IMPACT ANALYSIS OF INCOME DIVERSIFICATION ON BANKING PROFITABILITY CASE STUDY OF BANKING IN INDONESIA

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ARTICLE INFO	ABSTRACT
Keywords: Diversification; Non-Interest Income; Profitability; Digital Banking Services,	Banking is part of the financial system which has an important role to fund economic activities through its intermediary activities. Soundness of banking performance can be seen from the resilience of its capital to absorb risks. Meanwhile, capital is derived from several main components, including profit. In order to increase their capital, banks also make various efforts to increase profitability, including diversification of sources of income, especially from services charge. For this reason, this study examines whether income diversification affects the profit (profitability) of banking. In addition, this study also analyze other factors that affect bank profitability over the period of July 2018 – June 2022. This study uses data off all bank that operating in Indonesia as of June 2022 using generalized method of moment (GMM). The results of the study show that income diversification has a negative impact on banking profitability (ROA and ROE) and there are other variables that have a negative effect, that are third party funds and digital banking services. Meanwhile, credit and GDP growth have a positive effect on profitability. Based on KBMI, income diversification at KBMI 2 and KBMI 3 have a positive effect on profitability. However, KBMI 3 needs to pay attention to the impact of securities and foreign exchange transactions which cause a decrease in profitability. Whereas at KBMI 1, non-interest income has a negative effect and on KBMI 4, there is no significant effect. Meanwhile, other income, which is the main component of non-interest income, has no significant effect on profitability
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1. INTRODUCTION

Banking is a part of the financial system that plays an important role in funding economic activities through its intermediation role. The credit provided by banks is then used for production and consumption activities that drive economic growth. The banking sector dominates Indonesia's financial system, with total banking assets accounting for 78% of the financial sector's assets as of June 2022 (BI, 2022). Strong banks will drive the economy, while weak banks will hinder economic growth and may even cause economic crises, as happened in 1997-1998.

The strength or adequacy of bank performance can be seen from the resilience of its capital to absorb various risks. Meanwhile, capital is formed from several main components, one of which is profit. The profit generated by a bank depends on its level of profitability. According to Kasmir (2013), bank profitability is generated from two main sources, namely interest income and non-interest income. Interest income is generated from traditional banking activities in raising and disbursing funds, which is the difference between interest income on loans and the interest expense of third-party funds. Non-interest income is generated from activities outside of traditional banking or activities that do not originate from intermediation activities.

Bank Indonesia data shows that in the industry, interest income still dominates operational income, but the proportion of non-interest income to operational income over the past five years has increased. As of June 2022, non-interest income to total operational income in the banking industry had increased from 16.83% in June 2018 to 17.24% in June 2022.

The increasing trend of non-interest income has received much attention from researchers studying the impact of income diversification on bank performance. Several empirical studies have revealed that diversification of income sources affects bank profitability. According to Köhler (2015), an increase in the proportion of non-interest income makes banks more stable and more profitable, especially for saving banks and cooperative banks. However, Lee et al. (2014) found different results, that non-interest income will reduce the profitability of saving banks and its impact depends on the specialization of the bank and

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also the level of income of a country. Similarly, DeYoung & Rice (2004) found that expansion into non-interest income activities would improve the short-term trade-off between risk and income, among others by increasing revenue, but in the long run, this trade-off would worsen. Meanwhile, Chen, Liang & Yu (2018) found that asset diversification has a negative effect on the profitability of conventional banks and has no effect on the profitability and has a weak negative effect on the asset quality of Islamic banks. Similarly, according to Stiroh (2004), an increase in dependence on non-interest income is related to greater risk.

To increase their capital, banks also make various efforts to increase profitability, including diversifying income sources, especially from banking services. Banking services have increased rapidly in recent years, in line with the development of digital technology that makes it easy for consumers to carry out banking transactions, especially through digital banking services. Therefore, it is essential for banks to improve and enhance their services to meet consumer needs and increase their customer base. According to the Bank Indonesia's Commercial Bank Head Office Report, as of June 2022, there were 89 banks (or 83% of the total 107 banks) that had digital banking services such as internet banking and mobile/sms banking.

