IMPACT OF MONETARY POLICY INSTRUMENTS ON PROFITABILITY: A CASE OF NEPALESE COMMERCIAL BANKS

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RECOMMENDATION

CERTIFICATION

DECLARATION OF AUTHENTICITY

I, Bibek Pandey, declare that this Graduate Research Project is my own original work and that it has fully and specifically acknowledged wherever adopted from other sources. I also understand that if at any time it is shown that I have significantly misrepresented materialpresented to SOMTU, any credits awarded to me on the basis of that material may be revoked.

Bibek Pandey

September, 2022

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I believe that this report will be a valuable asset not only for academic institution, but willalso be useful for all those who are interested to learn Impact of monetary policy instruments on profitability: a case of Nepalese commercial banks.

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LIST OF ABBREVIATIONS

Abbreviation	Explanation
BR	Bank rate
CRR	Cash reserve ratio
GRP	Graduate research project
IRC	Interest rate corridor
IRS	Interest rate spread
ITB	Investment in treasury bills
Ltd.	Limited
MBA	Master of business administration
MS	Broad money supply
NEPSE	Nepal stock exchange
NIM	Net interest margin
NRB	Nepal Rastra Bank
OMO	Open market operation
ROA	Return on asset
ROE	Return on equity
SD	Standard deviation
SEBON	Security board of Nepal
SLR	Statutory Liquidity Ratio
SOMTU	School of management Tribhuvan University
SPSS	Statistical Package for Social Sciences
VAR	Vector autoregressive

EXECUTIVE SUMMARY

The monetary authority's policy of managing the supply of money in order to achieve predetermined macroeconomic goals is known as monetary policy. The central bank's useof monetary policy to control the money supply as a tool for accomplishing preset macroeconomic goals is known as monetary policy. The main objectives of this study is toinvestigate the impact of monetary policy instruments on firm profitability in the context of Nepalese commercial banks.

The study is very useful to identify the impact of central banks regulations on the tighteningof credit limit that directly affects the profitability of commercial banks as they have to maintain and enhance the credit only in the priorities sector of the economy. The study tried to find out the impact of independent variables such Cash Reserve Ratio (CRR), BroadMoney Supply, Bank Rate (BR), Statutory Liquidity Ratio (SLR) and Investment in T-bills (ITB) interest rate corridor, interest rate spread. The review of previous studies shows that effect of monetary policy instruments on profitability. this study uses the data from the banking sector covering the period of 2011/12 to 2020/21. Hence it has included the recentdata which might have some new insights into the monetary policy instruments' relationship firm's performance in the banking sectors. So, this is also considered the gap in the research.

This study has employed descriptive and causal-comparative research designs to deal with issues associated with monetary policy instruments on firm profitability in the context of Nepal. The sample consists of a total of 100 observations. The ten commercial banks have been selected on the basis of the highest paid-up capital in 2021 and the study is based onthe secondary data. The finding of this study is Broad money supply, statutory liquidity ratio, and bank rate is in increasing trends as it is set by the monetary authorities of specific country central bank. In Nepal, Nepal Rastra bank play active role in monitoring these activities. The highest mean among the sample banks is observed for net interest margin whereas the lowest is observed for statutory liquidity ratio. Similarly, highest fluctuation among the selected enterprises is observed for statutory liquidity ratio whereas the lowest is observed for return on assets.

The return on assets is found to have positive relation with investment on treasury bills, statutory liquidity ratio, bank rate, cash reserve ratio and broad money supply. Similarly, return on equity is found to have positive relation with investment on net interest margin, broad money supply and bank rate whereas the negative relationship with investment on treasury bills, statutory liquidity ratio and cash reserve ratio. Likewise, the net interest margin is found to be positive relation with investment on treasury bills and cash reserve ratio whereas the negative relationship is found with statutory liquidity ratio, broad moneysupply and bank rate.

The beta coefficient is negative for investment on treasury bills, statutory liquidity ratio and cash reserve ratio with return on equity which indicate that higher the investment on treasury bills, statutory liquidity ratio and cash reserve ratio. Similarly, the beta coefficient is negative for broad money supply and statutory liquidity ratio with net interest margin which indicates that higher the broad money supply and statutory liquidity ratio would leadto lower net interest margin. The beta coefficient is positive for cash reserve ratio, investment on treasury bill and bank rate with net interest margin which indicate that higher the investment on treasury bills, bank rate and cash reserve ratio higher would lead to higher net interest margin. Similarly, the beta coefficient is negative for bank rate and statutory liquidity ratio with return on assets which indicate that higher the bank rate and statutory liquidity ratio would lead to lower return on as

s that the cash reserve ratio, bank rate, investment on treasury bills are the most dominant variables in the monetary policy instruments to analyze it impact on the profitability of Nepalese commercial banks. Cash reserve ratio has found to have negativerelationship with return on equity which indicate that higher the cash reserve ratio lower could be the bank profitability. Likewise, bank rate has found to be negative relationship with return on assets which indicate that higher the bank rate would lead lower the bank profitability. Similarly, investment on treasury bills has found to be negative relationship with the return on equity which indicate that higher the investment on treasury bills lower could be the return on equity whereas the positive relationship has found with return on assets and net interest margin which indicate that higher the investment on treasury bills would lead the higher profitability of commercial banks.

The study also concludes that positive relationship with investment on treasury bills, broad money supply and cash reserve ratio. These results reveal that higher the investment on Treasury bill higher would be the return on assets. Likewise, higher the broad money supply higher would be the return on assets. Similarly, the positive beta coefficient for cash reserve ratio indicates that higher the cash reserve ratio higher would be the return on assets.

CHAPTER I
INTRODUCTION

1.1 Background of the study

Monetary policy is the policy issued by central bank of nation to manage the supply of money for achieving the macroeconomic goals of the nation. The central bank's use of monetary policy to control the money supply as a tool for accomplishing preset macroeconomic goals is referred to monetary policy. It influences the economy's performance through control of bank credit, quantity of money, bank deposits, interest rate, and other aspects such as inflation, national production, and employment. According to Isisaila and Imoughele (2015), monetary policy is the tool used by monetary authorities to maintain the stability of price and control the supply of money in an economy.

The goal of monetary policy is to regulate the supply of money by making changes in the interest rates and rate of inflation for overall economic growth and stability. Monetary policy can be expansionary or contractionary policy. An expansionary monetary policy leads to increase in the total supply of money in the economy while a contractionary monetary policy leads to decrease in the total money supply in the economy (Mankiw, 2013). Either of the policies have vital role in the economy as they both promote economic development. The regulation of economic performance could be observed as change in the macroeconomic variables such as inflation, gross domestic product, and employment. The policy works by controlling the amount of money in circulation via its frequent manipulation of interest rates in order to foster both economic expansion and stability. The link between an economy's total money supply and interest rate often referred to as cost of borrowing money from bank, is maintained by monetary policy. This price of money can be thought of as the cost of borrowing money in an economy (Reddy, 2011).

Monetary policy enhances the performance of the banks which contributes to the overall sustainable economic development of the country. It includes the actions taken by the monetary authority to influence the availability of credit and cost of money in economy. However, in relation to open economy, the economy is affected mainly

through two channels namely, exchange rate and the rate of interest. Because of the impact that a shift in the rate of interest that has on the market interest rate in case of short term as well as long term, the first channel i.e. interest rate is extremely significant from a banking perspective. As a result of this consequence, the effects of interest rate fluctuations on the banking sector are mitigated. In order to find a solution to this problem, the size of the company is quite important. A bank with a higher size will have an easier time managing it than a bank with a lesser size (Zaman et al., 2014).

When it comes to banking sector regulation, the government mostly relies on monetary policies as the instrument of choice. Embedded within these are the many sorts of tools that are used to govern the activities of banks within the economy. Monetary policies are an integral part of these. The fact that the instruments are external to the banks means that they might either operate as a militating or mitigating component in the process of increasing the banks' profitability. However, the tools and considerations applied to banks varies according to the nation as per the economic condition. In context of stable and developed economies, the tools of monetary policy are secured from frequent manipulations. In the developing countris and where the capital market is not fully developed, the tools highly affect the economic activities of the nation (Nwannebuike, 2015).

Rao and Somaiya (2006) found that the objectives of have helped in improving the growth, full employment of resources, prevention of financial crisis, stabilization of interest rates and the exchange rate of nation. Although certain goals complement each other while some of them are competitive to each other as well. For instance, maintaining price stability goal often cometes with goal of stabilizing the nterest rates and maintaining full employment in short term. Targets for monetary policy, as opposed to objectives, are an example of proximal goal setting. These goals are not the policy's aims in and of themselves; but, if they are accomplished, they will directly contribute to the accomplishment of the policy's longer-term goals. Aims for monetary policy may be broken down into two categories: operational targets and intermediate targets. Although they are assumed to have an effect on the ultimate goals of monetary policy, intermediate aims are variables. The central bank does not have direct control over these variables.

The central bank makes the use of monetary policy instruments like quantitative instruments (bank rate, researve requirements, open market operations) and qualitative instruments (selective credit control, margin lending). The banking aspect is an importanct system in an economy that helps in contribution of money supply to a large extent in an economy (Sohail et al., 2014).

According to Ndugbu and Okere (2015), the model takes into account monetary policy variables as mentioned above regarding the qualitative and uantitative instruments. however, only bank deposit rate has a significant inverse relationship. This was discovered after they found that only bank deposit rate has this relationship. Based on this assumption, the research suggests that the the central bank in order to control the operation of deposit money, it should use deposit rate and boost the profitability of banks. This recommendation is made in the context of the Nigerian economy.

According to Imoughele and Mohammed (2014), central banks deploy two primary control mechanisms of monetary policy at any one moment. Monetary instruments can be direct or indirect. Reserve requirement i.e. cash reserve ratios, discount rates, open market operations are the indirect instruments of monetary policy and credit limits or ceiling, deposit ceilings, exchange control are the direct instruments of monetary policy. Monetary policy has important function in both short run and long run. In short run, it helps in stabilization of output while in long run, it helps in achieving the macroeconomic goals of nation i.e. stability of price, full employment of resources, economic growth and equilibrium in balance of payments.

Monetary policy is the macroeconomic policy of nation used by central bank to achieve the goals specifically, the macroeconomic goals of the nation. The policy can be classified into direct or indirect instruments. Monetary authorities control the credit supply through use of onetary policy. On the other hand, direct instruments aim at controlling specific types of credit such as it includes change in margin requirements and regulating the level of customer credit (Jhaingal and Stephen, 2004).

In the context of Nepal, Khatiwada (1994) stated that monetary policy is mainly a tool for the management of the money supply. Its role in the Nepalese economy should also be primarily sought in economic stabilization rather than in economic growth.

Nepal Rastra Bank started issuing the monetary policy in1960 through use of interest rates, margin lending rate and cash reserve ratios. During 1970s, there was the introduction of liquidity constraints, credit limitations and ceilings, as well as guided credit program options. Only in the 1990s did monetary policy begin to transition away from direct control and toward indirect control, which allowed open market activities to emerge.

Pokharel (2009) emphasized the importance of open market operations as one of the major instrument of monetary policy. These tools typically have as their primary short-term objective the realization of a predetermined short-term interest rate target. The monetary policy of 2015/16 mainly focuses on increasing the capital for the commercial banks and other financial institutions as well as maintaining the stability of price, promoting economic growth and financial sector stability, increasing the financial access and leading to overall economic growth. The fiscal year 2015/16 has been considered as an important milestone in contect of Nepal. This is because it led to formulation of new constitution. The investment climate also seems to be favorable through timely implementation of government budget along wiwth political transition. It is assumed that these, together with the anticipated increase in agricultural production citing the favorable monsoon, would be helpful in achieving the government's projected economic growth (Nepal, 2015).

Sigdel (2006) shed light on the historical evolution of the Nepalese monetary policy, concentrating on its characteristics, objectives, and implementation mechanisms. According to the findings of the research, Nepal's monetary policy is very successful and makes a significant contribution to the expansion of the country's financial sector. Prabhu (2005) stated that monetary policy focuses on supporting the economy through a competitive and production-oriented financial development in Nepal is dominated by private banks and the tools of monetary policy act as a vital role in the overall profitability of Nepalese commercials banks.

From above context, it can be oinferred that the the studies carried out in respect of the impact of monetary policy instruments and firm profitability are of great significance. Even while similar results may be found in the context of other nations, including Nepal, there isn't a single one that uses data that is more current that can be found in the context of Nepal. As a result, the purpose of this research is to analyse

how monetary policy instruments and the firms' profitability in the Nepalese commercial banking sector are related to one another.

1.2 Statement of the problem

Borrowers' dependency on banks' credit is regulated by monetary policy to a great extent . In addition to that the lending activites of banks and the use of restrictive monetary policy is highly influenced by the credit channel of the bank. Morris and Sellon (1995) stated that the scope of the banks has been reinforced in the monetary transmission mechanism due to the frequent changes in the banking industry as initiated by the central bank.

Reserve requirements has to be maintained as deposit with the central banks which is the certain percentage of domestic deposit liabilities of banks. Change in such reserve requirements tend to affect the lending of banks to its customers. Okoye and Richard (2013) came to the conclusion that the lending rate and the monetary policy rate both have substantial impacts that are beneficial on the performance of deposit money institutions. According to Zaman et al. (2014), there is negative impact of rate of interes on financial performance of the firm accessed through return on euity and return on assets of the firm.

