# CHAPTER I

# INTRODUCTION

## Background of the study

The term "lending" is used by all banking and financial institutions (BFIs) to describe the process by which they give money to other commercial banks and financial sectors, to individuals, corporations, business-related groups, as well as to the government when it is in need (Adhikari & Jha, 2020). Commercial banks' loan services play an essential part in their customers' short-term, medium, and long-term financial goals. The banks offer loans and advances to their clients, including people, businesses, and governments, in accordance with official procedures. The customer invests the advance and loan in various business ventures. In general, it contributes to the rise in the nation's economic development (Olokoyo, 2011). The banks have acted as middlemen in the flow of the money. With regard to its impact on growth in developing nations, the ratio of surplus to deficit expenditure units cannot be overstated (Alhassan, Brobbey, & Asamoah, 2013).

Lending is not as simple as taking money and then just giving it back, it charges for borrowing money because lending has a cost to the lender (Charalambakis & Psychoyios, 2012). As bank lending is the source of generating earnings and it involves amount of risk, banks should aware to analyze the various determinants of bank lending behavior. The bank lending generate the sustainable profit and liquidity sources (Timsina, 2019). The lending practices of banks have provided additional information into the sustainable environment and economic growth of developing nations (Alkhazaleh, 2017).

Lending is affected by different factors like interest rate, inflation, liquidity, exchange rate, capital and economic growth (Akinlo & Oni, 2015). Thus, bank lending is determined by bank-specific factors and macro-economic factors, which include inflation, exchange rate, capital, economic growth, management efficiency and bank profitability (Kim & Sohn, 2017). As (Moussa & Chedia, 2016) have found, the lending is depends on the bank size, credit risk, interest rate and liquidity. The factors that influence lending have been the subject of numerous national and international research.

The lending activity is the heart of commercial bank’s banking business. Commercial banks accept deposits from customers who have excess funds while also using those funds to provide loans to financially deficit entities. The primary source of income for banks is known as interest income, and it comes from the loans they make to their customers. Therefore, banks would always be interested in providing loans and advances to their customers with the goal of profitability, regardless of the state of the economy (Cheboi, 2012). There are two groups of customers, which are group of persons who have funds and others who do not. The group with surplus is better than the group without surplus. The two groups should constantly be in balance with one another. For this, the surplus group consistently makes the numerous financing options to the deficit group available. Thus, direct financing can be done between the two groups of surplus and deficit groups so, the both parties are linked by the help of lending practices (Acha, 2010).

Without sufficient cash, investment activity, corporate growth, and industrial development would not be possible, and without sufficient funds, an economy would either freeze or, worse. Apparently, lending activity is the core business of commercial banks that provides the largest income proportion to the banks (Isa, Latif, Zaharum, Nasrul, & Noh, 2019). The strength and stability of the bank as well as the risk taken on by the creditors and depositors are indicated by the quality of a bank's credit. The primary cause of liquidity issues and bankruptcies worldwide is poor loan portfolio management. Even though credit expansion may increase investment and economic activity, too much credit expansion can threaten the financial system's stability by raising risk factors at the micro and macro levels (Igan & Pinheiro, 2011).

One of the basic objective of the bank is to earn maximum profit by providing quality services to its customers. The difference between the interest rates of depositing and loan is the major source of income for banks. This study examines the factors influencing commercial bank loans and advances in Nepal, including variables like bank size, total deposit, interest rate, capital adequacy ratio and non-performing loan. And also this study examines the relationship and effect of independent variables on lending policy of Nepalese commercial banks.

## Problem statement

The whole study focused on determinants of commercial banks' lending in Nepal. This study deals with the issues ongoing with the lending factors on the commercial banks when there is lending practices to different deprived sectors. The key challenges of the bank is to make resources available. Only financing can be achieved when resources are accessible. When approving a financing source, it is necessary to evaluate whether there is sufficient funds or not and whether they are properly utilized or not (Adhikari & Jha, 2020). While lending, interest rates should be focused and majority of the research work focuses on this. But there may be the problem of considering the accurate interest rates in lending procedure. There may be various queries regarding the relationship of the lending policies of commercial banks which is loan and advance with deposit, bank size and interest rate. So, there may be various relationship of different dependent and independent variables which arises the queries.

Olokoyo (2011) found out positive relationship between total deposit, interest rate and loan and advance, (Adzis, Sheng, & Bakar, 2018) analyzed that there was positive effect of bank size and total deposit on loan and advance, and (Bhari, 2023) researched that interest rate has a positive and insignificant impact on loan and advance. Thus, this study has checked whether bank size, interest rate and total deposit has positive relationship with loan and advance or not. Therefore, the research has directed towards answering the following questions:

1. Does the interest rate fluctuate over a certain period of time?
2. How do bank size, total deposits, and interest rates relate to loan and advance?
3. What is the impact of bank size, total deposit and interest rate on loan and advance?

## Objectives of the study

For any study there has to be some objectives which highlight the purpose of doing the research work. The major objective of the study is to determine the factors or determinants affecting loan and advance among the banks area. The specific purpose of the study are:

1. To examine the fluctuating interest rate of lending amount.
2. To examine the relationship of bank size, total deposit and interest rate with bank loan and advance.
3. To explore the impact of bank size, total deposit, and interest rate on bank loan and advance.

## Hypothesis of the study

The study was carried out based on certain hypothesis. With the help of hypothesis, the study is able to analyze the loan and advance with respect to various determining factors. Following are the hypothesis made in order to study loan and advance.

Ho1: There is no significant relationship between bank size and loan and advance.

Ho2: There is no significant relationship between total deposit and loan and advance.

Ho3: There is no significant relationship between interest rate and loan and advance.

Ho4: There is no significant impact between bank size and loan and advance.

Ho5: There is no significant impact between total deposit and loan and advance.

Ho6: There is no significant impact between interest rate and loan and advance.

## Rationale of the study

One of the fundamental tasks on which the entire banking industry is built is lending. Less research, journals, and articles are available in the lending practices of commercial banks in the context of Nepal. There aren't many studies on commercial banks' lending policies in general. It is being well known fact that the financial institution can affect the economic conditions of the whole country that effort is made to highlight the lending policies of the commercial banks. This study provide information to management of the bank that would help them to take corrective action.

The study work as a framework for the scholars to understand the bank loan and advance. This research study aid future researchers in giving a standard and synchronized way of making their work accessible. The significance of the study are:

1. This study will provide a useful feedback for academic institution, bank employee, trainees and financial person concerned with commercial bank.
2. This study will be a useful reference for the researcher who would plan to make any related study precisely.