Several studies have revealed the impact of digital services and the number of Automated Teller Machines (ATMs) on profitability with varying test results. A study conducted by Del Gaudio et al. (2021) found that the level of internet usage and the number of ATMs have a positive impact on banking profitability. Consistent with this, Hernando & Nieto (2007) found that the use of the web for transactions, also known as e-channels, increases ROA. However, based on research conducted by Gupta et al. (2018), information technology-related expenditures have a negative impact on ROA, and according to Ho & Mallick (2010), bank profits will decrease due to IT adoption and usage.

Meanwhile, several studies have also revealed several factors that influence the level of profitability. Petria, Capraru, and Ihnatov (2015) stated that profitability measured by Return on Asset (ROA) and Return on Equity (ROE) is determined by credit risk, liquidity risk, management efficiency, business diversification, market concentration or competition, and economic growth. According to Athanasoglou, Brissimis, and Delis (2008), profitability is determined by capitalization, Non Performing Loan (NPL), productivity growth, operational costs, inflation, and cyclical output, but not significantly influenced by total assets, industry concentration, and ownership. Dietrich & Wanzenried (2011) also found that banking profitability during crises is influenced by the level of efficiency (cost to income ratio), loan loss provision, Third Party Funds (DPK) growth, credit growth, interest income, and funding costs, while total assets and ownership do not affect profitability.

The income diversification reflected in the growth of non-interest income in Indonesian banks attracted the author to conduct research on its impact on profitability. Bank profitability is measured by the ROA and ROE ratios, and income diversification is analyzed from non-interest income to total operating income.

Therefore, the problem that will be analyzed in this study is to identify and test the impact of income diversification on bank profitability in Indonesia, taking into account internal (bank specific) and external factors that can affect bank profitability. Testing the impact of income diversification on profitability will be carried out in two stages. The first stage tests non-interest income against the profitability of the banking industry, and the second stage identifies other factors that determine bank profitability to obtain a comprehensive picture of the factors that influence bank profitability in Indonesia other than those from non-interest income. Testing will also be carried out by grouping banks based on the Financial Services Authority (OJK) criteria, namely the Bank Group based on Core Capital (KBMI).

This study aims to analyze whether income diversification affects the profitability of banks. Additionally, this study includes an analysis of other factors that influence bank profitability.

1. The Role of Banking in the Economy

In simple terms, banking is an intermediary institution that provides savings and loan products. Savings represent a liability for banks that must be managed by channeling loans to generate profits (Heffernan, S., 2005). In the economy, banking plays a role as a financial sector. The household sector receives income and uses it to pay taxes, consume goods and services, and deposit money into the financial sector (including banking). Companies also receive income from the sale of goods and services and use it to pay for production factors. The household and corporate sectors borrow from the financial sector to pay for investment goods such as homes and factories.

Banking is a driver of economic growth. According to Hsueh et al. (2013), the development of the financial sector leads to economic growth in 10 Asian countries, including Indonesia. Similarly, according to Liu (2002), in general, the development of the financial sector in developing countries will lead to

economic growth. Based on research by Habibullah & Eng (2007), this supports Liu's (2002) research that the development of the financial sector drives economic growth in 13 developing countries in Asia, including Indonesia.

Banks continue to strive to improve their profitability to become healthy banks so that intermediary functions can run smoothly. Banks that cannot channel funds to loans will place them in assets that can provide higher income than savings interest. Income from activities other than lending will become a source of non-interest income. Meanwhile, banking is currently facing an era of rapid technological development that is changing banking operations and services. Most banks have digital banking services such as internet banking and mobile/sms banking. Furthermore, income from these digital banking services will also become a source of non-interest income for banks.

In addition, the level of financial literacy and the absence of restrictions on banks to engage in non-traditional activities as long as they comply with OJK and other authorities' provisions provide incentives for banks to engage in activities that generate non-interest income, such as providing money transfer services and account management.

2. Banking Profitability

Profitability indicates a company's ability to generate profits during a certain period (Munawir, 2014). Furthermore, the parameters of banking profitability, as stated in Financial Services Authority (OJK) Circular Letter No. 14/SEOJK.03/2017 dated March 17, 2017 concerning Assessment of the Health Level of Commercial Banks, are Return on Asset (ROA) and Net Interest Margin (NIM). According to the OJK Circular Letter, ROA is defined as the profit before tax divided by the average total assets. According to Dendawijaya (2015), ROA is a ratio used to measure the banking management's ability to generate profits overall. The higher the ROA, the higher the banking profitability. The formula for calculating ROA is as follows:
ROA = (Profit before Tax) / (Average Total Assets)

Meanwhile, NIM in the OJK Circular Letter is defined as net interest income divided by average productive assets. According to Dendawijaya (2015), NIM is a ratio that indicates the management's ability to manage its productive assets to generate net interest income.

