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Impact of Bank Specific and Macro-Economic Factors on Financial Performance of Commercial Banks in Afghanistan

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JEMS

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Abstract

This study was carried out to examine the effects of bank-specific factors and macroeconomics on the financial viability of commercial banks in Afghanistan. The ten banking institutions' panel data sets for the years 2010–2021 were used. Random Effect model of regression was applied. The model of random effects was recommended when the Hausman test was employed to confirm the models' fitness. The null hypotheses were also rejected based on the results of the Wooldridge test for serial correlation and the modified Wald test for group-wise heteroscedasticity. The findings of current research revealed that bank determinants, specifically liquidity and asset management, showed a positive but slight effect on bank profits, while deposit ratio, bank number of branches, and ATMs showed a negative influence. Regarding macro-economic factors, the outcomes indicated that the influence of the GDP, exchange rate, and inflation rate on bank profitability was negative, while the interest rate, taxes, and industry growth rate had a positive and significant impact on bank profitability. Additionally, by highlighting weak points, the study's findings will assist management of banks, financiers, the government, policymakers, and shareholders in taking better decisions and enhancing bank performance. Overall, decision-makers need to be better knowledgeable about the factors that affect the profitability of Afghan commercial banks.

Keywords: Bank profitability; Deposit Ratio; Asset Management; Liquidity; industry growth rate; Taxes; Afghanistan

JEL Classification: C33, F43, G14, G21, G32

Introduction

It has been apparent over the past several decades that all policymakers, legislators, and bank administrators are increasingly concerned about the stability and financial viability of banks. However, with the 2007 and 2008 global financial crises, this issue became more significant (Ali and Puah, 2018). In the economic improvement and development of a country, financial institutions play a crucial role that we cannot ignore (Almaqtari, 2019). A cost-effective and profitable banking sector facilitates a country's economic development. According to Bekhet and Yasmin (2014), the global financial crisis of 2007–2008 showed that it is vital to understand the available risks and factors, potential risks and factors, and how these dynamics influence the financial success of financial institutions. Furthermore, consolidated and successful banking services contribute to overall economic constancy as well as effectiveness, and they work together to mitigate the impact of unexpected macroeconomic shockwaves. To be sustainable and profitable, the banking sector needs to understand the determinants that have a significant impact on the profitability of financial institutions. In addition, it has been realized that bank executors must understand all kinds of dynamics that banks face in order to control them efficiently and effectively. Research on the influence of bank-specific and macroeconomic factors that affect the performance of financial institutions has developed rapidly and is now a big concern, especially in countries with developing economies (Fidanoski et al., 2018; Bongini et al., 2018; Garcia & Guerreiro, 2016).

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Furthermore, not much progress has been made in terms of studies on the influence of bank-specific and external factors in developing countries. Afghanistan is one of those countries that have yet to take into account the impact of bank-specific and external factors studied together on a larger scale.

Over the past 20 years, Afghanistan's banking industry has greatly improved the country's economy as the banking system has developed. Only state-owned banks with a limited financial system were operational in Afghanistan until 2001. After the Taliban regime was overthrown in 2001, the new government developed a banking system with assistance from other nations. This attracted numerous financial institutions and investors to the banking industry, and the central bank granted operating licenses to up to 10 private banks and some international banks. On August 15, 2021, the Taliban regime retook control of Afghanistan, causing significant disruption and uncertainty in the banking industry. Furthermore, commercial banks have made significant investments in real estate in the affected country; they are unable to preserve their liquidity, which is causing them to fail. Therefore, the main purpose of the current study is to examine and find the impact of those internal and external (macroeconomic) determinants on the financial soundness of listed Afghan commercial banks. In order to address the issues and uncertainties in Afghanistan's banking system, significant investment is needed in a variety of sectors, especially the banking sector, including enhancing the quality of the banking sector, standards, security, banking culture, and regulatory frameworks for high technology. As a consequence, Afghanistan has experienced numerous catastrophic crises in the financial industry, such as the Kabul Bank crisis in 2010 and changes in deposit levels after the withdrawal of NATO and USA troops in 2014, which caused major disruption in the overall economy of Afghanistan. For example, most commercial banks received large sums of money from the United States for their mission expenses, payments to suppliers, and payments to contractors. The money they received made up a significant portion of Afghan commercial banks' deposits and provided a good source of income for them. After ceasing United Nations and USA operations and withdrawing their troops, the inward remittance from the United States has dropped considerably. On the other hand, on the financial market, the Afghani currency has depreciated against the US dollar. As of 2013, one dollar was worth 50 afghanis, but today it is worth 89 afghanis or more. The inflation rate has risen from 2.20% in 2010 to 18% in 2021. Changes in interest rates and, most importantly, changes in the political situation have harmed the overall economy of Afghanistan's special banking sector. Even most financial institutions are still struggling to at least survive the current situation in the market.

In light of the above facts, the primary goal of the current study is to investigate the impact of bank-specific factors and macroeconomic variables on the success of commercial banks in Afghanistan, which have not been considered in previous studies and research. On the other hand, identify which factors play a significant role in the success of commercial banks in Afghanistan. Lastly, the results of current research will enhance the literature resource regarding the factors affecting the profitability of financial institutions (banks) and consolidate the literature in this environment. Because of the scarcity of studies on the influence of bank-specific determinants and external factors in Afghanistan, this study will also fill this gap. Second, there have been very few studies that have looked at the bank-specific and macroeconomic determinants of profitable banks in developing countries with unsustainable economic and political conditions. As a result, it will provide valuable information to future researchers in the

business environment. Additionally, as it is more important for bank management and investors who are investing in the banking sector to know which factors are affecting the financial performance of their entity, they should keep an eye on them. Therefore, this study will provide good insight and information for all concerned parties.