## Limitations of the study

The study's limits are those aspects of design or technique that impacted or influenced the interpretation of your research findings. Study limitations are the constraints placed on the ability to generalize from the results, to further describe applications to practice, and/or to the utility of findings as a result of the ways in which you initially chose to design the study, or the method used to establish internal and external validity, or as a result of unanticipated challenges that emerged during the study. The following are the major limitations of the study:

1. This study is mainly based on secondary data which are collected from banks.
2. The study is carried out within limited time period.
3. Only four independent variables i.e. bank size, total deposit and interest rate have been considered in the entire study.
4. This study concentrates only on those factors that are related with lending.

## 1.7 Chapter plan

This study has organized into five chapter viz. introduction, literature review, research methodology, analysis and discussion, and summary and conclusion. The first chapter includes background of the study, problem statement, objectives of the study, hypotheses of the study, rationale of the study, limitation of the study and chapter plan. The second chapter deals with theoretical review, empirical review and research gap. The third chapter contains research framework and definition of the variables, research design, population and sample, and sampling design, nature and sources of data, and the instrument of the data collection and methods of analysis. The fourth chapter presents the analysis of the data and discussion in the form of various tables and figures. And the fifth chapter includes summary and conclusion. At last, bibliography and appendices are also attached at the end of the study.

# CHAPTER II

# LITERATURE REVIEW

A literature review is an examination of academic sources that offers a summary of a particular subject. In order to provide readers a thorough understanding of what has been said about a subject and by whom, literature reviews collect the most relevant and important writings on the subject. A literature review's objective is to provide an analysis of publications on the subject under consideration in order to define the reviewer's own viewpoint within the body of knowledge already available on the subject. A thorough examination of earlier arguments before the one the reviewer will make in his or her own research paper, thesis, or dissertation is given to the reader in a literature review. A literature review, in basic terms, demonstrates to readers where the reviewer is joining the academic discussion on a certain subject within the framework of previous study.

## 2.1 Theoretical review

The theories that are reviewed in this study are: Loan pricing theory and Market power model.

### 2.1.1 Loan pricing theory

Stiglitz and Weiss (1981) proposed that banks should not always focus on delivering very low interest rates on deposits but instead charge high interest rates on loans to improve their profits. Rather, when strategizing for increased revenue, companies should be cautious about behavioral risk and wrong selection because it is difficult to understand the type of borrower with confidence when beginning a client relationship (Stiglitz & Weiss, 1981). Loan pricing refers to the technique used by the book runners to determine the interest rate for granting a loan, which is commonly expressed as an interest spread (margin) over the base rate. Organizers have to evaluate the credit risk associated with group loans and determine the willingness of lenders to take on that risk before setting the loan's price. By making high costs attractive to high-risk borrowers, for instance, high interest rates can lead to the issue of poor selection. Once these borrowers have obtained loans, the lenders are more likely to engage in risky behavior as a result of the start of projects and highly risky investments (Chodechai, 2004). Based on Stiglitz and Weiss' analysis, it is typical to find that the interest rate imposed by banks is not always appropriate to the risk of the borrowers.

Makanile and Pastory (2022) and Olokoyo (2011) research on the determinants of lending behavior of commercial banks while implementing this theory and did their research.

Furthermore, this study also conducted on the basis of loan pricing theory.

### 2.1.2 Market power model

This model was developed by (Gorton & Winton, 2000). According to the hypothesis, banks with higher capital ratios should be more resistant to runs (from both deposits and short-term wholesale funding), since capital serves as a loss-absorbing buffer. High-capitalized banks are able to provide more loans because of the reduced run risk. (Repullo, 2004) has made the case that banks only choose to handle their liquidity risk responsibly when their leverage is modest. The bank's capacity to lend decreases as its capital ratio falls. A bank has to retain a lot of liquid assets to increase its lending capacity. A bank with minimal capital will thus have a relatively low ability to lend and will discover that protecting against lending risks is rather expensive. The idea emphasizes the connection between capitals and as well as bank lending liquidity and risk reduction. The hypothesis suggests that lending favors banks with large capital and flexibility. So, the purpose of this study was to examine that hypothesis.

Makanile and Pastory (2022) research on the determinants of lending behavior of commercial banks while implementing this theory and did their research.

Furthermore, this study also conducted on the basis of market power model.

## 2.2 Empirical review

Olokoyo (2011) investigated the determinants of commercial banks' lending behavior in Nigeria. The study aimed to test and confirm the relationship between the lending behavior of commercial banks and explanatory variables. From this study loan and advance was taken as dependent variable whereas deposits, investment portfolio, interest rate, cash reserve requirement and liquidity ratio were taken as independent variables. The whole population of commercial banks were taken for data collection and analysis. The total population of the commercial banks was 89 and data are collected from secondary source for the period of 1980-2005.

The study used multiple regression analysis and correlation analysis. The variables expressed with the addition of two macroeconomic variables i.e. gross domestic product and foreign exchange. From the estimated results, it was found that the volume of deposit, investment portfolio, foreign exchange and gross domestic product had positive and significant effect on loan and advance. Interest rate, cash reserve ratio and liquidity ratio also had significant effect on loan and advance. From the regression analysis, the model was found to be significant and its estimated turned out as expected. It was discovered that commercial banks deposits had the greatest impacts on their lending behavior.

(Dhungana, 2011) examined the impact of banks' deposit in economic growth of Nepal over the period of 1990 to 2010 AD. This study focused the impact of banking sectors especially commercial banks on economic growth of Nepal. The relationship and impact of banks' deposit on economic growth of Nepal has been analyzed with the help of statistical method. The banking sector plays the important role of mobilizing or allocating the limited resources towards people' needs so as to develop the economic system. This study concluded that there is positive relationship between deposit and economic growth of the nation. Also that higher the deposit of the financial institutions, higher the level of Gross deposit product and economic growth of the nation.

(Ladime, Kumankoma, & Osei, 2013) researched the determinants of bank lending behavior in Ghana. The study used the sample of 17 banks over the period of 1997-2006 by using panel data. This study showed that bank lending was dependent variable and it was affected by different independent variables. Also found the relationship between bank lending behavior and a set of macroeconomic indicators, industry and bank level characteristics. This study showed that there was statistically significant and positive relationship of bank size and capital structure with bank lending behavior. But there was negative and significant impact of macroeconomic indicators (exchange rate and lending rate) on bank lending behavior. Again, competition in the industry has positive and significant impact on bank lending behavior in Ghana. Finally, relationship of banking has positive correlation with bank lending behavior.