In addition to using ROA, many studies also use ROE as a measure of profitability (Dietrich and Wanzenried, 2011; Kanas, Vasiliou, Eriotis, 2012; Stiroh, 2004; Li et al.; 2021; Lee, Yang, & Chang, 2014). ROE is a profitability ratio that shows the comparison between profit (after tax) and bank capital (core capital) and indicates the percentage level that can be generated in managing available capital to obtain net profit (Riyadi, 2006). Thus, the higher the ROE ratio, the better the bank's profitability. The formula for calculating ROE is as follows:
ROE = (Profit after Tax) / (Average Core Capital)

Therefore, ratios that can measure non-interest income, as one of the components of banking operational profits, and reflect profitability are the ROA and ROE ratios, while the NIM ratio measures profitability from the perspective of interest income.

3. Bank Revenue According to Kasmir (2013), bank profitability comes from two main sources: interest income and non-interest income.
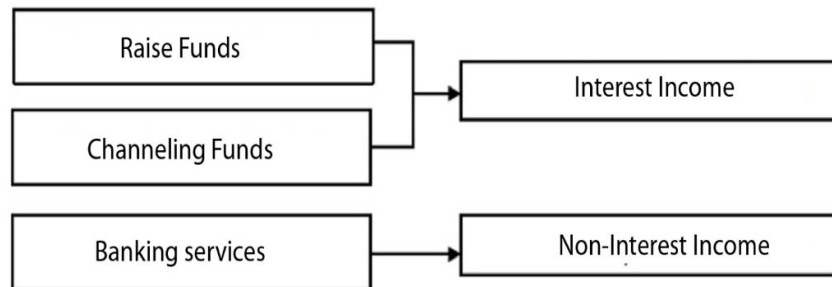

Figure 1 Bank Profitability Sources Source: adapted from Kasmir (2013)

In addition to intermediation activities, banks also earn interest income and pay interest on other activities such as interest income from Bank Indonesia obtained from placing funds in bank current accounts at Bank Indonesia, interest income from placements in other banks, interest income from securities, and other interest income. Meanwhile, interest expenses mainly consist of interest expenses to Bank Indonesia, interest expenses on obligations to other banks, and interest expenses on securities. The

second component of revenue (Figure 4) is non-interest income or fee-based. Non-interest income is generated from activities outside traditional banking or not originating from intermediation activities. Banks earn non-interest income mainly consisting of income from securities, income from foreign exchange transactions, other income, and correction of reserve losses in financial assets. While non-interest expenses mainly consist of securities expenses, foreign exchange transaction losses, insurance premium expenses, labor expenses, financial asset impairment losses, and other expenses. Other revenue/expenses or fee income consists of several main components, namely those related to credit commissions/fees, commissions/fees from derivative transactions, fees for managed loans, fees for cash management services, and others (e.g., income/expenses from digital banking activities such as transfer commissions/fees and account management).

Revenue diversification in developed countries such as America has been carried out since several years ago. The banking industry in America continues to shift from traditional revenue sources, namely credit distribution, to activities that generate non-interest income. According to Kevin J. Stiroh (2004), this is done so that revenue does not depend on business conditions so that reducing dependence on interest income will reduce profit and bank revenue volatility. In addition, with the opportunity for cross-selling and expanding the product lines offered, diversification of revenue portfolios can be increased.