The study of bank-specific and macroeconomic determinants that affect the success of financial institutions ("banks") has grown rapidly and has become a major concern, particularly in developing countries (Iskandar et al., 2019; Ohman & Yazdabfar, 2018; Fidanoski et al., 2018; Bongini et al., 2018; Garcia & Guerreiro, 2016). Afghanistan, as one of these developing countries, has an ineffective banking system (Shukla, 2016; Sahar, 2018). Over the course of three decades of conflict and violence, Afghanistan's banking sector was decimated rather than considerably improved. The fact, which is derived from the above reality, is that banks' performances provide a clear signal to bank supervisors to enhance banking services, and evaluating their performances helps depositors and investors deposit or withdraw their money. In addition, it provides good insight for regulators to articulate better regulation. Mirsa (2015) declared that it is critical for bank supervisors to comprehend the causes of revenue variations amongst banks. However, since 2001, this country, "Afghanistan," has been working to modernize its banking system in order to provide the best banking services. Nowadays, twelve banks, including three government banks, are active and operating in Afghanistan. The total accumulated asset of commercial banks in Afghanistan is nearly 311 billion Afghanis, according to the most recent Da Afghanistan Bank report on July 20, 2021, of which 276 billion are debts and credits and the remaining 36 billion are net assets and owner equity. Many large businesses have been distorted as a result of the regime change and the Taliban's retaking of power, and many others are failing as a result of the upcoming economic situation, rendering them incapable of fulfilling their obligations and paying any interest to banks. According to reports, commercial banks lost a significant portion of their revenue. In addition, about 97 billion AFN of private bank reserves are with the central bank at this moment, and the central bank is unable to pay the amount of money invested by private banks in capital notes back to the private banks. Therefore, the central bank will need about one or two years to pay back the amount to commercial banks. The other challenge is that banks have most of their deposits from depositors but are facing the problem of paying them back to their customers, and people still line up to withdraw money on a daily basis since the Taliban seized power in the country. Even most financial institutions are incapable of reserving their liquidity, which is leading this sector towards failure. The liquidity crisis and restrictions on wire transfers have severed Afghanistan's commercial banks' relationship with the rest of the world, causing delays in commodity imports, higher prices for goods and raw materials, and a high inflation rate.

Furthermore, Afghanistan's economy has suffered the worst economic crisis in a long time in all areas, especially the banking sector. For instance, the Kabul Bank Crisis in 2010 Changes in commercial bank deposit levels following the withdrawal of NATO and US troops in 2014, which caused significant disruption in Afghanistan's overall economy and a severe decline in bank profitability due to a lack of liquidity, On the other hand, based on a World Bank report on the financial market, the Afghani currency has depreciated against the US dollar. As of 2013, one dollar was worth 50 afghanis, but today it is worth 89 afghanis or more. The inflation rate has risen from 2.20% in 2010 to 18% in 2021. Changes in interest rates and, most importantly, changes in the political situation have harmed the overall economy of Afghanistan's special banking sector.

Even most financial institutions are still struggling to at least survive the current situation in the market. Furthermore, the yearly audited financial reports of commercial banks revealed that the majority of them had many years of losses and low profits. In addition, Afghanistan's economy was previously on unstable ground, even before the Taliban seized power, and it was hugely dependent on foreign aid; about 40 per cent of GDP came from international aid (Qazizada and Wani, 2020; Muram and Wani, 2020). According to a recent World Bank report, the new government is still under pressure to address economic issues such as rising inflation, currency depreciation, and job losses. BBC News (2022). As a result, Naderi (2021), Bekhet (2020), and Al-Homaidi et al. (2020) recommend the current study investigated the impact of deposit ratio, asset management, the bank's number of branches and ATMs, and external factors such as industry growth rate and taxes on commercial banks' financial performance, whose impact has been studied in other contexts but not in Afghanistan. The theories that support the current study are theories of financial intermediation theory, which state that financial institutes collect funds from customers with surplus and then lend them to those who need money. In return, the bank will receive interest, which increases the bank's profit. efficient-structure theory, which states that superior management and business practices provide greater earnings and improved performance. Therefore, there is a dearth of academic research and analysis on the impact of internal and external factors on the financial performance of commercial banks in Afghanistan, which prompted the in-depth investigation. The researchers considered the majority of factors for both internal and external environments, as in previous research, but some important factors were not considered. which needed to be investigated, particularly in Afghanistan (Naderi, 2021; Bekhet, 2020; and Al-Homaidi et al., 2020). Hence, the core objective of the current research is to examine the impact of the suggested factors on the financial success of commercial banks in the context of Afghanistan.

The rest of the paper is divided into four sections. The second section includes literature reviews. The third section describes the research methodology. The third section elaborates on the analysis, which systematically explains the research findings, and the final section highlights the conclusion, policy implications, and recommendations.1.5- Research Gap

2. Review of Literature

It has been stated in the past few years that policymakers, regulators, and bank controllers are becoming increasingly concerned about the profitability and stability of the banking system. However, this issue only became significant after the 2007-2008 global economic crisis (Ali & Puah, 2018). The stability of a nation's banking industry has a significant impact on that nation's GDP. Therefore, banks play a vital role in the economic growth of countries, and the presence of both theoretical and empirical studies on the performance of banks at the country level and at the cross-country level makes it even more important that more investigation be performed on the success of commercial banks in different countries. As a result, many previous research articles have been reviewed and their findings discussed in the current paper. Based on the findings of previous investigations and studies, the current study investigates the findings of previous investigations to develop new hypotheses grounded in various dynamics affecting the banking industry. Previous research, which covered the period from 2016 to 2022, reviewed all articles based on different themes and properly stated under literature (Akbari, 2022).

