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# Non-Performing Loan and Profitability of Private Commercial Banks in Nepal

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## Abstract

*This study aims to examine the effect of non-performing loans (NPL) on the profitability of commercial banks in Nepal. In the context of the rapidly evolving banking sector, where institutions face challenges related to loans, financial performance plays a crucial role. The research focuses on 20 commercial banks, selecting a sample of 10 banks through judgmental sampling, covering the period from 2013/14 to 2022/23. Data for the study were obtained from the annual reports of the chosen banks. A causal-comparative research design was used to analyze and interpret the data, which was processed using Microsoft Excel and SPSS version 25. The study found a significant negative relationship between Cash Reserve Ratio and Bank Size with Return on Assets and Return on Equity, while the other independent variables had no significant impact. Furthermore, CRR and BS were negatively correlated, while NPL and Capital Adequacy Ratio (CAR) positively and significantly affected both ROA and ROE. The Credit Deposit Ratio (CDR) did not have a significant influence on the returns, highlighting its lesser importance compared to other financial factors. The findings suggest that banks with higher capital reserves and greater risk exposure (through NPLs) tend to perform better financially, while larger banks and those with higher cash reserves may face difficulties in maintaining strong profitability.*

**Key Words**: Capital Adequacy Ratio, Cash Reserve Ratio, Commercial Banks, Credit Deposit Ratio, Non- performing Loan, Profitability.

## Introduction

Non-performing loans (NPLs) are a key aspect of financial institutions, and the structure of loans and advances directly impacts a bank's performance and profitability. An NPL is a loan where the borrower fails to make payments as agreed. More specifically, an NPL is defined by a debtor's inability to meet scheduled payments for a period of at least 90 days, a standard followed by many countries and institutions (Bholat et al., 2018). Managing and

reducing non-performing loans has become a critical priority for banks due to their potential negative effects on financial stability and overall performance.

In recent years, non-performing loans (NPLs) have emerged as a critical concern for financial institutions in Nepal. A high level of NPLs within the banking sector is a key factor contributing to bank failures. Asset quality is a crucial indicator of insolvency, with financial institutions that fail often having a large proportion of non-performing loans before their collapse (Bhattarai, 2015).

Profitability is generally defined as the earnings a company generates from its revenue after deducting all expenses incurred over a specific period. The primary goal of any company is to maximize shareholder wealth by increasing the value of its stock. In other words, if profit results meet expectations, stock prices will rise, while if results fall short, stock prices will decline. This is particularly evident during a crisis, where some companies may take risky actions to maintain their financial position. However, due to insufficient knowledge and the high risk involved, such actions often harm their financial standing (Alarussi & Alhaderi, 2018).

As Nepal's banking sector continues to grow, it is essential to develop effective strategies that reduce risks and enhance loan performance across all stages of operations. This study acknowledges the dynamic nature of the banking industry in Nepal and seeks to provide valuable insights to support decision-making within the sector. By focusing on commercial banks listed on the Nepal Stock Exchange, the research aims to examine the relationship between non-performing loans and bank profitability.

The primary goal of this study is to provide bank executives with a deeper understanding of how non-performing loans impact the profitability of commercial banks in Nepal. These insights can help inform the development and execution of strategic lending practices, enabling commercial banks in Nepal to effectively tackle challenges and seize opportunities for long-term growth.

Numerous studies have been conducted to explore the relationship between non-performing assets (NPA) and profitability in various countries. Singh et al. (2021) argue that non-performing loans are considered bad debt because the likelihood of repayment decreases when a borrower misses the payment deadline. The rising level of NPA negatively affects both the bank's cash flows and its stock price (Wadhwa et al., 2020). To recover their loans, banks must adopt strict measures. Investors are typically attracted to companies with consistent profits and stable stock prices, but there is considerable uncertainty when examining non-performing loans in relation to a bank's overall assets (Bholat et al., 2018).

Commercial banks in Nepal have been facing several challenges, including a struggling economy, inconsistent policies and guidelines from the Nepal Rastra Bank (NRB), political instability, security concerns, inadequate information systems, excess liquidity due to a lack of attractive lending opportunities, and an increase in non-performing assets (Kalika, 2019). In the current environment, where banks in Nepal are grappling with rising NPAs, it is essential to allocate more funds for loan loss provisions.