4. The Relationship between the Use of Digital Banking and Automated Teller Machines (ATMs) with Bank Profitability

The use of information and communication technology is considered to encourage economic growth with increased productivity, efficiency, and economies of scale. However, research on its effects on banks has not yet reached a conclusion. A study conducted by Del Gaudio et al. (2021) in European banking found that the level of internet usage, the number of ATMs, and branch offices have a positive impact on bank profitability. Similarly, Shu & Strassmann (2005) found that investment in information technology provides higher returns than spending on banking staff salaries in America. Meanwhile, Hernando & Nieto (2007) found that the use of the web for transactions, or also called e-channels, increases bank ROA in Spain but with a lag time. However, based on research conducted by Gupta et al. (2018), technology-related expenses have a negative impact on ROA in India, and according to Ho & Mallick (2010), bank profits in America will decrease due to the adoption and use of IT investments. In line with this, Wirdiyanti (2018) found that there is a trade-off between the level of efficiency and the efficiency of market reach associated with IT costs incurred by banks in Indonesia. The higher the IT costs as a proportion of total operating costs, the lower the efficiency level, but it has a more efficient market reach. Meanwhile, the number of ATMs and branches relative to deposit base will increase costs and lead to lower profitability, while a higher ratio of ATMs to branches will result in lower costs and higher levels of profitability (Valverde, S.C.; Lopez del Paso, R.; Humphrey, D.B.,2004). In addition, financial literacy also influences the increase in the use of digital banking services. According to a study conducted by (Andreou & Anyfantaki, 2021), there is a positive relationship between financial knowledge and the frequency of internet banking usage. Based on the data from the National Survey on Financial Literacy and Inclusion in 2022, Indonesia's financial literacy index reached 49.68%, a significant increase compared to the previous survey in 2019, which only reached 38.03%.

2. METHOD

The unit of analysis used in this study is the panel data of all conventional and Islamic commercial banks with monthly data from July 2018 to June 2022. The selection of the period is based on data availability, with the main data sources being the Monthly Report of Commercial Banks (LBU) and the Head Office Report of Commercial Banks (LKPBU), while the Gross Domestic Product (GDP) data comes from the publication of the Central Bureau of Statistics (BPS), and the Core Capital Group of Banks data comes from OJK. Revenue diversification is measured using non-interest income to operating income, as in the studies of Lee et al. (2014) and Stiroh & Rumble (2006). This study uses the dependent variable, which is profitability measured by the ROA and ROE ratios, and independent variables, which are the main objectives of the study (variables of interest), such as non-interest income, and control variables that include internal and external variables. The explanation of the research variables is as follows:

ROA is the ratio of pre-tax earnings to average total assets. ROA measures a bank's ability to manage its assets to generate profits, which is measured as a percentage. The higher the ROA, the better the bank's ability to generate profits from its assets.

ROE is the ratio of after-tax earnings to average core capital. ROE measures a bank's ability to provide returns on shareholder investment. The higher the ROE, the better the bank's ability to provide returns on investment.

Non-Interest Income to Operating Income (Non-Interest) is the net of non-interest income less non-interest expenses, so the ratio can be positive or negative depending on the performance of the sampled bank.

Securities Income (SSB) is the sum of the increase and decrease in fair value (mark to market) of securities and the gains and losses from the sale of securities.

Foreign Exchange Transaction Income (VAL) is the sum of the increase and decrease in fair value of foreign exchange transactions and the gains and losses from foreign exchange transactions.

Other Income (OTH) consists of several main components, namely those related to credit commissions/fees, commissions/fees from derivative transactions, fees for managed loans, fees for cash management services, and others (e.g. income/expenses from digital banking activities such as transfer commissions/fees and account management).

Total Asset Growth (GROWTH) is the annual growth of total assets, indicating management choices in implementing operational strategies to generate revenue.

Loans to Total Assets (LOAN) indicate the bank's strategy in placing its funds.

Deposits to Total Assets (DEPOSIT) can indicate the bank's strategy in mobilizing funds.

Equity to Total Assets (EQT) is used as a control variable because banks with strong capital can diversify their sources of income. Banks with good capital can pursue business opportunities more effectively and have more flexibility to manage potential risks, thus achieving better profitability.

Allowance for Impairment Losses to Total Assets (CKPN). CKPN is the provision formed for the impairment of financial instruments (OJK Circular Letter, 2019). The higher the formation of CKPN, the higher the operational burden, which will have a negative impact on profitability.

Dummy Mobile Banking (DMOB), mobile banking services have a positive impact on bank profitability Del Gaudio et al. (2021). A dummy value of "1" is assigned to banks that have mobile banking services and "0" to banks that do not have mobile banking services.

Number of ATM Machines (ATM), the number of ATMs has a positive impact on bank profitability Del Gaudio et al. (2021). In this study, the ATM variable is the ratio of the number of ATMs per 100,000 population.

