Advance Journal of Econometrics and Finance
Vol-4, Issue-1, 2026

Advance Journal of Econometrics and Finance

Online ISSN
2959-8990
Print ISSN
2959-8982
https://ajeaf.com/index.php/Journal/About s://ajeaf.

Name of Publisher: SCHOLAR CRAFT EDUCATION & RESEARCH HUB

Review Type: Double Blind Peer Review

Jurnal Frequency: Quarterly Research Journal

Effect of Income Diversification on Financial Performance with Moderating Role of Financial Stability: Evidence from Commercial Banks in Afghanistan Using the CAMEL-DEA Approach

Ishaq Safi[1], Dr. Mehboob Ur Rasheed[2], Dr. Hamid Ullah[3]

Ishaq Safi
PhD Scholar, IMS, UOP

Dr. Mehboob Ur Rasheed
Assistant Professor, IMS, UOP

Dr. Hamid Ullah
Assistant Professor, ICP

Abstract

This study aims to analyze the impact of income diversification on the financial performance with the moderating role of financial stability of commercial banks (CBs) in Afghanistan. Currently, there is no empirical evidence related to this topic in Afghanistan. This study analyzes data from eight CBs covering the period from 2015 to 2024. The data were collected from the official websites of the respective banks. For the analysis, the author has employed panel data regression analysis techniques, including the Fixed Effects Model (FEM), Random Effects Model (REM), and Pooled Ordinary Least Squares (OLS) model. For the measurement of financial performance, the study used the capital adequacy, assets quality, management quality, earnings, and liquidity (CAMEL) framework, and for the measurement of income diversification, the study used the Herfindahl-Hirschman Index (HHI). For measuring FS, the author used the Z-score. The study concludes and confirms that income diversification significantly improves the financial performance of Afghan CBs and have a significant relationship. Furthermore, financial stability as a moderating variable improves the impact of income diversification on financial performance, and found to be positive and significant. The findings back up portfolio theory and say that for the purpose of improving financial performance and maintaining risk the most important factor to consider is income diversification. This study is significant for a number of reasons. For one, the examination of income diversification in conjunction with stability as a moderating variable is the first study of its kind in Afghanistan. This study results are of the practical value to customers in improving their trust, investors for their investment in non interest based activities, bank managers for focusing more on managing the non interest activities, policymakers for making relevant policies to support non interest based activities, and other stakeholders for believing on banks in Afghanistan.

Keywords: Income diversification, financial performance, moderating analysis, financial stability, control variables, tangibility, leverage, bank size, Afghanistan, commercial banks, panel data.

Introduction

Using both regional and global studies, particularly those focusing on fragile and post-conflict economies, the author established the research's conceptual foundations and theoretical framework, based on Modern Portfolio Theory. A number of studies have examined the influence of income diversification on the financial performance of commercial banks (CBs). Within the Modern Portfolio Theory (MPT) framework, financial stability is an essential precondition for the MPT assumptions, and the efficacy of the diversifications may be limited if financial stability is lacking (Huu Vu & Thanh Ngo, 2023). While banks may implement income diversification in an attempt to mitigate the negative impacts of shocks to their core products and services, it is advised that the growth of non-interest services and products be restricted in relation to the core traditional services and products (Muhammad Faruq Abdulhakim et al., 2024). The relationship between income diversification and financial performance of banks is a very controversial subject in all professional and academic circles. Some authors point out that income diversification positively impacts banks' financial performance. Income diversification is a means of stabilizing income and mitigating the risk, and it is, therefore, a good measure for enhancing the financial health and profitability of commercial banks (CBs). In particular, CBs experience a significantly positive impact on their financial performance from fees and commissions, dividend income, income from trading foreign currencies, and revenue from transactions. These elements not only enhance a bank's revenue but also diminish its risk exposure. This perspective is supported by studies from (Ambawani & Muharrami, 2025; Ashraf & Nazir, 2023; Getinet et al., 2025; Lasmawati et al., 2024; Malik et al., 2025; Muriuki & Musau, 2024; Nhat & Mai Anh, 2024; Setiadi & Danarsari, 2024; Sharma & Anand, 2018; Singh & Singh, 2024; Thakur & Arora, 2024; Waweru et al., 2025). Githaiga et al., (2019) in Kenya a regression analysis using panel data was conducted. The hypothesis of the study was analyzed using a regression model. For financial performance, the Return on Assets (ROA) technique was used, while the Herfindahl-Hirschman Index (HHI) was used for income diversification. The study conducted a review of 31 commercial banks (CBs) from the year 2008 to 2017 and established a positive relationship, which shows that banks minimize the revenue volatility and improve financial performance through income-generating activities other than interest-based activities. Ndungu & Muturi (2019) in Kenya the study was guided by Winton's hypothesis of the non-linear diversification effect, agency theory, and portfolio theory. Secondary data for the years 2013 to 2017 was collected, and five years' data analysis was carried out. For the analysis of data, descriptive and inferential statistics were used, and results showed a positive correlation, which indicated that income diversification exerts a positive influence on financial performance. In an effort to lower the risks associated with portfolios and to increase the profits that can be earned, banks have started using income diversification strategies.

