The Influence of Internet Banking and Bank Risk on the Performance of Banking Companies in Indonesia

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Abstract. This study aims to analyze the effect of Internet banking on bank performance. The independent variables in this study are Internet banking and bank risk, with the control variables being economic growth inflation and the dependent variable being bank performance. The sample used in this study is a company engaged in banking companies listed on the Indonesia Stock Exchange (IDX) for the 2017-2021. The number of samples used in this study amounted to 37 banking companies using purposive sampling. The results showed that Internet banking and economic growth had a significant positive effect. In contrast, credit and operational risks significantly negatively affected banking companies' performance in Indonesia. Managerial Implications: Companies must develop Internet banking features, minimize credit and operational risks, and stabilize economic growth to improve performance.

Keywords: Bank Risk, Economic Growth, Inflation, Internet Banking, ROA

1 Introduction

The development of the banking world is going very fast. The rapid development of the banking world is greatly influenced by various factors, one of which is technology. The use of technology in the banking world today is a must. Modern life, which is very dynamic with very high mobility, even across space and time, requires people to effectively and efficiently utilize their time using modern technology. In line with the rapid development of the internet, banks also offer a modern lifestyle by providing easy access to banking services through Internet banking. With Internet banking, customers can make various transactions anytime and from anywhere: at home, the office, or when stuck in traffic on the highway. Internet banking technology that the banking world has created has benefits for banks, namely the efficiency of banking performance in using paper because everything is done through the internet and can be a source of income derived from service fees charged to customers. Reducing the use of paper and the efficiency of bank performance will reduce costs incurred by banks that make profits will increase because costs will reduce. Likewise, the income obtained from using Internet banking by customers will increase the bank's profit. Internet banking does not positively affect the performance of banks in Jordan. In this case, what is meant by bank performance in profit growth[1]? Seeing the phenomena that occur in Jordanian and Indian banks, researchers want to examine the same thing in Indonesia. In addition to the use of Internet banking, internal and external factors can also have an impact on bank performance. Internal factors include cash flow,operat-

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ing risk, credit risk, market risk, capital adequacy, and liquidity risk. At the same time, external factors include monetary policy, exchange rate fluctuations, inflation rates, interest rate volatility, securities, treasury management, globalization, competition between banks and non-bank financial institutions, technological developments, and innovation of financial instruments [2]. Based on the background above, the researcher wants to study, "The Effect of Internet Banking and Bank Risk on the Performance of Banking Companies in Indonesia."

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2 Theoretical Background

Bank Performance

Financial performance is a work achievement that has been achieved by the company in a certain period and is stated in the financial statements of the company concerned. Performance is the organization's ability to achieve its goals through the efficient and effective use of resources. Thus, bank performance describes the company's work performance or ability to work on operational activities. Therefore, to find out the company's achievements, it is necessary to evaluate its performance within a certain period. The successful performance of banking companies can be seen from the return to assets (ROA) [3]. Over time, Internet technology can affect the performance of banking companies due to its function as an intermediary or liaison between customers and the bank. Transactions that are virtual or without a face-to-face process will certainly pose new risks for the company [4].

Internet Banking

The use of the internet began to facilitate human needs, especially in terms of banking. The convenience offered is in the form of easy access to banking services through Internet technology. Security for online transactions is a priority for banks in providing internet banking services. The benefits of using Internet banking are not only for transferring money and checking balances but also providing convenience for other payment transactions such as purchasing credit, electricity, Clean Water, telephone, internet, insurance, tickets, and education to credit cards [5]. In addition, you can also make the opening account be of a deposit done online. The focus of this research is to examine the effect of Internet banking on banking performance. The dummy variable (internet banking) takes a value of 1, which will be given if the bank has used Internet banking, and vice versa, a value of 0 if it has not used Internet banking [6] . The coefficients associated with dummy Internet banking indicate a possible relationship between Internet banking and banking performance. This is a positive sign for the expected variable because Internet banking has the potential to reduce costs and generate greater profits [1]. This shows that Internet Banking has a positive and significant effect on banking financial performance[5]

Credit Risk

Credit Risk (CR) is a ratio used to measure a bank's ability to bear the risk of defaulting on debtors' credit payments [7]. Credit risk is a threat to a bank, and if the credit risk is high, it indicates that the bank is less than optimal in managing credit, and it will increase credit risk [2]. Credit risk is categorized into doubtful, substandard, and bad loans. The results of the study state that credit risk (CR) has a negative effect on banking performance [8],[9],[6].