Gross Domestic Product (GDP) growth rate affects profitability (Dietrich & Wanzenried, 2011; Petria, Capraru, & Ihnatov, 2015). An increase in per capita GDP is associated with an increase in the economic cycle, which will increase demand for credit, thus having a positive relationship with profitability. Banking profitability shows a tendency to remain stable over time, reflecting market barriers, information ambiguity, and/or sensitivity to macroeconomic fluctuations (Berger et al., 2000). Some studies have also revealed endogeneity issues when analyzing profitability. Banks with better profitability can accumulate capital more easily through retained earnings. Likewise, they can use their profits for better marketing, making it easier to increase bank assets that impact profitability. Conversely, causality can also occur in reverse, as having better profitability can allow banks to hire more employees that may reduce their efficiency. Other issues include unobservable heterogeneity among banks that cannot be measured in this study, such as managerial capabilities and governance. To address this, the study will use the generalized method of moment (GMM) as in García-Herrero et al.'s (2009) study. Therefore, this study uses a dynamic panel data model by incorporating lag dependent variables, as follows:

$$\Pi iitt = C + [\![\delta\Pi]\!]_{(i,t-1)} + \beta_0 [\![NonBunga]\!]_{it} + \beta_1 [\![SSB]\!]\_{it} + \beta_2 [\![VAL]\!]_{it} + \beta_3 [\![OTH]\!]_{it} + \beta_4 [\![Growth]\!]\_{it} + \beta_5 [\![Loan]\!]_{it} + [\![\beta_6 Deposit]\!]_{it} + [\![\beta\_7 Equity]\!]_{it} + \beta_8 [\![CKPN]\!]_{it} + [\![\beta_9 ATM]\!]_{it} + \beta_{10} [\![DMOB]\!]_{it} + [\![\beta_{11} PDB]\!]_{it} + uit \qquad (3)$$

Where:
Πiitt : Bank profitability measured by ROA and ROE for a specific bank and year
C: Constant
δ: Speed of adjustment to equilibrium, with values ranging from 0-1, with larger numbers indicating slower adjustments and less competitive market structures, while lower numbers indicate strong competition conditions and faster adjustments.
Π (i,t-1): One-period lag of profitability
I : Year

T : Individual bank

The study's tests include endogeneity tests to determine whether there is a relationship between independent variables and the error term, and multicollinearity tests to test the relationship between independent variables. In addition, before conducting regression with the GMM method, regression with Ordinary Least Square (OLS), fixed effects, and random effects should be performed. As in the study by Meslier et al. (2014), regression results from static panel data are compared before using GMM. The OLS regression results are compared to fixed effects using the Chow test. If the p-value is significant, the fixed effects model is better than OLS. Next, fixed effects are compared to random effects using the Hausman test. If the p-value is significant, it indicates that the fixed effects model is better than the random effects model, and GMM can be continued.

3. RESULT AND DISCUSSION

The estimated impact of income diversification analyzed through the non-interest income effect on bank profitability, as shown in the following Table 1:

Table 1 Impact of Non-Interest Income on Profitability

Panel A: ROA	Industri	KBMI 1	KBMI 2	KBMI 3	KBMI 4	Panel A: ROE	Industri	KBMI 1	KBMI 2	KBMI 3	KBMI 4
ROA (-1)	0.5833***	0.6090***	0.6193***	0.6820***	0.7935***	ROE (-1)	0.5088***	0.5526***	0.4931***	0.6953***	0.8215***
Non Bunga	-0.0009**	-0.0009**	0.0118***	0.0053**	-0.0077	Non Bunga	-0.0046*	-0.0042	0.0426*	0.0318*	0.0207
SSB	-0.0003	0.0000	-0.0041	-0.0015***	0.0078**	SSB	0.0006	0.0009	-0.0108	-0.0081***	0.0521**
Valas	-0.00003	-0.0001	-0.0035	-0.0011***	-0.0002	Valas	-0.0004	-0.0003	-0.0068	-0.0045**	-0.0121
OTH	0.00003	-0.0000	-0.0043	-	-	OTH	0.0008	0.0007	-0.0079	-	-
Growth	0.0021***	0.0022**	0.0023**	0.0005	0.0011	Growth	0.0032	0.0131*	0.0119*	0.0061	0.0620*
Loans	0.0226***	0.0185***	0.0309***	0.0057*	-0.0036	Loans	0.0750***	0.0462**	0.0513	0.0437**	0.0602
Deposit	-0.0279***	-0.0227***	-0.0047	-0.0151***	-0.0079	Deposit	-0.1170***	-0.0680*	0.0178	-0.0610*	-0.0894
Equity	-0.0079	-0.0106	-0.0034	0.0045	0.0672**	Equity	0.1917***	0.2777***	0.0430	-0.0599	0.0142
CKPN	-0.0059	-0.0139	-0.3938***	0.0098	-0.0825	CKPN	-0.2572***	-0.4656***	-3.1234***	0.2954	0.0267
ATM	0.0001	-0.0615**	0.0958***	-0.0001	-0.0001	ATM	-0.0021	-0.5018***	0.8759***	-0.0058	0.0008
DMOB	-0.0073***	-0.0070***	0.0072*	-	-	DMOB	-0.0322***	-0.0301**	0.0137	-	-
GDP	0.0002*	0.0000	0.0001	-	-	GDP	0.0023***	0.0021**	-0.0051**	0.0013*	0.0017***
AR (2) (p-value)	0.00682	0.0115	0.293	0.163	0.0739	AR (2) (p-value)	0.000508	7.41e-05	0.844	0.0721	0.124
Sargan test (p-value)	0	0	0.603	0.667	0.347	Sargan test (p-value)	0	0	0.493	0.724	0.333