This study seeks to explore the impact of non-performing loans on the profitability of commercial banks in Nepal. Non-performing loans are affected by both internal and external factors, and they directly influence profitability. As such, there is a conceptual gap in understanding whether non-performing loans have a positive or negative effect on commercial banks when considering both internal and external variables. Although numerous studies have been conducted in this field, previous research has either included or omitted variables such as capital adequacy ratio, asset quality ratio, credit deposit ratio, cash reserve ratio, non-performing loans, loan-to-deposit ratio, loan loss provision ratio, bank size, GDP, and inflation. This research aims to fill this gap in the existing literature.

This study is organized into six main sections. The first section provides the introduction. The second and third sections cover the literature review and conceptual framework. The fourth and fifth sections present the methodology and data analysis. The final section includes the discussion, conclusion, and scope of future research.

## Review of Literature

Zabin et al. (2024) examined the impact of non- performing loan on bank profitability: A study of Rupali Bank PLC, Bangladesh. The study have been used secondary data from 2015- 2022 panel data collected and analyzed by regression model. ROA and ROE are dependent and NPL is independent variable. The authors found that the significant negative relationship between NPL and profitability. NPL have positive and significant impact on profitability.

Maaji et al. (2023) examined the Non-Performing Loans and Commercial Bank Profitability: Evidence from Cambodia. Used panel data, the paper examines 35 Cambodian commercial banks between 2017-2022. The results demonstrated that among the elements impacting

The three main factors influencing non-performing loans among Cambodian commercial banks are inflation, bank size, and profitability. The findings also demonstrate that whereas the loan-to-deposit ratio, bank size, inflation, and economic growth all significantly and favorably affect Cambodian banks' profitability, the non-performing loans ratio significantly and negatively affects that profitability.

Uddin (2022) investigated the impact of leverage, operating efficiency, non-performing loans, and capital adequacy ratio on the profitability of commercial banks in Bangladesh. The study specifically selected four state-owned and six private commercial banks, using secondary data from their annual reports over a four-year period from 2017 to 2020. A panel data regression model was applied to examine the research questions and hypotheses. The results indicated that leverage, represented by the debt-equity ratio, had a negative and insignificant effect on profitability. Similarly, non-performing loans had a negative and insignificant influence on ROA, suggesting that higher debt-equity ratios and NPLs contribute to lower bank profitability. In contrast, the capital adequacy ratio had a positive and significant impact on ROA.

Al-Sharkas and Al-Sharkas (2022) explored the impact of capital adequacy ratios, cost-income ratios, and non-performing loans on bank profitability in emerging markets, focusing on a sample of 24 banks in Jordan from 2008 to 2018. The study used static panel data analysis to examine these relationships. The primary objective was to assess how capital adequacy ratios, along with other bank-specific factors such as bank size, debt ratio, and NPLs, influence return on assets and return on equity. The findings revealed that ROA had negative correlations with all four capital adequacy ratios, indicating that higher capital adequacy could limit profitability as measured by ROA. However, the impact on ROE differed: while the core capital to risk-weighted assets ratio and the total capital to risk-weighted assets ratio positively influenced ROE, the core capital to total assets ratio and the total equity capital to total assets ratio had negative effects on ROE. Additionally, NPLs were negatively associated with both profitability measures.

Karim et al. (2022) explored the relationship between non-performing loans (NPLs) and bank profitability in Bangladesh. Using panel data from 25 listed banks between 2010 and 2021, they applied the least squares regression model to analyze the secondary data. The results revealed a significant negative relationship between NPLs and return on assets (ROA), and also identified an inverse relationship between bank size and profitability.

Mahyoub and Said (2021) investigated the factors influencing non-performing loans in Malaysian commercial banks from 2010 to 2018, utilizing panel data from 15 commercial banks. The study found that the capital adequacy ratio significantly impacted NPL levels, while other bank-specific factors had no significant effect. Macroeconomic factors such as real GDP and inflation were found to have an insignificant impact on NPLs.

Saleh and Winarso (2021) examined the effect of NPLs and loan-to-deposit ratio (LDR) on profitability in rural banks in Bandung City. The study, involving 24 rural banks from 2014

to 2019, used multiple linear regression analysis. The results indicated that both NPL and LDR significantly affected profitability.