Ndungu & Muturi, (2019); Widyarti & Sari, (2022) stated that the objective of the research is, how income diversification impacts financial performance. Research utilized the variables of the Modern Portfolio and 2020-2021 as the time frame. The primary methods of analysis were multiple linear regression and moderated regression analysis. A purposive sampling method was employed to select a sample of 70 participants in Indonesia. The research showed a positive relationship where investors and companies are assumed to implement diversification strategies in order to maximize their returns and improve their performance. On the other hand, there is a school of thought that holds the belief that revenue diversification is both negatively and significantly related to the performance of banks. The primary reason for this is that the costs associated with that particular activity tend to be greater, and the diversification of income streams can potentially increase the risk of loss to the banks. This view is supported by research from (CRUZ et al., 2025; Githaiga, 2023; Muhammad Faruq Abdulhakim et al., 2024; Samo & Siddiqui, 2024; Setiadi & Danarsari, 2024; Thomas Jordan & Haninun, 2025). Muhammad Faruq Abdulhakim et al., (2024) in South Korea a research is theoretically based on Modern Portfolio Theory (MPT). The researcher used the panel data regression method on the data obtained from the Bank of Korea (BoK) for the years 2015 to 2022. The results of the regression analysis indicated that the income diversification of South Korean banks has a negative impact on the performance of the banks. More specifically, income diversification, which is regarded as a source of profitability, is associated with a substantial decline in banks' financial performance due to the costs it entails, such as employee training expenses. The negative impacts of income diversification on the essential banking activities can be lessened by recommending that the banks keep the activities that generate non-interest income to a lower level as compared to the primary banking products and services. These findings indicate that income diversification has some value but is also accompanied by a number of drawbacks (Muhammad Faruq Abdulhakim et al., 2024). CRUZ et al., (2025) The sample for the research consisted of 16 representative Brazilian banks of the National Financial System (SFN), which have 8 state banks and 8 private banks. The research covered the years 2012 to 2021, and the portfolio theory guided the research. The analysis was performed using a balanced panel and multiple linear regression model, with fixed effects for time and entity. Diversification of income was included in the analysis. Findings show that there is no meaningful relationship between banks' income diversification and profitability or risk. Indicating that greater diversification could most probably result in negative outcomes for banks (CRUZ et al., 2025). Baek et al., (2016) See this study of Korean banks. The results show that an increase in non-interest revenue is accompanied by an increase in non-interest expenses, thus neutralizing the effect of income diversification on the performance of the bank. These results show that Korean banks should not overly rely on non-interest income and income diversification as a performance strategy (Baek et al., 2016). (Rossi et al., 2020) examine whether the diversification of income results in improved stability or performance using various measures of risk and return for a set of banks in the US and the EU for the years 2008 to 2016. A number of different methods are used to complete the analysis, including static panel regressions, dynamic fixed-effects panel models, OLS regressions, and the Herfindahl-Hirschman (HH) index of net operating income. There appears to be no discernible relationship between performance, volatility, and diversification. Also, the authors note that banks in the U.S. respond differently from banks in the E.U. Non-traditional income does not make a significant contribution to the nominal or to the performance measure in a European bank adjusted for risk, while in the U.S. it does contribute to the performance measure and volatility adjusted for risk. There are also significant differences between large banks and small banks. Finally, it is shown that the diversification strategies employed by banks are, for the performance of the bank, of greater importance than the overall diversification in revenue for banks in the same line of business (Rossi et al., 2020).

Earlier studies have not examined the impact of income diversification on financial performance comprehensively, and the results have been both positive and negative, so the literature available is mixed and inconclusive (Wiryawan, 2024). In the case of income diversification and bank performance, the literature is rich but inconsistent in developing or industrialized markets (Bustaman et al., 2025). Muhammad Faruq Abdulhakim et al., (2024) Earlier studies have been inconsistent, both with the available empirical evidence and the identified gaps in the literature. The impact of income diversification on banks remains unclear. Given the inconsistent findings, limited generalizability, and methodological constraints that undermine the overall conclusiveness of existing research, as well as the mixed results reported in studies conducted outside Afghanistan, it is essential to systematically examine the impact of income diversification on the financial performance of commercial banks in Afghanistan. Such an analysis can provide more relevant, context-specific, and practically applicable insights for the Afghan banking sector (Githaiga, 2023). Muhammad Faruq Abdulhakim et al., (2024) study findings suggest that the execution of income diversification has some weaknesses. Negative findings were observed in relation to return on assets and non-traditional income. Moreover, the interest and non-interest revenue ratio and ROE were found to be unrelated (Andrzejuk, 2019). According to Malik et al., (2025), a sample of 33 scheduled banks of Pakistan and their financial data for years 2007-2021 were used. The researcher used GMM and panel data for analysis. The income diversification positively affects ROA and ROE. This means that banks that have different sources of revenue are more efficient and more resilient to financial shocks. Balanced revenue diversification can help prevent income instability and mitigate financial risk. The findings also show that diversification, especially service revenue, positively affects banks' financial performance, while an increase of market risk negatively affects banks. Malik et al., (2025), Non-interest income made stability and improved the overall capacity of banks during financially unstable times. During economically and financially

unstable times, banks made non-lending services their highest income source and obtained outstanding results. A bank that has interest-based revenue as its primary source of income is inefficient. Malik et al., (2025) argue that banks showed greater than 15 percent Return on Investment on equity with non-interest revenue constituting more than 50 percent of the banks' income. Excessive income diversification has been found to be detrimental to the financial performance of banks (Ben Lahouel et al., 2024). Therefore, the relationship of income diversification and financial performance is more dependent on sustaining financial stability. Markowitz's (1952) Modern Portfolio Theory (MPT) postulates that firms can reduce the volatility of their returns and increase their performance by diversifying their income-generating activities through an optimal combination of income-generating activities. The core principle of MPT is diversification, which focuses on the reduction of risk by combining other sources of income. The current research is based on MPT, which is fitting and applicable to the topic at hand. MPT denotes the presence of a positive correlation between performance and diversification; therefore, MPT assists in determining the correlation between income diversification and financial performance of Afghan CBs in relation to the objectives of the study. MPT is flexible in almost any environment, particularly in a financially unstable and high-risk environment such as Afghanistan.

H_1: Income diversification of CBs has a positive influence on their financial performance.

H_1: Financial stability has a significant influence on the relationship between income diversification and commercial banks' financial performance.