"Non-interest income has a significant negative impact on bank ROA and ROE. A 1% increase in non-interest income results in a decrease in ROA by 0.09% and a decrease in ROE by 0.46%. Lag coefficients for ROA and ROE are significantly positive, indicating profitability persistence. However, each component of non-interest income, such as income from securities, foreign exchange transactions, and other income, individually does not significantly affect ROA and ROE. The loan control variable has a significant positive impact at a 1% level. Meanwhile, the external variable, GDP growth, also has a positive and significant impact at a 10% level for ROA and a 1% level for ROE. The deposit and DMOB control variables have a negative impact on ROA and ROE. Deposit and DMOB are both significant at a 1% level for ROA and ROE. On the other hand, the growth control variable has a positive impact on ROA and is significant at a 1% level. However, other control variables such as equity, CKPN, and ATM penetration do not significantly affect ROA. Unlike ROA, the equity variable has a positive impact, and the CKPN variable has a negative impact on ROE, and both are significant at a 1% level. Other control variables, such as growth and ATM penetration, do not significantly affect ROE.

Furthermore, testing the impact of income diversification on banks based on their core capital groups shows a significant effect on KBMI 1, KBMI 2, and KBMI 3, with varying results, while KBMI 4 does not have a significant impact. Meanwhile, in KBMI 2 and KBMI 3, non-interest income has a positive impact on profitability. The other control variables that have a significant impact on each bank group are as follows:

a. KBMI 1 For KBMI 1 bank, the growth and loan control variables have a positive impact on ROA and ROE. However, adding DPK, ATM expansion, and digital services have a negative impact on ROA and ROE.

b. KBMI 2 For KBMI 2 bank, the growth and ATM control variables have a positive impact on ROA and ROE, but the CKPN variable has a negative impact on ROA and ROE.

c. KBMI 3 For KBMI 3 bank, the loan control variable has a positive impact on ROA and ROE, while securities, foreign exchange, and deposits have a negative impact. However, securities transactions, foreign exchange transactions, and increases in DPK have a negative impact on ROA and ROE.

d. KBMI 4 For KBMI 4 bank, the income from securities has a positive impact on ROA and ROE.

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Furthermore, to obtain a deeper conclusion regarding the impact of one component of non-interest income that has a significant portion of other income, namely other income, testing is also conducted by adding the other income variable and excluding the securities income, foreign exchange income, and other income variables. The other income variable is the total amount of other income to non-interest income. Other income components mainly come from commission/transfer fees and account management income. The test results are as shown in Table 2:

Table 2 Impact of Other Income on Profitability."

Panel A: ROA	Industri	KBMI 1	KBMI 2	KBMI 3	KBMI 4
ROA (-1)	0.5603***	0.5849***	0.6224***	0.6609***	0.6860***
Non Bunga	-0.0010***	-0.0012***	0.0118***	0.0087***	-0.0038
Growth	0.0022***	0.0012	0.0021**	-0.0004	0.0117*
Loans	0.0249***	0.0189***	0.0302***	0.0053*	0.0146
Deposit	-0.0236***	-0.0180***	-0.0047	-0.0166***	-0.0088
Equity	-0.0037	-0.0011	-0.0030	0.0004	0.0485*
CKPN	-0.0068	-0.0259*	-0.3824***	0.0106	0.0194
ATM	0.0001	-0.0815***	0.0937***	0.0004	0.0000
DMOB	-0.0030	-0.0027	0.0071*	-	-
GDP	0.0002**	0.0001	0.0001	0.0003***	0.0009***
Net lainnya/Non bunga	-0.0000	-0.0000	-0.0003	-	-
AR (2) (p-value)	0.00977	0.0140	0.275	0.386	0.0862
Sargan test (p-value)	0	0	0.622	0.633	0.281