Much theoretical and empirical research on the development of financial sectors has been conducted in recent years, which provides the basis for understanding how and which factors affect the performance of financial institutions. Financial intermediation theory of banking, portfolio management theory, efficient-structure theory, John Maynard Keynes economic theory, theory of bank liquidity, growth rate theory, and studies of (Akhisar, 2015; Weigelt & Sarkar, 2012; Almaqtari, 2018; Svitek, 2001; Albertazzi, 2010) are among these studies and theories. The financial intermediation theory of banking states that banks, like other financial intermediaries, collect funds from non-banks and customers with surplus and then lend them to those who need money. In return, the bank will receive interest, which increases the bank's performance. The portfolio theory of management recommends that diversification across all asset classes is a great way to avoid placing all of your eggs in one basket. Therefore, if the banks differentiate their venture and capitalize in different assets and stocks, it will reduce the associated risk to the banks and increase bank profitability, which represents better asset management by the bank. Furthermore, according to the efficient-structure argument, better management and business practices provide greater earnings, and improved performance eventually increases market share and concentration. According to the concept of bank liquidity (cash reserve) requirements, banks that hold more cash are better equipped to control risk in their non-cash portfolio of problematic assets. Additionally, keeping cash on hand before liquidating non-current assets reduces liquidation costs. Furthermore, the Keynesian macroeconomic economic argument says that the amount of money spent in the economy has an impact on production, employment, and inflation, which reveals that increases in total regime disbursement and lower taxes motivate demand and bring the world's economy out of its recession. Human needs and desires are unlimited, according to growth rate theory, and their unlimited desires and wishes increase productivity and economic growth, which increases the profitability of companies in that sector. On the other hand, many studies concentrated on bank-specific and external determinants affecting the improvement and better performance of financial institutions.

2.1 Empirical Studies

Over the last few years, many studies have been conducted to examine the determinants of financial institutions' success. For instance, the impacts of bank-specific and macroeconomic factors on the profitability of commercial banks were examined by Bekhet, Al-Smadi, and Khudari (2020). by employing pooled ordinary least squares, random effect, and fixed effect models. RoA was used as a proxy for the measurement of bank profitability. The outcome illustrates that bank-specific factors, in particular bank size and diversification, had a positive effect on financial institution success. While credit risk, operational risk, and leverage risk showed negative influences on bank performance, as for macroeconomic factors, the results illustrate that the inflation rate had a positive but significant impact on bank profitability. While GDP and the refugee crisis had a negative but insignificant impact on bank profitability, this study also did not consider some external dynamics such as taxation, exchange rates, and interest rates and recommended that they be considered in future studies. Furthermore, this study also stated that the term "return on asset" is a profitability ratio that reflects the capability of a bank's management in producing profit from assets or resources used by the bank. This term, "ROA," reveals the earned profit from each dollar invested in business by shareholders, and it is a predictor of the efficiency of business management. The impacts of bank-specific and macroeconomic factors were also examined by Naderi (2020).

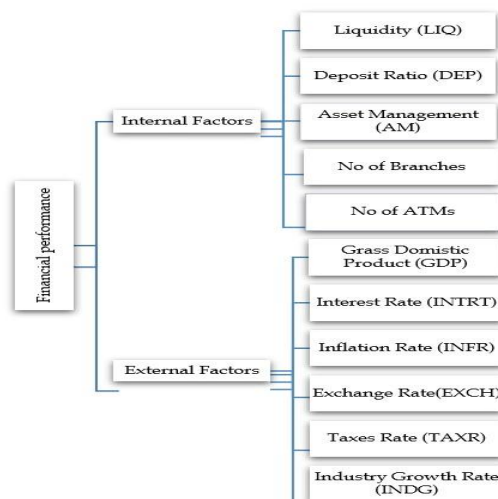
Through this study, bank profitability was measured through proxies of return on equity (ROE), return on asset (ROA), and net interest margin (NIM). A panel dataset of ten commercial banks for the period 2010–2020 was used. The Generalized Method of Moments (GMM), random effects, and fixed effects models were used to investigate factors affecting the performance of commercial banks. Through GMM regression analysis, the results indicate that bank size and capital adequacy are positively related to the ROA ratio. While the correlation between ROA ratio, credit risk, liquidity, and management efficiency were negative. Among macroeconomic indicators, the interest rate had a positive impact on return on assets, whereas the GDP, inflation rate, and exchange rate had a negative impact. This paper has not considered some bank-specific and macroeconomic variables such as the corporate tax rate, industry growth rate, deposit ratio, bank number of branches, and ATMs. Therefore, it is recommended that researchers in the future incorporate these factors into their future studies and also conduct a comparative analysis of the banking sector in Afghanistan.