Adzis, Sheng, and Bakar (2018) investigated the bank specific and macroeconomic determinants of commercial bank lending in Malaysia. The study used the sample of 27 banks covering the period from 2005 to 2014. It consist of 8 domestically incorporated commercial banks and 19 locally incorporated foreign commercial banks. In this study bank lending was taken as a dependent variable and independent variables were bank size, non-performing loan, liquidity, volume of deposit, gross domestic product, lending rate, and cash reserve requirement. To analyze the data, different statistical tools were used. They are descriptive statistics analysis, correlation matrix and random effect regression. This study also examined the impact of macro prudential policy measure implemented in 2010 on the lending activities of Malaysian commercial banks.

The findings of this study concluded that bank size, liquidity and volume of deposit had a significant relationship with the commercial bank lending in Malaysia. The bank size and deposit volume had positive impact on commercial bank, whereas liquidity had a negative impact on lending activities. In terms of macroeconomic drivers, this study found no clear evidence to support the influence of gross domestic product, lending rate, and cash reserve requirement on commercial bank lending activities in Malaysia.

(Yulianti, Aliamin, & Ibrahim, 2018) examined the effect of capital adequacy and bank size on non-performing loans in public banks in Indonesia. This study aimed to identify the effect of independent variables on dependent variable. Independent variables included capital adequacy ratio, bank size and loan to deposit ratio whereas dependent variable included non-performing loans. The study was based on quantitative analysis through panel data regression using E-Views 8.o program. Out of 118 banks only 81 banks were taken as a sample for the period of 2012 to 2016. The result showed that there was positive effect of capital adequacy ratio on non-performing loans. Moreover, there was negative effect of bank size on non-performing loans also negative effect of loan to deposit ratio on non-performing loans.

Bhattarai (2019) conducted the determinants of lending operations among commercial banks. The study explored the effect of bank specific characteristics and to identify external factors that determine commercial banks' lending behavior in Nepal. The dependent variable of this study was taken from total loans and advances, where as independent variables was taken from interest rate spread, cash reserve ratio, inflation rate and exchange rate. Secondary panel data was used that covered a period of six year (2012/13-2017/18) of the major ten commercial banks to examine factors associated with lending behavior in Nepal. A sample of 10 commercial banks had been taken out of 28 commercial banks. This study adopted the model employed by Olokoyo (2011) and Malede (2014).

The statistical tests used in the analysis of data include descriptive statistics, correlation analysis and regression analysis. SPSS version 23.0 was used to compute and analyze data. From the estimation results, it was found that cash reserve ratio, interest rate spread and exchange rate were significant in determining lending behavior in Nepal's commercial banks. The positive effect of exchange rate inferred that commercial banks in Nepal had sufficient insights into the international market and trade and that they are prepared to meet short-term and long-term commitments. Inflation maintained by the central economic policy has a positive and significant influence on lending volumes among commercial banks in Nepal. Likewise, the findings showed interest rate spread negatively and significantly on total loans advanced to individual and institutions. This implies that as the cost of borrowing increases, banks significantly increases credit supply in the market. It seemed that greater deal of reluctance from among the borrowers to get more credit in such situations.

(Yildiz, 2020) examined the effects of macroeconomic factors on bank loan interest rates. In this study bank loan interest rate were dependent variable and macroeconomic factors were independent variable. Bank loan interest rate included consumer loan, mortgage loan and vehicle loan interest rates whereas macroeconomic factors included exchange rate, gold price, money supply and inflation. This study has collected primary monthly data from 2009 to 2020. The analysis has used three methods where long-term relationship between variables were determined by co-integration test, direction and size of long-term relationships of variables were tested by the Fully Modified Ordinary Least Square (FMOLS) method and causality relationship between variables were studied by the causality test.

This study determined that when exchange rate increases the bank loan interest rates also increases, while the money supply decreases the bank loan interest rates also decreases. Hence, it has positive relation. From the causality analysis, there was negative impact of money supply and inflation on consumer loan interest rate but there was positive impact of gold price and exchange rate on consumer loan interest rate. Likewise, there was positive relationship between mortgage loan interest rate and money supply and exchange rate. At last, there was negative relationship between vehicle loan interest rate and money supply, gold price and inflation.

Bhattarai (2020) investigated to determine the commercial banks' lending in Nepal. In this study the loan and advance was taken as dependent variable whereas liquidity, investment portfolio, cash reserve ratio, bank size, gross domestic products growth rate and inflation rate was taken as independent variables. The secondary data was taken as independent variables. The secondary data were used for the periods of 2012-2013 to 2016-2017. Out of 28 commercial banks sample of 10 commercial banks were taken. The data was collected through the annual report of sample commercial banks and economic survey. For the analysis of data statistical tools like descriptive statistics, correlation analysis and regression analysis were used. The data had been analysis with the help of Gretl statistics software version 1.9.4. From the estimation results, it was found that investment portfolio, bank size and cash reserve ratio had positive and statistically significant with loan and advance. But the liquidity had negative and statistically significant with loan and advance. The macroeconomic variables gross domestic product growth rate and inflation rate had no effective roles to determine the loan and advance. It concluded that liquidity, investment portfolio, cash reserve ration and bank size were the major determinants of loan and advance.

Adhikari and Jha, (2020) studied the lending practices of commercial banks in Nepal. The study was based on Siddhartha bank limited and Sunrise bank limited. The dependent variable was lending behavior (loans) and independent variables was deposits, investment, borrowings and net profits. Both the primary and secondary data were analyzed for the study. This study used five years data for the period of 2014/25 to 2018/19 and data were collected from annual reports of concerned banks. The primary data was based on survey method. There are various methods of data analysis, among them descriptive analysis method has chosen by this study.

For the Siddhartha bank limited, it was concluded that deposits, investments and borrowings had the positive effect on the loans and advances whereas net profit had negative effect on loans and advances. For the Sunrise bank limited, it was concluded that there were positive effect of deposits, borrowings and investments on loans and advances whereas there were negative effect of net profit on loans and advances. All these results were evaluated by the regression analysis. From the trend analysis, deposits, net profit, loans and advances were increasing from the last five fiscal years for both Siddhartha and Sunrise bank. Borrowings and investments of Siddhartha bank limited was fluctuating but there was no any borrowing in last fiscal year of Sunrise bank limited. Also, investments of Sunrise bank was increasing.