Panel B: ROE	Industri	KBMI 1	KBMI 2	KBMI 3	KBMI 4
ROE (-1)	0.5043***	0.5541***	0.4961***	0.6784***	0.7728***
Non Bunga	-0.0048*	-0.0046*	0.0425*	0.0416**	-0.0226
Growth	0.0067	0.0149*	0.0119*	0.0031	0.0613*
Loans	0.0838***	0.0571**	0.0506	0.0441**	0.0645
Deposit	-0.1340***	-0.0881**	0.0215	-0.0659**	-0.0420
Equity	0.1802***	0.2769***	0.0456	-0.0820	-0.0249
CKPN	-0.2302**	-0.4438***	-3.0358***	0.2804	0.4434
ATM	-0.0032	-0.6474***	0.8500***	-0.0034	0.0003
DMOB	-0.0285**	-0.0204	0.0150	-	-
GDP	0.0023***	0.0021**	-0.0049*	0.0017**	0.0055***
Net lainnya/Non bunga	0.0001	-0.0001	0.0002	-	-
AR (2) (p-value)	0.000416	6.66e-05	0.831	0.145	0.217
Sargan test (p-value)	0	0	0.513	0.668	0.264

Discussion

Non-interest income has a significant negative impact on the ROA and ROE of banks. This supports the research conducted by Lee et al. (2014) and Chen, Liang & Yu (2018) that non-interest income has a negative impact on bank profitability. Meanwhile, the lag coefficients on ROA and ROE are significantly positive, indicating the persistence of profitability, which means that current profitability is influenced by profitability in the previous period. The control variable loan provides a positive and significant impact at the 1% level, indicating that banks in Indonesia still rely on income from traditional banking activities, namely lending. Therefore, the higher the credit disbursed, the higher the profitability. Meanwhile, the external variable, namely GDP growth, also has a positive and significant impact, indicating that economic growth drives an increase in credit demand, resulting in increased bank profitability.

The control variables deposit and DMOB have a negative impact on ROA and ROE. The negative impact of deposit indicates that the banking funding structure, which mostly comes from Third-Party Funds (DPK), has a relatively high interest rate, thus giving a negative impact on profitability. Meanwhile, digital services have a negative impact due to banking investment in IT infrastructure. This result is in line with Gupta et al. (2018) and Ho & Mallick (2010) research. Meanwhile, the control variable growth has a positive impact on ROA, indicating that asset growth strategy benefits the bank. Meanwhile, the equity variable has a positive impact, and the CKPN variable has a negative impact on ROE. Additional capital will increase the bank's ability to absorb risk, so that the bank can carry out activities that generate higher profits. The CKPN variable has a negative impact, indicating that profitability is influenced by the formation of CKPN, the larger the formation of CKPN, the lower the profitability ratio.

The test results based on the KBMI group, the effect of income diversification analyzed through non-interest income, show a significant effect on KBMI 1, KBMI 2, and KBMI 3, while KBMI 4 has no significant impact. The test results on KBMI 1 are in line with the test on the industry, namely that non-interest income has a negative impact on profitability. Meanwhile, in KBMI 2 and KBMI 3, non-interest income has a positive

impact on profitability. This indicates that banks in KBMI 2 and KBMI 3 can utilize diversification to increase profitability.

In KBMI 1 bank, the control variables growth and loan have a positive impact on ROA and ROE. This indicates that the asset growth strategy benefits KBMI 1 bank and the interest income from lending activities is still the main service of the bank, so that the increase in assets and credit has a significant impact on its profitability. However, on the other hand, the addition of DPK, ATMs, and digital services has a negative impact on ROA and ROE. KBMI 1 bank provides relatively high DPK interest rates, so that the addition of DPK will lower profitability. In addition, in line with the characteristics of KBMI 1 bank which has relatively low capital, additional investment in IT infrastructure will lower profitability.

