$). For banks in this lower bracket, intangible assets do not yield additional NPAT. Median to high Profitability (50% to 90% Percentiles), as we move up the distribution, the coefficient consistently increases. At the median (50%), the coefficient rises to $\beta=0.002$ ($p = 0.05$). This trend accelerates at the 75th percentile ($\beta=0.003$) and peaks at the 90th percentile ($\beta=0.004$, $p = 0.00$).

The model's goodness-of-fit improves as we analyze banks with a greater amount of intangible assets. While the Pseudo $R^2$ is a mere 1.21% at the 25th percentile, it climbs to 27.37 % at the 90th percentile. This suggests that intangible assets are a much more critical determinant of performance for "high-flyer" banks than for those in the lower quartiles of the industry. Based on the consistent significance across the OLS model and the majority of the quantiles (50%, 75%, and 90%), Hypothesis H1 is accepted. Intangible assets serve as a significant driver of corporate profitability (NPAT), though the magnitude of this effect is contingent upon the firm's existing profit level.

**Table 8**

*Regression Analysis of fixed Assets, Age, Bank types and dummy variable on NPATs, OLS vs. Quantile Estimates*

| NPAT (in Billion) | OLS | Quantile Regression | | | | Results |
|---|---|---|---|---|---|---|
| | | At 25% | At 50% | At 75% | At 90% | |
| Firm size/Total asset (in Billion) | .0057, (p=.00) ** | .00292, (p=.059) | .00655, (p=.00) ** | .00854, (p=.00) ** | .00957, (p=.00) ** | H2= Accepted |

| | | | | | |
|---|---|---|---|---|---|
| Constant | 1.359, (p=.001) ** | .789, (P=0.213) | 1.49, (p=.001) ** | 1.239(p=.002) ** | 1.64, (p=.003) ** |
| R-squared/ Pseudo R2 | 0.278=27.8% | 0.0456=4.56% | 0.1807=18.07 % | 0.3192=31.92% | 0.4255=42.55% |
| No. of Observations | 152 | H2=Accepted | | | |

The empirical analysis investigates the impact of Firm Size (measured by Total Assets) on corporate profitability (NPAT). The results from the OLS regression show a positive and highly significant coefficient of ($\beta$= 0.0057, $p < 0.01$). This suggests that for every 1 billion unit increase in Total Assets, NPAT increases by 0.0057 billion, confirming a general "economies of scale" effect across the sample. However, the Quantile Regression results reveal a more complex, non-linear relationship that varies across different profit levels. At the low percentile (25th Percentile), the coefficient is at its lowest ($\beta$=0.0029) and is only marginally significant ($p = 0.059$). This indicates that for banks struggling with lower profitability, increasing firm size has a relatively weak impact on the bottom line.

At median and high percentiles (50%, 75%, and 90% Percentiles), as we move toward more profitable banks, the impact of size strengthens significantly. The coefficient rises from ($\beta$=0.0065 to $\beta$=0.0095; $p < 0.01$) at the 90th percentile.

The Pseudo $R^2$ values demonstrate a striking increase in the model's explanatory power as we move up the Quantiles: At the 25th percentile, firm size explains only 4.56% of the variance in NPAT. By the 90th percentile, the Pseudo $R^2$ reaches 42.55%. This suggests that while firm size is a contributing factor for all companies, it is a primary driver of success for the most profitable banks in the industry.

**Table 9**

*Regression analysis of age, bank types, mergers and acquisitions on NPAT*

| NPAT Rs. Billion | Coef. | St.Err. | t-value | p-value | Sig |
|---|---|---|---|---|---|
| Age of banks | .005 | .016 | 0.35 | .727 | H3=Rejected |
| No Merger/Merger: In Reference –Before merger | 0 | . | . | . | |
| 1-After merger | .754 | .282 | 2.67 | .008 | H4=Accepted |
| 2- No merger | -.441 | .416 | -1.06 | .289 | |
| Constant | 2.861 | .626 | 4.57 | 0 | *** |
| Type of banks: in Reference-Joint venture | 0 | . | . | . | |
| 2-Public bank | -.574 | .487 | -1.18 | .239 | H5=Rejected |
| 3-Government banks | .325 | .857 | 0.38 | .705 | |
| Mean dependent var | 2.600 | | | | |
| Overall r-squared | 0.172 | | | | |
| Chi-square | 14.151 | | | | |
| R-squared within | 0.047 | | | | |