Liyana and Indrayani (2020) analyzed the impact of NPL, LDR, and net interest margin (NIM) on financial performance, specifically ROA, in publicly listed commercial banks in Indonesia from 2014 to 2018. The study found that NPL and LDR had no significant effect on ROA, while NIM positively impacted ROA. Capital adequacy ratio (CAR) mediated the relationship between NPL and ROA but not between LDR or NIM with ROA. Sabwa and Mabonga (2020) investigated the impact of NPLs on profitability in the Kenyan banking sector, finding a strong negative relationship. Regression analysis confirmed that NPLs significantly reduce profitability.

Onyango and Olando (2020) analyzed the impact of bank-specific factors on NPLs in Kenya's commercial banks, using data from all 43 licensed banks between 2012 and 2016. The study revealed that the interest rate spread had a positive and significant effect on NPLs, suggesting that wider spreads lead to higher NPL levels. Oganda et al. (2019) studied the impact of NPLs on the performance of National Bank Kenya Limited and Equity Bank Kenya Limited from 2007 to 2016. The findings revealed a significant negative relationship between NPLs and bank performance, indicating that NPLs negatively affect bank performance.

Anik et al. (2019) researched the effect of NPLs on the profitability of state-owned commercial banks in Bangladesh from 2005 to 2016. The study showed a statistically significant negative relationship between NPL ratio and return on equity (ROE), highlighting that NPLs, NPL growth rate, deposit growth rate, and provision growth rate negatively impact ROE, while capital adequacy ratio had a positive effect. Islam (2018) examined the impact of loan loss provisioning for NPLs on the profitability of commercial banks in Bangladesh from 2009 to 2017. The study found a significant negative relationship between NPLs, loan loss provisions, and profitability, indicating that loan loss provisions negatively impact profitability.

Kingu et al. (2018) explored the impact of NPLs on the profitability of commercial banks in Tanzania from 2007 to 2015, using information asymmetry theory and the bad management hypothesis. The study identified a negative relationship between NPLs and profitability. Gnawali (2018) analyzed the effect of NPLs on the profitability of commercial banks in Nepal from 2010 to 2017. The study found that NPLs negatively impacted profitability, using ROA and ROE as the dependent variables.

Jolevski (2017) studied the effect of NPLs on profitability indicators in Macedonia from 2007 to 2015. The research found a moderately high negative correlation between NPL ratios and both ROA and ROE. Kiran and Jones (2016) investigated the effect of non-performing assets (NPAs) on the profitability of public sector banks in India, using correlation and regression analyses. The study revealed a significant negative correlation between gross NPAs and net profits for most banks, except for the State Bank of India (SBI), which managed NPAs more effectively. Azeem and Amara (2014) examined the impact of NPLs on the profitability of sixteen major banks in Pakistan from 2006 to 2012. Their study found that as NPLs increased, both ROA and ROE decreased significantly. Interestingly, stock return was insignificantly affected by NPLs.

To achieve the research objectives, the study analyzed five independent variables—non-performing loans, capital adequacy ratio, credit deposit ratio, cash reserve ratio, and bank size—in relation to return on assets and return on equity, which served as the dependent variables. The aim was to evaluate the effect of these explanatory variables on the dependent variables.

## Research Methodology

This study utilizes both descriptive and causal-comparative research designs. Descriptive statistics are employed to assess the current status of non-performing loans (NPLs) and profitability in Nepal's commercial banks. Additionally, a causal-comparative approach is used to examine the impact of NPLs on the profitability of these banks. The study focuses specifically on the NPLs of commercial banks. The population consists of 20 commercial banks, but a sample of 10 banks was selected through a judgmental sampling technique. The selected banks include Prabhu Bank, Laxmi Sunrise Bank, Global IME Bank, Citizen Bank International, Prime Commercial Bank, Kumari Bank, NIC Asia Bank, Siddhartha Bank, Sanima Bank, and Machhapuchhre Bank. This sampling method allows for a targeted analysis of the NPL situation and profitability within Nepal's commercial banking sector, providing valuable insights into the financial health and risk management practices of these banks. A quantitative approach is adopted, with secondary data collected from the annual reports of the selected banks spanning from 2013/14 to 2022/23. The data is analyzed using SPSS version 23 and MS Excel, applying financial and statistical tools, with ordinary least squares regression employed for analysis.