Conceptual framework

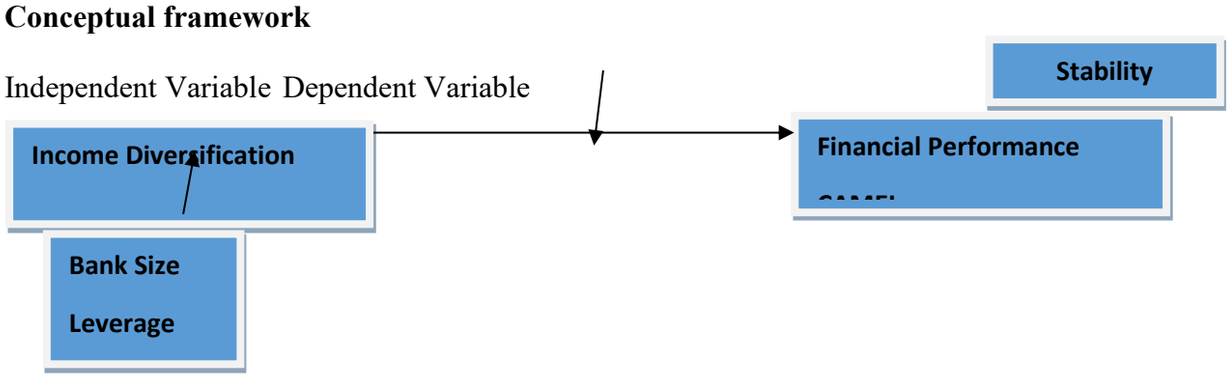

Figure 1

Methodology and data

For this study, a quantitative research design was employed, utilizing financial data obtained from the official websites of commercial banks in Afghanistan. The research used secondary panel data (time-series data with cross-sectional data) covering eight commercial banks (CBs) over a certain period. The websites provide access to the annual audited financial statements including income statements and balance sheets of the eight registered CBs. Consequently, secondary data were collected, covering a time span of 10 years, based on available data. The period of study was chosen from 2015 to 2024 because it covers the period of regime change in Afghanistan, which was significant to the banking sector. The study examined all 10 CBs that operated in Afghanistan at the time, per the Central Bank of Afghanistan. The eight CBs in the sample account for around 80 percent of the commercial banking industry in Afghanistan. The final data set of the study was constructed from 80 observations for 10 years of data availability of 8 CBs. The dataset was refined by removing institutions that did not complete all years of their audited financial statements and banks that did not have any audited financial reports for some years or had missing reports for some key variables. After cleansing the data, eight Afghan CBs made up the final sample.

Measurement of variables

Income diversification

This study measured the HHI used the same formula as (Addai et al., 2022; Baek et al., 2016; Muhammad Faruq Abdulhakim et al., 2024).

$$HHI = 1 - \left[\left(\frac{Non - Tradional\ income}{Operating\ income}\right)^2 + \left(\frac{Traditional\ income}{Operating\ income}\right)^2\right.$$

Thus, one minus HHI indicates bank diversification, where complete diversification is shown with a result of 1 and no diversification with a result of 0 (Hoang et al., 2020). Nontraditional income ranges from 0 to 1 (Adem, 2023). A bank is more concentrated if it scores 0 for HHI, which means it purely offers its core product and all its revenue comes from one single source. If a bank's HHI is 0.5, it is considered half diversified (Mahali & Ansari, 2024). Higher HHI values would indicate more diversified bank revenue and lower values the opposite (Alhassan, 2015; Bustaman et al., 2025; Nguyen & Cao, 2022; Rehman & Abbas, 2025; Widyarti & Sari, 2022).

Financial performance measurement

In this research, financial performance is the dependent variable, and the CAMEL technique is the performance measurement tool, as per (Huda et al., 2023). The CAMEL technique comprises five constituents and is a multi-criteria technique to measure financial performance (Afroj, 2022). One constituent is encapsulated in the capital strength, which is gauged by the capital adequacy ratio (CAR) as a ratio of the regulatory capital to the risk-weighted assets, while the study used a Tier 1 ratio of capital to risk-weighted assets (Afroj, 2022) that originates from the equity, capital reserve, and retained earnings). The risk weight is created from the three core components of the financial system: investments, loans, and cash. The risk weight for capital adequacy was taken from The Afghanistan Bank (Central Bank) Capital Adequacy Regulations, "Article 9 Risk Categories, Risk Weights for Assets and Off-Balance Sheet Items" in accordance with Basel III, which classifies 0% as a risk for cash in Afghani, 20% for a balance with other banks, and 100% for a loan and investment (www.dab.gov.af 2025).

Stability measurement

This study utilizes the Z-score as a banking stability metric. This method is established in prior works (Chowdhury et al., 2024; Huda et al., 2023; Stiroh, 2002). A higher Z-score indicates greater stability and a lower overall risk, and as return volatility increases, bank stability decreases. The Z-score is calculated as follows: (Adem, 2023; Albaity et al., 2019; Hoang et al., 2020).

$$Z - Score = \frac{ROA + \frac{TE}{TA}}{\sigma ROA}$$

The Z Score, which adds stability, considers ROA as return on assets, TE/TA as total equity to total assets, and the standard deviation of return on assets.

Bank size measurement

For this study, the bank size was calculated as the natural logarithm of total assets for the purpose of reducing skewness and normalizing the data (Getinet et al., 2024; Githaiga et al., 2019; Gürbüz, Yanik, et al., 2013; Ochenge, 2022).

1. Natural logarithm (ln) of total assets

Log of total assets = ln (Total Assets)

Used base e ≈ 2.718 this base is commonly used in regression models and econometrics.

Leverage

In this study leverage is measured as (Debt/Total assets) and Debt = Total Assets – Equity.

$$Leverage = \frac{Debt}{Total\ Assets}$$

$$Debt = Total\ assets - equity$$

Including a leverage variable being controlled helps consider the effect of capital structure and capital adequacy on the study's dependent variable regression models and econometrics (Iqbal et al., 2014; Samo & Siddiqui, 2024).

Tangibility

Asset tangibility and financial leverage significantly enhance financial performance (İLtaş & DemiRgüneş, 2020). For this study, tangibility is assessed as fixed assets over total assets (Fixed Assets/Total Assets).

$$Tangibility = \frac{Fixed\ Assets}{Toatal\ Assets}$$

Empirical model specification

The current research examines the causal relationship between banks' financial performance and income diversification. The equation for multiple regression used to analyze the relationship of the variables is presented as follows (Githaiga et al., 2019). This model for the study was based on previous work (Githaiga et al., 2019). The general from of regression model can be specified as follows:

$FP_{it} = \beta_0 + \beta_1 ID_{it} + \epsilon_{it}$ ……1

Including Moderators

$FP_{it} = \beta_0 + \beta_1 ID_{it} + \beta_2 ST_{it} + \epsilon_{it}$ ……2

Including Control Variables

$FP_{it} = \beta_0 + \beta_1 ID_{it} + \beta_2 BSize_{it} + \beta_3 Leve_{it} + \beta_4 Tang_{it} + \epsilon_{it}$ ……3

$FP_{it} = \beta_0 + \beta_1 ID_{it} + \beta_2 ST_{it} + \beta_3 (ID_i \times ST_i) + \epsilon_{it}$ ……4

Where:

FP_{it} represents the financial performance of bank i at period t.

ID_{it} represent the income diversification for bank i at period t.

ST_{it} represents the stability for bank i at period t.

$BSize_{it}$ represent bank size for bank i at period t.