Table 9 explains the regression model that examines the factors influencing net profit after tax (NPAT). The model is statistically significant as a whole (Prob>chi2=0.015). The Overall R-squared of 0.172 indicates that the independent variables explain approximately 17.2% of the variance in NPAT. The most notable result in this model is the effect of mergers on profitability. There is a statistically significant positive relationship between the "After Merger" period and NPAT (β=0.754, p=0.008). This indicates that, holding other factors constant, banks saw a significant increase in net profit after a merger compared to the pre-merger reference period. Banks that do not undergo a merger showed a negative coefficient (β=−0.441), but this result was not statistically significant (p=0.289). Other institutional factors did not show a statistically significant impact on NPAT at the 5% level. Bank type, compared to the reference group (Joint Venture banks), both Public banks (β = -0.574, p = 0.239) and Government banks (β = 0.325, p = 0.705) did not show significant differences in profitability. Similarly, the institution's age has a negligible, statistically insignificant effect on NPAT (β = 0.005, p = 0.727).

## Discussion

The primary objective of this study was to investigate the influence of intangible assets on the profitability of commercial banks in Nepal. The empirical results indicate a positive and statistically significant relationship between intangible assets and net profit after tax (NPAT). Interestingly, while OLS regression showed a general positive impact, Quantile regression revealed that this effect is most pronounced at the 50th percentile and above. For banks in the lower 25th percentile of holding intangible assets, it does not yield additional NPAT, suggesting that such assets are more critical determinants of performance for "high-flyer" Banks.

This finding aligns with the knowledge-based theory of the firm, which posits that knowledge-intensive processes are primary drivers of value creation. Specifically, these results support Kengatharan's (2019) findings on the role of intellectual capital in driving productivity and profitability. Furthermore, the positive influence of intangible assets on performance is consistent with research in other emerging markets, such as Nguyen (2023) in Vietnam and Ebe et al. (2023) in Nigeria. Research consistently demonstrates that intangible assets significantly bolster corporate performance. Several studies have established a positive relationship between these assets and profitability metrics, specifically Return on Assets (ROA) and Return on Equity (ROE) (Intara & Suwansin, 2024; Qureshi & Siddiqui, 2020; Seo & Kim, 2020; Yao et al., 2019). Beyond immediate profitability, intangible assets also contribute to heightening the firm's value and superior stock returns (Ionita & Dinu, 2021; Qureshi & Siddiqui, 2020; Stan & Paraschiv, 2024). Furthermore, recent literature emphasizes that these assets are primary drivers of organizational growth and productivity (Bagna et al., 2024; Ognjanović et al., 2024; Roth et al., 2022).

The study also found that bank size, measured by total assets, has a highly significant positive effect on NPAT, confirming a general "economies of scale" effect across the sample. Similar to intangible assets, the impact of size strengthens as banks move toward higher profit levels. This supports the views of Alarussi and Gao (2023), who identified firm size and assets as prominent determinants of profitability.

Moreover, establishing the findings of this study within the broader context of international empirical research provides a robust foundation for the discussion. The positive and statistically significant relationship between intangible assets and Net Profit After Tax (NPAT) observed in Nepalese

commercial banks mirrors findings in other emerging economies. This is further supported by Singh and Narwal (2015), whose examination of Indian companies across technology, service, and manufacturing sectors revealed that human capital efficiency (HCE) and structural capital efficiency (SCE) are primary drivers of profitability.

The efficiency of knowledge-based capital in generating value is a recurring theme in the literature. Oppong and Pattanayak (2019) claimed that such capital leads to higher employee productivity and asset turnover ratios in Indian banks, while Chen et al. (2005) highlighted that physical capital, human capital (often measured through R&D investment), and structural capital collectively create significant value and positively impact firm profitability. These perspectives align with the results of this study, which show that the impact of intangible assets on NPAT peaks at the 90th percentile, suggesting they are critical determinants for "high-flyer" banks.