## The Model

The study is expressed the econometric model:

$$y = \alpha + \beta x + \varepsilon$$

Where:

Y represents the dependent variable, while the constant term and the coefficients of the explanatory variables are indicated. X is the vector of explanatory variables, and the error term captures the unobserved factors. This model is straightforward to understand and interpret, making it an ideal basis for analysis.

The regression model can be shown as:

$Y_{ROA} = \alpha + \beta_1 NPL + \beta_2 CAR + \beta_3 CDR + \beta_4 CRR + \beta_5 SIZ + e_t$ ……. (1)

$Y_{ROE} = \alpha + \beta_1 NPLR + \beta_2 CAR + \beta_3 CDR + \beta_4 CRR + \beta_5 SIZ + e_t$ ……. (2)

Where,

ROA = Return on Assets
ROE = Return on Equity
NPLR = Non-Performing Loan
CAR = Capital Adequacy Ratio
CDR = Credit Deposit ratio
CRR = Cash Reserve Ratio
SIZ = Size
$e_t$ = Error Term
$\alpha$ = Intercept Term
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$= Coefficients

### *3.5 Conceptual Framework*

The research framework provides a conceptual structure outlining the key variables and their relationships within a study. It delineates the theoretical underpinnings guiding the investigation and serves as a roadmap for data collection, analysis, and interpretation. This study has developed a research framework wherein Non-Performing Loans (NPLR), Capital Adequacy Ratio (CAR), Credit deposit ratio (CDR), Cash Reserve Ratio (CRR), and Size (SIZ) are considered as independent variables, while Profitability metrics including Return on Asset (ROA), Return on Equity (ROE) serve as dependent variables (Karim et al., 2022; Psaila et al., 2019). Drawing inspiration from prior research, the framework guides the empirical investigation into the relationships between these variables.

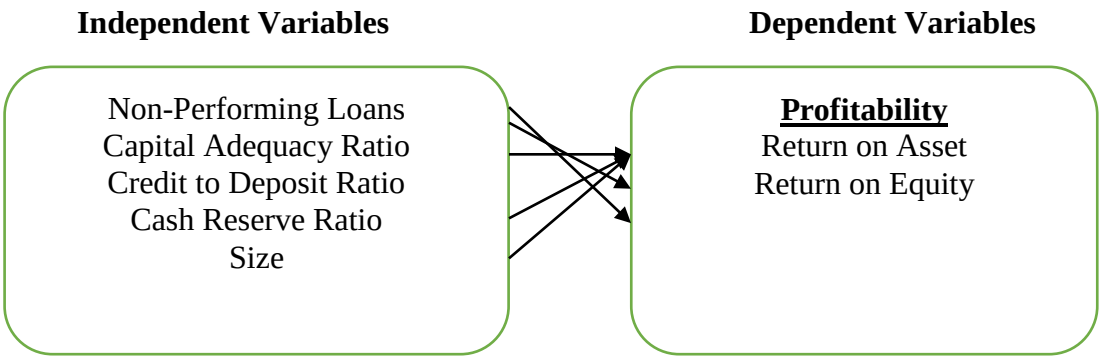


*Figure 1.* Research Framework of this Study

## Descriptive Analysis

Descriptive analysis helps to simplify complex data, making it easier for readers to understand and interpret. It offers context to the data or information presented, enabling readers to grasp the broader picture and its significance. When used effectively, descriptive analysis can enhance an article, making it both informative and engaging. In this study of commercial banks in Nepal, descriptive statistics of the sample variables have been provided. The sample data is presented in Table 1, and the statistics include the mean, standard deviation, maximum, and minimum values.