Monetary policy has an active role to determine the profitability of the banks. According to Imoughele and Mohammed (2014) , the instruments of monetary policy are qualitative and quantitative and also be classified as direct and indirect instruments. Especially in context of a liberal and stable financial system, the indirect instruents of monetary policy such as open market operation, cash reserve ratio and bank rate are exercised (Rao and Somaiya, 2006). This study is intended towards discovering the structure and pattern of return on assets (ROA) , return on equity (ROE) and net interest margin (NIM), cash reserve ratio CRR), statutory liquidity ratio SLR) and investment on T-bill (ITB), bank rate (BR) and broad money supply (MS) in Nepalese commercial banks in order to determine the profitability of commercial banks.

In contect of Nepal, although there seems to be high level of information asymmetry, undeveloped financial insfrastructure, low level of financial stability, Budha (2015)

analyzed the monetary transmission mechanism especially related to bank lending channel, the interest rate channel, and the asset price channel. The evidence of monetary transmission channels suggests that the Nepal Rastra bank was successful in achieving the designated goals over a predetermined period of time via the growth of the money market. Therefore, it investigated the problem of inflation convergence as well as the independence of the monetary system of Nepal because of the prescence of exchange rate peg with India and its policy regarding the capital movement.

Between the years 1995 and 2000, Punita and Somaiya (2006) conducted research to regarding the influence of monetary policy on profitability of banking institutions in India. According to the study, the lending rates, the cash reserve ratio, lending rate and the statutory liquidity ratio were the monetary variables, and impact of each of the variables was carried through regression method on profitability of banks individually. The study shoed that the lending rate has a positive and considerable impact on the profitability of banks. In this context, the finding suggests that a decline in lending rates would result in a reduction in the profitability of banks. Additionally, it was discovered that the cash reserve ratios, statutory liquidity ratio and bank rate had negative impact on the profitability of banks. Bernanke and Mihov (1998) argued that the primary drivers that have a greater degree of effect on the performance of commercial banks are monetary policy tools.

There are number of empirical evidence regarding the study in context of other countries. Howver, the evidences and studies regarding such using the recent data does not exist in Nepal. Therefore, the study aims at answering the following research questions and deals with the following issues:

1. What is the effect of the commercial bank's profitability regarding the monetary policy instruments?
2. What is the relationship between the instruments of the monetary policy and the commercial banks' profitability?
3. What is the impact of monetary policy instruments on the profitability of commercial banks of Nepal?

1.3 Objectives of the study

The major objective of the study is to investigate the impact of monetary policy instruments on firms' profitability in the context of Nepalese commercial banks. Specifically, the objectives are as follows:

1. To identify the relationship between the commercial bank's profitability and the monetary policy instruments.
2. To examine the relationship between cash reserve ratio, bank rate, and investment on Treasury bills on the firm's profitability.
3. To analyze the impact of monetary policy instruments on a firm's profitability.

1.4 Hypothesis of the study

Following hypothesis has been developed to achieve the objective of this study based on the review of literatures:

H1: Cash reserve ratio is negatively related to firm profitability.

The cash reserve system provides an explanation for the connection that exists between the profitability of banks and the monetary policy tools that are used in the private sector (Nwannebuik, 2015). According to Punita and Somaiya (2006), the cash reserve system was discovered to have a detrimental and considerable impact on the profitability of banks. This was proven to be the case.

H2: Bank rate is negatively related to firm profitability.

According to Ajayi and Atanda (2012) rate of inflation, bank rate and interest rate enchance the credit level while the cash reserve ratios and liquidity ratio has negative impact on the credit of banks. Punita and Somaiya (2006) stated that there was negative impact of bank rate on the firms' profitability.

H3: Statutory liquidity reserve is negatively related to firm profitability.

Younus and Akhtar (2009) studied the the importance of the statutory liquidity requirement (SLR) in Bangladesh. The study found that decrsed SLR had positive

impact of the on the investment and credit and this is particularly associated with the period prior to 1990s.

H4: Broad money supply is positively related to firm profitability.

The study about impact of the monetary policy on the lending of banks in Ghana was carried out by Amidu (2006) between the period of 1998 and 2004. The study found that change in supply of money and economic support by nation highly imoacted the lending behavior. The results also revealed that there was statistical significant and positive relationship between the banks credit and broad money supply in an economy.

H5: Investment in treasury bills is positively related to firm profitability.

The quantity of money in circulation may be influenced by the central bank's actions of selling and redeeming its assets (Suresh and Paul, 2013).

H6: There is positively relationship between interest rate spread and profitability.

Karki (2016) investigated the association between interest rate spread (IRS) and profitability of commercial banks in Nepal. It was found that the interest rates and profitability had a significant association with each other.

1.5 Scope and Significance of the study

The purpose of the study was to investigate the impact of tool of monetary policy on the level of firm profitability enjoyed by commercial banks. It is useful to know the influence of monetary authority's regulations on the tightening of the credit limit factor that has a significant impact on the profits of commercial banks as they have to maintain and enhance the credit only in the priorities sector of the economy. This study will also enhance the investors to know the performance of commercial banks from this investment on T-bills as it reflects the soundness of commercial banks. Similarly, this study is mainly important for university students, researchers, shareholders, managers, bankers, government, central bank authorities, etc. who are interested in monetary policy's impact on the banking sector particularly the commercial banks of Nepal.

Therefore, the study aims to enlighten the bankers to know about key indicators which can assure them at least nominal and fair returns on their investment. The bankers can have ideas about the various monetary instruments tools such as cash reserve ratio, statutory liquidity ratio, bank rate, etc. that are always given importance to maintain the sound health of financial institutions. Budha (2015) observed that having an understanding of how monetary policy is transmitted is also very important for central monetary authority of Nepal i.e. Nepal Rastra Bank (NRB), especially with regard to increasing the efficiency of monetary policy.

Nwannebuik (2015) revealed that monetary policy tools helps in controlling the economic fluctuations through its contractionary and restrictive policies. However, additional researches has to be done to determine whether the changes in monetary policy impact the level of profitability of banks.

Moreover, this study also is useful to policymakers in order to prepare policies in a timely manner for efficient functioning and growth of commercial banks' profitability. The regulator always gives attention to the activities of commercial banks in order to protect them from insolvency because it impacts the economic development of countries. Therefore, the study is significant to the general public to help them undertake rational decisions while investing in the share of commercial banks. In addition, this study is also useful to banks and other financial institutions to understand the relationship between profitability, financial position, and performance regarding the changes in the monetary policy instruments by the regulator. Thus, this study lies mainly in filling a research gap and expectation of all parties related to the impact of instrument of monetary policy and profitability of commercial banks in the context of Nepal for which data are collected from the time period 2011/12 to 2020/21.

1.6 Limitation of the study

The limitations of the study are highlighted below:

- The study has omitted the firms like non-finance companies, development banks, finance companies, and insurance companies so, the conclusions drawn from the study need precaution for generalizing the findings.

- The study of monetary policy instruments on firm profitability has been based on assumption that there is linear relationship between the independent and the dependent variables. Thus, this study has not considered the non-linearity preconceptions which are normally characterized in markets of emerging countries.
- This study has used the annual time series data of macro-economic variables. However, there are studies using different quarterly macro-economic data. Moreover, in the case of Nepal data other than annual forms are not available.
- The data taken for a short period of time that is of 10 years may not truly picture and raise strong conclusions relating to the monetary policy instruments and banks' profitability.
- The study of a causal relationship between monetary policy instruments and firm profitability is based on the ordinary least square test. However, many similar studies have used the vector autoregressive (VAR) model, the integration and generalized method of moment (GMM) model. However, this model lacks sufficient numbers of data. Hence, the result is simply based on the ordinary least square test.

1.7 Organization of the study

The study is categorized intro five chapters where the first chapter presents the overall context of the investigation, which includes a problem statement, research objectives, research hypotheses, the relevance and importance, the limitations and the structure of the study. A conceptual review, a literature review pertaining to studies in a worldwide context, and a literature review pertaining to research in the Nepalese context are all included in the second chapter. In addition, this chapter comes to a close with some closing notes about the results and primary concepts that emerged from the investigations. In the third chapter, topics such as the study design, the nature and sources of the data, the selection of firms, the models used for data analysis, and the conclusion are discussed. The methodical display, analysis, and discussion of the data are the primary objectives of the fourth chapter. The work that was done in chapters one through four, as well as the primary findings, are

summarized and analyzed in chapter five, which also gives an overview of the whole body of work. This chapter also contains a separate section for suggestions and scope for further investigation based on significant results of the study and references. This section is included as part of this chapter.

CHAPTER II
RELATED LITERATURE AND CONCEPTUAL FRAMEWORK

This chapter highlights the theoretical review and the conceptual framework of the study. The empirical studies carried out by the different researchers regarding the subject matter has also been highlighted thoroughly. The chapter is divided into four sections where the first section provides the review of related studies in context of both developed and developing countries around the globe. The second section presents a conceptual framework of the study. The third section presents a research gap in the study. Finally, the fourth section deals with the concluding remarks. The details about these sections are distributed in the following subchapters.

2.1 Review of literature

This section is broken down into three categories such as review of major literature, review of recent literature, and review of major Nepalese studies. The literature originated in terms of popular write-ups, reports, and studies/articles are reviewed. The review of major literature has been chronologically organized under:

2.1.1 Review of International literature

The major international review literature review related to the monetary policy instruments on firm profitability is shown in table 2.1.1:

Table 2.1.1

Review of International literature

Studies	Major Finding
Rasche and Williams (2005)	Monetary policy has referred to central bank actions to influence or target some measure of the money stock. The effectiveness of monetary policy is a long-standing issue in the literature on monetary economics and central banking
Rao and Somaiya (2006)	The monetary policy instruments that are bank rate, cash reserve ratio, and statutory liquidity ratio are insignificant to explain the relationship between bank profitability and in the case of public sector banks. The monetary variables were BR, CRR, and SLR,

	and each was regressed on banks' profitability independently.
Adrian and Shin (2008)	Monetary policy dimension in terms of regulating aggregate demand, but also the crucial dimension of ensuring the stability of the financial system.
Younus and Akhta (2009)	Found that statutory liquidity requirement has experienced infrequent changes and past evidence showed that reduction in SLR produced a positive impact on bank credit. SLR and CRR were found to be significant tools for reducing inflation and drastic imbalance resulting from major shocks
Irshad et al. (2011)	The empirical results have found strong evidence that both internal and external factors have a strong influence on profitability.
Kimera (2011)	The volume of commercial banks' investment in loans positively and significantly influences their overall profitability only in terms of ROE but insignificant in terms of ROA.
Ajayi and Atanda (2012)	The empirical estimates indicated that bank rate, inflation rate, and exchange rate are total credit enhancing, while liquidity ratio and cash reserves ratio exert a negative effect on banks' total credit.
Olweny and Chiluwe (2012)	The study showed that monetary policy variables of government domestic debt and Treasury bill rate are inversely related to private sector investment, while money supply and domestic savings have a positive relationship with private sector investment.
Ikechukwu (2012)	The study indicated that the real interest rate and real exchange rate in Nigeria failed to influence real gross domestic product while a broad money supply is statistically significant for economic growth.
Otuori (2013)	Explained that interest rate and external debt had positive and significant effects on performance while inflation rate and external debt had negative and significant effects on performance.
Okoye and Eze (2013)	Determined the effects of lending rate and monetary policy rate on the performance of Nigerian Deposit Money Banks and analyzed how bank lending rate policy affects the performance of Nigerian deposit money banks

Okoye and Eze (2013)	The empirical estimate indicated that a positive and significant relationship was found between bank lending rate and bank performance in both the short and long run.
Tejaswi et al. (2013)	Any fluctuations in the cash reserve ratio will be having a direct impact on the stock market and the overall economy of the nation. The cash reserve ratio played a vital role in influencing the interest rates and flow of liquidity from the deposit holders into the banks.
Arslan et al. (2014)	The study reveals that the interest rate taken as a measure for monetary policy has a significant inverse relationship with firm financial performance measured, which is measured by ROA and ROE.
Ayodele (2014)	Monetary policy instruments are not effective to stimulate commercial bank loans and advances in the long run, while banks' total credit is more responsive to the cash reserve ratio. Thus, the monetary authorities should make efforts to develop indirect monetary instruments and exercise appropriate control over the monetary sector.
Zaman et al. (2014)	The finding of the study reveals that interest rate taken as a measure for monetary policy has a significant inverse relationship with firm financial performance, which is measured by ROA and ROE
Nwannebuike (2015)	The study discovered that the cash reserve ratio, liquidity ratio, and interest rate did not have a significant impact on the profit before tax. However, the minimum rediscount rate was found to have a significant effect on the profit before tax of the bank.
Nwannebuike (2015)	Monetary policy instruments are not effective to stimulate credit in the long run, while banks' total credit is more responsive to the cash reserve system.
Chiang and Ab-Rahim (2016)	The findings of this study suggest that the bankers should focus more on improving the efficiency performance of their banks as efficiency is found to influence the profitability of the banks consistently throughout the analysis.
Proto (2017)	The finding of this study is the higher this level of illiquidity insurance the lower the investments in long-run assets, and the higher the risk of a bank run generated by a real negative shock.