$Leve_{it}$ represent leverage for bank i at period t.

$Tang_{it}$ represent tangibility for bank i at period t.

β_0 represent intercept.

β_1, β_2…, β_4 represent regression coefficients for the independent and moderating variables.

ϵit represents the error term.

Moderation Models for Panel Data Regression

1. The Baseline/Main Model (Without Moderators)

$$FP_{it} = a + \beta_1 ID_{it} + \gamma_1\, size_{it} + \gamma_2\, Leverage_{it} + \gamma_3\, tangibility_{it} + \mu_{it} + \epsilon_{it}$$

2. Moderator Stability Included

$$FP_{it} = a + \beta_1 ID_{it} + \beta_2 ST_{it} + \beta_3 (ID_{it} \times ST_{it}) + \gamma_1\, size_{it} + \gamma_2\, Leverage_{it} + \gamma_3\, tangibility_{it} + \mu_{it} + \epsilon_{it}$$

Where

β_1 shows the income diversification's primary impact on financial performance.

β_2 shows direct influence of stability.

β_3 shows moderation effects (interaction terms).

γ coefficients – shows control variable impact.

If β_3 is significant it means that there is moderation

Empirical results

Table 1 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Financial Performance	80	39.1	5.307	27	50
Income Diversification	80	.752	.128	.43	1
Financial Stability	80	5.499	2.202	1.83	14.23
Size	80	8.077	1.377	6.915	10.668
Leverage	80	.868	.053	.658	.955
Tangibility	80	.034	.015	.005	.073

Source: Researcher Analysis

The financial performance variable has recorded a mean of 39.1 (SD = 5.31), proposing considerable consistency among banks. The minimum recorded score is 27, while the maximum is 50. This shows that some banks perform considerably better than the rest in the given financial performance results. The mean of the income diversification was 0.75 (SD = 0.13), ranging from 0.43 to 1.00. This shows that although some variation exists within the sample, banks tend to possess a considerably high level of income diversification. Stability has an average of 5.50 with a standard deviation that is comparably high (2.20) to the average, ranging between 1.83 and 14.23. Such a wide range shows some banks have far greater financial stability than others, pointing towards varying levels of resilience and risk management within the industry. Lastly, the descriptive statistics show that while the sample banks have similarities in terms of leverage and tangibility, their stability and financial performance differ greatly in a relative sense.

Table 2 Pairwise Correlation

Variables	(1)	(2)	(3)	(4)	(5)	(8)
(1) Financial Performance	1.000					
(2) Income Diversification	0.517	1.000				
	(0.000)					
(3) Financial Stability	-0.110	0.024	1.000			
	(0.330)	(0.836)				
(4) size	-0.222	-0.083	0.236	1.000		
	(0.047)	(0.464)	(0.035)			
(5) leverage	0.103	-0.028	-1.000	-0.234	1.000	
	(0.361)	(0.807)	(0.000)	(0.037)		
(6) tangibility	0.004	0.071	-0.030	0.211	0.031	1.000
	(0.974)	(0.532)	(0.789)	(0.061)	(0.786)	

Source: Researcher Analysis

With regard to financial performance and income diversification (ID), the correlation of 0.517 and $p < 0.01$ signifies that financial performance is "positively and significantly correlated" with income diversification. This indicates that, in general, the financial performance of banks is better when income diversification is greater. These results align with (Rossi et al., 2020; Widyarti & Sari, 2022) who state that income diversification is positively correlated with the financial performance and claim that income diversification strategies enhance performance, and financial performance is negatively and significantly correlated with the size of the banks. The correlation of financial performance and income diversification in relation to leverage and tangibility is weak and statistically insignificant. Income diversification shows no correlation with stability except for one area in which there is strong correlation, which is financial performance, and this strengthens its role as the primary explanatory variable of the study. Stability is positively correlated with bank size ($r = 0.236$, $p < 0.05$), which indicates that large banks that are well managed are likely to have better financial stability. Financial stability is negatively correlated with leverage ($r = –1.000$, $p < 0.01$). This reflects the theoretical expectation that greater debt levels reduce a bank's financial stability. This is the case with the debt ratio. Bank size is 0.236 and shows positive relations with stability, but it was adversely associated with financial performance (-0.222). This shows that larger banks may be more stable, but that does not mean that they are more profitable. Stability, on the other hand, has a near-perfect negative correlation to leverage, which stands at -1.000. The larger the debt ratios, the less stability they have and the larger the bank, as the results suggest. The tangibility ratio does not appear to have a significant relationship with financial performance yet has a very weak positive relationship with the size of the bank at 0.211, which is near the margin. In summary, correlation analysis shows that income diversification has a positive contribution to the bank's financial performance, while leverage works negatively and weakens the performance. The strong negative relationship with stability and leverage also emphasizes the role of capital structure in defining the bank's flexibility.

Multicollinearity Test

For the analysis of the existence of multicollinearity between the independent and control variables involved in the regression model, the VIF examination was implemented.

Table 3. Variance Inflation Factors

	VIF	1/VIF
Size	1.128	.887
Leverage	1.069	.936

Tangibility	1.063	.94
Income Diversification	1.019	.982
Mean VIF	1.07	.

Source: Researcher Analysis

The VIF results showed that all factors in the model, income diversification, size, leverage, and tangibility have VIF factors that are just under 1. The largest VIF is for size (1.128), and the lowest is for income diversification (1.019). The average VIF is 1.07. Since these values are substantially lower than the commonly accepted rule-of-thumb thresholds of 5 and 10 for the Variance Inflation Factor (VIF), there is no evidence of multicollinearity among the variables. Inverse values (1/VIF), which is tolerance, are also close to 1, confirming that there is no significant multicollinearity. This suggests that control variables (size, leverage, and tangibility) and independent variable (income diversification) are not highly correlated with one another. The regression estimates are reliable, and the effect of income diversification on financial performance can be determined with a high degree of certainty. In light of these research aims, the analytic approach enhances the robustness of the regression results. This is to say that the perceived positive effect of income diversification on financial performance is not spurious due to over association with size, leverage, or tangibility. So, the control variables are operating as expected. They account for the banks' structural characteristics without compromising and affecting the precision of the relation and association between income diversification and financial performance.