Table 1:*Descriptive Analysis of Dependent and Independent Variables*

| Variables | Mini | Maxi | Mean | Std. Dev |
|---|---|---|---|---|
| ROA | -0.01 | 2.24 | 0.1675 | 0.47935 |
| ROE | -0.27 | 20.36 | 1.4413 | 4.13447 |
| NPL | 0 | 0.09 | 0.0168 | 0.01523 |
| CAR | 0.09 | 0.17 | 0.1279 | 0.01383 |
| CDR | 0.69 | 0.97 | 0.8538 | 0.0553 |
| CRR | 3.23 | 19.27 | 8.3584 | 3.0344 |
| BS | 8.33 | 13.17 | 11.5785 | 0.77727 |

***Note*: Annual Reports of Sample Banks**

**Table one presents that return on assets how resourceful a company is at generate profit from its assets. The mean value of 0.1675 suggests a modest average return on assets, but with a wide spread (o.48) indicating significant variation in performance across companies. Return on equity measures profitability in relation to shareholders equity. Mean value 1.44 shows low average return but high standard deviation (4.14) indicates a lot of variation in how companies perform on this measure. Non-**

**performing loan indicated that are in default or close to default. Low mean (0.017)and relatively small standard deviation (0.015) suggest that most institutions have a low percentage NPL and there's little variation in this measure.**

**Capital adequacy ratio is an indicator of a bank's financial health measuring the capital available to absorb potential losses. Mean of 0.13 indicated the moderate average capital adequacy with a relatively low standard deviation (0.014) showing limited variation in the capital adequacy ratio across the sample. Credit deposit ratio reflects the proportion of a bank's credit in relation to its deposit. Mean 0.85 indicated the average banks are using a significant portion of their deposit. Cash reserve ratio indicates the percentage of bank's total deposits that it must hold as reserves. It's mean show the average reserve requirement level and standard deviation shows there's significant variation in reserve requirements across the data. Bank size mean suggests a moderate average size for bank with a relatively low standard deviation indicating that the banks in the sample are of fairly similar sizes. Maximum and minimum show the highest and lowest value of the variable of sample banks in selected period.**

## Correlation Analysis

Table 2: *Correlation Analysis of Variables*

| Variables | ROA | ROE | NPL | CAR | CDR | CRR | BS |
|---|---|---|---|---|---|---|---|
| ROA | 1 | | | | | | |
| ROE | .984** | 1 | | | | | |
| NPL | 0.157 | 0.168 | 1 | | | | |
| CAR | .214* | 0.17 | -0.19 | 1 | | | |
| CDR | 0.027 | -0.012 | -.351** | .518** | 1 | | |
| CRR | -.224* | -.202* | 0.123 | -.381** | -.582** | 1 | |
| BS | -.261** | -.286** | -0.046 | .261** | .411** | -.523** | 1 |

Table two shows the correlation between dependent and independent variable. NPL (0.157), CAR (0.214), and CDR (0.027) have weak positive correlation with ROA but CRR (-0.224), and BS (-0.261) have moderate negative correlation. The result shows only CAR, CRR and BS have been significant relationship with return on assets. Similarly, on the basis of ROE show that NPL (0.168), and CAR (0.17) weak positive correlation and CDR (-0.012), CRR (-0.202), and BS (-0.286) weak negative relation with ROE but only CRR, BS have been negative and significant relationship between ROE. More variables have insignificant relationship with ROA and ROE.

## Regression Analysis

Table 3: *Regression Analysis of Variables*

| Variables | B | T | P | VIF |
|---|---|---|---|---|
| Constant | 4.089 | 3.651 | .000 | |
| NPL | 6.513 | 2.279 | .025 | 1.161 |
| CAR | 8.925 | 2.596 | .011 | 1.387 |
| CDR | -.850 | -.816 | .416 | 2.032 |
| CRR | -.077 | -4.310 | .000 | 1.797 |
| BS | -.329 | -5.308 | .000 | 1.419 |
| $R^2$ = 0.333 | adj $R^2$ = 0.297 | F = 9.384 | | P = 0.00 |

**Table 3 shows that the regression analysis of independent variables and ROA dependent variable. NPL and capital adequate ratio have positive significant impact on ROA. Similarly CRR and BS have negative significant impact on ROA but only one CDR has negative and statically insignificant impact on ROA. All VIF value is less than 10 its indicate that no co linearity problem. $R^2$ = 0.333 indicate that 33.3% of the variation in ROA can be explained by the independent variables in this model. Adjusted $R^2$ = 0.297** 297 indicates that after considering the number of variables, the model still explains 29.7% of the variance in ROA. **F = 9.384** and **p = 0.00**: The **F-statistic** tests the overall significance of the model. Since the p-value is **0.000**, the model is statistically significant as a whole, meaning that at least one of the independent variables significantly predicts ROA.