	If individuals are sufficiently risk-averse, competitive banks trade-off liquidity insurance for portfolio risk.
Bal ago et al. (2018)	The study concludes that quoted DMBs' ability to grant more credit is not significantly influenced by CRR, OMO, and Deposit mobilization.
Harkat et al (2019)	The finding of this study is the level of economic freedom influenced risk-taking behavior within the banking sector as a whole, conventional and Islamic banking sectors negatively during the study period (2011–2017).
Okheshimi (2020)	The findings of the study proved that the cash reserve ratio, open market operations rates, monetary policy rates, and treasury bills rates have no significant relationship with assets quality indicators of commercial banks in Nigeria.

Rasche and Williams (2005) revealed that monetary policy impact both situations i.e., longrun and short-run. Given the generally held belief regarding monetary policy, central banks are required to operate under a hierarchical mandate in order to achieve their long-term goals without presenting the tradeoff between inflation and output in economy. This is a necessary requirement. In point of fact, the pre-specification of the long-run inflation target is necessary in order to complete the process of specifying a policy rule. The effect of monetary policy on total demand is achieved through influencing the liquidity position of financial institutions and the spending intentions of individuals with regard to actual resources. As a result, we came to the conclusion that both monetary policy and policy on the management of debt has to be complied with the fiscal policy in order to achieve our goals of higher level of employment while minimizing the rate of inflation.

Adrian and Shin (2008) explored studies on liquidity, monetary policy, and financial cycles. The study found that the degree of ease in monetary plicy seems to be closely related with the growth of repos in the economy. When there is loose monetary policy, the growth rate of repo is high and liquidity in the market is high and vice versa.

Younus and Akhtar (2009) investigated the role that statutory liquidity requirements play in Bangladesh as a tool of monetary policy. The evidence highlighted that reduction in the SLR had positive influence on the level of banks investment and the

credit especially before 1990s. Both the statutory liquidity requirement and the cash reserve requirement (CRR) were discovered to be effective weapons for lowering inflation; however, both of these mechanisms are only used in extreme cases of imbalance brought on by substantial shocks. It was further found that OMO was used more frequently than other instruments of monetary policy. This is in keeping with the market-oriented approach that the Bangladesh Central Bank takes.

Irshad et al. (2011) researched on the variables that influence bank profitability in Pakistan. This research was conducted with the intention of examining the link between bank-specific features and macro-economic variables as they relate to bank profitability. The data for this study came from the top fifteen commercial banks in Pakistan and covered the years 2005-2009 in which the Pooled Ordinary Least Square (POLS) method was considered the analyse the influence on the profitability indicators of bank namely ROA and ROE. Other factors investigated included economic growth, inflation, and market capitalization. The empirical findings provide solid evidence that internal variables as well as external ones have a significant impact on a company's capacity to turn a profit.

Kimera (2011) investigated the connection that exists between the volume of investment in loans made by Uganda's commercial banks and the associated lending rates, the volume of treasury bills made and the yields that are associated with them, and firms profitability in terms of ROA and ROE. The dependent variables includes the return on assets (ROA) and the return on equity (ROE), where as the independent variables include the loan volume, lending rates, T-Bills volume, and its yield. According to findings of the research, positive coefficients were identified for loan volume and volume of treasury bills, while negative coefficients were found for lending rates and average yields on treasury notes and their relationship to return on assets. In spite of this, not a single one of the four factors shown a correlation that was statistically significant with the return on assets. On the other hand, profitability was shown to have a positive correlation with ROE, loan volume, lending rates, and volume of T-Bills; however, the yields on T-Bills indicated a negative correlation with profitability. Return on equity is a measure of a company's profitability. As a result, the conclusion that has been reached is that the volume of commercial banks' investment in loans has only a positive and considerable impact on their total

profitability in terms of their return on equity, but that this influence has no bearing whatsoever on their return on assets. According to the findings, there is a correlation that is not only negative but also insignificant between the yield on treasury bills and the banks' profitability in Uganda.

Ajayi and Atanda (2012) revealed the impact of tools of monetary policy on performance of banks in order to identify whether or not a long-run association existed between 1978 and 2008. This investigation took place between the years 1978 and 2008. The Engle-Granger two-step cointegration strategy was selected as the most appropriate method to use. The empirical research found that bank rates, inflation rates, and exchange rates are utilized enhance the overall credit whereas CRR and liquidity ratios tend to have a negative impact on overall credit at banks. The exchange rate was shown to be the most important factor. In the long term, the tools of monetary policy are not successful in stimulating credit, but the cash reserve ratio has a greater impact on the overall credit offered by banks.

Olweny and Chiluwe (2012) highlighted the relationship between private sector investment and the instruments of monetary policy in Kenya. The transmission mechanism of money was considered while corrying out the study. Their findings revealed that there is a relationship between the two. According to the IS-LM model, it can be inferred that the private sector investment and the domestic debt of the government, as well as the interest rate on Treasury bills, have a negative relationship with one another. However, there was positive relationship between the supply of money and domestic savings with investment in private sector. An anticipated link between money supply and investment in the private sector is presented by the literature as a rising function of private sector investment. In the first chapter, both the goal of conducting an investigation into how the availability of money influences private sector investment and the premise that the availability of money has a beneficial impact on private sector investment were presented.

Ikechukwu (2012) investigated how the availability of money affected the rate of economic expansion in Nigeria. The real gross domestic product (real GDP) is the regressor in the model that has been established, while the supply of broad money, real interest rate, real exchange rate were considered as the repressors. The CBN statistics Bulletin served as the source for the collection of data from the period

between 1981 to 2010. The study revealed that, both the real interest rate and the real exchange rate under consideration of study had no effect on the real GDP of the nation. It has been further highlighted that the most significant factor contributing to the poor performance of monetary policy instruments in Nigeria in terms of influencing real gross domestic product is the time lags involved. As a result of these time lags, any policy implemented by the government takes a significant amount of time before it can be said to have had its intended effect. Broad money supply is statistically significant, so doing so will promote the effectiveness of influencing real gross domestic product. It has been shown that none of the monetary goal variables have a significant influence on the expansion of the economy in Nigeria, with the exception of wide Money Supply (M2), which plays a role that is statistically significant in the expansion of the economy in Nigeria.

Otuori (2013) studied about increased levels of interest rates led to increased levels of profitability of banks in Kenya. The study revealed that the increased levels of inflation rate lead to decreased levels of bank profitability in Kenya. According to the findings of the research, greater levels of foreign debt in Kenya lead to decreased profitability for the country's banks. According to the findings of the research, increase in imports and exports led to increase in profitability of the banks. It is further recommended that the monetary authority particularly the central bank should establish the base of lending rates in such a way such that both lucrative for the banks and does not place undue hardship on the borrowers. According to the findings of this research, the rate of inflation should be kept under control by means of effective policy measures as higher inflation rates may affect the performance of banking secotr in. It is crucial for the government to address the problem of the country's rapidly growing foreign debt since greater levels of external debt are detrimental to the performance of commercial banks in Kenya. In conclusion, the research suggests that more steps should be taken by the government in order to boost the amount of goods exported from the nation. Doing so would significantly contribute to an improvement in the efficiency of commercial banks in Kenya.

Okoye and Eze (2013) studied on bank lending rates that focused on how it affected the deposit money of banks in Nigeria from period of 2000 to 2010. The analysis used a regression based on secondary data econometrics, combining time series and

quantitative design, and estimating their joint effects. There was positive correlation between the lending rate and the profitability of deposit money banks. It has been suggested that the Nigerian government tighten bank lending rate policy via an efficient and effective regulatory and supervisory structure, and that it also implements policies that would allow Nigerian deposit money banks to improve their performance. Monetary policy rate (MPR) was discovered to have a significant impact on bank profits (BE). As such, MPR is an accurate metric by which to evaluate the efficiency of a bank. This is due to the positive and statistically significant correlation between the rate at which banks lend money and their profitability, both in the short and long terms.

Tejaswi et al. (2013) explained the Reserve Bank of India mandates on certain cash reserve ratio, defined as a certain proportion of a bank's total liquid assets that the bank must maintain on deposit with the central bank. This requirement does not apply to regional or rural banks. The primary objective of a bank's cash reserve ratio is to ensure the institution's ability to meet its short-term liquidity needs. The availability of a bank's funds for credit in the economy rises whenever the bank maintains a low cash reserve ratio. Because of this, interest rate decreases as pressure is relieved. Furthermore, the availability of bank funds and the bank's willingness to lend to other businesses at reduced interest rates both contribute directly to economic expansion. When the Reserve Bank of India raises its required cash reserves, banks immediately reduce their reserves. If the cash reserve ratio (CRR) is increased, banks will deposit more cash with the Reserve Bank of India, and if it is decreased, banks would deposit less cash with the Reserve Bank of India. Banks' liquidity and interest-rate flexibility may increase or decrease depending on the cash reserve ratio. An rise in the cash reserve ratio might result in higher interest rates, making it difficult if not impossible for certain businesses to get financing from financial institutions. The economy is weakening as a result of this expansion. The Reserve Bank of India is poised to terminate expansion with the recent increase in the cash reserve ratio, and if expansion slows, the price-earnings ratio would drop and the interest rate may rise. Interest rates would drop if the cash reserve ratio were reduced. Reduced interest rates would make bank deposits less appealing. If banks provide excessively high interest rates on deposits, customers may leave for institutions that offer lower rates.

The study by Arslan et al. (2014) analysed the relationship between the level of interest rate and the level of financial performance of banks in Pakistan, which was measured in terms of return on assets and return on equity. On this paper, we will discuss the significance of monetary policy in the banking industry, with a particular emphasis on how it has affected the overall performance of the banking sector in Pakistan. To do so, we will analyze monetary transmission over the course of the past five years, using interest rate as the primary metric for our research. The empirical analysis of the research is carried out by first doing a correlation analysis, then performing an ordinary least square regression. According to the findings of the study state day, the interest rate used as a measure for monetary policy y has a substantial negative association with firm financial performance assessed. This research analyzes the link between monetary policy and its consequences on banking performance. A sudden and rapid swing in interest rates will have an influence on the performance of the bank. This extends the impact of monetary policy and contributes to it at the same time. The findings of this research indicate that a negative association exists between the interest rate and the performance of banks.

Ayodele (2014) used the macroeconomic variables such as the supply of money, interest rate, liquidity ratio, exchange rate, loan to analyse the impact of monetary policy on Nigerian banks from period between 1988 and 2008. The estimate was performed with the help of the Vector error correcting mechanism of the ordinary least square econometric approach. According to the results, there is a link between the variables in the model that exists throughout the long term. In particular, the findings indicated that the banks lending was significantly influenced by the exchange rate however there was negative impact of liquidity ratio and supply of money. This was the case because liquidity ratio and money supply were negatively correlated with lending by commercial banks. As a result, the authorities in charge of money should make an effort to create indirect monetary tools and should exert proper supervision over the monetary sector.

Zaman et al. (2014) highlighted that there is negative impact of monetary policy on the return of assets and the return of equity. This suggests that a increase in interest rate by the central bank of Pakistan will lead to decrease in performance of the banks.

Furthermore, there is significant unfavorable association between the performance of a company and changes in the interest rate.

Nwannebuike (2015) investigated the influence of various monetary policy tools on the profitability of commercial banks of Nigera. As an example, they looked at the Zenith Bank Plc. A descriptive research approach was used for this study. It made use of time series data that was gathered from public financial statements between the years 2005 and 2012. According to the findings of the research, The study found that there was no significant effect of cash reserve ratio, liquidity ratio, and interest rate on the profit before tax. But, However, there was significant effect of minimum rediscount rate was on the profit before tax of the bank. In addition to that, it had a large and constructive effect on the bank's profits.

Chiang and Ab-Rahim (2016) investigated the market structure of the Malaysian banking sector and its performance considering the time period of 2000-2011. The strategy of minimizing squared differences was used for this investigation. According to the findings of this research, the level of market concentration in the Malaysian banking sector is on a downward trend. Structurally speaking, the level of competition among Malaysian banks is higher since there is less market concentration. According to the findings of the DEA, Malaysian financial institutions are performing at just 40 percent of their potential efficiency, which is below their capability. As a result, the use of inputs by Malaysian banks might see a reduction of sixty percent . Furthermore, the findings provide credibility to ESH, in which the profitability performance of Malaysian commercial banks is determined by the degree to which the market is concentrated and the efficiency with which banks operate.

Proto (2017) conducted an analysis using a model of bank fragility and growth expectations. Liquidity is provided by banks so that people may be protected against potential short-term swings in consumption. When this degree of illiquidity insurance is increased, investments in long-term assets are decreased. The likelihood of a bank run is increased by the high growth expectations that are characteristic of developing nations. On the other hand, deposit contracts that are made available during times when economic performances are very uncertain (such as in economies that have not yet been fully developed), and where output fluctuations are milder (such as in economies that have been fully developed), have less risk associated with bank run.