Modern organizational shifts also validate these findings. Abouaomar and Alhaderi (2024) indicated that digital orientation and capability directly boost digital transformation and revenue generation, while Crass and Toole (2019) emphasized that strong brand equity acts as a buffer to maintain profitability during economic demand shocks. In the Nepalese context, the observed increase in intangible assets after 2078 BS, linked to strategic shifts and post-pandemic digital transformation, reflects this broader global emphasis on intangible resources as competitive drivers. Furthermore, the significant role of bank-specific characteristics found in this study, such as the positive influence of bank size and the "After Merger" period, is echoed in the work of Bhandari (2024), who found that size and capital adequacy significantly affect ROA and ROE. While this study found no significant effect for ownership type, Paudel (2024) suggested that banks with higher foreign ownership or diversified stakeholders may perform better. Finally, the synergy-driven improvement in net profit and total assets observed by Adhikari, Kavanagh and Hampson (2023). reinforces the finding that mergers and acquisitions significantly enhance banks' earning capacity.

Regarding moderating factors, the "After Merger" period showed a significant positive relationship with NPAT, indicating that banks experienced increased profit following consolidation. This is likely due to asset revaluation and strategic shifts toward digital infrastructure following the merger. However, unlike size and mergers, the age of the bank and ownership type (public vs. private) did not exhibit a significant effect on NPAT in this specific context. While the current study demonstrates a positive and significant relationship between intangible assets and profitability in Nepalese banks, global literature presents a more nuanced and sometimes contradictory perspective. For instance, in the Nigerian context, Pukon (2024) found that investments in intangible assets had a positive but statistically insignificant effect on earnings per share, attributing this to management inefficiencies or measurement difficulties. Similarly, research in the Jordanian banking sector by Al-Dweik and Al-Thuneibat (2022), indicated an insignificant impact, suggesting that intangible assets are sometimes utilised for "earnings management" rather than genuine value creation.

Furthermore, some evidence suggests that intangible assets can negatively correlate with profitability. Research in the technology and healthcare sectors indicates that high levels of structural capital can become a "negative factor" due to increased management costs and inefficiencies (Dragomir, 2024). This is reinforced by the concept of "intangible liabilities," where factors such as poor corporate culture can lead to a decline in share price and profit (Harvey and Lusch, 1999)

Finally, the findings regarding moderating variables also face academic scrutiny. Contrary to the "no effect" of ownership found in this study, Micco et al., (2004) observed that state-owned banks in developing countries often underperform compared to private ones.

## Conclusion

Nepalese commercial banks represent the leading corporate entities in terms of capital investment and profit generation, as measured by NPAT. All commercial banks are designated as 'A' class institutions by Nepal Rastra Bank, following strict compliance with various regulatory criteria and banking laws. These banks have consistently maintained strong profit-earning capacity and financial leverage. Many Nepalese commercial banks: Nabil bank and Bangladesh bank in 2078/79 BS; Himalayan bank and Civil bank in 2079/78; Kumari bank and NCC bank in 2079/80; NIC and Asia bank in 2079/80; Nepal investment bank and Megha bank in 2079/80; Parbhu bank and Century bank in 2079/80; Laxmi bank and Sunrise bank in 2079/80 experienced merger and stood as bigger size banks.

This research aimed to determine if intangible assets such as software, human capital, and goodwill drive profitability within 19 Nepalese commercial banks. Utilizing an ex post facto research design and Quantile regression on panel data from 2074 to 2081 BS, the study sought to bridge the gap between resource-based theory and practical financial outcomes in Nepal's banking sector.

The major findings conclude that investment in intangible assets serves as a significant driver of corporate profitability, particularly for the most profitable banks. Additionally, the study confirms that mergers and acquisitions significantly enhance profit-earning capacity, while institutional age and ownership structure are less impactful factors.