(Yunusa, Ariyibi, & Olaiya, 2021) examined the impact of the lending rate on bank lending in Nigeria. The increase in lending rates in Nigeria had impacted borrowers in the financial system and had ultimately slowed the country's economic activity. As a result of this situation, it became necessary to investigate the impact of the lending rate on bank lending in Nigeria. The study employed an ex-post facto research design. The data from the Central Bank of Nigeria Statistical Bulletin from 1981 to 2018 were analyzed using the Auto regression Distributed Lag (ARDL) regression approach. The data were collected from secondary source. The macroeconomic variable growth of bank lending, which is a proxy for bank lending, was included in the research. The dependent variable was loan growth and independent variables were lending rate, deposit growth, foreign exchange rate, liquidity rate, money supply and gross domestic product growth. The findings showed a long-run link between the variables of the study. It was also revealed that the lending rate and liquidity ratio are inversely connected to bank lending growth. Deposit growth and money supply both had a positive significant impact on bank lending growth.

(Makanile & Pastory, 2022) examined the determinants of the lending behavior of commercial banks in Tanzania. In this study lending was the dependent variable whereas liquidity, interest rate, capital adequacy and management efficiency were independent variables. The research was based on quantitative research design. The study used statistical methods, such as regression and correlation to examine the relationship between independent and dependent variables. Multiple regression analysis method was also used to estimate the equation. The data were analyzed using STATA software. The population of this study was the 37 commercial banks in Tanzania. Out of the population 6 commercial banks was taken and data were collected through annual reports from 2015 to 2019. The study concluded that, the commercial banking sector of Tanzania were considered as banks liquidity, management efficiency and capital adequacy in the formulation of lending policies as well as in financial decisions. There was statistically significant relationship between the liquidity and the lending of the banks. The study found that the statistical insignificant and positive effect in relationship between interest rate and lending of bank. The results found that there is a statistically significant relationship between the capital adequacies and liquidity and the lending of banks in Tanzania while interest rate and management efficiency showed an insignificant relationship towards the lending of banks.

(Magoma, Mbwambo, & Dobogo, 2022) examined the factors influencing bank lending behavior in Tanzania. The study looked at bank-specific and industry-specific factors that influence commercial banks' lending behavior. Out of 30 commercial banks the study has taken 7 listed banks as a sample. Explanatory research design were applied and data were collected from secondary source for the period of 2016 to 2020. For the statistical tools pre-regression analysis, correlation and linear analysis were used. As per the study bank-specific factors include asset quality, capital adequacy, liquidity and bank size whereas industry-specific factors include gross domestic product and inflation rate. The findings showed that the liquidity, gross domestic product and inflation rate has the negative relation with the bank lending behavior. There was inverse relationship between capital adequacy and the bank lending behavior whereas positive relationship between the bank size and the lending behavior.

(Malla & Paudel, 2023) investigated the liquidity regulation and bank lending in Nepalese commercial bank. The study showed out of 26 commercial banks only 10 banks were taken as a sample by following simple random sampling. All the data were collected from secondary source which were from 2011 to 2020. It has used descriptive and inferential statistical tools for the study. In this study, the dependent variable was bank lending; total loan, customer deposit to total asset and bank deposit to total assets. The independent variable were liquidity regulation which includes short term loan to total asset, credit deposit ratio and cash reserve ratio. This study concluded that the cash reserve ratio has a positive and significant relationship with bank deposit to total assets but credit deposit ratio has a negative and significant relationship with bank deposit to total assets. There is no significant effect of short term loan to total assets on bank deposit to total assets. The cash reserve ratio and credit deposit ratio has positive effect on the natural logarithm of loans whereas short term loan to total assets has no effect. In terms of customer deposit to total assets, there is positive effect of cash reserve ratio and negative effect of credit deposit ratio, while there is no effect of short term loan to total assets.

(Bhattarai & Sapkota, 2023) investigated the factors that influence the lending behavior of commercial banks in Nepal. The total population of this study was 26 commercial banks and out of this 10 banks were taken as a sample by applying convenience sampling method. This study was based on the secondary data of annual report for the period of 2011/12 to 2020/21. Bank specific variables and macroeconomic variables were the independent variables where loan were the dependent variable. The study showed that inflation and gross domestic product growth rate has a negative and significant impact on bank lending, while bank size, interest rate spread and exchange rate has a positive and significant impact on commercial bank lending in Nepal. And the cash reserve ratio has a negative and insignificant impact on bank lending.

(Bhari, 2023) aimed to identify the effect of macroeconomic variables, industry-specific variables and bank-specific variables on Nepalese commercial banks' lending. The macroeconomic variables were gross domestic product, inflation rate and foreign exchange rate. Likewise, industry-specific variables were cash reserve ratio, cash adequacy ratio and lending interest rate. And bank-specific variables were total deposit, profitability, liquidity and bank size. The loan and advance was taken as dependent variable and other all variables which are already mentioned above were independent variables. The data were collected from secondary sources through annual reports by the Nepal Rastra Bank and individual banks' websites. Out of 26 commercial banks the study used 15 commercial banks from the year 2011 to 2020 through convenience sampling method.

The research was based on quantitative analysis. This study used statistical tools like descriptive statistics, correlation analysis and regression analysis. The data had been analyzed with the help of Eviews version 12. The result showed that the inflation rate, exchange rate, return on assets, bank size, total deposit and liquidity ratio had significant effect on bank loans and advances. However, gross domestic product, cash reserve ratio, cash adequacy ratio and lending interest rate showed insignificant effect on loan and advances. The results of return on assets, bank size, total deposit and lending interest rate showed that they had a positive relationship on loan and advances. In other hand, inflation rate, liquidity rate, gross domestic product, cash reserve ratio and cash adequacy ratio showed negative effect on bank loan and advances. Considering the overall result, exchange rate and bank size are found to have a greater effect on banks' lending.

(Boateng, Mensah, Osei, Atta Bash, & Opoku, 2024) explored the effect of interest rate on customers' demand for loans in Atiwa Rural Banks in Ghana. The study was based on explanatory research design. The data were collected from secondary source and analyzed by using frequencies and percentages. Binary logistic and linear regression were used to analyze the relationship among the key variables of the research also it has used t- test, ANOVA test and chi-square test. Interest rate were taken as an independent variable whereas loan amount, repayment status and repayment period were taken as dependent variables. The data were collected from 2019 to 2021. In this study, more males repay their loans than females and groups so there was insignificant difference between the employment status of the respondents and the repayment status. Interest rate positively affect the loan period and has positive correlation. The credit facility with high interest rate is likely to default in paying back the credit facility as compared to respondents. The management of the Atiwa Rural Banks targeted more salaried workers and loans used for emergency services in order to reduce non-performing loans.