Bal ago et al (2018) conducted an Analysis of the Impact of Monetary Policy Instruments on the Lending Practices of Nigerian Quoted Deposit Money Institutions. Data from the DMBs' annual reports between 2007 and 2016 are analyzed using ex-post facto and causal research methodologies. Using panel data and a random effect model, it was found that there was statistical negative relationship between bank lending and CRR, OMO and deposit ratio. On the other hand, the Monetary Policy Rate was shown to have a considerable negative influence on lending behavior. Hence, CRR, OMO, and Deposit mobilization have no appreciable effect on quoted DMBs' capacity to provide additional credit.

Harkat et al., (2019) examined the risk-taking as affected by economic freedom and its components. Observations based on Malaysia's two-tiered banking structure. The goal of this article is to examine how the two banking systems in Malaysia are affected by the degree to which financial institutions are permitted to take risks. Its secondary objective is to examine the differences and similarities between conventional and Islamic financial institutions from period of 2011-2017. The impact of economic freedom and its six key components on banks' willingness to take risks is estimated using the generalized least squares method. This research concludes that throughout the study period, conventional and Islamic banking sectors' risk-taking behavior was adversely impacted by the extent of economic freedom (2011– 2017). Traditional banks and Islamic financial institutions take about the same amount of risk. On the other hand, contrary to what was previously believed, conventional banks are far less sensitive to changes in economic freedom than Islamic financial institutions are.

Okheshimi (2020) conducted a study on Monetary Policy and Commercial Banks Assets Quality in Nigeria: Panel Data Analysis. Data for the cross-sectional analysis came from yearly reports submitted by commercial banks as well as the Statistical Bulletin published by the Central Bank of Nigeria from period of 2009 to 2018. The independent variables for the study used are cash reserve ratios, open market operation rates, monetary policy rates, treasury bills rates, and money supply where as the dependent variables for the study is while the assets quality indicator of commercial banks. In the research, both panel unit roots analysis and panel cointegration analysis were carried out. The study found that T-bill Rates, OMO,

CRR had so significant relationship with the indicators of asset quality of banks in Nigeria These four rates were also examined. Nevertheless, the quantity of money has a substantial link with the quality of assets that serve as measures of the robustness of commercial banks in Nigeria. In light of the results, we believe it is imperative that the Central Bank of Nigeria (CBN) places a greater emphasis on the use of money supply as a genuine and powerful instrument of monetary policy in order to realize our goal of achieving bank soundness in Nigeria. This will result in an increase in liquidity, which will allow commercial banks to more effectively carry out their lending and investment responsibilities toward the general public. It is recommended that the cash reserve ratio be used as a supplement to open market operations in order to ensure appropriate level of liquidity in the banking system.

2.1.2 Review of National literature

The Nepalese literature review related to the monetary policy instruments on firm profitability is shown in table 2.1.2.

Table 2.1.2

Review of National literature

Studies	Major finding
Ghimire (2006)	Nepal Rastra Bank followed direct monetary instruments such as interest rate, margin rate, statutory reserve requirements (SLR), and so on. However, after economic liberalization, indirect instruments such as cash reserve ratio, open market operation, and bank rate have been used.
Buddha (2013)	The empirical result shows that bank lending decreases after a monetary tightening. Bank size is found to have a significant impact on loan supply in Nepal and liquidity in the case of private sector banks had a significant role in the bank lending in response to the monetary policy changes
Subedi (2014)	A high-interest rate policy is also anti-inflationary by discouraging borrowing and investment for speculative motives and in foreign currencies, The nature of banking activities and banks' position as intermediaries makes these institutions relevant for the transmission of monetary policy such as interest rate, bank rate, and money supply.
Budha (2015	Shows the evidence of the bank lending channel, interest rate channel, and the asset price channel of the Nepalese monetary policy though

	there exists a lag in monetary policy transmission due to high information asymmetry, adjustment costs, and the poor financial infrastructure
Pradhan and Shrestha (2016)	The correlation between the capital ratio and return on equity found to be positive indicating higher the capital ratio higher would be the return on equity.
Shrestha (2018)	The result reveals that liquidity does not have a significant impact on profitability in Nepalese commercial banks.
Pokharel (2019)	This study reported there is a significant relationship between liquidity ratios with profitability, except between IGSCA and ROA.

Ghimire (2006) revealed monetary policy is one of the most significant strategies that may be used to influence aggregate demand. Prior to the economic liberalization in Nepal, Nepal Rastra Bank relied on direct monetary tools including interest rates, margin rates, statutory reserve requirements (SLR), and other similar policies. On the other hand, after the liberalization of the economy, indirect tools including the OMO, CRR and bank rates were used. These instruments initially affect on aggregate demand, which then has a knock-on effect on variables in the real sector, such as the level of prices, income, employment, and production, among other things. However, in the case of Nepal, monetary policy, like other policies, has not been successful in achieving its aims or objectives. This is due to the fact that the price level cannot be explained by the money supply alone. Other policies have also failed.

Budha (2013), a reduction in bank lending occurs following a monetary tightening. It was discovered that the size of the bank had a substantial influence on the availability of loans in Nepal, and that the liquidity of the private sector banks had a big role in the amount of lending that the banks did in reaction to changes in the monetary policy. However, research has shown that capitalization does not have a substantial influence on bank lending. It was also shown that the gross domestic product has a considerable influence on the amount of bank loans available.

Subedi (2014) found that monetary policy is a key instrument that may be used to preserve price stability by altering both the demand for and supply of money. If there is a disconnect between the two, it will show up as an inflationary or deflationary trend in the price level of the money supply. When an economy is developing, the demand for money rises as a result of monetization as well as rising agricultural and

industrial output. This causes an increase in the amount of money that must be available. In addition, by maintaining a high interest rate, monetary policy may be of assistance in bringing the gap in the balance of payments under control. A higher interest rate can entice foreign investment and might assist in closing the gaps in the balance of payments if it is high enough. A strategy that maintains high interest rates is not only inflation-fighting but also deflationary since it discourages borrowing and investment for speculative purposes as well as in foreign currencies.

Budha (2015) discovered that the Nepalese monetary policy shows the lag in transmission of monetary policy due to prescense of high level of information asymmetry, poor financial infrastructure and financial stability. But still there is presence of asset price channel, interest rate channel and bank lending channel. The examination of the money market evolution reveals the necessity for a revision of the operating processes and monetary policy implementation issues. The existence of monetary transmission channels suggests that Nepal Rastra Bank's policy may be used to accomplish the defined goals over a certain time horizon.

According to Pradhan and Shrestha (2016) the impact that liquidity has on the overall performance of Nepalese commercial banks is investigated. The independent variables that were considered for usage in this research were the investment ratio, the liquidity ratio, the capital ratio, and the quick ratio. The yearly reports submitted by the banks as well as the supervisory report submitted by the Nepal Rastra Bank were used as secondary sources of data. It was discovered that there is a positive connection between the capital ratio and the return on equity that highlighted the fact that ncrease in capital ratio will increase the return on equity. In addition, researchers discovered that a negative association exists between quick ratio and return on equity. Findings further reveal that performance of banks may be increased by increasing the investment and the capital ratio.

Shrestha (2018) looked at how liquidity management relates to the profitability of commercial banks in Nepal. Commercial banks are the focus of this investigation. The purpose of the research is to determine the nature of the connection that exists between effective management of liquidity and increased profitability, as well as the effect that this relationship has on profitability. Pearson correlation analysis are used to investigate the connection between effective management of liquidity and increased

profitability. Regression studies are used to investigate the impact that liquidity has on a company's profitability. It has been determined that the statistics span the period of time from 2012 to 2016 for Nepal's commercial banks. The terms "current Reserve ratio" (CRR) and "credit deposit ratio" (CDR) are examples of the factors that make up "liquidity management." Other aspects of "profitability," such as "return on equity," are also included (ROA). According to the findings, the level of liquidity in Nepalese commercial banks does not have a substantial bearing on the profitability of such institutions.

Pokharel (2019) investigated how the availability of liquid assets affects the profit level of the commercial banks in Nepal. For the purpose of the present research, a sample of five of Nepal's commercial banks was chosen at random from among Nepal's total of 28 commercial banks to be analyzed for the period of time spanning from 2010/11 to 2016/17 AD. owing to the fact that proper management of the bank's liquidity may boost profits. The research used a wide range of statistical and financial applications in order to investigate both their liquidity management and their profitability situations. Although the trajectory of the bank's liquidity ratios is unpredictable, the article reveals that commercial banks have been experiencing a generally zigzag pattern of profitability over the last several years. According to the findings of the study, the liquidity ratios of banks are lower than the minimum requirement. In a similar vein, the CRR is much higher than what was specified by the monetary policy for 2016/17. There is a positive correlation between the CRR and IGSCA and the ROA, however there is an inverse correlation between the CRR and the CBBISD and the ROA. When looking at the relationship between liquidity and ROE, Current Ratio (CR) has a negative correlation with ROE, but all of the other ratios (CRR, CBBISD, and IGSCA) have a positive correlation with ROE.

2.2 Research Gap

The study investigated the impact of independent variables such Broad Money Supply, Bank Rate (BR), Statutory Liquidity Ratio (SLR, Cash Reserve Ratio (CRR), and Investment in T-bills (ITB. The review of previous studies shows that effect of monetary policy instruments on profitability

There are different studies that have examined the relationship between monetary policy's impact on banks' profitability. According to Ghimire (2006) revealed monetary policy has an active role in influencing and managing the aggregate demand. A gap from the existing literature is that none of the studies has highlighted the impact of monetary policy particularly focusing on commercial banks' profitability. Besides this study, no study has selectively tested the predictive ability monetary policy instruments' impact on the profitability of Nepalese commercial banks. So, this study aims to fill up this gap. Moreover, this study uses the data from the banking sector covering the period of 2011/12 to 2020/21. Hence it has included the recent data which might have some new insights into the monetary policy instruments' relationship firm's performance in the banking sectors. So, this is also considered the gap in the research.

2.3 Conceptual framework

A review of empirical research linked with monetary policy instruments and the firm profitability of Nepalese commercial banks is discussed as part of the conceptual framework of the study. The study was carried out in Nepal. The concepts that go into making up a general concept are held together by the theoretical framework that is comprised of a set of rules, principles, and assumptions. It helps to differentiate between different ways of thinking and arrange thoughts. A powerful conceptual framework is able to both accurately represent reality and do it in a manner that is simple to recall and put into practice. The conceptual framework's primary objective is to provide light on the nature of the connection that exists between the dependent and independent variables that are used in the research. Monetary policy is the collection of actions that central banks do in order to control an economy's money supply, interest rates, and overall value of currency (Chowdhury et al., 2003).

Monetary policy of the nation incorporates the monetary component of the overall economic policy that necessitates the coordination between all the policies of nation. However, the efficiency of monetary policy for economic stabilization varied according to economies as a result of differences in the structures of those economies, differences in the degrees of development of money and capital markets as a result of varying degrees of economic progress, and differences in the economic conditions that are currently in place (Faure, 2007).

The dependent variable in the study incudes the profitability of the commercial banks of Nepal. The firm profitability is measured by using three indicators named as return on equity in percent, return on assets in percent, and net interest margin percent. In this study, monetary policy instruments have been used as an independent variable which is measured by using cash reserve ratio in percent, the broad money supply in millions, statutory liquidity ratio in percent, bank rate in percent and investment on treasury bills in millions has been used to show how much influence monetary policy instruments on firm profitability of Nepalese commercial banks in presence of these variables. The relationship between dependent and independent variables is shown in figure 2.2.

Figure 2.2 shows the conceptual framework of the study. Monetary policy instruments variables are taken as independent variables whereas a firm's profitability is the dependent variable. Cash reserve ratio, bank rate, broad money supply, investment on Treasury bill, and statutory liquidity ratio are independent variables and return on assets, return on equity and net interest margin are taken as dependent variables considered from the period of 2011/12 to 2020/21.

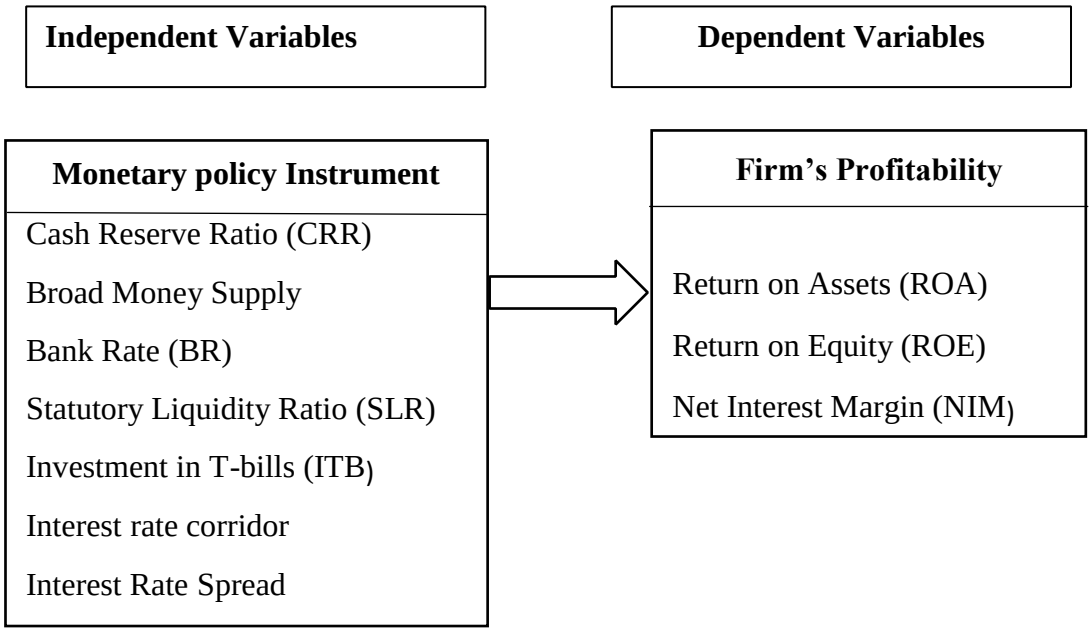

Fig 2.1: Schematic diagram on the impact of monetary policy instruments on firm's profitability

2.4 Operational definitions of the study

Operational definitions section deals with the definition of variables that are used for the study. The study attempts to measure or investigate the relationship between monetary policy instruments and the profitability of commercial banks. The dependent and independent variables of the study include the following:

2.4.1 Bank profitability indicators

Return on assets (ROA)

It is a ratio that compares a company's net income to its average total assets over a certain time period. This ratio is used to determine how much net income a company generates from its total assets over a given time period. According to Ekwe and Daru (2012), return on asset is considered as dependent variable because it shows how the managers are performing their jobs. According to Lazaridis and Tryfonidis (2006), the return on assets (ROA) formula should be represented as the ratio of profit before tax to total assets. According to Wen (2010), a greater ROA demonstrates that a corporation is more effective in making use of the resources at its disposal.