Table 4: *Regression Analysis of Variables*

| Variables | B | t | P | VIF |
|---|---|---|---|---|
| Constant | 38.950 | 4.020 | .000 | |
| NPL | 55.350 | 2.240 | .027 | 1.161 |
| CAR | 66.920 | 2.250 | .027 | 1.387 |
| CDR | -9.120 | -1.010 | .313 | 2.032 |
| CRR | -.677 | -4.390 | .000 | 1.797 |
| BS | -2.898 | -5.420 | .000 | 1.419 |
| $R^2$ = 0.333 | adj $R^2$ = 0.297 | F = 9.384 | | P = 0.00 |

**Table 4 shows that the regression analysis of independent variables and ROE dependent variable. NPL and capital adequate ratio have positive significant impact on ROE. Similarly CRR and BS have negative significant impact on ROE but only one CDR has negative and statically insignificant impact on ROE. All VIF value is less than 10 it's indicate that no co linearity problem. $R^2$ = 0.333 indicate that 33.3% of the**

**variation in ROA can be explained by the independent variables in this model. Adjusted $R^2$ = 0.297** indicates that after considering the number of variables, the model still explains 29.7% of the variance in ROA. **F = 9.384** and **p = 0.00**: The **F-statistic** tests the overall significance of the model. Since the p-value is **0.000**, the model is statistically significant as a whole, meaning that at least one of the independent variables significantly predicts ROE.

## Discussion

The results show that non-performing loans and the capital adequacy ratio have a positive and significant impact on the dependent variables. The cash reserve ratio and bank size negatively affect both return on assets and return on equity, while the credit deposit ratio has a positive but insignificant effect on both ROA and ROE. The model successfully demonstrates the relationships between the predictors and the outcome variables. Furthermore, the correlation analysis indicates that NPL, CAR, and CDR are positively correlated, while CRR and BS are negatively correlated. This result is consistence with the result of (Zabin et al., 2024); (Niroula et al., 2024); (Mahyoub and Said, 2021); (Saleh and Winarso, 2021); (Liyana and Indruyani, 2020); (Onyango and Olando, 2020); (Morina and Aliji, 2019); (Anik et al., 2019); (Gnawali, 2018); Contradiction with the result of (Uddin, 2022); (Nguyen, 2020); (Korankye et al., 2022); (Karim et al., 2022); (Liyana and Indruyani, 2020); (Isabwa and Mabonga, 2020); (Oganda et al., 2019); (Islam,2018); (Kingu et al., 2018); (Jolevski, 2017); (Kiran and Jones, 2016); (Azeen and Amarea, 2016).

## Conclusion

This study aimed to investigate the effect of non-performing loans, particularly focusing on factors such as the capital adequacy ratio, credit deposit ratio, cash reserve ratio, and bank size, on profitability. The correlation study shows that NPL, CDR, and CAR are positive insignificant relation on ROA. Additionally CRR, and BS are negative but significant relation with ROA. Similarly NPL, and CAR are positive insignificant but CDR negative insignificant relation with ROE. Additionally CDR, and Bs are negative but significant relation with ROE. The **positive impact of NPL and CAR on ROA and ROE** suggest that riskier strategies (non-performing loans) and higher capital adequacy contribute to better returns.**CRR and BS** have a negative impact on both returns, which suggests that higher reserve ratios and larger bank sizes may be associated with reduced profitability. The model explains a significant portion of the variance in ROA and ROE, though other factors may still influence these outcomes.**CDR** does not significantly affect returns in this data set, highlighting its relative importance compared to other financial metrics.The analysis suggests that banks with **higher capital reserves** and **greater risk-taking** (via NPL) tend to

have **better financial returns**, while **larger banks** and those holding **higher cash reserves** may face challenges in maintaining strong profitability

## Implication for Future Research

It is evident that increasing bank profits can help ensure smooth operations. This study specifically focuses on the impact of non-performing loans on profitability. The research primarily aims to explore the relationship and influence between the variables in a straightforward manner. However, future studies can expand on this by examining these relationships and their effects in different contexts, as well as exploring how each variable in this study interacts with the others.

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