The implications of these findings suggest that bank managers and policymakers should prioritize capital allocation toward intangible resources, such as digital transformation and human capital development, to sustain competitive advantages. Limitations of this study include the lack of categorization for individual intangible components, which could be explored in future research to determine the specific contribution of assets like trademarks versus software.

### Practical and Managerial Implications

Bank policymakers are encouraged to rethink the size and nature of their investments in intangible assets, discussing resource allocation strategically such as software and digital infrastructure, to boost profitability. Similarly, the study also expresses a significant positive relationship between the M&A phenomenon and profitability, suggesting that consolidation might be a strategic shift for the enlargement of digital infrastructure and earning capacity. In the era of Industry 4.0, these findings emphasize on building intellectual capital (human, structural, and relational) is essential for strengthening a bank's value chain and maintaining a sustainable competitive edge. Since the positive impact of intangible assets is most pronounced at the 50th percentile and above, managers of "high-flyer" firms should prioritize these resources more heavily than lower-performing counterparts.

### Future Scope of Research

Future research could categorize intangible assets into individual components for comparative study (e.g., software vs. goodwill vs. trademarks) to determine the unique contribution of each to bank performance. Future studies could extend this analysis to other emerging markets or different sectors

in Nepal (such as insurance or manufacturing) to see if these trends hold beyond the banking industry. Researchers could investigate why ownership type and bank age did not show significant impacts in this specific study, perhaps through qualitative interviews with bank management. While this study covered eight years, future work could analyse the long-term impact of digital transformation efforts initiated during the post-pandemic period.

**Limitations of the study**

Despite the significant insights gained from this study, certain limitations must be acknowledged. Primarily, this research does not categorize intangible assets into individual components such as software, goodwill, trademarks, and human capital. Since each component of an intangible asset may contribute to profitability in a unique and individual manner, the aggregate nature of the current data limits the ability to identify which specific intellectual resources are most effective for Nepalese commercial banks. Future research should aim to disaggregate these assets to provide a more granular understanding of their respective impacts on financial performance."

## References:

Abebe Zelalem, B., Ali Abebe, A., & Wodajo Bezabih, S. (2022). Corporate governance and financial performance in the emerging economy: The case of Ethiopian insurance companies. *Cogent Economics & Finance*, *10*(1). https://doi.org/10.1080/23322039.2022.2117117

Abouaomar, S., & Alhaderi, K. (2024). Overcoming Barriers to Digital Transformation in Public Organizations using the McKinsey 7S Model. *International Journal of Research in Economics and Finance*, *1*(3), 14-28. https://doi.org/10.71420/ijref.v1i3.23

Adhikari, B., Kavanagh, M., & Hampson, B. (2023). Analysis of the pre-post-merger and acquisition financial performance of selected banks in Nepal. *Asia Pacific Management Review*, *28*(4), 449-458.https://doi.org/10.1016/j.apmrv.2023.02.001

Ahmad, R., & Matemilola, B. T. (2013). Determinants of bank profits and net interest margins. In *Emerging Markets and Financial Resilience: Decoupling Growth from Turbulence* (pp. 228-248). London: Palgrave Macmillan UK. https://doi.org/10.1057/9781137266613_12

Ahmed, Z., Hussin, M. R. A., & Pirzada, K. (2022). The Impact of Intellectual Capital and Ownership Structure on Firm Performance. *Journal of Risk and Financial Management, 15*(12), 553. https://doi.org/10.3390/jrfm15120553

Alarussi AS, Gao X (2023), "Determinants of profitability in Chinese companies". *International Journal of Emerging Markets*, Vol. 18 No. 10 pp. 4232–4251, doi: https://doi.org/10.1108/IJOEM-04-2021-0539

Al-Dweik, H., & Al-Thuneibat, A. (2022). The impact of intangible assets and fair value measurement on earnings management: Empirical evidence from Jordanian banking sector. *Academy of Accounting and Financial Studies Journal*, *26*(2), 1-19.https://doi.org/1528-2635-26-1-182.pdf

Grant, R. M. (1991). The resource-based theory of competitive advantage: implications for strategy formulation. *California management review*, *33*(3), 114-135.https://doi.org/10.2307/41166664