Return on equity (ROE)

Return on equity is ratio between net income and total equity in order to determine the amount of net income that was generated by total equity over a certain time period. It is a measure of how efficiently the management of a bank uses the money provided by its shareholders. According to Khrawish (2011) return on equity is the ratio of net income after taxes and the total equity capital. This further explains that return on equity is the ratio of total equity capital.

Net interest margin (NIM)

It is a ratio that shows a company's net income to its total equity in order to determine how much net income the company was able to generate within a certain time period. It is an indication of how efficiently the administration of a bank is using the capital provided by the shareholders. Return on equity may be calculated by considering the ratio between company's net income after taxes and the book value of the owner's equity, as discovered by Onaolapo and Kajola in their research.

2.4.2 Monetary policy instruments indicators

Cash reserve ratio (CRR)

The cash reserve ratio, a tool for monetary policy employed by central banks, is the portion of total deposits that commercial banks have to keep with central bank or monetary authority of the nation. To decrease the supply of money in the economy, the central bank will increase the cash reserve ratio and vice versa. Both cash reserve ratios and other techniques for controlling inflation have been demonstrated to be effective when there is a severe imbalance brought on by large shocks. The cash reserve system illustrates how monetary policy tools and bank profitability interact in the private sector (Nwannebuik, 2015). According to Punita and Somaiya (2006), the cash reserve system seems to have adverse effect on the firms' profitability.

Bank rate (BR)

Bank rate is the rate at which monetary authority of the nation lends money to commercial banks. The central bank is the institution that commercial banks go to in order to either borrow money from them or have their bills of exchange discounted. The bank rate is either increased or decreased by the central bank in order to either boost or decrease the flow of credit from commercial banks. According to Punita and Somaiya (2006), bank rates were shown to have a detrimental impact that was both considerable and noticeable on the profitability of banks.

Statutory liquidity ratio (SLR)

Commercial banks are required to hold certain portion of deposits form of reserve requirement with the central bank as a secondary reserve. This reserve requirement is considered to be a SLR. In order to decrease the supply of money in economy, central bank increase the statutory liquidity requirements. On the other hand, when it wants to enhance the amount of money available in the economy, it will cut the statutory reserve requirements. Younus and Akhtar (2009) investigated the role that the statutory liquidity requirement (SLR) plays in Bangladesh as a monetary policy tool and found that decrease in SLR had positive impact on the investment and credit on bank especially before 1990s.

Broad money supply (M2)

A wide money supply is a measure of the money supply in the economy that includes more than just physical money such as banknotes and coins. A narrow money supply is a measure of the money supply in the economy that only includes physical money. Demand deposits held at commercial banks are often included in this category. The amount of money supply that is accessible in the economy either inhibits the expansion of the economy as a whole or the capacity of deposit money institutions to give further credits. These actions may be carried out with the use of discretionary monetary policy tools (Nwannebuike, 2015). Between the years 1998 and 2004, Amidu (2006) investigated the implications of Ghana's restrictive monetary policy on bank lending in the country. According to the findings of their research there is positive link between money supply and bank credit.

Investment in treasury bills (ITB)

Treasury bills are a kind of government security that may be purchased or sold by the central bank to the banking system as part of an open market operation. Other types of government securities, such as savings bonds and development bonds, are also included in this category. However, the most prevalent kind of asset that commercial banks are required to invest in, according to the the Treasury bill.In order to reduce the money supply, central bank sells the securities and vice versa (Suresh and Paul, 2013). Monetary policy measures include direct management of banking system lending, open market operations (OMO), and direct regulation of interest rates (Loayza and Schmid, 2002).

Interest Rate corridor

The interest rate corridor is used for the stabilization of short term interest rates by the central bank using the instruments like repo rate, interbank rate, standing liquidity facility and deposit collection rate.

Interest rate spread

It refers to the the difference between the interest rates that the bank charge to the borrower and the interest rate a bank pays a depositor is known as the bank spread. The bank spread, also known as the net interest spread, is a percentage that indicates how much money the bank earns vs how much it gives out.

CHAPTER III
RESEARCH METHODOLOGY

Research methodology highlights the overall plan of the study. Research method is employed for data analysis and measurement in order to know how exactly conclusions can be drawn from this study in the future.

This research methodology includes design, nature of data, data gathering procedure, population, and data procession. This chapter, therefore, explains the methodology employed in this study. This study attempts to have an insight into the impact of monetary policy instruments on the profitability of Nepalese commercial banks. An effective and efficient research methodology is required for making the study sensible.

3.1 Research design

The research design used in the study is the descriptive as well as causal comparative research design that highlights the association between monetary policy instruments and firm profitability in the context of Nepal. Casual comparative research design helps to investigate the possible causes affecting the insturments of monetary policy such as cash reserve ratio (CRR), bank rate (BR), broad money supply (M2), investment on Treasury bill, and statutory liquidity ratio for observing existing consequences and searching for possible factors leading to firm profitability of selected enterprises.

3.2 Description of the sample

The objective of the study is to analyze the impact of monetary policy instruments on bank profitability of Nepalese commercial banks using different tools and techniques for the data collection. Financial statements of commercial banks were considered for the data collection purpose. The necessary financial statements have been collected from the websites of concerned commercial banks, Nepal Stock Exchange Limited (NEPSE), and Nepal Rastra Bank (NRB). This study collected financial statements of sampled commercial banks for the period of seven years that is 2011/12 to 2020/21

The sample consists of a total of 100 observations. The ten commercial banks have been selected on the basis of the highest paid-up capital in 2021.

Table 3.1

Commercial banks selected for the study along with study period and number of observations.

S.no	Name of the banks	Study Period	Observations
1	Global IME Bank	2011/12- 2020/21	10
2	Prime Commercial Bank Nepal Bank	2011/12- 2020/21	10
3	Agriculture Development Bank	2011/12- 2020/21	10
4	Nabil Bank	2011/12- 2020/21	10
5	NMB Bank	2011/12- 2020/21	10
6	Nepal Investment Bank	2011/12- 2020/21	10
7	Mega Bank	2011/12- 2020/21	10
8	Kumari Bank	2011/12- 2020/21	10
9	Nepal Bank	2011/12- 2020/21	10
10	Citizen Bank	2011/12- 2020/21	10
	Total number of observations		100

3.3 Nature and source of data

Secondary data have been used for the study where the data are gathered from ten commercial banks in Nepal for the period of ten years from 2011/12 to 2020/21. The secondary data for the study were collected from various sources such as the Nepal stock exchange, securities board of Nepal, central bank websites, and each bank's particular annual reports. For this process, a Microsoft spreadsheet was used to arrange data according to variables and make them meaningful. SPSS software was used for the data analysis purpose and to derive the meaningful relationship among the dependent and independent variables to know the impact of monetary policy instruments on the profitability of Nepalese commercial banks

3.4 Data collection procedure and time frame

Secondary data were collected from the secondary data sources. Data were collected by visiting the different official websites of respective commercial banks as well as websites of Nepal Rastra Bank (NRB), securities broad of Nepal (SEBON), and Nepal stock exchange (NEPSE) and annual reports of the respective banks. It took 2-3 weeks to collect the data from different sources.

3.5 Method of data analysis

The statistical and econometric models particularly the descriptive, correlation, and regression methods of analysis were used for the data analysis. Mean, median, standard deviation, minimum and maximum values of variables explain the characteristics of sample firms while correlation analysis measured the relationship between variables. Regression model used various types of tests like t-test, F-test, Z-test, which tested for the individual effect of the independent variable and the joint effect of an individual variable using SPSS. Detailed analysis of models and statistical tests of significance have been dealt with in the following sections.

3.5.1 Specification of the model

To estimate the relationship between monetary policy instruments and firm profitability, return on assets, return on equity and net interest margin were taken as dependent variables whereas, cash reserve ratio, broad money supply, statutory liquidity, bank rate, ratio and investment on T-bill were considered as independent variables. The function of the profitability as the dependent variable can be highlighted below:

PROF= f (CRR, SLR, BR, MS, ITB, IRC, IRS)

The firm's profitability was represented by three different proxies, return on assets (ROA), return on equity (ROE), and net interest margin (NIM) to show the relationship between dependent and independent variables. The regression models can be expressed as:

Model-I

$ROA_{it} = \alpha 0 + \alpha 1\ CRR_{it} + \alpha 2BR_{it} + \alpha 3SLR_{it} + \alpha 4InMS_{it} + \alpha 5lnITB_{it} + \alpha 6IRC + \alpha 7IRS + E_{it}$……. (1)

Model-II

$ROE_{it} = \alpha 0 + \alpha 1\ CRR_{it} + \alpha 2BR_{it} + \alpha 3SLR_{it} + \alpha 4InMS_{it} + \alpha 5lnITB_{it} + \alpha 6IRC + \alpha 7IRS + E_{it}$……. (2)

Model-III

$NIMit = \alpha 0 + \alpha 1\ CRR_{it} + \alpha 2BR_{it} + \alpha 3SLR_{it} + \alpha 4InMS_{it} + \alpha 5lnITB_{it} + \alpha 6IRC + \alpha 7IRS + E_{it}$…..…. (3) Where:

α = Constant term

ROA = Return on Assets (variable of profitability)

ROE = Return on Equity (variable of profitability)

NIM = Net Interest Margin (variable of profitability)

CRR = Cash reserve ratio (variable of monetary policy instrument)

BR= Bank rate for the time period (variable of monetary policy instrument)

SLR = Statutory liquidity ratio (variable of monetary policy instrument)

In MS = Natural log of broad money supply (M2) (variable of monetary policy instrument)

In ITB =Natural log of investment on T-bill (variable of monetary policy instrument)

IRC= Interest rate corridor

IRS= Interest rate Spread

Table 3.2:

Description of dependent and independent variables

Variables	Symbol	Description
	Dependent Variables	
Return on Assets	ROA	The percentage ratio of net income to total assets
Return on Equity	ROE	The percentage ratio of net income to total equity
Net Interest margin	NIM	The percentage ratio of net interest income to total income
	Independent variables	
Monetary policy instruments	CRR	Cash Reserve Ratio
	BR	Bank Rate
	SLR	Statutory Liquidity Ratio
	ln SM	Natural logarithm of broad money supply (M2)
	ln ITB	Natural logarithm of investment on T-bill

In the above table, a study has identified the variables that will be used to analyze the impact of monetary policy instruments on firm profitability. For the study, the dependent variable taken are Return on Assets (ROA), Return on Equity (ROE), and Net Interest

Margin (NIM), and independent variables considered for the study namely Cash Reserve Ratio (CRR), Bank Rate (BR), Statutory Liquidity Ratio (SLR), Broad Money Supply

(MS), and Investment on Treasury Bill (ITB), interest rate corridor and interest rate spread.

3.6 Analysis plan

This section deliberates how the analyses have been carried out in chapter four. The analysis starts with the analysis of secondary data which has been mainly collected

from bank's annual reports, websites of Nepal Rastra Bank, the securities board of Nepal, and the Nepal stock exchange (NEPSE).

For analyzing the impact of monetary policy instruments on firm profitability. This section is divided into various subsections which deals with the descriptive statistics, correlation analyses and regression. All the observed relationships and findings have been interpreted to drive meaningful conclusions regarding the impact of monetary policy instruments on firm profitability.

CHAPTER IV

RESULTS AND ANALYSIS

This chapter presents the summary of the data, interpretation and analysis of the findings from the collected data. It consists of two sections where first section provides the analysis and second part deals with the concluding remarks.