Al-Homaidi et al. (2020) examined the impact of internal and external dynamics on the performance of 37 Indian commercial banks for the period of 2008–2017. Return on assets (RoA) and return on equity (ROE) were used as proxies to measure bank profitability. Both static models (pooled, fixed, and random effects) and the GMM model were used to investigate factors affecting the performance of commercial banks. The findings show that deposit ratio, operation efficiency, capital adequacy, inflation, and GDP all had a negative and significant impact on ROA. While bank size, asset quality, liquidity, asset management, and net interest margin revealed a significant positive impact on bank performance, these are important internal factors that also affect the bank's profitability. On the other hand, capital adequacy, asset quality, liquidity, operation efficiency, inflation, and GDP had a negative impact on ROE, but deposit ratio, bank size, and asset management showed positive impacts on ROE, and the influence of liquidity, deposits, and net interest margin was insignificant for ROE. Furthermore, this study suggested that other studies are able to investigate this issue by including some new variables or by extending the time period or sample size of the investigation in future studies. Le, T. D., & Ngo, T. (2020) conducted a panel country analysis to investigate the factors affecting bank profitability in 23 countries for the period of 2002–2016 by using a generalized method of moment approaches. The return on assets (ROA) and net interest margin (NIM) are used as proxies for the measurement of bank profitability. The findings showed that the quantity of granted bank cards, ATMs, and points of sale (POS) had a positive relationship and significant impact on the profitability of financial institutions and suggested that further expansion of these delivery channels would improve bank profitability. While market power, bank overhead expenses, asset quality, and the global financial crisis all had a negative impact on bank profitability, inflation and GDP both had a positive impact. The findings also showed that stock prices positively affected bank performance. Furthermore, findings indicate a favorable association between bank performance and growth in the capital markets. Rani (2017) examined the influence of financial institution particulars and external dynamics on the profitability of commercial banks in Ethiopia by employing multiple regression models for the period of 2005–2015. For the measurement of bank profitability, the proxies of ROE and NIM were used. The NIM was found to have a significant positive relationship between capital adequacy and earnings ratio. While asset quality, management efficiency, liquidity, tax rate, and average exchange rate showed positive relationships through NIM with an insignificant impact on bank performance. Only industry growth rate and GDP are shown as negative, with an insignificant impact through NIM. On the

other hand, all macroeconomic determinants of tax rate, average exchange rate, industry growth rate, and GDP showed affirmative relations along with an insignificant influence on return on equity except the inflation rate. Moreover, as the proxies used for measurement of bank profitability in this research paper explain the performance of commercial banks on a smaller scale, it will be better to consider ROA, which represents bank profitability on a broader scale, in future studies.

Saona (2016) investigated the impact of bank-specific and extra-bank determinants of profitability on Latin American banks for the period 1995–2012 by employing the GMM approach. Furthermore, the results revealed a negative influence of revenue diversification and efficiency of the regulatory structures and a positive impact of bank deposits, bank size, and the success of financial institutions. Based on the results derived from this paper, there is no single factor impacting the profitability of banks. So, there are many other internal and external factors that are impacting the performance of financial institutions and should be considered by bank management while making policies and procedures. Noor and Gahnisha (2021) investigated the impact of macroeconomic determinants on the financial performance of commercial banks in Indonesia for the period of 2008–2016. Bank performance was measured through ROA and the inflation rate; central bank interest rates and exchange rates were used as independent variables. The fact that the inflation rate was not affecting the return on assets of financial institutions during the aforementioned period implies that a change in the inflation index might not clearly describe the bank's ROA. The central bank interest rate had no effect on the ROA of financial institutions during the period, implying that a change in the central bank interest rate cannot explain the bank's ROA. Finally, only changes in the exchange rate had a positive impact on the ROA of Indonesian banks. Generally, Afghanistan's banking sector has responded to the country's economic and political circumstances. Since 2001, Afghanistan's economic growth, banking industry growth, and investment sector have all benefited from the banking sector's development.

Figure 1: Theoretical framework of the study



Source: Adapted from Al-Homaidi, E. A., Tabash, M. I., Farhan, N. H., & Almaqtari, F. A. 2018; Shrestha, P. M. 2020)

3. Research Methodology

The investigation plan outlines the whole research process, including problem conceptualization, research question and goal, technique, and an overall study conclusion. Therefore, this research adopts a positivist research philosophy for the current study in order to study the association between two variables. The deductive approach used in the current research paper since the current study is an analysis of an already available concept in the territory of Afghanistan that previously existed, a quantitative methodology is also necessary. Because the deductive approach follows quantitative methodology, hypotheses are tested in this research to see how much they affect each other. The data collected is from secondary sources. According to the Da Afghanistan Central Bank's recent report, there are currently 12 national and international banks active in the banking sector of Afghanistan. The data for internal bank determinants were collected from ten banks' yearly financial statements which include all local private and state-owned banks in Afghanistan and the data for the macro-economic variables was collected from World Bank reports word bank, Due to a lack of data, the two foreign banks were excluded. The period for data collection will be from 2010–2021 for analysis purposes. Finally, the probability sampling technique was employed to increase the outcome's scope. As the population is homogeneous, and in order to provide everyone in the population with an equal opportunity, a basic random sampling technique was employed to choose the sample from the entire population.

Table 1. Lists of Banks and taken sample

Specification	Government Banks	Commercial Bank	Branch of Overseas Banks	Aggregate No
Aggregate Banks	3	7	2	12
Sampled Banks	3	7	0	10
% of Aggregate Banks	75%	100%	0%	83%

Source: From the Central Bank of Afghanistan (DAB)

3.1 Operationalization and Data Sources

The current study used panel data along with time series data for the dated cover from 2010 up to 2021 in order to analyze the relationship between the financial success of financial institutions (return on investment) as a dependent variable, and bank-specific and external factors as independent variables in the context of Afghanistan, and for each variable, individual data is available. The data for external variables have been collected from the World Bank Data Source, and for bank-specific variables, from the audited annual financial reports of commercial banks, which are available on their website as well.