Atimbire, P. A., Aboagye, A. Q. Q., Sarpong-Kumankoma, E., & Asuming, P. O. (2024). Bank mergers and acquisitions and the post-merger and acquisition performance of combined banks: Evidence from Sub-Saharan Africa. *Cogent Economics & Finance*, *12* (1), https://doi.org/10.1080/23322039.2024.2319167

Bagna, E., Ramusino, E., & Denicolai, S. (2021). Innovation through Patents and Intangible Assets: Effects on Growth and Profitability of European Companies. *Journal of Open Innovation: Technology, Market, and Complexity*. https://doi.org/10.3390/joitmc7040220.

Harvey, M. G., & Lusch, R. F. (1999). Balancing the intellectual capital books: intangible liabilities. *European management journal*, *17*(1), 85-92. https://doi.org/10.1016/S0263-2373(98)00065-6

Banerjee, S., & Velamuri, M. (2015). The conundrum of profitability versus soundness for banks by ownership type: Evidence from the Indian banking sector. *Review of Financial Economics*, *26*, 12-24. https://doi.org/10.1016/j.rfe.2015.04.001

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*. https://doi.org/10.1177/014920639101700108

Bhandari, P. (2024). Impact of Capital Structure, Loan to Deposit, Firm Size and Asset Tangibility on the Profitability of Nepalese Commercial Banks. *Nepalese Journal of Finance*, *11*(4), 142–162. https://doi.org/10.3126/njf.v11i4.79774

Bhattarai, Bishnu Prasad (2020). Bank Lending Determinants: Evidence from Nepalese Commercial Banks International Journal of Management, *11*(10), 2020, pp. 1-10. SSRN: https://ssrn.com/abstract=3736477

Bhatia, A., & Aggarwal, K. (2018). Impact of investment in intangible assets on corporate performance in India. *International Journal of Law and Management*, *60*(5), 1058-1073. https://doi.org/10.1108/IJLMA-05-2017-0127

Bistrova, J., Lāce, N., Tamošiūnienė, R., & Kozlovskis, K. (2017). Does firm's higher innovation potential lead to its superior financial performance? Case of CEE countries. *Technological and Economic Development of Economy*, *23*, 375-391. https://doi.org/10.3846/20294913.2016.1266411.

Bontempi, M. E., & Mairesse, J. (2015). Intangible capital and productivity at the firm level: a panel data assessment. *Economics of Innovation and new Technology*, *24*(1-2), 22-51. https://doi.org/10.1080/10438599.2014.897859

Brown, N., & Kimbrough, M. (2011). Intangible investment and the importance of firm-specific factors in the determination of earnings. *Review of Accounting Studies*, *16*, 539-573. https://doi.org/10.1007/S11142-011-9151-X.

Chen, M. C., Cheng, S. J., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of intellectual capital*, *6*(2), 159-176. https://doi.org/10.1108/14691930510592771

Chappell, N., & Jaffe, A. (2018). Intangible investment and firm performance. *Review of Industrial Organization*, *52*(4), 509-559. https://doi.org/ 10.1007/s11151-018-9629-9

Crass, D., Czarnitzki, D., & Toole, A. A. (2019). The dynamic relationship between investments in brand equity and firm profitability: Evidence using trademark registrations. *International Journal of the Economics of Business, 26*(1), 157-176. https://doi.org/10.1080/13571516.2019.1553292

Chowdhury MAF, Haque MM, Masih M (2016) Re-examining the determinants of islamic bank performance: new evidence from dynamic GMM, quantile regression, and wavelet coherence approaches. Emerg Mark Finance Trade *53*(7),1519–1534. https:// doi. org/ 10. 1080/ 15404 96x. 2016.12500 76

Connor, T. (2002). The resource-based view of strategy and its value to practising managers. *Strategic Change*, *11*(6), 307-316. https://doi.org/10.1002/jsc.593

Cornett, M. M., Guo, L., Khaksari, S., & Tehranian, H. (2010). The impact of state ownership on performance differences in privately-owned versus state-owned banks: An international comparison. *Journal of Financial Intermediation, 19*(1), 74–94. https://doi.org/10.1016/j.jfi.2008.09.005