Table 1

Review of empirical studies

|  |  |
| --- | --- |
| Study | Major findings |
| (Olokoyo, 2011) | * Found significant and positive effect of volume of deposit on loan and advance. * Identified significant effect of interest rate and cash reserve ratio on loan and advance. |
| (Dhungana, 2011) | * Found positive impact of banks deposit on economic growth. * Found positive impact of banks deposit on gross domestic product. |
| (Ladime, Kumankoma, & Osei, 2013) | * Identified significant and positive relationship of bank size and capital structure with bank lending behavior. * Found negative and significant impact of macroeconomic indicators on bank lending behavior. |
| (Adzis, Sheng, & Bakar, 2018) | * Identified significant and positive effect of bank size and volume of deposit on loan and advance. |
| (Yulianti, Aliamin, & Ibrahim, 2018) | * Found positive effect of capital adequacy ratio on non-performing loan. * Found negative effect of bank size on non-performing loans. * Found negative effect of loan to deposit ratio on non-performing loans. |
| (Bhattrai, 2019) | * Found significant and positive effect of interest rate on lending behavior. * Found insignificant effect of capital adequacy ratio on lending behavior. |
| (Bhattarai B. P., Bank lending determinants: Evidence from Nepalese commercial banks, 2020) | * Identified significant and positive effect of bank size and cash reserve ratio on loan and advance. |
| Adhikari and Jha, (2020) | * Found positive effect of deposits, investments and borrowings on loans and advances. * Found negative effect of net profit on loans and advances. |
| (Yildiz, 2020) | * Identified positive impact of money supply and exchange rate on bank loan interest rates. * Determined negative impact of money supply and inflation on consumer loan interest rate. * Determined positive impact of exchange rate and gold price on consumer loan interest rate. * Found negative relationship between vehicle loan interest rate and money supply, gold price and inflation. |
| (Yunusa, Ariyibi, & Olaiya, 2021) | * Found that the lending rate and liquidity ratio are inversely connected to bank lending growth. |
| (Makanile & Pastory, 2022) | * Found insignificant and positive effect of interest rate on lending of bank. * Found significant effect of capital adequacy on lending of bank. |
| (Magoma, Mbwambo, & Dobogo, 2022) | * Identified positive impact of bank size on bank lending behavior. * Identified negative impact of liquidity, gross domestic product and inflation rate on bank lending behavior. * Identified significant inverse relationship between capital adequacy and the bank lending behavior. |
| (Malla & Paudel, 2023) | * Identified significant and positive effect of credit deposit ratio on bank loan. * Identified positive effect of cash reserve ratio on bank loan. * Identified no effect of short term loan to total assets on bank loan. |
| (Bhattarai & Sapkota, 2023) | * Found positive and significant impact of bank size, interest rate spread and exchange rate on bank loan. * Found negative and significant impact of GDP growth rate and inflation on bank loan. * Found negative and insignificant impact cash reserve ratio on bank loan. |
| (Bhari, 2023) | * Identified significant and positive effect of bank size, lending interest rate and total deposit on loan and advance. * Showed negative and insignificant effect of cash reserve ratio on loan and advance. |
| (Boateng, Mensah, Osei, Atta Bash, & Opoku, 2024) | * Identified high interest rate results default in paying back the credit facility. * Found positive affect of interest rate on loan period. |

## 2.3 Research Gap

The empirical review had contributed to enhance the fundamental understanding and knowledge, which made the study meaningful and purposeful. The researcher had used various independent variables such as cash reserve ratio, interest rate, bank size, total deposit, liquidity ratio, gross domestic product, inflation rate etc. whereas loan and advance had used as dependent variable (Bhattarai, 2020), (Bhari, 2023), (Olokoyo, 2011) and (Makanile & Pastory, 2022). They used descriptive statistics, correlation and regression to find the relationship between the dependent and independent variables. But in the context of this study three independent variables has been taken and they are bank size, total deposit and interest rate whereas dependent variable is loan and advance.

# CHAPTER III

# RESEARCH METHODOLOGY

A research methodology is a means to describe how a researcher plans to conduct their investigation. It is a logical and systematic approach to a study issue. A methodology explains how a researcher can conduct the study in order to produce accurate, valid results that meet their objectives. This section of a research paper answers how was the data collected or generated and how was it analyzed. It may include publication research, interviews, surveys and other research techniques, and could include both present and historical information. It consists of six different sections. First section includes the description of research design. Second section is about the population and sample of the research. Third section consists of the explanation of nature and sources of data used in the research. The fourth, fifth and sixth sections include definition of variables, methods of analysis and limitations of the study respectively.

## 3.1 Research framework and definition of the variable

A research framework has been used to focus on the variables in the study. Loan and advance is a function of independent variables such as bank size, total deposit, interest rate, capital adequacy ratio and non-performing loan. The research framework of the study is in *Figure 1.*

Independent Variables Dependent Variable

Bank Size

Total Deposit

Loan and Advance

Interest Rate

Capital Adequacy Ratio

Non-Performing Loan

*Figure 1. Research framework of the study*

From the research framework and objectives of the study, it is clear that the study is aimed at determining the effect of selected variables namely bank size, total deposit and interest rate on bank loan and advance.

Table 2

*Source of variables*

|  |  |  |
| --- | --- | --- |
| Variables | Sources | |
| Bank size | | * Adzis, Sheng, and Bakar (2018), Bhattarai (2020) and Bhari (2023), Ladime, Kumankoma and Osei (2013), Yulianti, Aliamin and Ibrahim (2018), Bhattarai and Sapkota (2023), Magoma, Mbwambo and Dobogo (2022) |
| Total deposit | | * Olokoyo (2011), Adzis, Sheng, and Bakar (2018) and Bhari (2023), Dhungana (2011), Adhikari and Jha (2020) |
| Interest rate | | * Olokoyo (2011), Bhattarai (2019), Yunusa, Ariyibi and Olaiya (2021), Makanile and Pastory (2022), and Bhari (2023), Boateng, Mensah, Osei, Atta Bash and Opoku (2024), Yildiz (2020), Bhattarai and Sapkota (2023) |
| Capital adequacy ratio | | * Yulianti, Aliamin and Ibrahim (2018), Makanile and Pastory (2022), Magoma, Mbwambo and Dobogo (2022), Bhari (2023) |
| Non-performing loan | | * Adzis, Sheng and Bakar (2018), Yulianti, Aliamin and Ibrahim (2018) |
| Loan and advances | | * Olokoyo (2011), Adzis, Sheng, and Bakar (2018), Bhattarai (2019), Bhattarai (2020), Yunusa, Ariyibi and Olaiya (2021), Makanile and Pastory (2022), and Bhari (2023), Ladime, Kumankoma, and Osei (2013), Malla and Paudel (2023), Boateng, Mensah, Osei, Atta Bash and Opoku (2024), Bhattarai and Sapkota (2023), Magoma, Mbwambo and Dobogo (2022), Adhikari and Jha (2020) |