Heteroscedasticity Diagnostic Test for Financial Performance (Dependent Variable)

In order to assess the homoskedasticity assumption of the regression model predicting financial performance, the Breusch-Pagan / Cook-Weisberg test was used to assess the presence of heteroskedasticity. This test determines whether the error terms of the regression model have constant variance ('homoskedasticity'). The null hypothesis (H_0) states that the error variance is constant (homoskedasticity), and the alternative hypothesis contradicts that by positing heteroskedasticity, which means variance is not constant.

Table 4 Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

Ho: Constant variance	
Variables: fitted values of fp	
chi2(1	3.77
Prob > chi2	0.0521

Source: Researcher Analysis

The test statistic is χ^2 (1) = 3.77 and for the test, it created "a chi-square value" of 3.77 "with a p-value" of 0.0521. The p-value is slightly above the 5% "significance level" and thus, the null hypothesis of constant variance cannot be rejected. Strong evidence of hertoskedasticity is absent in the model, and the errors can be regarded as having constant variance.

4.3.4. Autocorrelation Test

The Wooldridge test was used to determine the presence of first-order autocorrelation in the panel data, where the error terms exhibit temporal correlation.

Table 5 Wooldridge Test for Autocorrelation in Panel Data

H0: "no first-order autocorrelation"	
F(1, 7)	0.073
Prob > F	0.7946

Source: Researcher Analysis

The test showed an F-statistic of 0.073 and a p-value of 0.7946. The p-value is an estimate of the null hypothesis, which would show no 'first-order autocorrelation.' Since the p-value is greater than the thresholds of the 1%, 5%, and 10% significance levels, a high p-value indicates the null hypothesis should be accepted, which states that there is no evidence of first-order autocorrelation in the dataset. The model is free from serial correlation and thus is reliable in regard to the regression outcomes; this means that the data is free from autocorrelation. The study is free to continue the panel data analysis.

2. 4.4. Panel Data Regression Results

This analysis intends to evaluate the proposed hypotheses and achieve the objectives of the research. To this end, the analysis utilized "panel data regression."

Table 6 Pooled OLS Regression Results for the Moderating Effect of Financial Stability on the Relationship between Income Diversification and Financial Performance

Financial Performance	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
ID	8.196	10.786	0.76	.45	-13.334	29.726	
ID_Stability	3.574	1.987	1.80	.077	-.391	7.54	*
Leverage	120.637	64.995	1.86	.068	-9.094	250.369	*
Tangibility	9.586	46.699	0.21	.838	-83.625	102.797	
Size	1.754	1.438	1.22	.227	-1.116	4.623	
Constant	-101.053	55.136	-1.83	.071	-211.104	8.998	*

Mean dependent var	39.100	SD dependent var	5.307
R-squared	0.408	Number of obs	80
F-test	9.244	Prob > F	0.000
Akaike crit. (AIC)	436.818	Bayesian crit. (BIC)	451.110
*** p<.01, ** p<.05, * p<.1			

Source: Researcher Analysis

Regression analysis shows that income diversification is positively related, but insignificantly, to the financial performance of CBs in Afghanistan (coef = 8.196, p = 0.45). This is consistent with Cuong et al., (2020); Giawa et al., (2025) where income diversification shows a positive but statistically insignificant relationship with profitability. The current result shows that income diversification, by itself, shows no significant effect on the financial performance. This result is contrary to Rahman & Abbas, (2025) who posit that income diversification, by itself, enhances banks' performance. Therefore, the first null hypothesis, Ho, of this study can't be rejected. This study proved that financial stability has a moderating influence that is slightly significant at the 10% level of significance with the coef. = 3.574 and p = 0.077. This provides weaker but suggestive proof that financial stability affects moderately or impacts the relationship of income diversification and financial performance. The findings from this study agree with (Chakrabarti et al., 2007) which claims that during economy-wide shock periods, the benefits of diversification are minor, even in the least developed countries (Chakrabarti et al., 2007). However, the current findings contradict with (Baudouin et al., 2025) who claim that despite the fact that diversification is often viewed as a risk-reducing strategy, in some cases, even in banks, it can reduce profitability and overall financial stability negatively. Therefore, the current results are still weak to reject H_0 and support H_1 partially, which means that it is still supporting the second alternative hypothesis at a 10 % level of significance. Therefore, more stable banks may gain more from diversification strategies than less stable banks; these results confirm the (Abigael et al., 2024; Chowdhury et al., 2024; Lamers et al., 2016; Lee & Bustaman, 2024) which settled that stability generates profits for banks and also has a good impact on the overall economic situation, the stability of financial institutions helps to reduce systematic risk and enhance financial performance, which are positive evidences of the Modern portfolio 1952 theory which states that income diversification minimizes risk and increases financial stability. Another study states that bank diversification and financial stability have a quadratic relationship and that diversification helps financial stability both in and after crises (Lia, 2025). The constant, as the negative regression result of this current study shows, is -101.053, and the p-value (p = 0.071) indicates weak significance, suggesting that in the absence of explanatory variables, financial performance would tend to be low. The overall explanatory power of the model is accepted to be reasonably good, with an R^2 of 0.408, which shows that almost 40.8% of the change in financial performance is explained by the variables in the model. The result (p = 0.000) of the F-test further affirms that this model is usable from the statistical perspective. AIC (436.818) and BIC (451.110) indicate good model fit. Alone, the income diversification does not significantly boost performance. The role of financial stability is moderating only weakly and significantly. For performance, leverage is vital while size and tangibility are not. The model accounts for a large proportion (40.8%) of the bank performance variations.

Table 7 Hausman (1978) Specification Test Result

	Coef.
Chi-square test value	2.66
P-value	.752

Source: Researcher Analysis

The test for the REM and FEM decision was implemented. H0 is for REM, while H1 is for FEM. A chi-square value of 2.66 and a p-value of 0.752, with the test output showing the p-value is higher than the rule of thumb 0.05, thus, we fail to reject H_0; hence, the REM is appropriate, efficient, and reliable.

Table 8 The Breusch and Pagan Lagrangian multiplier test for random effects

Model: fp [bid, t] = Xb + u[bid] + e [bid, t]

3. **Estimated Results:**

	Variance (Var)	*SD = sqrt(Var)*
fp	28.16709	5.307268
e	14.14953	3.761586
u	12.6423	3.555601

4. Hypothesis Test: Null hypothesis Var (u) = 0

Chibar² (01)	*17.89*
Prob > chibar²	0.0000

Source: Researcher Analysis

The test was used for that purpose, whether pooled OLS or random effects were more appropriate. The hypotheses output assumes no RE, which means pooled OLS would be suitable. The test outcome has a p-value of 0.0000, which is below the 0.05 rule of thumb, and a chi-bar² of 17.89. Thus, the "null hypothesis or H0 is rejected," indicating that there is considerable RE among the banks and pooled OLS is unsuitable. Therefore, the random effects model has to be used rather than pooled OLS in the case of the relationship of income diversification, stability, and financial performance of the CBs.