Expenses Management

Expenses Management is bank cost management, which is one of the significant determinants of bank performance. The high level of inefficient bank cost management can affect bank profits. Management costs have a negative effect on the performance of banking companies [1].

Operational Risk

Operational risk (BOPO) in a banking company is caused by inadequate and/or malfunctioning internal processes, human error, system failure, and/or external events that affect bank operations. The causes of operational risk include human resources, processes, systems, and external events. This course will affect the company's performance. The ratio to measure operational risk is Operational Expenses to Operating Income or BOPO [10]. Operational costs incurred by banks are higher than the income received by banks, will increase BOPO, and will reduce profitability [11]. Bank Indonesia sets the best figure for the BOPO ratio below 90% because if the ratio exceeds 90%, it is close to 100%, the bank can be categorized as inefficient in carrying out operations [12]. Thus, it can be concluded that operational risk (BOPO) has a negative effect on banking performance[13].

Market Risk

Market conditions and situations with various stability and instability can influence the continuity and profit of the company. Market risk is a condition experienced by a company caused by changes in outside market conditions and situations and the company's control [14]. One measurement of market risk is the interest rate, which is measured by the difference between the interest rate on funding (funding) and the interest rate on loans (lending) or, in absolute form is the difference between the total cost of funding interest and the total cost of interest on loans which in terms of banking is called Net Interest Margin (NIM) [15]. The higher the NIM value, the greater the interest income on productive assets; thus, profitability obtained by the bank will also increase [10]. This indicates that market risk (NIM) has a positive effect on ROA[11].

Economic Growth

Economic growth also affects bank performance. This shows that during a decline in economic growth, loans can decline, and credit quality deteriorates, thereby reducing bank profits [6]. If economic growth improves, demand for credit may increase, and interest margins may increase. This happens because an increase in a country's GDP causes people's income to increase, which will create conducive conditions to arouse the interest of individual and corporate customers to save and take credit at the bank, which results in increased profitability [16]. The results of the study state that economic growth has a positive effect on bank performance [1], [17].

Inflation Rate

[1] stated that the extent to which inflation affects bank profitability depends on whether future inflation movements are anticipated or unexpected. If inflation is anticipated and interest rates are adjusted so that income, which increases faster than costs, then may have a positive impact on profitability, while unexpected changes could increase costs due to imperfect interest rate adjustments. Inflation measurement (INF) uses the rate of change of CPI [6].

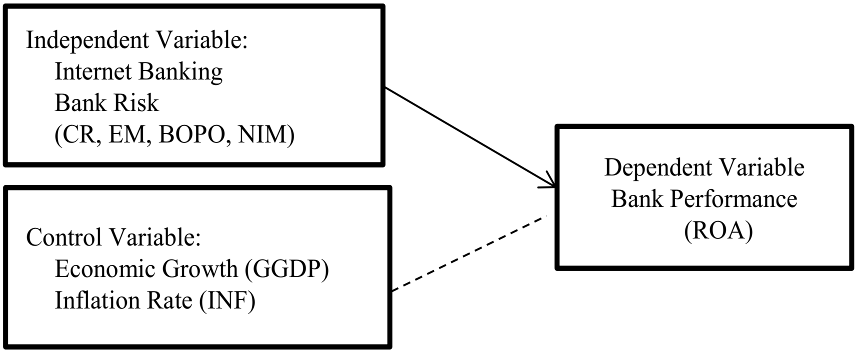

Fig. 1. Conceptual framework.

Hypotheses Formulation

H_1: Internet Banking has a positive influence on Bank Performance
H_2: Credit Risk has a negative effect on Bank Performance
H_3: Expenses Management has a negative influence on Bank Performance
H_4: Operational Risk has a negative effect on Bank Performance
H_5: Market Risk has a positive influence on Bank Performance
H_6: Economic Growth has a negative effect on Bank Performance
H_7: Inflation has a negative effect on Bank Performance

3 Methods

This research design uses hypothesis testing, which aims to examine the influence of Internet Banking and Credit Risk on the Financial Performance of Banks Listed on the Indonesia Stock Exchange. Period 2017 to 2021 using Multiple Regression Analysis. The data used in this study is secondary data, namely data obtained or collected from the company's annual report obtained from the Indonesia Stock Exchange website, www.idx.co.id. The analytical tool used is panel data regression using e-views Ten software.