4.1 Descriptive statistics

Table 4.1

Descriptive statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
ROA (%)	100	.0268	3.6863	1.604173	.8261977
ROE (%)	100	.4737	41.9328	14.489629	8.3216846
NIM (%)	100	.2865	6.2711	3.134204	1.0128500
ITB (Rs.)	100	8.1200	11.1000	9.868900	.8383026
MS (Rs.)	100	12.0532	12.7122	12.378878	.2098860
SLR (%)	100	10	16	13.65	2.363
BR (%)	100	5.00	8.00	7.100	.92211
CRR (%)	100	3	6	5.10	1.142
IRC (%)	100	00	5	2.5110	1.170
IRS (%)	100	4	5.12	4.5340	.4073

Source: Annual report of selected bank and NRB annual report

Note: ITB and MS is log amount

Table 4.12 shows the descriptive statistics. Clearly, the return on the asset has a minimum is .0268 percent to a maximum of 3.6863 percent with a mean of 1.604173 percent with fluctuation of ROA is .8261977 percent. The average return on equity of the sample banks during the period is noticed to be 14.489629 percent with a minimum of .4737 percent to a maximum of 41.9328 percent and fluctuation of ROE is 8.3216846 percent.

The net interest margin ranges from a minimum of .2865 to a maximum of 6.2711 percent with a average of 3.134204 and fluctuation is 1.0128500 percent.

The investment on the treasury bills of sample banks ranges from Rs 8.1200million to a maximum value of Rs. 11.1000 million leading to an average value of Rs. 9.868900 million.

The average value of the broad money supply of sample banks is Rs. 12.378878 million and it ranges from a minimum value of Rs. 12.0532 million to a maximum value of Rs. 12.7122 million with a with fluctuation of 0. 2098860. The average percent of SLR is 13.65% with minimum and maximum is 10 to 16 percent and fluctuation of SLR is 2.363 percent. In the same way 7 to 8 with 7.4, average percent of bank rate and fluctuation is 0.49236 percent.

The minimum CRR is 3% and maximum is 6% with 5.10% average CRR with fluctuation is 1.142. Interest rate corridor is 0 to 5 minimum and maximum percent with average 2.5110 percent with fluctuation is 2.17%. Similarly, the interest rate spread is 4 to 5.12% is minimum and maximum with average percent is 4.5340 and fluctuation of interest rate spread is 0.4.73.

4.2 Correlation analysis

The correlation analysis shows the direction and magnitude of relationship between the firm profitability and monetary policy instruments variables of sample banks. The Pearson correlation matrix is presented in Table 4.2.

Table 4.2

Computation of correlations coefficient of dependent and independent variables

Variables	ROA	ROE	NIM	IT-Bill	MS	SLR	BR	CRR	IRC	IRS
ROA	1									
ROE	.260**	1								
NIM	.283**	-0.042	1							
IT-Bill	-0.194	-.249*	-0.073	1						
MS	0.001	-0.191	-.267**	.484**	1					
SLR	0.181	0.18	0.161	-.584**	-.488**	1				
BR	0.073	0.062	-.272**	-0.08	-0.079	0.052	1			
CRR	0.162	0.031	-0.195	-0.144	.633**	0.085	-0.027	1		
IRC	-0.076	-0.193	-0.185	.619**	.790**	-.691**	0	.262**	1	
IRS	-0.036	0.188	.208*	-.449**	-.855**	.295**	0.125	-.491**	-.535**	1

Notes:

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

This table 4.2 shows the Pearson correlation coefficients have been computed and the results are presented in Table 4.2. The return on asset is positively significance related with the return on equity and net interest margin of the commercial bank. It means when increase in ROA and also increase the ROE and NIM. ROE is positively significant with ROA and investment in T-bills, when increase in ROE also increase the IT-bill.

The net interest margin is positively significance related with ROA and interest rate spread and also negatively significance related with money supply and bank rate. Similarly, investment in T-bill positively significance related to the money supply and interest rate corridor with negatively significance with ROE, SLR and CRR.

The money supply is positively significant related to IT-bills, CRR, ICR and negatively significance with NIM, SLR, BR, IRS. In SLR is positively significance with the interest rate spread and negatively significance with IT-bills, MS and interest rate corridor. The bank rate only negatively significance with the net interest margin. The cash reserve ratio is positively significance with money supply, interest rate corridor and negatively significance with interest rate spread. In the same manner Interest rate corridor is positively significance related to money supply, IT-bills and

CRR, negatively significance with SLR and IRS. The interest rate spread is positively significance with NIM, SLR, and negatively significance with IT-bills, MS, CRR and IRC.

4.3 Regression analysis

The regression of monetary policy instruments on firm profitability has been analyzed by defining the firm profitability in terms of return on assets, return on equity, and the net interest margin and monetary policy instruments in terms of bank rate, statutory liquidity ratio, broad money supply, investment on treasury bills and cash reserve ratio. In order to test the significance of monetary policy instruments and firm profitability regression analysis has been used in the study and the results are presented in three tables.

4.3.1: Regression of monetary policy instruments on return on asset

The results are based on panel data of 10 commercial banks with 100 observations for the period of 2011/12 to 2020/21 by using a linear regression model. Return on asset is the dependent variable while, bank rate, statutory liquidity ratio, broad money supply, cash reserve ratio, and investment on treasury bills, interest rate corridor, interest rate spread are the independent variables.

The model is: $\mathbf{ROA = \alpha_0 + \alpha_1 CRR + \alpha_2 BR + \alpha_3 SLR + \alpha_4 InMS + \alpha_5 lnITB + \alpha_6 IRC + \alpha_7 IRS + E0}$.

Table 4.3.1 shows that regression of monetary policy instruments on return on asset of Nepalese commercial banks. The investment in treasury bills change in one unit then decrease on return on asset of Nepalese commercial banks by -17.6 percent. When central bank change in Money supply one unit then, return on asset is decrease by -.27.9 percent.

The SLR changes in one percent then, increase in return on asset by commercial bank is 10.8 percent in return on assets.

Table 4.3.1

Regression of monetary policy instruments on return on assets

Model -I	B	Std. Error	Beta
(Constant)	14.864	21.881	
IT-Bill	-0.173	0.155	-0.176
MS	-1.100	1.818	-0.279
SLR	0.038	0.056	0.108
BR	0.108	0.171	0.064
CRR	0.811	1.153	0.148
IRC	9.829	14.578	0.164
IRS	-0.392	0.422	-0.234
R square	0.099		

Note: Depended variable is ROA

The central bank changes in one percent in bank rate then, the ROA increased by the 6.4 percent of commercial banks in Nepal. Similarly, the cash reserve ratio (CRR) change in one percent by the central bank then, the return assts increased by 0.148 percent. When the interest rate corridor changes in one percent then, the return on assets of commercial banks increased by 16.4 percent. The interest rate spread is change in one percent then, decreased by ROA of commercial banks is 23.4 percent.

The model-I reveals the value of R square is 0.099 which indicates that the 9.9 percent impact variable by monetary instrument in return on assets of commercial bank in Nepal and remaining percentage variation on return on asset by others variables of banks.

4.3.2: Regression of monetary policy instruments on return on equity

Return on equity is considered as the dependent variable while, bank rate, statutory liquidity ratio, broad money supply, cash reserve ratio, and investment on treasury bills, interest rate corridor, interest rate spread are the independent variables.

The model is: **ROE = α_0 +α_1 CRR + α_2BR + α_3SLR+ α_4InMS + $\alpha_5$lnITB+ α_6 IRC + α_7IRS +E0**.

Table 4.3.2

Regression of monetary policy instruments on return on equity

Model-II	B	Std. Error	Beta
(Constant)	166.770	219.804	
IT-Bill	-1.097	1.557	-0.111
MS	-14.445	18.258	-0.364
SLR	-0.071	0.562	-0.020
BR	0.575	1.717	0.034
CRR	11.981	11.579	0.217
IRC	48.856	146.447	0.081
IRS	-0.360	4.242	-0.021
R square	0.098		

Note: Depended variable is ROE

Table 4.3.2 shows that regression of monetary policy instruments on return on equity of Nepalese commercial banks. The investment in treasury bills change in one unit then decrease on return on equity of Nepalese commercial banks by -11.1 percent. When central bank change in Money supply one unit then, return on equity is decrease by -36.4percent.

The SLR changes in one percent then, decease in return on equity by commercial bank is 2.0 percent in return on equity.

The central bank changes in one percent in bank rate then, the ROE increased by the 3.4 percent of commercial banks in Nepal. Similarly, the cash reserve ratio (CRR) change in one percent by the central bank then, the return equity increased by 2.17 percent. When the interest rate corridor changes in one percent then, the return on equity of commercial banks increased by 8.1 percent. The interest rate spread is change in one percent then decreased by ROE of commercial banks is 2.1 percent.

The model-II reveals the value of R square is 0.098 which indicates that the 9.8 percent impact variable by monetary instrument in return on equity of commercial

bank in Nepal and remaining percentage variation on return on equity by others variables of banks.

4.3.3: Regression of monetary policy instruments on net interest margin

Net interest margin is considered as the dependent variable while, bank rate, statutory liquidity ratio, broad money supply, cash reserve ratio, and investment on treasury bills, interest rate corridor, interest rate spread are the independent variables.

The model is: $\mathbf{NIM = \alpha_0 + \alpha_1 CRR + \alpha_2 BR + \alpha_3 SLR + \alpha_4 InMS + \alpha_5 lnITB + \alpha_6 IRC + \alpha_7 IRS + E0}$.

Table 4.3.3

Regression of monetary policy instruments on net interest margin

Model-III		B	Std. Error	Beta
1	(Constant)	35.682	25.357	
	IT-Bill	0.069	0.180	0.057
	MS	-2.366	2.106	-0.490
	SLR	0.065	0.065	0.151
	BR	-0.630	0.198	-0.306
	CRR	0.076	1.336	0.011
	IRC	17.288	16.894	0.236
	IRS	-0.123	0.489	-0.060
	R square	0.087		

Note: Depended variable is net interest margin

Table 4.3.2 shows that regression of monetary policy instruments on net interest margin of Nepalese commercial banks. The investment in treasury bills change in one unit then increase on net interest margin of Nepalese commercial banks by 5.7 percent. When central bank change in Money supply one unit then, net interest margin is decrease by -4.9 percent.

The SLR changes in one percent then, increase net interest margin by commercial bank is 15.1percent in net interest margin.

The central bank changes in one percent in bank rate then, the NIM decreased by the 30.6 percent of commercial banks in Nepal. Similarly, the cash reserve ratio (CRR) change in one percent by the central bank then, the net interest margin increased by 1.1 percent. When the interest rate corridor changes in one percent then, the net interest margin of commercial banks increased by 23.6 percent. The interest rate spread is change in one percent then, decreased by NIM of commercial banks is 6 percent.

The model-III reveals the value of R square is 0.087 which indicates that the 8.7 percent impact variable by monetary instrument in net interest margin of commercial bank in Nepal and remaining percentage variation on net interest margin by others variables of banks.

4.4 Hypothesis testing summary

Hypothesis	Significance relationship	Results
H1	(+)	Accepted
H2	(-)	Accepted
H3	(+)	Rejected
H4	(+)	Accepted
H5	(+)	Accepted
H6	(-)	Accepted

Note: These results based on the correlation analysis of the study.

4.5 Major finding

The objective of the study is to analyse the impact of monetary policy instruments on firm profitability in the context of Nepalese commercial banks for the time period of 20111/12 to 2020/21. Specifically, the study established whether there is a relationship between the dependent variable profitability of banks and the independent variable CRR, BR, SLR, MS, IT-bill, IRS and IRC. Event study methodology was used to describe the data. Quantitative analysis was performed through the data collected from NRB websites and annual report, annual reports of concerned banks and private websites. The key findings of the study are summarized below:

1. Broad money supply, statutory liquidity ratio, and bank rate is in increasing trends as it is set by the monetary authorities of specific

country central bank. In Nepal, Nepal Rastra bank play active role in monitoring these activities.

2. The highest mean among the sample banks is observed for net interest margin whereas the lowest is observed for statutory liquidity ratio. Similarly, highest fluctuation among the selected enterprises is observed for statutory liquidity ratio whereas the lowest is observed for return on assets.
3. In descriptive analysis the lowest percent in ROA with highest percentage is ROE and average percent of high is money supply. the highest fluctuation of ROE and lowest fluctuation in ROA.
4. The return on assets is found to have positive relation with investment on treasury bills, statutory liquidity ratio, bank rate, cash reserve ratio and broad money supply.
5. Similarly, return on equity is found to have positive relation with investment on net interest margin, broad money supply and bank rate whereas the negative relationship with investment on treasury bills, statutory liquidity ratio and cash reserve ratio. Likewise, the net interest margin is found to be positive relation with investment on treasury bills and cash reserve ratio whereas the negative relationship is found with statutory liquidity ratio, broad money supply and bank rate.
6. The beta coefficient is negative for investment on treasury bills, statutory liquidity ratio and cash reserve ratio with return on equity which indicate that higher the investment on treasury bills, statutory liquidity ratio and cash reserve ratio would lead to lower return on equity.
7. The beta coefficient is positive for bank rate and broad money supply with return on equity which indicate that increase in broad money supply and the bank rate will lead to increase in return on equity.
8. Similarly, the beta coefficient is indicated as negative for broad money supply and statutory liquidity ratio with net interest margin. This highlights that that higher the broad money supply and statutory liquidity ratio would lead to lower net interest margin.