Conclusion and policy implications

Given the rising competition and the increased emphasis on performance in the banking industry, this study sought to examine the impact of income diversification in relation to the financial performance of the commercial banks (CBs) from the perspective of the CAMEL framework. The researcher analyzed secondary data from the financial statements of 8 CBs for the period of 2014-2024. The correlation analysis revealed a "positive and significant" relationship between financial performance and income diversification of the commercial banks, with banks having large financial records indicating greater financial success. The study found that income diversification was not significantly associated with stability, whereas a strong association was observed between financial performance and income diversification. The pooled Ordinary Least Squares (OLS) regression results of the moderating impact of financial stabilityon the relationship between income diversification and financial performance revealed that income diversification did not have a significant

impact on the financial performance of commercial banks in Afghanistan. Here, it indicates that an income diversification cannot alter financial performance, and financial stability has a marginally significant moderating effect at the 10% level of significance. Financial stability moderate strengthening of the connection between income diversification and financial performance. Out of the control variables, the leverage is 10% significant and has a positive effect on financial performance. However, the other two, tangibility and size, are insignificant. This indicates that they both did not impact financial performance. This supports the portfolio theory. The results present some policy implications. Policymakers are able to improve the financial stability with useful regulatory policy, credit risk control, and adequate capital requirements. These strengthen the ability of banks. Policymakers can offer guidelines that endorse income diversification strategies while diminishing risk and preservation. Establish guidelines that reduce risks, improve profit, and empower the banks of Afghanistan. Therefore, the findings of this study highlight the importance of non-interest income such as fees, commissions, and trading income, which may provide valuable insights for regulators, as well as highlight the significance of income diversification for commercial banks (CBs). Bank managers should focus on income diversification of a non-traditional nature while keeping the balance between leverage and financial stability to strengthen financial performance. The State Bank of Afghanistan, as policymakers and regulators, should design and execute regulations that motivate CBs to diversify their sources of revenues beyond the conventional, focusing on nonconventional incomes such as income from trading and from fees and commissions. Also, the State Bank should provide instruction on management of risk and maximization of returns to balance the risks and the profitability, aligned with the findings and recommendations of the current research. This study advocates that subsequent research focus on Afghanistan's both privately and publicly owned CBs, as comparing the two types of banks, financial performance and income diversification, is rather a compelling area of study.

References:

Abigael, O., Stephen, C., & Collins, K. (2024). Does Size Matter? Portfolio Diversification and Financial Performance of Commercial Banks in Kenya: Testing the Moderating Effect of Bank Size.

Addai, B., Tang, W., & Agyeman, A. S. (2022). Examining the impact of income diversification on bank performance: Are foreign banks heterogeneous? Journal of Applied Economics, 25(1), 1–21. https://doi.org/10.1080/15140326.2021.2022828

Adem, M. (2023). Impact of income diversification on bank stability: A cross-country analysis. Asian Journal of Accounting Research, 8(2), 133–144. https://doi.org/DOI 10.1108/AJAR-03-2022-0093

Afroj, F. (2022). Financial strength of banking sector in Bangladesh: A CAMEL framework analysis. Asian Journal of Economics and Banking, 6(3), 353–372. https://doi.org/10.1108/AJEB-12-2021-0135

Albaity, M., Mallek, R. S., & Noman, A. H. Md. (2019). Competition and bank stability in the MENA region: The moderating effect of Islamic versus conventional banks. Emerging Markets Review, 38, 310–325. https://doi.org/10.1016/j.ememar.2019.01.003

Alhassan, A. L. (2015). Income diversification and bank efficiency in an emerging market. Managerial Finance, 41(12), 1318–1335. https://doi.org/10.1108/MF-12-2014-0304

Ambawani, F. N. P., & Muharrami, R. S. (2024). Effects of Diversification, Bank Size and Bank Competition on Profitability of Islamic Banks.

Andrzejuk, K. (2019). Non-Interest Income and Profitability in. Private Banking. https://doi.org/DOI: 10.17951/ijsr.2017.6.175

Anis, W., Qamer, H., & Khan, Dr. M. A. (2022). Impact of Banks Specific Risk on the on the Banks Financial Stability and Profitability with Moderating Role of Corporate Social Responsibility Index in Pakistan. 1 Issue No: 2 (2022).

Ashraf, Y., & Nazir, M. S. (2023). Income diversification and bank performance: An evidence from emerging economy of Pakistan. Journal of Economic and Administrative Sciences. https://doi.org/10.1108/JEAS-05-2023-0119

Baek, S., Lee, K. Y., Lee, J., & Mohanty, S. K. (2016). Diversification in Korean Banking Business: Is Noninterest Income a Financial Savior? SSRN Electronic Journal. https://doi.org/10.2139/ssrn.2977590

Baudouin, N., Eleazar, J. U., & Mimba, T. D. (2025). Implications of Diversification on Financial Performance of Financial Institutions in the Central African Economic and Monetary Community (CEMAC). VOL.4,(NO.5). https://doi.org/doi:10.63593/LE.2788-7049.2025.06.001

Ben Lahouel, B., Taleb, L., Ben Zaied, Y., & Managi, S. (2024). Financial stability, liquidity risk and income diversification: Evidence from European banks using the CAMELS–DEA approach. Annals of Operations Research, 334(1–3), 391–422. https://doi.org/10.1007/s10479-022-04805-1

Brahmana, R., Kontesa, M., & Gilbert, R. E. (2018). Income diversification and bank performance: Evidence from Malaysian banks. Economics Bulletin, 38(2), 799–809. https://www.researchgate.net/profile/Rayenda-Brahmana/publication/324826997_Income_diversification_and_bank_performance_Evidence_from_Malaysian_banks/links/5c943c5545851506d72235df/Income-diversification-and-bank-performance-Evidence-from-Malaysian-banks.pdf