### 3.1.1 Bank size

Bank size represents the amount of total assets that a bank holds and it has positive effects on loan and advance. Banks can provide more financial services at a reduced cost by having a high asset ownership rate. In this study, the size of the bank is determined by the natural logarithm of its total assets. Commercial bank lending concluded that bigger banks tend to provide higher credit facilities to the public (Rabab'ah, 2015). According to (Chemykh & Theodossiou, 2011) large banks are typically more diversified, have large funds, and are more accessible to large-company borrowers with high credit card balances. They also have enough resources to build advanced technologies to manage and assess credit risks. This increases the degree of lending facilities that the biggest banks can offer. If the size of the bank is large then the bank lend more to the public but if the size of the bank is small then lending to the public will be low. The big size of bank has high volume of loan and advance.

### 3.1.2 Total deposit

Total deposit is the money or assets held at a bank. When a customer deposits money, they do it into the bank. Private sector credit is built on the deposit. The depositor gives the bank permission to hold their money in a safe place for a while in exchange for interest payments from the bank. The bank invests or lends this money to its customers, who then pay interest to the bank in exchange. Deposit mobilization growth is determined by interest rates, inflation, economic growth, remittance inflows and the amount of currency in circulation (Bhari, 2023). Commercial banks should focus on mobilizing more deposits as it will improve their lending performance (Getachew, 2017).

### 3.1.3 Interest rate

The interest rate refers to the amount a lender charges for the use of assets expressed as a percentage of the principal (Makanile & Pastory, 2022). The interest rate measures how well a bank performs its role as an intermediary by monitoring how much money it lends while similarly borrowing at a lower interest rate. Bank collects the fund at cheaper interest rate and granting them at higher interest rate. A high interest rate affects loan demand while only a small number of borrowers with projects that are highly risky may have their demand met. In this study interest rate is the base rate of the every banks.

### 3.1.4 Capital adequacy ratio

Capital adequacy ratio (CAR) is the minimum capital requirements based on total risk weighted assets (Bhari,2023). According to Nepal Rastra Bank, commercial banks need to maintain at least 8.5 percent Tier I capital including Capital Conservation Buffer and 11 percent Total Capital (Tier I + Tier II). The total risk weighted exposure or total risk weighted assets includes credit risk, market risk and operational risk. Capital adequacy ratio also known as capital to risk weighted exposure ratio.

### 3.1.5 Non-performing loan

Non-performing loan (NPL) is the situation where there is the rejection of credit approval and also lead potential loss. NPL is the ratio of non-performing loan to total loan (Yulianti, Aliamin & Ibrahim, 2018). Low NPL shows the ability of bank management in managing non-performing loans whereas higher NPL shows the worse credit quality of the bank causing the number of non-performing loans. If the NPL is high then bank is afraid to lend the money to their customers.

### 3.1.4 Loan and advance

Giving money to someone else in exchange for repayment of the loan principal plus interest is known as lending. In terms of the commercial banks' lending a portion of their deposits in the form of various credit schemes is explained as loan and advances. In addition, the amount lent by the lender to the borrower for a specific purpose like the construction of the building, capital requirements, purchase of machinery, manufacturing industries, education sector and so on, for a particular period of time (Bhattarai, 2019). In general, banks and other financial entities provide loans. After the predetermined amount of time has passed, the obligation must be fulfilled. The lending organization investigates the customer's credit report before approving loans to learn more about his reputation, financial situation, and repayment capabilities. A loan is classified as secured or unsecured based on security or demand, time or instalment loan based on the repayment mode. Likewise, for businesses to meet their short-term financial needs, banks provide money to them in the form of advances. It is a credit facility which should be repaid within one year as per the terms, conditions and norms issued by Nepal Rastra Bank.

## 3.2 Research design

Quantitative research approach was applied for the study to examine and analyze factors affecting lending policy. Based on the objectives of the study relational and causal research design was applied. Relational research design examines the relationship between variables without the researcher manipulating any of them. It shows the intensity or direction of the link between two or more variables. A correlation might be in positive or negative direction. Causal research design analyzes the cause and effect link between two different situations. Researchers create experiments to get statistical proof of the relationship between the circumstances since numerous alternative factors might affect cause and effect.

**3.3 Population and sample, and sampling design**

The population of the study was 20 commercial banks. Out of the total population 13 commercial banks was taken as a sample by applying convenience sampling method. Among these, 3 banks were government and 10 banks were private. Government banks were Nepal Bank Limited, Rastriya Banijya Bank Limited and Agricultural Development Bank Limited and rest of the banks were private banks. This study was examined by ten year panel data for the period of 2012/13to 2021/22. The total observations of the study was 130. The name of the companies, study period and number of observations are listed in the following table:

Table 3

Sample Companies

|  |  |  |  |
| --- | --- | --- | --- |
| S.N. | Companies | Study period | Number of observations |
| 1 | NBL | 2012/13-2021/22 | 10 |
| 2 | RBB | 2012/13-2021/22 | 10 |
| 3 | SCB | 2012/13-2021/22 | 10 |
| 4 | SBI | 2012/13-2021/22 | 10 |
| 5 | EBL | 2012/13-2021/22 | 10 |
| 6 | NICA | 2012/13-2021/22 | 10 |
| 7 | MBL | 2012/13-2021/22 | 10 |
| 8 | SBL | 2012/13-2021/22 | 10 |
| 9 | ADBL | 2012/13-2021/22 | 10 |
| 10 | CBIL | 2012/13-2021/22 | 10 |
| 11 | PCBL | 2012/13-2021/22 | 10 |
| 12 | NMB | 2012/13-2021/22 | 10 |
| 13 | SANIMA | 2012/13-2021/22 | 10 |

**3.4 Nature and sources of data and the instrument of data collection**

The study was based on secondary data. The annual reports of the respective companies was recorded in excel for the period of ten years from fiscal year 2012/13 to 2021/22. The data was collected on the basis of the variables: dependent variable include loan and advance whereas independent variables include bank size, total deposit, interest rate, capital adequacy ratio, non-performing loan, loan to deposit and age of the bank.

**3.5 Method of analysis**

Various statistical tools was applied for this study. SPSS software was used in order to calculate and analyze the data. The following subsections discuss the statistical methods that was used in this study to examine the data findings:

**3.5.1 Descriptive statistics**

A statistical measure focuses on descriptive statistics uses specific numbers, such as mean, median and mode, to characterize data in order to make it simpler to interpret and analyze. The data that is accessible (sample) is what descriptive statistics describe, and they are not dependent on any theory of probability because they don't include any generalization or inference beyond what is immediately available.