Table 2. Definitions and Measurements of Determinants

Variable	Acronyms	Measure	Expected Effect	Evidence of Previous investigations
Dependent variables: Return on Asset				
RoA		$ROA = \frac{\text{Net profit}}{\text{Total Assets}}$		(Ariyadasa et al., 2017; Knezevic & Dobromirov, 2016; Paolucci & Menicucc, 2016; Bekhet, H. A., Alsmadi, A. M., & Khudari, M., 2020; Shrestha, P. M., 2020; Bucevska & Misheva, 2017).

Independent variables: Bank-specific factors				
Deposit Ratio	DEP	Total Deposit / Total Asset	Positive	Tarawneh et al. (2006), Gul et al. (2011), Naeem et al. (2017), and Goel and Kumer (2016)
Asset Management	AM	Operating Income / Total assets	Positive	(Yahya et al., 2017; Masood, Ashraf, & Ashraf, 2012)
Liquidity	LIQ	LIQ=Total Loan/Total assets	Positive	(Rani & Zergaw, 2017; Shrestha, P.M. 2020)
Branches	BRNCH	No Bank Branch	Positive	(Almaqtari et al., 2018)
Automated Teller Machine	ATMs	No Bank ATMs/ Number of Bank Branches	Positive	(Akhisar et al. 2015; Le, T. D., & Ngo, T. 2020)
Independent variables: Macroeconomics factors				
Economic activity	GDP	Annual GDP growth rate	Mixed	(Sufian, 2012; Pervan et al., 2015; Rani and Zergaw, 2017; Mokni and Rachdi, 2014; Ozili, 2016; and Zarrouk et al., 2016).
Inflation	IF	Annual inflation rate	Positive	(Pervan et al., 2015; Amzal, 2016; Rahaman & Akhter, 2015; Bekhet, Alsmadi, & Khudari, 2020)
Exchange rate	EXCH	Average exchange rate in a year	Positive	(Chowdhury & Rasid, 2017; Menicucci & Paolucci, 2016)
Interest rate	INTRT	Lending interest	Positive	(Noor, A. R., and R. P. Gahnisha, 2021; Rashid and Jabeen, 2016; Amzal, C., 2016)
Tax Rate	TAXR	Annual Tax Rate	Negative	(Knut & Huizinga, 1999; Albertazzi & Gambacorta, 2010)
Industry Growth Rate	(INDG)	Total Asset of Bank / Gross Domestic product	Positive	(Owoputi et al., 2014; Rani, D. M., and L. N. Zergaw, 2017)

Source: Al-Homaidi, E. A., Tabash, M. I., Farhan, N. H., & Almaqtari, F. A. (2018); Naderi, R. (2021)

3.2 Model specification and econometric tools

Several stages of methodology were utilized to investigate the impact of internal and external influences on the bank's performance. The first stage was to examine the data's behavior and quality, for which descriptive analytics is crucial. Bekhet & Al-Smadi, (2015) Furthermore, Almaqtari et al., (2019) stated that while the investigation of financial institutions' performance using functional linear regression is more appropriate, numerous former investigators, such as Nuhiu et al. (2017), Abate & Mesfin (2019), Petria et al. (2015), and Paolucci (2016), used OLS, fixed effect, and random effect models. while many others studied (Saona, 2016; Bucevska & Misheva, 2017). applied both the generalized method of moments and linear regression. Roodman (2009) approved that GMM is more appropriate in circumstances with a large population and

a short time period. Also, regressors are not exactly exogenous. existence of fixed individual effects, non-correlation, and autocorrelation. Furthermore, according to Saona (2016), utilizing GMM is a smart idea because there may be challenges with individual heterogeneity that aren't present in this study. But according to Almaqtari et al. (2019), in the event that an instrument has qualities close to a unit root, both variance and the GMM system may be inconsistent. Moreover, Gujarati & Porter (2008) confirmed that adopting panel data analysis contained several advantages. First, it can account for potential heterogeneity. Second, combining cross-sectional and time-series data results in a more accurate estimation. Therefore, the current investigation used the static regression random effect method.

In this study, the panel date approach for variables for the period of 2010 to 2021 was used. The data set with dimensions of time series and cross sections (i.e., $t = 1, \dots, T$ & $i = 1, \dots, N$) is referred to as a panel data set, and the total number of observations stands at ($i \times t = 120$). Moreover, according to publications from 2008, equation one specifies the overall structure of a panel data regression.

$$y_{it} = \alpha_i + \beta_j X_{it} + \varepsilon_{it} \quad (i = 1, 2, \dots, N; t = 1, 2, \dots, T) \quad (I)$$

In the above equation the y_t act as a dependent factor (profitability), α_i is the intercept; β_i is the coefficients which will be estimated; is the set of bank-specific and macroeconomic determinants), ε_{it} shows the level of error. For examining the impact bank-specific and macroeconomic factors had on the commercial banking sector's performance in Afghanistan, as seen in the equation below, equation one was expanded to include both external and internal variables.

$$ROA_{it} = \alpha_0 + a_1(Liq)_{it} + a_2(Dep)_{it} + a_3(Ass_M)_{it} + a_4(BRNCH)_{it} + a_5(ATMs)_{it} + a_6(GDP Growth)_{it} + a_7(Interest)_{it} + a_8(Inf)_{it} + a_9(Exch)_{it} + a_{10}(TAXR)_{it} + a_{11}(INDG)_{it} + \varepsilon_{it} \quad (II)$$

In the current investigation, the random effect model is used to evaluate the impact of determinants. The Multicollinearity (VIF) assessment is also applied to check the Multicollinearity among the dynamics. Furthermore, Hausman tests were also applied to define the most efficient model among them.