Bustaman, Y., Nurdayadi, & Al-Ghiffari, D. D. (2025). Income Diversification and Cost Efficiency Nexus: Empirical evidence from the Asia Pacific banking sector. Environment-Behaviour Proceedings Journal, 10(SI25), 3–10. https://doi.org/10.21834/e-bpj.v10iSI25.6461

Chakrabarti, A., Singh, K., & Mahmood, I. (2007). Diversification and performance: Evidence from East Asian firms. Strategic Management Journal, 28(2), 101–120. https://doi.org/10.1002/smj.572

Chindengwike, J. D. (2024). Nexus Between Operational Efficiency and Profitability from Tanzanian Listed Commercial Banks at Dar es Salaam Stock Exchange. African Journal of Empirical Research, 5(4), 1134–1141. https://doi.org/10.51867/ajernet.5.4.93

Chowdhury, T., Karim, R. A., Awanis, A., & Rownak, A. (2024). Does the Size of a Bank Moderate the Relationship Between Income, Asset Diversification, and Bank Stability? International Journal of Financial Studies, 12(4), 125. https://doi.org/10.3390/ijfs12040125

CRUZ, L. X. P., NAZARÉ, S. R. M., NUNES, D. M. S., & FERNANDES, M. P. (2025). INCOME DIVERSIFICATION AND ITS EFFECTS ON PROFITABILITY AND RISK: A STUDY OF BRAZILIAN BANKS. https://doi.org/10.5281/ZENODO.14908433

Cuong, H. V., Ngoc Luu, H., Quynh Thi Nguyen, L., & Chu, V. T. (2020). Income structure, diversification strategy and owners' benefit in cooperative financial institutions. International Journal of Managerial Finance, 16(4), 481–500. https://doi.org/10.1108/IJMF-11-2018-0346

Getinet, B., Dereja, B., Akinida, T., Yohannes, D., & Mengistu, S. (2024). Income Diversification, Credit Risk and Profitability of Commercial Banks in Ethiopia. Volume 1(1),. https://doi.org/DOI: https://doi.org/10.70984/8yrkh266

Giawa, B., Purba, S., Simanjuntak, W. A., & Simanjuntak, A. (2025). The Influence of Income Diversification, Operational Efficiency, Credit Risk, and Bank Size on the Profitability of the Banking Subsector Listed on the Indonesia Stock Exchange Period 2019-2023. 5(1), 83–100. https://doi.org/doi: 10.11594/baarj.05.01.08

Githaiga, P. N. (2023). Intellectual capital and bank performance: The moderating role of income diversification. Asia-Pacific Journal of Business Administration, 15(4), 509–526. https://doi.org/10.1108/APJBA-06-2021-0259

Githaiga, P. N., Yegon, J. C., & Komen, J. K. (2019). Income diversification and financial performance: Should banks trade? Journal of Accounting, Finance and Auditing Studies,. https://doi.org/10.32602/jafas.2019.34

Gürbüz, A. O., Yanik, S., & Aytürk, Y. (2013). Income Diversification and Bank Performance: Evidence From Turkish Banking Sector.

Hassan, A. A. (2017). Effects of Income Diversification On Financial Performance of Commercial Banks Listed at Nairobi Security Exchange [University of Nairobi]. http://hdl.handle.net/11295/102728

Hoang, C., Nguyen, L., Tran, M., & Hoang, T. (2020). The impact of income diversification on liquidity creation and financial performance of Vietnamese Commercial Banks. Accounting, 6(4), 553–568. https://doi.org/DOI: 10.5267/j.ac.2020.4.004

Huda, N. U., Zulfiqar, Dr. B., & Ljaaz, Dr. S. (2023). How Audit Quality Affects Bank Performance and Stability with Moderating Role of Ownership Structure. Foundation University Journal of Business & Economics, 8(2), 42–65. https://doi.org/10.33897/fujbe.v8i2.809

Huu Vu, T., & Thanh Ngo, T. (2023). Bank capital and bank stability: The mediating role of liquidity creation and moderating role of asset diversification. Cogent Business & Management, 10(2), 2208425. https://doi.org/10.1080/23311975.2023.2208425

İLtaş, Y., & DemiRgüneş, K. (2020). Asset Tangibility and Financial Performance: A Time Series Evidence. Ahi Evran Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 6(2), 345–364. https://doi.org/10.31592/aeusbed.731079

Iqbal, N., Ahmad, N., & Riaz, Z. (2014). The Relationship between Working Capital Management and Profitability: Evidence from Pakistan. International Letters of Social and Humanistic Sciences, 20, 14–25. https://doi.org/10.18052/www.scipress.com/ILSHS.20.14

Kollie, J. L. (2024). EFFECTS OF INCOME DIVERSIFICATION ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS LISTED IN SIERRA LEONE. European Journal of Management and Marketing Studies, 9(1). https://doi.org/DOI: 10.46827/ejmms.v9i1.1702

Lamers, M., Mergaerts, F., Meuleman, E., & Vander Vennet, R. (2016). The Trade-Off between Monetary Policy and Bank Stability. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.2896747

Lasmawati, S. D. K., Zulfikar, R., & Soleha, N. (2024). The Influence of Intellectual Capital and Income Diversification on Competitive Advantage and Its Implications for the Financial Performance of the Banking Industry. Vol.1, 2025, 105–108.

Lee, R. E., & Bustaman, Y. (2024). Analysis of Corporate Governance, Market Concentration, And Diversification on Financial Stability In The Indonesian Banking Sector. In S. Musa, E. J. Nasution, D. O. Lai Teik, H. N. Nasution, G. M. Tumibay, A. Mohd. Amir, D. M. Lenny, & S. O. Sihombing (Eds.), Proceedings of the 5th International Conference on Global Innovation and Trends in Economy 2024 (INCOGITE 2024) (Vol. 302, pp. 276–292). Atlantis Press International BV. https://doi.org/10.2991/978-94-6463-585-0_20

Lia, Y. (2025). Income Diversification and Profitability in Selected Latin American Countries. https://doi.org/DOI: 10.32996/jhsss

Luu, H. N., Nguyen, L. Q. T., Vu, Q. H., & Tuan, L. Q. (2020). Income diversification and financial performance of commercial banks in Vietnam: Do experience and ownership structure matter? Review of Behavioral Finance, 12(3), 185–199. https://doi.org/10.1108/RBF-05-2019-0066