**3.5.2 Correlation**

Correlation is a statistical tool used to measure how strong a relation is between two variables. Correlation are useful because they can indicate a predictive relationship that can be exploited in practice. Thus, it is helpful. It is calculated as follows:

Where,

n = Number of observations

x = Value of independent variables

y = Value of dependent variable

**3.5.3 Regression analysis**

Regression is a statistical measure that attempts to determine the strength of the relationship between one dependent variable and one or more independent variables. In this study, regression analysis was applied to show the impact of independent variables on dependent variable. It is calculated by applying following formula:

Where,

Y = Loan and advance

a = Intercept

b1 = Coefficient of bank size

b2 = Coefficient of total deposit

b3 = Coefficient of interest rate

X1 = Bank size

X2 = Total deposit

X3 = Interest rate

ein = Error term

# CHAPTER IV

# DATA ANALYSIS AND DISCUSSION

The study aims to explain various determinants of commercial banks' lending in Nepal. This chapter describes the presentation and analysis of the data which were collected from secondary sources. The research work presents in the form of major findings and data gathered from various sources have been inserted in the tabular form which are in appendix. For the analysis, the study employs various statistical tools and techniques to determine the banks' lending.

## 4.1 Analysis of data

Secondary data was collected and analyzed in systematic way to derive the empirical findings. The secondary data was collected according to the variables shown in figure 1.

In the procedure of collecting the data, the dependent variable: loan and advance, Non-performing loan and interest rate of commercial banks which is affected by independent variables: total deposit, bank size, capital adequacy ratio, loan to deposit ratio, dummy and age of the banks were all collected from Nepal Rastra Bank and each individual bank's official website. The data were analyzed using t-test, correlation and regression analysis. The calculations of secondary data were made by using IBM SPSS Static 27 software. For studying the effect of independent variable with dependent variable t-test was used. The source of tables represent below are output from SPSS software and edited in Excel.

### 4.1.1 Descriptive statistics

Table 4 summarizes the outcome of the descriptive statistics for the variables under study. The table depicts the descriptive statistics: number of observations, minimum, maximum, mean and standard deviation of the variables under study for all sample collected.

Table 4

Descriptive statistics of dependent and independent variables

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variables | N | Minimum | Maximum | Mean | S.D. |
| Deposit | 130 | 9.79 | 12.58 | 11.3238 | .59646 |
| Bank size | 130 | 10.00 | 12.79 | 11.5210 | .62982 |
| CAR | 130 | .00 | 3.15 | 2.5489 | .46172 |
| LTDR | 130 | .28 | 1.12 | .8128 | .13317 |
| Age | 130 | 1.39 | 4.43 | 3.0193 | .72331 |
| Dummy | 130 | .00 | 1.00 | .7692 | .42295 |
| Loan and Advance | 130 | 9.62 | 12.49 | 11.0996 | .65926 |
| NPL | 130 | -4.61 | 1.98 | -.1044 | 1.29876 |
| IR | 130 | .00 | 2.47 | 2.0733 | .33296 |

Table 4 presents the summary of descriptive statistics of all the dependent and independent variables. The table shows the number of observations (N), minimum, maximum, mean and standard deviation of respective variables. From the independent variables, the highest minimum and maximum values are 10.00 and 12.79 from bank size whereas, the lowest minimum and maximum values are .00 and 1.00 from dummy variable. Likewise, the bank size has the higher mean with 11.5210 and dummy has the lower mean with .7692. The variable of age has the higher standard deviation with .72331 and LTDR has the lower standard deviation with .13317. From the dependent variables, NPL has the lower value of minimum and maximum with -4.61 and 1.98 due to the analysis of natural logarithm whereas, loan and advance has the higher value of minimum and maximum with 9.62 and 12.49. Likewise, NPL has the lower mean with -.1044 due to natural logarithm and loan and advance has the higher mean with 11.0996. At last, IR has the lowest standard deviation with .33296 and NPL has the highest standard deviation with 1.29876.

### 4.1.2 Correlation Matrix

Table 5 shows the correlation analysis of the variables. Correlation analysis helps to find out the relationship between the variables. In this study, correlation analysis is done between dependent and independent variables.

Table 5

Correlation matrix of dependent and independent variables

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variables | L and A | Deposit | Bank size | CAR | LTDR | Age | Dummy | NPL | IR |
| L n A | 1 |  |  |  |  |  |  |  |  |
| Deposit | .955\*\*\*  (.000) | 1 |  |  |  |  |  |  |  |
| Bank size | .963\*\*\*  (.000) | .995\*\*\*  (.000) | 1 |  |  |  |  |  |  |
| CAR | .163\*\*  (.032) | .023  (.399) | .056  (.264) | 1 |  |  |  |  |  |
| LTDR | .497\*\*\*  (.000) | .221\*\*\*  (.006) | .268\*\*\*  (.001) | .457\*\*\*  (.000) | 1 |  |  |  |  |
| Age | .421\*\*\*  (.000) | .547\*\*\*  (.000) | .545\*\*\*  (.000) | -.193\*\*  (.014) | -.226\*\*\*  (.005) | 1 |  |  |  |
| Dummy | -.243\*\*\*  (.003) | -.342\*\*\*  (.000) | -.341\*\*\*  (.000) | .278\*\*\*  (.001) | .187\*\*  (.016) | -.790\*\*\*  (.000) | 1 |  |  |
| NPL | .041  (.321) | .087  (.162) | .084  (.170) | -.270\*\*\*  (.001) | -.100  (.129) | .288\*\*\*  (.000) | -.595\*\*\*  (.000) | 1 |  |
| IR | -.048  (.294) | -.123\*  (.081) | -.105  (.117) | .543\*\*\*  (.000) | .250\*\*\*  (.002) | -.364\*\*\*  (.000) | .269\*\*\*  (.001) | -1.26\*  (.077) | 1 |

Note: \*\*\*Correlation is significant at the 0.01 level (1-tailed), \*\* Correlation is significant at the 0.05 level (1-tailed) and \*Correlation is significant at the 0.1 level (1-tailed).