3.3 Statistics on data description

Table 3 displays descriptive statistics for this study's variables. It shows the mean, minimum, maximum, standard deviation, and the cumulative total of observations for the current study. The outcome of the test revealed a 0.046 mean for ROA, while the minimum value was -0.147, the maximum was 0.088, and the standard deviation was 0.024 for bank return on assets. Furthermore, the outcome indicates that for bank-specific factors such as liquidity, deposit ratio, asset management, and the number of bank's branches and ATMs, the average values are 0.25, 0.82, 0.06, 38.65, and 0.59, with standard deviations of 0.18, 0.14, 0.07, 20.77, and 0.69, respectively. while for external variables, the mean values for inflation rate, interest rate, GDP, taxes, currency exchange rate, and industry growth rate are 0.05, 0.12, 0.025, 0.16, 63.02, and 0.005, with a standard deviation of 0.03, 0.05, 0.07, 0.08, 11.49, and 0.01 correspondingly.

Table 3. Descriptive Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
Dependent variable					
ROA	120	0.0046	0.0239	-0.1467	0.0879
Bank specific independent variables					

LIQ	120	0.258	0.1829	0	0.8775
DEP	120	0.8183	0.1424	0.11	1.1566
AM	120	0.063	0.0689	0.0044	0.5129
BRNCH	120	38.6583	20.7792	8	82
ATMS	120	0.598	0.6981	0.1026	4.3
Macro-economic independent variables					
INFR	120	0.048	0.033	-0.007	0.118
INTRT	120	0.1169	0.0466	-0.012	0.176
GDP	120	0.025	0.0707	-0.15	0.1436
TAXES	120	0.1567	0.0827	0	0.2
EXCH	120	63.022	11.495	45	77.74
INDG	120	0.0057	0.0101	0	0.0381

Source: Output of Stata -14 Econometric software

3.4 Correlation matrixes

Table 4 shows the relationships between all dependent and autonomous determinants. The outcome shows a positive relationship between liquidity and the return on assets of the financial institution, which are aligned with the studies of Almaqtari et al. (2018) and Shrestha et al. (2020), while the ratio of deposits displays a negative association with the return on assets of the financial institution, which is consistent with Al-Homaidi, E. A. et al. (2020). Moreover, asset management displays a positive connection with the performance of the sector, while banks' numbers of branches and ATMs show negative relationships with ROA. Regarding macroeconomic variables and industrial variables, inflation rate and GDP show negative relations with ROA, and the interest rate, exchange rate, taxes, and industry growth rate show positive relations with ROA.

Table 4. Correlation Matrix Analysis

Variables	ROA	LIQ	DEP	AM	BRNCH	ATMS	INFR	INTRT	GDP	TAXES	EXCH	INDG
ROA	1.0000											
LIQ	0.0493	1.0000										
DEP	-0.2676	0.3147	1.0000									
AM	0.0403	0.2322	-0.0602	1.0000								
BRNCH	-0.0812	0.2178	0.0114	0.0275	1.0000							
ATMS	-0.0040	0.2355	0.1989	0.1268	0.0352	1.0000						
INFR	-0.0004	0.1012	0.0355	0.3910	0.0452	0.0569	1.0000					
INTRT	0.1990	0.2407	0.0195	0.4720	0.0682	0.2288	0.6313	1.0000				
GDP	-0.1948	0.1952	0.0849	0.0797	0.0384	0.3097	0.2561	-0.2235	1.0000			
TAXES	0.6053	0.0483	-0.3275	0.0091	0.0128	0.0362	0.0904	0.0425	-0.0032	1.0000		
EXCH	0.1840	0.3431	0.1083	0.2418	0.0785	0.3902	0.2568	0.6629	0.6572	0.0824	1.0000	
INDG	0.0964	-0.4357	0.0794	0.0733	0.2776	0.2666	0.0096	-0.0071	0.0131	0.0082	0.0119	1.0000

Source: Output from Stata -14

3.5 Multicollinearity diagnostics

Table 5. shows the result of the multicollinearity test among the variables. This variance in inflation assessment was conducted to identify the multicollinearity between all factors. According to this test, the value of each variable should be (greater than one) and (less than 10). If the value of the variables is more than 10, this reveals that there is no multicollinearity among the variables. As shown in the below table, the values of all variables such as the rate of exchange, interest rate, GDP, inflation rate, rate of industry

growth, taxes, liquidity, number of bank ATMs, deposit ratio, number of bank branches, and asset management are greater than one and less than 10, which is a good sign and shows no sign of multicollinearity between the determinants. Furthermore, based on the small value of the variance, the inflation factor shows a weak correlation among variables. But, by keeping in view the mean value of the variance inflation factor, which is 2.07, we see a low correlation among variables.

Table 5. Multicollinearity Test

Variable	VIF	1/VIF
EXCH	4.06	0.246082
INTRT	3.33	0.300219
GDP	2.84	0.351523
INFR	2.45	0.408055
LIQ	1.81	0.553081
INDG	1.6	0.625874
ATMS	1.54	0.647939
DEP	1.42	0.70285
AM	1.42	0.704441
TAXES	1.2	0.835902
BRNCH	1.13	0.885034
Mean VIF	2.07	

Source: Output of Stata -14

Furthermore, the heteroscedasticity test was conducted in order to examine the heteroscedasticity between variables. The result shown below for the probability value is less than 0.05 percent, which is a good sign and reveals that there is heteroscedasticity among variables. Moreover, according to the P value, we can throw away the null assumption.