D'Oria, L., Crook, T. R., Ketchen Jr, D. J., Sirmon, D. G., & Wright, M. (2021). The evolution of resource-based inquiry: A review and meta-analytic integration of the strategic resources–actions–performance pathway. *Journal of Management*, *47*(6), 1383-1429. https://doi.org/10.1177/0149206321994182

Dragomir, V. D. (2024). The impact of intangible capital on firm profitability in the technology and healthcare sectors. *International Journal of Financial Studies*, *12*(1), 5.https://doi.org/10.3390/ijfs12010005

Paudel, R. (2024). Bank specific factors, macroeconomic variables and market value of Nepalese commercial banks. *Intelligence Journal of Multidisciplinary Research*, *3*(1), 135-150. https://doi.org/10.3126/ijmr.v3i1.65482

Ebe, C. O., Salawu, R. O., & Aguguom, T. A. (2023). IAS 38 intangible assets and firm performance: Empirical evidence from selected consumer goods manufacturing companies listed in Nigeria. *International Journal of Innovative Research and Scientific Studies*, *6*(3), 570-577. URL: www.ijirss.com

Gachigo, J., Ondigo, H., Aduda, J., & Onsomu, Z. (2023). Effect of Mergers and Acquisition Strategies on Financial Performance of Commercial Banks in Kenya. *Journal of Finance and Accounting*, *7*(7), 40-66. https://doi.org/10.53819/81018102t2213

Haji, A. A., & Mohd Ghazali, N. A. (2018). The role of intangible assets and liabilities in firm performance: empirical evidence. *Journal of Applied Accounting Research*, *19*(1), 42-59. https://doi.org/10.1108/JAAR-12-2015-0108

Humairah, N., Andriansyah, Y., & Badjie, F. (2023). Determinants of Profitability in Indonesian Islamic Banks: Insights on Financial Performance. *Unisia*, *41*(2). https://doi.org/10.20885/ unisia.vol41.iss2.art9

Intara, P., & Suwansin, N. (2024). Intangible assets, firm value, and performance: does intangible-intensive matter? *Cogent Economics & Finance,* 12. https://doi.org/10.1080/23322039.2024.2375341.

Kengatharan, N. (2019). A knowledge-based theory of the firm. International Journal of Manpower. https://doi.org/10.1108/ijm-03-2018-0096.

Ionita, C., & Dinu, E. (2021). The effect of intangible assets on sustainable growth and firm value–Evidence on intellectual capital investment in companies listed on Bucharest Stock Exchange. *Kybernetes*, *50*(10), 2823-2849. https://doi.org/10.1108/K-05-2020-0325

Kaplan, R. S., & Norton, D. P. (1996). Linking the balanced scorecard to strategy. *California management review*, *39*(1), 53-79. https://journals.sagepub.com/doi/abs/10.2307/41165876#con2

Khan, S., Yang, Q., & Waheed, A. (2018). Investment in intangible resources and capabilities spurs sustainable competitive advantage and firm performance. *Corporate Social Responsibility and Environmental Management 26*(2), 285-295. https://doi.org/10.1002/csr.1678.

Laeven, L., & Levine, R. (2009). Bank governance, regulation and risk taking. *Journal of Financial Economics*, *93*(2), 259-275. https://doi.org/10.1016/j.jfineco.2008.09.003

Levine, R. (2005). Finance and growth: theory and evidence. *Handbook of economic growth*, *1*, 865-934. https://doi.org/10.1016/S1574-0684(05)01012-9

Li, M.(2014). Moving beyond the linear regression model. *Journal of Management*. https://doi.org/10.1177/0149206314551963

Loderer, Claudio & Waelchli, Urs, (2010). Firm age and performance. *MPRA Paper 26450*, University Library of Munich, Germany, https://mpra.ub.uni-muenchen.de/id/eprint/26450

Malik, H. (2011). Determinants of profitability in banking sector of Pakistan: A case study of top 10 banks. *Mediterranean Journal of Social Sciences*, *2*(1), 125–135. https://doi.org/10.36941/mjss

Mansikkamäki, S. (2023). Firm growth and profitability: The role of age and size in shifts between growth–profitability configurations. *Journal of Business Venturing Insights*. https://doi.org/10.1016/j.jbvi.2023.e00372.