Table 1. Variables and measurement.

Variables	Measurements	Literature
Dependent Variable :		[4]

Return on Assets (ROA)	$\frac{\text{Net Income}}{\text{Total Asset}}$	
Independent Variables :		[1]
Internet Banking(IB)	The dummy variable (internet banking) takes a value of 1 if you have used Internetbanking and a value of 0 if you have not used Internet banking.	
Credit Risk(CR)	$\frac{Net\ Performing\ Loans}{Total\ Loans}\ x\ 100\%$	
Expense Management (EM)	$\frac{Operating\ Cost}{Total\ Asset}\ x\ 100\%$	
Operational Risk(BOPO)	$\frac{Operating\ Cost}{Operational\ Income}\ x\ 100\%$	[10]
Market Risk(NIM)	$\frac{Net\ Interest\ Income}{Average\ Earning\ Assets}\ x\ 100\%$	
Control Variables :		
Economic Growth (GGDP)	$\frac{GDP_t\ -\ GDP_{t-1}}{GDP_{t-1}}\ x\ 100\%$	[6]
Inflasi (INF)	Indeks Harga Konsumen	

The analysis method uses multiple regression analysis as follows :

$$\mathbf{ROA = \alpha + \beta1IB + \beta2CR + \beta3\ EM + \beta4BOPO + \beta5NIM + \beta6INF + \beta7GGDP + \varepsilon} \quad (1)$$

Note :
IB = Internet Banking
CR = Credit Risk
EM = Expenses Management
BOPO = Operational Risk
NIM = Market risk
GGDP = Economic Growth
INF = Inflation Rate
α = Constant
βo = Coefficient
ε = Residual (Error)

4 Result and Analysis

Based on the results of data analysis, Internet banking has a positive effect on ROA; banks that provide banking services have a higher ROA than banks that do not provide Internet banking services. The results of this study are different from research conducted by [5], which states that there is a positive and significant influence between internet banking and banking performance. The use of Internet banking services can improve the performance of banking companies. Commercial banks maximize the company's performance by continuously encouraging innovation that aims to improve efficiency and effectiveness in providing Internet banking services. The revolution in innovation and technology and their use in banking activities has brought confidence in transforming manual banking system operations into technology-based banking.

Credit risk in this study has a significant negative effect on banking performance. This shows that the lower the bank credit risk, the better the performance of banking companies. This research is supported by

[6][1], which states that credit risk has a negative effect on banking performance. Banking companies must manage to lend optimally and supervise the collection process. Expense Management in this study does not affect banking performance. This shows that the level of cost management is independent of banking performance. The results of this study are supported by the research done by [1]. This study obtained different results from [2][6], which stated that there was a negative influence between expense management and the performance of banking companies.

Table 2. Descriptive statistics.

Variable	Obs.	Mean	Median	Maximum	Minimum	Std.Dev
ROA	185	0.005124	0.007700	0.044700	-0.182000	0.023232
IB	185	0.945946	1.000000	1.000000	0.000000	0.226738
CR	185	0.032841	0.027400	0.0222700	0.000000	0.031081
EM	185	0.073703	0.068400	0.166300	0.022000	0.025827
BOPO	185	0.860900	0.8333790	2.638130	0.198960	0.310802
NIM	185	0.076163	0.051580	2.857290	-0.055730	0.2211716
GGDP	185	3.376400	5.018000	5.174000	-2.070000	2.784445
INF	185	0.027800	0.030000	0.032000	0.019000	0.004720

Table 3. Test results.

Variable	CoefFisien (βeta)	Probability *(P-value)*
IB	0.0074	0.0340*
CR	-0.0797	0.0026*
EM	-0.0558	0.581
BOPO	-0.0277	0.0000*
NIM	0.0022	0.0662
GGDP	0.0004	0.0000*
INF	0.5266	0.0000

Note: *Significant at alpha 0.05 (5%)

Operational risk in this study shows a significant negative effect on banking performance. The results of this study are supported by[11][10], which states that there is a negative effect. In this case,the banking company must minimize operational costs to increase the income received by the bank. Judging from market risk, the research results do not show a positive effect on the performance of banking companies. The results of this study are in line with research conducted [18], but this research is not in line with research conducted by [15], which states that there is a positive effect of market risk on banking performance.