9. The beta coefficient is positive for cash reserve ratio, investment on treasury bill and bank rate with net interest margin which indicate that higher the investment on treasury bills, bank rate and cash reserve ratio higher would lead to higher net interest margin.
10. The beta coefficient is positive for investment on treasury bills, broad money supply and cash reserve ratio with return on assets which indicate that higher the cash reserve ratio, broad money supply and investment on treasury bills would lead to higher return on assets.
11. The beta coefficient is positive for investment on treasury bills, broad money supply and cash reserve ratio with return on assets which indicate that higher the cash reserve ratio, broad money supply and investment on treasury bills would lead to higher return on assets.
12. Similarly, the beta coefficient is negative for bank rate and statutory liquidity ratio with return on assets which indicate that higher the bank rate and statutory liquidity ratio would lead to lower return on assets.

CHAPTER V
DISCUSSION, CONCLUSIONS AND IMPLICATIONS

This section presents the discussion, conclusion, and implication that could be drawn from the study. The findings are compared with previous studies and the implications are drawn out from the results

5.1 Discussion

There is significant contribution of monetary policy for the sustainable economic development of nation through performance enhancement of the banks. It incudes the actions taken by the monetary authority to control the supply of credit and money supply in an economy. It is basically used as the tool for regulating the banking sector activities. The most popular monetary policy instruments that are used in Nepal include statutory liquidity ratio, bank rate, broad money supply, investment on treasury bills, and cash reserve ratio.

The major objective of the study is to analyze the impact of monetary policy instruments on firm profitability in the context of Nepal. The specific objectives are to investigate the impact of monetary policy instruments on firm profitability; assess the relationship between cash reserve ratio, bank rate, and statutory liquidity ratio on the firm profitability; identify the major monetary policy instruments that play key role in influencing the profitability of commercial banks and evaluate the investment of commercial banks on government securities regarding the open market operation.

The relationship that exists between monetary policy instruments and firm profitability remain controversial and open to further research. The persistence of this study is to indicate the impact of monetary policy instruments used for the profitability of the commercial banks. It operates through its tools and in turn signals the commercial bank to work in tandem. According to Kaushal and Pathak (2010), the profitability is highly determined by the interest income of bank. Monetary policy instruments are employed by the central bank. Similarly, banking system is a vital part of economy as it has huge role in contributing to the money supply in overall economy (Malik et al., 2014).

Friedman (1968) revealed that monetary policy was to promote price stability by increasing disillusionment with fiscal policy with its potential to affect aggregate. Smitha (2010) examined that monetary polic have impact in both long run and short run where short run impact is typically seen on financial market and long run is seen on real sector of the economy. Similarly, cash reserve ratio becomes other integral part because, decrease in cash reserve ratio increases the money supply in an economy and vice versa. The statutory liquidity ratio is the other aspect that determines the money supply in an economy. Also known as the secondary reserve, increase in statutory liquidity ratio tends to decrease the money supply in an economy and vice-versa.

The various instruments of monetary policy which the central banks employ can be classified into direct or indirect instruments. Indirect instruments of of monetary policy includes bank rate variation, open market operations, and reserve requirement are used to regulate the overall level of credit in the economy through central banks. While, direct instruments of monetary policy aim at controlling specific types of credit. It has been analyzed that changing margin requirements and regulation of customer credit impact largely in the profitability of commercial banks (Jhaingal and Stephen, 2004).

5.2 Conclusion

The study concludes that the cash reserve ratio, bank rate, investment on treasury bills are the most dominant variables in the monetary policy instruments to analyze it impact on the profitability of Nepalese commercial banks. Cash reserve ratio has found to have negative relationship with return on equity that reveals the fact that higher the cash reserve ratio lower could be the bank profitability. Likewise, bank rate has found to be negative relationship with return on assets which indicate that higher the bank rate would lead lower the bank profitability. Similarly, investment on treasury bills has found to be negative relationship with the return on equity which indicate that higher the investment on treasury bills lower could be the return on equity whereas the positive relationship has found with return on assets and net interest margin which indicate that higher the investment on treasury bills would lead the higher profitability of commercial banks.

The study also concludes that positive relationship with investment on treasury bills, broad money supply and cash reserve ratio. These results reveal that higher the investment on Treasury bill higher would be the return on assets. Likewise, higher the broad money supply higher would be the return on assets. Similarly, the positive beta coefficient for cash reserve ratio indicates that higher the cash reserve ratio higher would be the return on assets.

5.3 Implication

Based on the results and findings following sets of recommendations are offered:

1. The study observed that there is negative relationship between the cash reserve ratio and profitability indicator measured by return on equity. Hence, the banks willing to increase return on equity need to manage cash reserve ratio as per the NRB regulation.
2. Nepal Rastra bank is responsible to act as the lender of last resort to enhance credit to the commercial banks. Hence, bank rate should be low to improve the profitability of commercial banks
3. There is positive relationship between investment on treasury and return on assets which indicated that banks should encouraged the investment on treasury bills as it increases the profitability of Nepalese commercial banks.
4. The study also observed that investment on treasury bills has positive relationship with net interest margin. Thus, commercial banks should increase their investment on treasury bills as it led to increase net interest margin of Nepalese commercial banks.
5. The study observed that there is negative relationship between statutory liquidity ratio and return on assets. Thus, this indicates that bank should try to minimize the statutory liquidity ratio in discussion with the central bank in order to increase their return on assets.
6. The broad money supply has positive relationship with return on assets. Thus, this indicate that profitability of commercial banks measured by return on assets is higher when broad money supply increase in the market.

5.4 Future scope

1. The profitability indicators used in study are return on asset (ROA), return on equity (ROE) and net interest margin (NIM). However, there are other proxies of profitability like earnings per share (EPS). So, it is recommended to use other proxies of profitability apart from return on asset, return on equity and net interest margin for future academic purpose.
2. This study has only taken investment on investment on treasury bills of respective enterprises as a proxy for open market operation but others open market operation instruments like proxies like repo, reverse repo would also be taken for further studies on the similar topic to know the impact on profitability of the banks.
3. The future studies can select larger sample and a greater number of observation years for the study that could lead to much more valid prediction regarding impact
4. of monetary policy instruments on firm profitability of the banks.
5. In addition, other financial institutions like finance companies, micro finance development banks, and cooperative banks can be sampled for comprehension similar study.
6. This study has focused on the quantitative instruments of monetary policy instruments through secondary approach of data collection procedure and not included the qualitative instruments like moral suasion. So further research can include both quantitative and qualitative approach for better results of firm profitability of the bank.

REFERENCES

Adaramola, A. O. (2011). The Impact of macroeconomic indicators on stock prices in Nigeria. *African Journal of Development Studies, 1(2)*,159-164. Retrieved from gbengaadaramolaunad@yahoo.com

Adrian, T., &Shin, H. S. (2008). Liquidity, monetary policy, and financial cycles. *Journal of Economic and Finance, 14 (1)*, 1-7.

Ajayi, F. O., & Atanda, A. A. (2012). Monetary policy and bank performance in Nigeria: A two-step cointegration approach. *African Journal of Scientific Management, 9 (1)*, 462-476.

Ajisafe, R., & Folorunso, B. (2002). The Relative effectiveness of fiscal and monetary policy in macroeconomic management in Nigeria. *The Journal of African Economic and Business, 3 (1)*, 23-40.

Ab-Rahim, R., & Chiang, S. N. (2016). Market structure and performance of Malaysian banking industry. *Journal of Financial Reporting and Accounting*, *14*(2), 158-177.

Akanbi, T., & Ajagbe, F. A. (2012). Analysis of monetary policy on commercial banks in Nigeria. *African Journal of Business Management, 6 (51)*, 12038-12042.

Amassoma, D. a. (2011). An Appraisal of monetary policy and Its effect on macroeconomic stabilization in Nigeria. *Journal of Emerging Trends in Economics and Management Sciences, 2 (3)*, 232-237.

Amidu, M. (2006). The link between monetary policy and banks' lending behavior's Ghanaian case. *Banks and Bank Systems, 1 (1)*, 38-48.

Angelini, P., & Cetrella, N. (2003). The Effects of regulatory reform on competition in the banking industry. *Journal of Money, Credit and Banking, 35 (5)*, 663-684. Retrieved from http://www.jstor.org/stable/3649822.

Anoh, A., & Charity, A. (2012, August). The impact of liquidity on the performance of commercial bank in Nigeria: A Case Study of Nigeria. *International Journal of Economics and Sciences*, 27-57.

Anyanwu, U., & Kalu, O. A. (2014). The effect of central bank of Nigeria (CBN) money supply management on commercial bank loans and advances (CBLA) and output. *Journal of Business and Management Studies, 2 (12)*, 1-10.

Arslan, M., Zaman, R., Sohail, M., & Malik, R. k. (2014). The Impact of monetary policy on financial performance: Evidence from banking sector of Pakistan. *Journal of Basic and Applied Scientific Research, 4 (8)*, 119-124.

Atanda, A., & Akinwande, F. O. (2012). Monetary policy and bank performance in Nigeria: A Two-Step cointegration approach. *African Journal of Scientific Research, 9 (1)*, 402-476.

Ayanda, A., Ekpo, C. I., & Mudashiru, D. M. (2013). Determinants of banks' profitability in a developing economy: Evidence from Nigerian banking industry. *Journal of Contemporary Research in Business, 4 (9)*, 155-181.

Aydin, B., & Igan, D. (2010, October). Bank lending in Turkey: Effects of monetary and fiscal policies. *IMF Institute and Research Department, 3(43) 233*, 1-33.

Ayodele, J. C. (2014, July). Effects of monetary policy on the commercial banks' lending in Nigeria. *Journal of Public Administration and Management, 3 (5)*, 134-146.

Bernanke, B. S., & Mihov, I. (1998). Measuring monetary policy. *The Quarterly Journal of Economics, 2 (3)*, 387-902.

Budha, B. B. (2013). The bank lending channel of monetary policy in Nepal: Evidence from bank level data. *NRB Working Paper, 25 (2)* , 44-64.

Budha, B. B. (2015, August). Monetary policy transmission in Nepal. *Nepal Rastra Bank Working Paper, 29*, 1-30.

Balago, G. S. (2018). Effects of monetary policy instruments on lending behavior of quoted deposit money banks in Nigeria. *RA Journal of Applied Research, 04*(10).

Chowdhury, I., Hoffman, M., &Schabert, A. (2003). Inflation dynamics and the cost channel of monetary transmission. *European Economic Review, 50*, 995-1016.

Christhopher, L. E., & Zha, T. (1996). What does monetary policy do? *Brookings Paper on Economic Activity, 9 (2)*, 1-63.

Hoque, M. A., Ahmad, A., Chowdhury, M. M., & Shahidullah, M. (2020). Impact of monetary policy on bank's profitability: A study on listed commercial banks in Bangladesh. *International Journal of Accounting & Finance Review*, *5*(2), 72-79.

Chuku, C. A. (2009). Measuring the effects of monetary policy innovations in Nigeria: A structural vector autoregressive (SVAR) approach. *African Journal of Accounting, Economics, Finance and Banking Research, 5 (5)*, 112-127.

Claessens, S., Demirguc-kunt, A., & Huizinga, H. (2001). How does foreign entry affect? the domestic banking markets? *Journal of Banking and Finance, 25 (1)*, 891-911.

Copper, D., & Schindler, P. (2010). Business research methods. *Journal of Science and Research* 2(1) 11-18.

Deloof, M. (2003). Does working capital management affect profitability of Belgian firms? *Journal of Business Finance and Accountancy, 30 (3)* , 45-53.

Dwivedi, D. (2000). *Managerial economics* (Fifth ed.). New Delhi: Vikas Publication House Pvt. Ltd.

Ekwe, M., & Daru, A. (2012). Liquidity management and corporate profitability in Nigeria. *Journal of Accountancy, 3 (1)*, 22-28.

Emekekwue, P. (2008). Corporate financial management. *African Bureau of Educational Science, 5th Revised*.

Falope, O., & Ajilore, O. (2009). Working capital management and corporate profitability; Evidence from panel data analysis of selected quoted firms in Nigeria. *Research Journal of Business Management, 3 (3),* 73-84.

Faure, P. (2007). Getting to grips with the equity market: Quoin institute Pvt. limited. A Bayesian estimation of the relationship among econometric, 13 (2), 189-208.

Friedman, M. (1968, March). The Role of monetary policy. *The American economics Review, 58 (1),* 1-17.

Gambacorta, L., & Iannotti, S. (2005). Are there asymmetries in the response of bank? interest rates on monetary shocks. *Journal of Money, Credit and Banking, 35 (1),* 8-37.

Gertler, M., & Gilchrist, S. (1994). The role of credit market imperfections in the monetary transmission mechanism: Arguments and evidence. *Journal of Economics, 95 (1),* 43-64.

Ghimire, R. (2006). Overview of monetary policy in the Nepalese Context. *Economic Journal of Nepal, 29 (1),* 54-60.

Ikechukwu, N. (2012). The impact of money supply on economic growth in Nigeria (1981-2010). *Department of economics faculty of management and social science, Thesis, Caritas University*, 1-68.

Imoughele, L., & Mohammed, I. (2014). Empirical investigation of the impact of monetary policy on manufacturing sector performance in Nigeria. *International Journal of Education and Research, 2 (1),* 1-20.