McGee, J., & Sammut-Bonnici, T. (2015). *Wiley encyclopedia of management, volume 12: strategic management*. John Wiley & Sons. https://www.um.edu.mt/library/oar/handle/123456789/44900

Micco, A., Panizza, U., & Yañez, M. (2004). *Bank ownership and performance* (No. 518). Working paper. https://doi.org/10419/88038/1/idb-wp_518.pdf

Micco, A., Panizza, U., & Yañez, M. (2007). Bank ownership and performance. Does politics matter? *Journal of Banking & Finance*, *31*(7), 2199–2215. https://doi.org/10.1016/j.jbankfin.2006.10.009

Milala, S. I., & Md Ariffin, K. (2024). Attributes driving intangible asset valuation. *Journal of International Business, Economics and Entrepreneurship (JIBE)*, *9*(1). https://journal.uitm.edu.my/ojs/index.php/JIBE/ind

Mondol, D. K., & Wadud, A. (2022). Determinants of profitability of commercial banking in Bangladesh: A panel analysis. *International Journal of Statistical Sciences*, *22*(1), 115-143. https://csa.ru.ac.bd/stat-ijss/wp-content/uploads/2023/08/v-22-iss-1-06.pdf

Mahoney, J. T., & Pandian, J. R. (1992). The resource-based view within the conversation of strategic management. *Strategic management journal*, *13*(5), 363-380. https://doi.org/10.1002/smj.4250130505

Nguyen, N. T. (2023). Intellectual capital and financial performance of industrial firms in emerging countries: Empirical evidence from Vietnam. *Global Business & Finance Review (GBFR)*, *28*(2), 107-122. https://doi:10.17549/gbfr.2023.28.2.107

Oppong, G. K., & Pattanayak, J. (2019). Does investing in intellectual capital improve productivity? Panel evidence from commercial banks in India. *Borsa Istanbul Review*, *19*(3), 219-227. https://doi.org/10.1016/j.bir.2019.03.001

Pukon, A. S. (2024). Effect of Intangible Assets on the Financial Performance of Nigeria's Deposit Money Banks: Analysis of UBA PLC and First Bank PLC. *African Journal of Management and Business Research*, *15*(1), 25-36. https://doi.org/10.62154/b4ygf202

Rahman, Jahidur Md and Yilun, Liu. (2021). Firm size, firm age, and firm profitability: evidence from china.*Journal of Accounting, Business and Management 28*.(1), 101-115. https://ssrn.com/abstract=3867566

Singh, R. D., & Narwal, K. P. (2015). Intellectual capital and its consequences on company performance: a study of Indian sectors. *International Journal of Learning and Intellectual Capital*, *12*(3), 300-322. https://doi.org/10.1504/IJLIC.2015.070169

Tahat, Y., Ahmed, A., & Alhadab, M. (2017). The impact of intangibles on firms' financial and market performance: UK evidence. *Review of Quantitative Finance and Accounting*, 50, 1147-1168. https://doi.org/10.1007/S11156-017-0657-6.

Takeuchi, H. (2013). Knowledge-based view of strategy. *Universia Business Review*, (40), 68-79. https://dialnet.unirioja.es/servlet/articulo?codigo=4451450

Tartaro, A. (2023). A Philosophy for Our Time? A Comment on Paksi and Héder's Guide to Personal Knowledge: The Philosophy of Michael Polanyi, Tacit Knowledge, Emergence and the Fiduciary Program. *Tradition and Discovery*, *49*, 17-24.

Uribe, J. (2025). Investment in intangible assets and economic complexity. *Research Policy*. https://doi.org/10.1016/j.respol.2024.105133.