From the macroeconomic point of view, economic growth has a significant positive effect on the performance of banking companies. This study is in line with research [17][19][1]. An increase in the GDP of a country results in an increase in people's income, which will create conducive conditions to arouse the interest of individual and corporate customers to save and take credit from banks, which results in increased profitability. Based on the study's results, the inflation rate did not show a positive effect on banking performance. This research is in line with research conducted by [1][20][21], which states that the rise and fall of a country's inflation do not affect the development of banking performance.

5 Conclusion, Implication, and Suggestion for Future Research

From the results of testing the influence of Internet banking and bank risk on banking performance from 2017- 2021, the following conclusions are obtained: Internet Banking, Market Risk, and Economic Growth have a positive influence on banking performance. On the other hand, Credit Risk and Operational Risk have a significant negative effect on Banking Performance. Expenses Management and Inflation are not proven to influence Banking Performance.

Suggestions for further research should be to expand the connection between Internet banking and not only look at its availability but deepen it by adding customer satisfaction variables as a mediating influence of Internet banking on the performance of banking companies[22]

References

1 M. Al-Smadi and S. A. Al-Wabel, "The Impact of E- Banking on The Performance of Jordanian Banks," *J. Internet Bank. Commer.*, vol. 18, no. 2–11, p. 10, 2013, [Online]. Available: http://eprints.utm.my/8136/.

2 M. Arif and E. Masdupi, "Pengaruh Internet Banking Terhadap Kinerja Perbankan," *J. Ecogen*, vol. 3, no. 4, p. 598, 2020, doi: 10.24036/jmpe.v3i4.10435.

3 S. M. Paul and M. Maniagi, "Effects of Credit Risk Management Practices on Financial Performance of Deposit Taking Microfinance Institutions in Nairobi," *Journals Bus. Manag.*, vol. 1, no. 2, pp. 29–34, 2020.

4 Mayasari, Y. M. Hidayat, and G. E. Hafitri, "Pengaruh Internet Banking dan Mobile Banking Terhadap Kinerja Keuangan Bank," *J. Pendidik. Manaj. Bisnis*, vol. 21, no. 1, pp. 55–72, 2021, [Online]. Available: http://repository.upi.edu/id/eprint/66542.

5 S. Wulandari and N. Novitasari, "Pengaruh Internet Banking, Risiko Kredit dan Ukuran Perusahaan Terhadap Kinerja Keuangan Perbankan Yang Terdaftar Di Bursa Efek Indonesia Periode 2017 - 2019," *Jesya (Jurnal Ekon. Ekon. Syariah)*, vol. 4, no. 1, pp. 166–177, 2020, doi: 10.36778/jesya.v4i1.327.

6 R. Egan and H. Prawoto, "Pengaruh internet banking terhadap kinerja perbankan di Indonesia (studi empiris pada bank yang listing di BEI)," *J. Akunt. Bisnis*, vol. 11, no. 22, pp. 138–153, 2013.

7 D. Kusmayadi, I. Firmansyah, and J. Badruzaman, "the Impact of Macroeconomic on Nonperforming Loan: Comparison Study At Conventional and Islamic Banking," *Iqtishadia*, vol. 10, no. 2, p. 59, 2018, doi: 10.21043/iqtishadia.v10i2.2864.

8 E. H. Y. Koh, H. Banna, and L. Youmkyung, "Credit Risk Differential between Islamic and Conventional Banks in Malaysia," *J. Southeast Asian Econ.*, vol. 39, no. 1, pp. 21–41, 2022, doi: 10.1355/ae39-1b.

9 M. Rahman, C. R. Martiningtiyas, E. Bisnis, and U. Trisakti, "Pengaruh Non Performing Loans Terhadap Profitability Y Bank Komersial yang Terdaftar di Bursa Effek Indonesia," vol. 21, no. 2, pp. 87–98, 2021.