Table 6. Test for Heteroscedasticity

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity	
Ho: Constant variance	Variables: fitted values of RoA
chi2(1) = 31.23	Prob > chi2 = 0.0000

Source: Output of Stata -14

4. Model estimation and results

The random effect regression model (REM) has been conducted to achieve the goal of current research by evaluating its hypotheses. for choosing the most appropriate model between the FE and RE Hausman tests. The result of the test demonstrates the superiority of RE over FE, as the P-value of the Hausman test is 0.9047, which is greater than 5%. In a random effect regression model (ROA), R is considered a dependent variable. The result shows a positive but insignificant effect of liquidity and asset management on bank profitability. whereas the deposit ratio, number of bank branches, and number of ATMs have a negligible negative impact on bank profitability. On the other hand, the inflation rate and exchange rate have a negligible negative impact on bank success, whereas GDP has a significant negative impact. In addition, bank success is significantly influenced by taxes and industry growth rates. According to the findings, the study's second hypothesis was rejected, but the first and third hypotheses were accepted: that the state industry growth rate has a positive and significant impact on

bank profitability. Furthermore, the multicollinearity (VIF) test and modified Wald tests were used to check for multicollinearity among all variables. A test for group-wise heteroscedasticity has been conducted based on the P-value, which is 0.000; the null hypothesis was rejected. These tests are used to determine the appropriateness of the model. The values of R² reveal that autonomous determinants express 49% of the dependent variable of ROA, an outcome supported by Almaqtari et al. (2019). which declares that 49% is also good but not too much. Furthermore, the outcome of the F-value reveals that the current model is more appropriate with a value of 102.09 and a P-value of 0.000.

Table 7. Result of Random Effect Model

Independent Variables	Coefficient	P-Value
Liq	0.011398	0.357
Dep	-0.00775	0.088
Am	0.045048	0.112
Brnch	-0.000168**	0.064
ATMs	-0.000553	0.855
Infra	-0.043173	0.577
Int	0.151343**	0.018
GDP	-0.095607***	0.004
Taxes	0.171306***	0
Exch	-0.000395	0.17
Indg	0.451353**	0.035
Constant	-0.005768	
R ²	0.4567	
Adjusted R ²	0.4914	
No. of Obs.	120	
F-Value	9.49***	
Probe > chi ²	0	
Number of Banks	10	
	P-Value	
Hausman Test	0.9047	
Wald chi2 test	102.09	

*** P<0.01, ** P<0.05 & *P<0.1 indicates significance at 1,5 and 10% levels respectively.

Source: Output of Stata -14

4.2 Discussions

This study was carried out to explore the influence of bank-specific and macroeconomic determinants and their relations with bank performance that are affecting the bank's profitability for a total of ten commercial banks in Afghanistan from 2010 to 2021. For the measurement of banks' performance, the proxy of ROA. Each significant factor's impact and relationship with respect to internal (bank-specific) and external (macroeconomic) elements were explored. The findings of this study on internal factors revealed that the success of commercial banks in Afghanistan was positively affected by liquidity and asset management. The finding was emphasized in many previous studies (Shrestha, 2020; Al-Homaidi et al., 2020; Masood, Yahya, et al., 2017; Ashraf & Ashraf, 2012). However, the results contradict some other studies (Rani & Zergaw, 2017; Naderi, 2021) that found a negative impact of liquidity on bank profitability. Furthermore, the

deposit ratio has a significant negative impact on the profitability of Afghanistan's commercial banks. This relationship is significant to bank decision-makers since it shows that more deposits always don't mean more profit unless they are invested in or transferred to investors. This significant negative impact of the deposit ratio was also found in studies by Allamy, K. K., 2020, and Al-Homaidi, E. A., 2020. However, the results contradict some other studies (Yahya et al., 2017; Tarawneh, 2006; Gul et al., 2011; and Naeem et al., 2017). On the other hand, the finding shows a negative impact of the number of bank branches and ATMs on bank success, emphasizing that a bank with a greater number of branches and ATMs earns less than banks that have a lower number of branches and ATMs. These outcomes are consistent with several studies (Sathye & Sathye, 2016; Al-Homaidi, 2018). However, the consequences contradicted some other studies (Almaqtari et al., 2018; Akhisar et al., 2015; Le, T. D., & Ngo, T. 2020). Second, the external factors of inflation, GDP, and the exchange rate had a negative impact on the profitability of Afghan financial institutions. This outcome is backed by many other studies (Al-Homaidi, 2018; Naderi, 2021; and Al-Homaidi et al., 2020). Furthermore, when the interest rate was considered, it showed a significant positive impact on bank profitability which is consistent with the findings of Naderi (2021). Considering the result of taxes reveals a positive influence on bank success in the random effect, and the result is also supported by Rani (2017). However, the outcomes are contrary to many other studies (Knut & Huizinga, 1999; Albertazzi & Gambacorta, 2010). Finally, the industry growth rate showed a positive effect on bank success. This outcome is in line with the last hypothesis of the study, which stated that there is a positive and significant relationship between industry growth rate and bank profitability. Owoputi et al. (2014) agree with this finding. The result was significant in the random effect model. Overall, for analysis, the random effect model of regression was used to identify and analyze the influence of both bank-specific determinants and macroeconomic factors affecting the bank's success (ROA). The outcome derived from this regression, considering ROA as the dependent variable, has low descriptive ratios (R-Square Value) and a low variance outcome for autonomous variables by variance level of significance. Based on the outcome of this practical research, investigation, and acquired knowledge, it has been recognized that certain factors are connected and affect the success of the banking sector in Afghanistan. Thus, this study paper is good guidance and a roadmap for future action for the development of performance in the banking segment of this country. Furthermore, this outcome may be useful to regulatory policymakers, bank owners, bank management, investors interested in investing in Afghanistan's banking sector, and researchers interested in researching this sector.