Vakulchyk, O. (2019). Value added in the system of financial indicators of the corporate enterprises' business activity. *Challenges and prospects for the development of a new economy at global, national, and regional levels: collective monograph*, 22-40. https://doi.org/10.36059/978-966-397-147-6/22-40

Warusawitharana, M. (2018). Profitability and the lifecycle of firms. *The B.E. Journal of Macroeconomics*, *18*(2), 20170124. https://doi.org/10.1515/bejm-2017-0124

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, *5*(2), 171-180. https://doi.org/10.1002/smj.4250050207

Yadav IS, Pahi D, Gangakhedkar R (2022), "The nexus between firm size, growth and profitability: new panel data evidence from Asia–Pacific markets". *European Journal of Management and Business Economics*, *31*(1) (pp. 115–140), https://doi.org/10.1108/EJMBE-03-2021-0077

Zelalem, B. A., & Abebe, A. A. (2022). Does intangible assets affect the financial performance and policy of commercial banks' in the emerging market? *PLOS ONE*, *17*(8). https://doi.org/10.1371/journal.pone.0272018

Intara, P., & Suwansin, N. (2024). Intangible assets, firm value, and performance: does intangible-intensive matter?. *Cogent Economics & Finance*, 12. https://doi.org/10.1080/23322039.2024.2375341.

Seo, H., & Kim, Y. (2020). Intangible assets investment and firms' performance: evidence from small and medium-sized enterprises in korea. *Journal of Business Economics and Management*, 21, 421-445. https://doi.org/10.3846/jbem.2020.12022.

Qureshi, M., & Siddiqui, D. (2020). The Effect of Intangible Assets on Financial Performance, Financial Policies, and Market Value of Technology Firms: A Global Comparative Analysis. *Asian Journal of Finance and Accounting*, 12, 26-57. https://doi.org/10.5296/ajfa.v12i1.16655.

Yao, H., Haris, M., Tariq, G., Javaid, H., & Khan, M. (2019). Intellectual Capital, Profitability, and Productivity: Evidence from Pakistani Financial Institutions. *Sustainability*. https://doi.org/10.3390/su11143842.

Stan, S., Țîțu, M., & Paraschiv, C. (2024). The role of intangible resources in driving value creation and sustained competitive advantage for businesses. *Management of Sustainable Development*. https://doi.org/10.54989/msd-2024-0010.

Roth, F., Sen, A., & Rammer, C. (2022). The role of intangibles in firm-level productivity – evidence from Germany. *Industry and Innovation, 30,* 263 - 285. https://doi.org/10.1080/13662716.2022.2138280.

Ognjanović, J., Pantić, N., & Podovac, M. (2024). Visible intangible asset efficiency and tangible assets efficiency: who contributes more to the business performance of agricultural firms?. *Ekonomika poljoprivrede.* https://doi.org/10.59267/ekopolj24041283o.

Bagna, E., Ramusino, E., Denicolai, S., & Strange, R. (2024). Intangible assets and firm performance: the relative effects of recognized and unrecognized assets. Journal of Open Innovation: Technology, Market, and Complexity. https://doi.org/10.1016/j.joitmc.2024.100356.

Zelalem, B. A., & Abebe, A. A. (2022). Does intangible assets affect the financial performance and policy of commercial banks' in the emerging market? *PLOS ONE, 17*(8). https://doi.org/10.1371/journal.pone.0272018

Zhang, A., Zhang, Y., & Zhao, R. (2001). Impact of Ownership and Competition on the Productivity of Chinese Enterprises. *Journal of Comparative Economics*, *29*(2), 327-346. https://doi.org/10.1006/jcec.2001.1714

Zhang, M., & Tu, X. (2022). The role of intangible assets in promoting the sustainability of agri-food enterprises: Evidence from China. *Economic Analysis and Policy*. https://doi.org/10.1016/j.eap.2022.12.028.

Zhu, L., Shen, J., & Yeerken, A. (2023). Impact analysis of mergers and acquisitions on the performance of China's new energy industries. *Energy Economics*, *129*. https://doi.org/10.1016/j.eneco.2023.107189

Zhu, W., & Hatakeda, T. (2023). Bank Efficiency and Intangible Assets: Evidence from Multinational Analysis and a Meta-SFA Approach. *Available at SSRN 4529968*.