10 E. P. Astuti and F. M. Husna, “The Effect of Net Interest Margin (NIM) and Operational Costs Operating Income (BOPO) on Return on Assets (RoA) at PT. Bank Rakyat Indonesia, Tbk,” *PINISI Discret. Rev.*, vol. 2, no. 1, p. 1, 2020, doi: 10.26858/pdr.v2i1.13210.
11 D. P. A. Raharjo, B. Setiaji, and Syamsudin, “Pengaruh rasio car, npl, ldr, bopo, dan nim terhadap kinerja bank umum di Indonesia,” *J. Ekon. Manaj. Sumber Daya*, vol. 15, no. 2, pp. 7–12, 2014, [Online]. Available: http://journals.ums.ac.id/index.php/dayasaing/article/download/2047/1439.
12 B. Indonesia, “Metadata Indikator Sektor Perbankan.” 2016, [Online]. Available: bi.go.id.
13 A. M. Lutfi, H. Erlangga, N. Nurjaya, S. Priadana, and D. A. Dwiwarman, “Pengaruh Capital Adequacy Ratio Dan Bopo Ratio Terhadap Return on Asset Pada Pt. Bank Muamalat Indonesia, Tbk Periode 2010-2019,” *J. Ekon. Ef.*, vol. 3, no. 3, pp. 420–428, 2021, doi: 10.32493/jee.v3i3.10540.
14 A. C. Mosey, P. Tommy, and V. Untu, “Pengaruh Risiko Pasar dan Risiko Kredit Terhadap Profitabilitas Pada Bank Umum Bumn yang Terdaftar Di BEI Periode 2012-2016,” *J. EMBA J. Ris. Ekon. Manajemen, Bisnis dan Akunt.*, vol. 6, no. 3, pp. 1338–1347, 2018.
15 B. Toufaili, “the Impact of Risk Management on Financial Performance,” *EUrASEANs J. Glob. socio-economic Dyn.*, vol. 3, no. 3(28), pp. 7–23, 2021, doi: 10.35678/2539-5645.3(28).2021.7-23.
16 P. P. Athanasoglou, I. Daniilidis, and M. D. Delis, “Bank procyclicality and output: Issues and policies,” *J. Econ. Bus.*, vol. 72, pp. 58–83, 2014, doi: 10.1016/j.jeconbus.2013.10.003.
17 C. R. Martiningtiyas and D. T. Nitinegeri, “The Effect of Non-Performing Loans on Profitability in Banking Sector in Indonesia,” vol. 151, no. Icmae, pp. 64–67, 2020, doi: 10.2991/aebmr.k.200915.016.
18 L. W. Widati, “Analisis Pengaruh CAMEL Terhadap Kinerja Perusahaan Perbankan Yang Go Publik,” *Din. Akunt. Keuang. dan Perbank.*, vol. 1 No. 2, no. Program Studi Akuntansi Universitas Stikubank, pp. 105–119, 2012, [Online]. Available: http://www.unisbank.ac.id/ojs/index.php/fe9/article/view/1590.
19 R. Verma, M. Kumar, A. Singh, and K. Srivastava, “Customer Satisfaction with Mobile Banking Services in India,” 2022.
20 D. Alper and A. Anbar, “OKUNDU_02.03.2018_GÜZEL_Bank Specific and Macroeconomic Determinants of Commercial Bank Profitability: Empirical Evidence from Turkey.,” *Bus. Econ. Res. J.*, vol. 2, no. 2, pp. 139–152, 2011.
21 M. T. Sandika, “Hubungan Faktor-Faktor Ekonomi Makro Terhadap Profitabilitas PT Bank Central Asia Tbk Periode Juli 2005 – Mei 2011,” *Semnas Fekon Pengaruh Modal Kerja Terhadap Profitab. Pada Ind. Dasar Dan Kim. Di Bursa Efek Indones.*, pp. 156–164, 2013.
22 M. Wilbert, R. Patricia, and C. Tabeth, “Effect of Internet Banking on Customer Satisfaction in the Banking Sector in Zimbabwe,” *Int. J. ...*, vol. 14, no. 2, pp. 112–128, 2022, [Online]. Available: https://search.proquest.com/openview/3fc340e930cc5f01a50be14f1c83c4b6/1?pq-origsite=gscholar&cbl=2032142.