Table 5 illustrates the correlation matrix of dependent and independent variables. The deposit, bank size, CAR, LTDR and age became positively correlated with loan and advance and statistically significant at 1% and 5% level, respectively. But loan and advance was negatively correlated and statistically significant with dummy at 1% level. Similarly, deposit and bank size was positively correlated with NPL and statistically insignificant. CAR and dummy was negatively correlated with NPL and statistically significant at 1% level. Likewise, NPL was negatively correlated with LTDR and statistically insignificant but it was positively correlated with age and statistically significant at 1% level. IR was positively correlated with CAR, LTDR and dummy which was statistically significant at 1% level but IR was negatively correlated with bank size which was statistically insignificant. However, there was negative relationship of deposit and age with IR and statistically significant at 10% and 1% level.

### 4.1.3 Regression analysis

Regression analysis helps to find out the effect of independent variables on dependent variables. The study mainly focused on regression results. Table 6, 7 and 8 shows the result of regression analysis. Table 6 presents the result related to loan and advance. Similarly, table 7 and 8 presents the result related to NPL and IR.

Table 6

Multiple regression equation of loan and advance on all independent variables

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | Coefficient | *t*-statistics | *P*-value | *VIF* |
| (Constant) | -1.317\*\*\* | -18.530 | .001 |  |
| Deposit | 1.152\*\*\* | 18.126 | .001 | 143.138 |
| Bank size | -.174\*\*\* | -2.802 | .006 | 151.738 |
| CAR | .010 | 1.192 | .720 | 1.390 |
| LTDR | 1.535\*\*\* | 45.125 | .001 | 2.043 |
| Age | .025\*\*\* | 2.794 | .006 | 4.114 |
| Dummy | .030\*\* | 2.311 | .023 | 2.918 |
| *F*-statistics | 7191.933 | *R2* | .997 |  |
| *P*-value | .001 |  |  |  |

Note: \*\*\*Statistical significance at 1% level, \*\*Statistical significance at 5% level.

Table 6 illustrates the effects of deposit, bank size, CAR, LTDR, age and dummy on loan and advance. The value of *R2*is .997 which means the independent variables have high ability to clarify on dependent variable. It indicates that 99.7% of the variation in loan and advance was explained by the variation in the independent variable. The variance inflation factor (VIF) of CAR, LTDR, age and dummy were less than 5 which indicates the non-presence of the multicollinearity problem. Besides, the VIF of deposit and bank size were more than 5 which shows the problem of multicollinearity. The regression coefficient of deposit (b1=1.152, p<.01) indicates that higher the deposit resulted the higher loan and advance of commercial banks and statistically significant at 1% level. The results consistent with previous studies of (Olokoyo, 2011; Adzis, Sheng, & Bakar, 2018; Adhikari & Jha, 2020; Bhari, 2023). When the bank is able to accept high volume of deposit from customers which lead to lend the money to the customers. The regression coefficient of bank size (b2=-.174, p<.01) indicates that a higher bank size resulted the lower loan and advance and statistically significant at 1% level. The result inconsistent with previous studies of (Ladime, Kumankoma & Osei, 2013; Adzis, Sheng, & Bakar, 2018; Bhattarai, 2020; Magoma, Mbwambo, & Dobogo, 2022; Bhattarai & Sapkota, 2023; Bhari, 2023). The regression coefficient of capital adequacy ratio (b3=.010, p>.05) indicates that a higher CAR resulted the higher loan and advance of commercial banks and statistically insignificant. The result consistent with previous studies of (Bhattaai, 2019) but inconsistent with (Makanile & Pastory, 2022; Magoma, Mbwambo, & Dobogo, 2022). The regression coefficient of loan to deposit ratio (b4=1.535, p<.01) indicates that a higher loan to deposit ratio resulted in the lower loan and advance of commercial banks and statistically significant at 1% level. The results inconsistent with previous studies of (Adzis, Sheng, & Osei, 2013; Magoma, Mbwambo, & Dobogo, 2022). The regression coefficient of age (b5=.025, p<.01) indicates that higher the age of the bank resulted higher the loan and advance of the banks and statistically significant at 1% level. The regression coefficient of dummy (b6=.030, p<.05) indicates that private and government bank effects on loan and advance and statistically significant at 5% level.

Table 7

Multiple regression equation of non-performing loan on all independent variables

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | Coefficient | *t*-statistics | *P*-value | *VIF* |
| (Constant) | 4.681\*\* | 2.405 | .018 |  |
| Deposit | -.052 | -.030 | .976 | 143.138 |
| Bank size | .133 | .078 | .938 | 151.738 |
| CAR | -.298 | -1.347 | .180 | 1.390 |
| LTDR | .006 | .007 | .995 | 2.043 |
| Age | -.905\*\*\* | -3.720 | .001 | 4.114 |
| Dummy | -2.916\*\*\* | -8.322 | .001 | 2.918 |
| *F*-statistics | 16.852 | *R2* | .451 |  |
| *P*-value | .001 |  |  |  |

Note: \*\*\*Statistical significance at 1% level, \*\*Statistical significance at 5% level.

Table 7 illustrates the effects of deposit, bank size, CAR, LTDR, age and dummy on non-performing loan. The value of *R2*is .451 which means the independent variables have ability to clarify on dependent variable. It indicates that 45.1% of the variation in non-performing loan was explained by the variation in the independent variable. The variance inflation factor (VIF) of CAR, LTDR, age and dummy were less than 5 which indicates the non-presence of the multicollinearity problem. Besides, the VIF of deposit and bank size were more than 5 which shows the problem of multicollinearity.

Table 8

Multiple regression equation of interest rate on all independent variables

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | Coefficient | *t*-statistics | *P*-value | *VIF* |
| (Constant) | 1.699\*\*\* | 3.235 | .002 |  |
| Deposit | -.260 | -.554 | .580 | 143.138 |
| Bank size | .302 | .660 | .510 | 151.738 |
| CAR | .393\*\*\* | 6.572 | .001 | 1.390 |
| LTDR | -.311 | -1.240 | .217 | 2.043 |
| Age | -.250\*\*\* | -3.808 | .001 | 4.114 |
| Dummy | -.199\*\* | -2.103 | .037 | 2.918 |
| *F*-statistics | 13.223 | *R2* | .392 |  |
| *P*-value | .001 |  |  |  |

Note: \*\*\*Statistical significance at 1% level, \*\*Statistical significance at 5% level.

Table 8 illustrates the effects of deposit, bank size, CAR, LTDR, age and dummy on interest rate. The value of *R2*is .392 which means the independent variables have ability to clarify on dependent variable. It indicates that the 39.2% of the variation in loan and advance was explained by the variation in the independent variable. The variance inflation factor (VIF) of CAR, LTDR, age and dummy were less than 5 which indicates the non-presence of the multicollinearity problem. Besides, the VIF of deposit and bank size were more than 5 which shows the problem of multicollinearity.

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