In KBMI 2 bank, the variables growth and ATMs have a positive impact on ROA and ROE. This indicates that the asset growth strategy and the addition of ATMs benefit KBMI 2 bank. However, on the other hand, CKPN has a negative impact on ROA and ROE, so that an increase in CKPN formation will lower the bank's profitability. This needs attention so that credit disbursement is carried out with caution to avoid an increase in CKPN formation.

At KBMI Bank 3, the loan variable has a positive impact on ROA and ROE, while securities, foreign exchange, and deposits have a negative impact. This indicates that interest income from lending activities is still the main service of the bank, so an increase in loans has a significant impact on its profitability. However, on the other hand, securities transactions, foreign exchange transactions, and an increase in deposits have a negative impact on ROA and ROE. This is in line with industry regression results, that deposits still have a relatively high interest rate. Meanwhile, securities and foreign exchange transactions have a negative impact on profitability because KBMI Bank 3 tends to have a higher trading and available for sale exposure compared to other KBMI groups that have to be marked to market, so the bank's position depends on market conditions.

At KBMI Bank 4, the variable of income from securities has a positive impact on ROA and ROE. This indicates that KBMI Bank 4's securities ownership strategy can increase profitability. Other revenue variables do not have a significant impact on banking industry profitability. Likewise, in KBMI, the test results did not show significant results. This indicates that banks in Indonesia have not yet optimized banking services as one of their sources of income. These test results are in line with the negative impact of mobile banking variables on profitability because of the relatively large investment in IT infrastructure while, on the other hand, the provision of banking services is still not being optimally executed

4. CONCLUSION

This research was conducted to investigate the impact of banking revenue diversification, as measured by non-interest income, on banking profitability in Indonesia. The study used panel data from all banks operating as of June 2022 (107 banks) with a data period from July 2018 to June 2022. The data period was chosen based on data availability. The research method used the GMM method, which was the best predictor in this study, with control variables including income from securities, foreign exchange transactions, other income, annual asset growth, credit to total assets, deposits to total assets, non-performing loans to total assets, capital to total assets, ATM penetration, and Mobile Banking dummy.

The results of the study indicate that revenue diversification has a negative impact on banking profitability (ROA and ROE), and there are other variables that have a negative impact, namely deposits and digital services. An increase in deposits causes banks to pay high interest rates on savings, which results in a decrease in profitability. Investing in IT infrastructure to improve digital banking services also reduces profitability. Meanwhile, loan disbursement and GDP growth have a positive impact on profitability. This indicates that interest income from intermediation activities remains the main source of revenue for banks in Indonesia, and economic growth increases demand for credit, thus increasing banking profitability.

Based on KBMI testing, revenue diversification in KBMI 2 and 3 banks has a positive impact on profitability. This indicates that KBMI 2 and KBMI 3 banks have the ability to manage activities derived from non-traditional banking activities. However, in Bank KBMI 3, attention is needed on the impact of securities and foreign exchange transactions, which cause a decrease in profitability. Meanwhile, in Bank KBMI 1, non-interest income has a negative impact, and in Bank KBMI 4, there is no significant influence. Bank KBMI 1 is a group of banks with the lowest core capital among other bank groups, so their ability to manage assets is relatively inadequate compared to other KBMI banks. Meanwhile, in Bank KBMI 4, interest income from intermediation activities remains the main source of revenue.

Based on KBMI testing, revenue diversification in KBMI 2 and 3 banks has a positive impact on profitability. This indicates that KBMI 2 and KBMI 3 banks have the ability to manage activities derived

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from non-traditional banking activities. However, in Bank KBMI 3, attention is needed on the impact of securities and foreign exchange transactions, which cause a decrease in profitability. Meanwhile, in Bank KBMI 1, non-interest income has a negative impact, and in Bank KBMI 4, there is no significant influence. Bank KBMI 1 is a group of banks with the lowest core capital among other bank groups, so their ability to manage assets is relatively inadequate compared to other KBMI banks. Meanwhile, in Bank KBMI 4, interest income from intermediation activities remains the main source of revenue.

Furthermore, testing on one of the largest components of other income, namely other income, shows insignificant results on industry and KBMI profitability. This indicates that banks in Indonesia have not yet optimized banking services as one of their sources of revenue. The results of this testing are in line with the negative impact of mobile banking variables on profitability because the investment in IT infrastructure is relatively high, while on the other hand, the provision of banking services has not been optimally implemented.

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