5. Conclusion

The banking sector in Afghanistan has experienced profound changes over the last many years. The improvement of financial institution service and its modernization has been inspired by waves of openness in local economies, changes to the regulatory system, the unavailability of proper bank policies and procedures, changes in technology, the instability of the political situation on one side, and the instability of the general economy on the other side. They have all had an impact on the performance of Afghanistan's commercial banks. Therefore, the main goal of this research paper was to examine and evaluate the impact of those bank-specific determinants and macroeconomic factors that are affecting the performance of commercial banks for the period of 2010 through 2021 in the context of Afghanistan. In this research paper, a panel data set of ten local commercial banks are used. The findings of this study uncovered the fact that the performance of financial institutions in Afghanistan is positively influenced by liquidity and asset management while negatively influenced by deposit

ratio, number of branches, and ATMs. On the other hand, for the macro-economic variables, the result shows that the profitability of banks was negatively influenced by the inflation rate, gross domestic product, and exchange rate during the aforementioned period while being positively impacted by the interest rate, taxes, and industry growth rate, and these findings were supported by many previous researchers as noted in subsections of 4.5. We can derive direct policy implications based on these findings. First, bank assets and customer deposits should be managed efficiently and effectively on a daily basis in business and operations. Secondly, bankers should draft policies to invest in short-term liquid assets associated with low risk. Thirdly, the bank should decide and draft policies to decrease the number of branches and ATMs in the current situation. Finally, banks must draft policies and concentrate on the industry growth rate. Because the banking sector is a growing industry, policymakers must consider the other external dynamics affecting the performance of commercial banks.

5.2 Recommendations

Keeping in view the findings of this study, both bank-specific and macroeconomic factors that explain the performance of commercial banks in Afghanistan in a good way are highlighted in this research paper. Therefore, it is recommended for bank founders, boards of directors, managers, and other involved parties to frame a clear and constant strategy and policies aligned with both bank-specific and macroeconomic determinants of banks' profitability to enhance the performance of the Afghan financial sectors. Liquidity and asset management are two factors that have a positive impact on a bank's profitability. As a result, bankers should draft policies to invest in short-term liquid assets associated with low risk rather than long-term assets associated with high risk, saving banks money while meeting their liquidity needs. In addition, assets should be managed efficiently and effectively on a day-to-day basis. Weak and ineffective supervision significantly reduces commercial banks' productivity and revenue. Finally, policymakers must consider the external dynamics affecting the performance and profitability of commercial banks while making new policies.

5.3 Policy implication of the research

This study fills gaps in the literature by conducting new empirical research on the impact of internal and external bank determinants on the profitability of financial institutions ("banks") in Afghanistan. Moreover, the outcome of this research paper contributes significantly to previous and current studies by systematically investigating and screening the present state of commercial banks' profitability. Furthermore, the measurement of tax impact, the number of bank branches, ATMs, and industry growth rate on commercial banks' profitability in Afghanistan is a unique point in this research paper. The outcomes of this research paper suggest many policy suggestions. First, potential shareholders and investors can determine whether it is still profitable to invest in or buy shares of the banking sector in the current situation or not. Secondly, the findings of this study help the bank founders, board of directors, and managers who are at the decision level to decide regarding change or revision of their strategic plan regarding the expansion of their business and the success of financial institutions in Afghanistan by recognizing the dynamics affecting accomplishment and success in these institutions in Afghanistan. Furthermore, by considering the key factors affecting the success of financial institutions, the current governing bodies of each bank can decide and easily find the most efficient way to manage both sides of transactions in a bank. to allocate resources in the most efficient and effective manner in order to improve bank

performance and maximize profit. As a result, it also assists both the governance body and investors in developing some rules and strategies in the following areas of financial institutions: liquidity, asset organization, deposits, bank branch number, and ATMs. Thirdly, bankers should decide and draft policies to decrease the number of branches and ATMs in the current situation. This will decrease banks' both operating and non-operating expenses for the time being due to restrictions on banking service activities by the United Nations and US Treasury and will increase their profitability. Finally, while making policies and procedures, the current economic situation of the country, including monetary policy, taxation law, and macroeconomic dynamics, should be considered. External factors such as interest rates, GDP, taxes, and industry growth rate also had a significant impact on the performance of Afghanistan's banking industry. Therefore, banks must draft policies and concentrate on the industry's growth rate.

5.4 Limitations of the study and future scope

Every study has its own limitations. As there will be no study that is complete and perfect, this study also has limitations and omitted a number of important determinants that may significantly affect any company's financial performance, particularly that of commercial banks. such as marked development, diversification, political factor, the number of bank POS machines, technological factors, and legal factors. Therefore, future researchers should consider the mentioned variables in future studies. In this research, just a few external and internal elements were evaluated that impacted the profitability of commercial banks. While future researchers are encouraged to consider many other factors, especially political, technological, legal, other macroeconomic factors, and industrial dynamics that influence profitability in the banking sector and find their relationship with the financial performance of banks in Afghanistan.

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