Irshad., F., K.Zaman, & S.Gul. (2011). Factors affecting bank profitability in Pakistan. *The Romanian Economic Journal, 14(39),* 61-87.

Islam, M. (2010). Monetary policy and money supply processing Bangladesh: An analytical review. *Institute of Governance Studies (IGS),* 72-177.

Jhaingal, M., & Stephen, J. (2004). *Managerial economies.* New Delhi: Vrinda Publication Pvt. Ltd.

Kashyap, A., Stein, J., & Wilcox, W. (1992). Monetary policy and credit conditions: Evidence from the composition of external finance. *NBER working paper series, 4(12),* 1- 45.

Kaushal, L., & Pathak, N. (2010, 9 05). Monetary policy and banking sector profitability. *Research Journal of Social Science & Management, 01*, 3-7.

Khatiwada, Y. (1994). *Monetary Policy: Evolution of Nepal's monetary and credit policies.* New Delhi: South Asian Publishers Pvt. Ltd.

Khrawish, H. (2011). Determinants of Commercial banks performance: Evidence from Jordan. *International Research Journal of Finance and Economics. Zarqa University, 5(5),* 19-45.

Kimera, N. S. (2011, Commercial banks' investment in loans and treasury bills and their overall profitability in Uganda. *Master of business administration of Makerere university*, 1-59.

Maddaloni, A., & Peydro, J. (2011). Bank risk taking, securitization, supervision, and low interest rates: evidence from lending standards. *Review of Financial Studies, 24 (6),* 2121-2165.

Mankiw, N. G. (2013). Monetary policy and m*acroeconomics* (Vol. 07, pp. 317-347). New York: Worth Publishers.

Mishkin, F. S. (2010, February). Monetary policy strategy: Lesson from the crisis. *ECB Central Banking Conference.02*, pp. 05-17. Massachusetts avenue. Retrieved from http://www.nber.org/papers/w16755

Morris, C. S., & Sellon, G. H. (1995). Bank lending and monetary policy: Evidence on a credit channel. *Federal Reserve Bank of Kansas City Economic Review, 80 (2),* 59-75.

Ndugbu, M. O., & Okere, P. A. (2015). Monetary policy and the performance of deposit money banks the Nigerian experience. *European Journal of Business and Management, 17 (17),* 65-72.

Nepal, C. (2015). *Monetary Policy for 2015/ 2016.* kathmandu: Nepal rastra Bank. Retrieved from www.nrb.org.np

Nwannebuike, U. S. (2015). Impact of monetary policy instruments on profitability of commercial banks in Nigeria: Zenith bank experience. *Research Journal of Finance and Accounting, 6 (10)* , 190-205.

Nyawata, O. (2012). Treasury bills and central bank bills for absorbing surplus liquidity: Monetary and capital market departments. *12 (40),* 1-39.

Obilor, I. A. (2013). The impact of liquidity management on the profitability of banks in Nigeria. *Journal of Finance and Bank Management*, 37-48.

Ogunyomi, O. O. (2011). The Impact of monetary policy on commercial banks loans and advances in Nigeria: An empirical investigation. *International Journal of science and Economic, 3(5),* 1-23.

Okoye, D., & Richard, E. O. (2013). Effect of bank lending rate on the performance of Nigerian deposit money banks. *International Journal of Business and Management Review, 1 (1),* 34-43.

Padmalatha, S., & Justin, P. (2010). *Management of banking and financial services* (Second ed.). Delhi: Pearson Education.

Pokharel, R. (2009). The effective role of monetary policy to cope with the current global financial crisis for achieving sustainable economic growth: Experiences of Nepal. *United Nations Economic and Social Commission for Asia and the Pacific.*, 123-176.

Punita, R., & Somaiya, K. (2006, March). Monetary Policy: Its impact on the profitability of banks In India. *International Business Economics Research Journal, 5 (3),* 15-22.

Rasche, R. H., & Williams, M. M. (2005). The Effectiveness of monetary policy. *Working Paper Serial, 48 (2),* 1-77.

Reddy, Y. V. (2011, March 10). Monetary and financial sector reforms in India: A Practitioner's perspective. *01*, 27-54. Retrieved from http://rbidocs.rbi.org.in/rdocs/Bulletin

Sigdel, B. D. (2006). Effectiveness of monetary policies and strategies: A Case of Nepal. *Economic Journal of Nepal, 29 (1)*, 38-53

Smitha, T. (2010). Impact of monetary Policy on Indian economy in the post -Reform Period. Kerala: department of Applied Economics.

Sohail, M., Malik, R. K., Zaman, R., & Arslan, M. (2014, April 29). The impact of monetary Policy on financial performance: Evidence from banking sector of Pakistan. *Journal of Basic and Applied Scientific Research, 4 (8)*, 119-124.

Subedi, D. (2014). Factors affecting Nepal's economic development. *The Nepalese Journal of Public Administration, 2 (1)*, 158-165.

ANNEX

Year	Bank Name	ROA	ROE	NIM	In ITB (in mil)	In MS (in mil)
2011/12	ADBL	1.05688	6.253252	3.736155	9.67	12.05319
2012/13	ADBL	1.68556	9.849435	4.312667	9.7	12.11905
2013/14	ADBL	1.631797	8.872618	5.444907	9.61	12.19478
2014/15	ADBL	2.410687	12.33844	4.901406	8.39	12.27365
2015/16	ADBL	2.513037	13.05068	5.183507	9.35	12.35113
2016/17	ADBL	2.635447	14.07832	5.0278	8.25	12.41359
2017/18	ADBL	1.373502	8.645031	4.246588	9.61	12.49059
2018/19	ADBL	2.633528	14.02053	4.43089	11	12.55414
2019/20	ADBL	1.373497	8.650723	1.060464	10.23	12.62644
2020/21	ADBL	1.544371	10.90396	0.725116	11.1	12.71222
2011/12	CZBIL	1.764795	19.86103	4.375855	9.67	12.05319
2012/13	CZBIL	1.917518	20.97454	4.130667	9.7	12.11905
2013/14	CZBIL	2.223536	23.37372	3.936496	9	12.19478
2014/15	CZBIL	2.736919	25.77564	3.907713	8.12	12.27365
2015/16	CZBIL	2.894063	19.84678	3.190968	10.12	12.35113
2016/17	CZBIL	2.485834	16.63799	2.717359	9.88	12.41359
2017/18	CZBIL	1.576296	11.12174	2.859438	10.21	12.49059
2018/19	CZBIL	1.685845	12.15968	2.983157	11	12.55414
2019/20	CZBIL	1.117685	9.208777	2.60944	10.23	12.62644
2020/21	CZBIL	1.313781	11.70835	2.168609	11.1	12.71222
2011/12	GBIME	2.272887	27.41098	2.929779	9.67	12.05319
2012/13	GBIME	2.131264	23.92087	3.309577	9.7	12.11905
2013/14	GBIME	2.009546	22.55474	4.176471	9	12.19478
2014/15	GBIME	1.576059	19.33032	3.294767	8.12	12.27365
2015/16	GBIME	1.701665	22.5706	3.025417	10.12	12.35113
2016/17	GBIME	1.613022	16.40171	3.015933	9.88	12.41359
2017/18	GBIME	1.560271	14.80468	3.00903	10.21	12.49059
2018/19	GBIME	1.815646	16.85931	3.456791	11	12.55414
2019/20	GBIME	1.083012	10.28673	3.002087	10.23	12.62644
2020/21	GBIME	1.235852	13.04666	2.645777	11.1	12.71222
2011/12	NBL	0.892347	5.152934	2.245761	9.67	12.05319
2012/13	NBL	0.811067	4.535074	2.686831	9.7	12.11905

2013/14	NBL	0.763208	4.439276	3.085265	9	12.19478
2014/15	NBL	1.559251	8.842496	3.570956	8.12	12.27365
2015/16	NBL	1.81303	10.3029	3.545794	10.12	12.35113
2016/17	NBL	2.586382	15.02687	4.273386	9.88	12.41359
2017/18	NBL	-0.223	-1.33101	4.669017	10.21	12.49059
2018/19	NBL	0.820221	4.804451	3.608734	11	12.55414
2019/20	NBL	0.918849	5.84895	2.939284	10.23	12.62644
2020/21	NBL	1.652699	11.07826	2.883706	11.1	12.71222
2011/12	KUMARI	0.180698	38.55384	0.286513	9.67	12.05319
2012/13	KUMARI	2.085885	41.93282	2.98914	9.7	12.11905
2013/14	KUMARI	2.211744	38.92075	2.902246	9	12.19478
2014/15	KUMARI	2.273918	38.58069	3.152825	8.12	12.27365
2015/16	KUMARI	1.926674	29.61264	2.235407	10.12	12.35113
2016/17	KUMARI	0.492804	15.10335	1.119108	9.88	12.41359
2017/18	KUMARI	0.985277	9.844699	1.904848	10.21	12.49059
2018/19	KUMARI	0.807899	10.06312	1.9661	11	12.55414
2019/20	KUMARI	0.849883	7.546973	2.330221	10.23	12.62644
2020/21	KUMARI	1.058419	10.63241	2.675434	11.1	12.71222
2011/12	MEGA	0.2442	15.86103	3.907713	9.67	12.05319
2012/13	MEGA	0.25199	10.97454	3.190968	9.7	12.11905
2013/14	MEGA	0.2244	13.37372	2.717359	9	12.19478
2014/15	MEGA	0.246012	23.77564	2.859438	8.12	12.27365
2015/16	MEGA	0.25175	19.84678	2.983157	10.12	12.35113
2016/17	MEGA	0.487	16.63799	2.60944	9.88	12.41359
2017/18	MEGA	0.9854	10.06312	2.0547	10.21	12.49059
2018/19	MEGA	1.62789	11.78179	3.88146	11	12.55414
2019/20	MEGA	1.143156	9.865821	2.68737	10.23	12.62644
2020/21	MEGA	1.345476	12.00713	3.196623	11.1	12.71222
2011/12	NABIL	0.848162	0.810849	4.557768	9.81	12.05319
2012/13	NABIL	3.563862	3.806818	4.511915	9.67	12.11905
2013/14	NABIL	3.386599	3.386599	4.112853	9.7	12.19478
2014/15	NABIL	3.686292	4.235385	0.462418	9	12.27365
2015/16	NABIL	3.040272	3.040272	0.581737	8.12	12.35113
2016/17	NABIL	2.327888	20.07628	3.862562	10.12	12.41359
2017/18	NABIL	2.320438	19.05779	3.703693	9.88	12.49059

2018/19	NABIL	2.171796	18.83824	3.559359	10.21	12.55414
2019/20	NABIL	1.954485	17.96675	2.938263	11	12.62644
2020/21	NABIL	2.280878	19.60791	2.774587	10.23	12.71222
2011/12	NIBL	0.026842	0.47373	2.964	11.1	12.05319
2012/13	NIBL	0.08912	1.610464	3.586992	9.67	12.11905
2013/14	NIBL	2.237785	36.79698	2.871044	9.7	12.19478
2014/15	NIBL	1.805474	26.9128	2.29522	9	12.27365
2015/16	NIBL	2.828972	18.05112	2.914952	8.12	12.35113
2016/17	NIBL	2.377128	15.28808	3.202967	10.12	12.41359
2017/18	NIBL	1.748164	12.08226	3.403373	9.88	12.49059
2018/19	NIBL	1.772318	12.87652	3.321911	10.21	12.55414
2019/20	NIBL	1.310198	9.789124	2.845807	11	12.62644
2020/21	NIBL	2.43678	17.23025	2.453846	10.23	12.71222
2011/12	NMB	3.317157	17.78136	6.271083	11.1	12.05319
2012/13	NMB	3.173288	20.51879	5.229077	9.67	12.11905
2013/14	NMB	1.17342	19.4015	2.189004	9.7	12.19478
2014/15	NMB	1.542135	16.32334	2.75888	9	12.27365
2015/16	NMB	1.997353	14.44849	3.30182	8.12	12.35113
2016/17	NMB	1.555594	8.780334	2.951663	10.12	12.41359
2017/18	NMB	1.621169	10.78313	2.601733	9.88	12.49059
2018/19	NMB	1.66625	12.9706	3.132803	10.21	12.55414
2019/20	NMB	0.954449	8.181252	3.062781	11	12.62644
2020/21	NMB	1.170853	11.32267	2.444714	10.23	12.71222
2011/12	PCBL	0.759006	9.966226	3.052731	11.1	12.05319
2012/13	PCBL	0.731652	10.80832	2.787113	9.67	12.11905
2013/14	PCBL	0.637947	9.305108	3.030035	9.7	12.19478
2014/15	PCBL	0.574335	8.432123	2.92002	9	12.27365
2015/16	PCBL	1.36989	16.35429	2.823553	8.12	12.35113
2016/17	PCBL	1.440022	13.94381	2.482495	10.12	12.41359
2017/18	PCBL	1.726856	14.64414	2.804928	9.88	12.49059
2018/19	PCBL	2.147827	16.38526	3.505528	10.21	12.55414
2019/20	PCBL	1.558235	11.55252	3.049369	11	12.62644
2020/21	PCBL	1.792122	14.2625	3.122167	10.23	12.71222

Source; Annual report of banks consider in this study