Mahali, M., & Ansari, M. N. (2024). Income Diversification and Financial Sustainability of Indian Microfinance Institutions (MFIs): An Empirical Study. International Journal of Banking, Risk and Insurance, 12(1), 40–49. https://doi.org/10.21863/ijbri/2024.12.1.005

Malik, A., Hanif, Dr. H., & Elahi, M. (2025a). Impact of Diversification, Political Stability & Regulatory Quality on Financial Performance: Empirical Evidence from Banking Sector of Pakistan. Vol. 3(No. 1). https://doi.org/DOI: https://doi.org/10.63468/jpsa.3.1.37

Muhammad Faruq Abdulhakim, Vera Intanie Dewi, & Maria Widyarini. (2024a). The Impact of Income Diversification on the Performance of South Korea's Commercial Bank. Accounting and Finance Studies, 4(4), 261–272. https://doi.org/10.47153/afs44.11652024

Muriuki, N., & Musau, Dr. S. (2024a). Revenue Diversification and Financial Performance of Commercial Banks, Kenya. 8(6), 104–118. https://doi.org/10.53819/81018102t5322

Nabhan, F., & Widyaningsih, A. (2024). The Role of Operational Efficiency on Islamic Commercial Banks. IQTISHODUNA: Jurnal Ekonomi Islam, 13(1), 385–396. https://doi.org/10.54471/iqtishoduna.v13i1.2342

Ndungu, J. G., & Muturi, W. (2019). Effect of diversification on financial performance of commercial banks in Kenya. International Journal of Current Aspects, 3(5), 267–285. https://doi.org/DOI: 10.35942/ ijcab.v3iV.67

Nguyen, N. T. D., & Cao, C. T. L. (2022). Income diversification and profitability of Vietnamese commercial banks. Journal of Science and Technology Issue on Information and Communications Technology, 74–79. https://doi.org/10.31130/ud-jst.2022.324E

Nhat, N. M., & Mai Anh, P. N. (2024). THE INFLUENCE OF DIVERSIFYING INCOME SOURCES ON THE FINANCIAL PERFORMANCE: AN EMPIRICAL STUDY ON VIETNAMESE COMMERCIAL BANKS. Vol. 15,(Issue 05;). https://doi.org/DOI: https://doi.org/10.52932/jfm.v15i5

Ochenge, R. (2022). The effect of revenue diversification on bank profitability and stability during the COVID-19 Pandemic: Evidence from Kenya.

Rahman, M. U., & Abbas, F. (2025). Exploring bank diversification and performance: Evidence from South Asia. Future Business Journal, 11(1), 63. https://doi.org/10.1186/s43093-025-00485-y

Rahmawati, D., & Mardanugraha, E. (2023). IMPACT ANALYSIS OF INCOME DIVERSIFICATION ON BANKING PROFITABILITY CASE STUDY OF BANKING IN INDONESIA. Jurnal Ekonomi, 12(02), 625–634. https://ejournal.seaninstitute.or.id/index.php/Ekonomi/article/view/1778

Rehman, M. U., & Abbas, Dr. F. (2025). Improving the Robustness of Diversification and Bank Performance: Empirical Evidence from Pakistan. Vol. 4(issue.1,2025).

Rossi, S., Dreassi, A., Borroni, M., & Paltrinieri, A. (2020). DOES REVENUE DIVERSIFICATION STILL MATTER IN BANKING? EVIDENCE FROM A CROSS-COUNTRY ANALYSIS. Journal of Financial Management, Markets and Institutions, 08(02), 2050003. https://doi.org/10.1142/S2282717X20500036

Samo, M., & Siddiqui, D. A. (2024). The Effect of Revenue Diversification on Bank Profitability, Stability and Risk During Covid-19 Pandemic. https://doi.org/10.2139/ssrn.4954274

Setiadi, R., & Danarsari, D. N. (2024). The Benefits of Revenue Diversification on Bank Profitability and Stability: An Empirical Study on Indonesian Commercial Banks. Volume 31 (1)(1).

Sharma, S., & Anand, A. (2018). Income diversification and bank performance: Evidence from BRICS nations. Emerald Publishing Limited 1741-0401, Vol. 67(No. 9,), 1625–1639. https://doi.org/DOI 10.1108/IJPPM-01-2018-0013

Singh, K., & Singh, M. (2024). Examining the Nexus Between Income Diversification and Profitability of Indian Banks. 4(1).
Stiroh, K. J. (2002). Do Community Banks Benefit from Diversification?
Tahiri, N. R. (2018). Study on financial performance of da Afghanistan Bank 2015 and 2016.
Thakur, N., & Arora, S. (2024). Determinants of income diversification: Empirical evidence from Indian banks. International Journal of Law and Management, 66(2), 195–215. https://doi.org/10.1108/IJLMA-05-2023-0113
Thomas Jordan & Haninun. (2025). THE EFFECT OF NON PERFORMING LOANS (NPL) AND INCOME DIVERSIFICATION ON PROFITABILITY: A STUDY ON THE BANKING SECTOR IN INDONESIA. International Journal of Accounting, Management, Economics and Social Sciences (IJAMESC), 3(1), 424–433. https://doi.org/10.61990/ijamesc.v3i1.464
Trivedi, S. R. (2015). Banking Innovations and New Income Streams: Impact on Banks' Performance. Vikalpa: The Journal for Decision Makers, 40(1), 28–41. https://doi.org/10.1177/0256090915573616
Uniamikogbo, E., Okoye, E. I., & Amos, A. O. (2021). Income diversification and financial performance of selected deposit money banks in Nigeria. International Journal of Applied Management Sciences and Engineering (IJAMSE), 8(1), 89–105. https://doi.org/10.4018/IJAMSE.20210101.oa1
Waweru, K. J., William K, S., & Josphat. K, K. (2025). Influence of Income Diversification on Financial Performance of Commercial Banks in Kenya. Vol 1 2025(ssue 1).
Widyarti, E. T., & Sari, D. F. (2022). ANALYSIS OF THE EFFECT OF INCOME DIVERSIFICATION ON BANK PERFORMANCE AND BANK RISK WITH OWNERSHIP STRUCTURE AS MODERATING VARIABLE IN DIGITAL BANKS IN INDONESIA. Jurnal RAK (Riset Akuntansi Keuangan), 7(2), 179–196.
Wiryawan, I. (2024). The Effect Of Operational Efficiency On The Financial Performance Of Banks In Indonesia. 13(03).