The Effect of Liquidity, Efficiency, and Overhead on Bank Profitability

Nanik Linawati[1(✉)], Moeljadi[2], Djumahir[2], and Siti Aisjah[2]

[1] Doctoral Program of Management Science, Faculty of Economics and Business, University of Brawijaya, Malang, Indonesia
nanikl@petra.ac.id

[2] Lecturer Faculty of Economics and Business, University of Brawijaya, Malang, Indonesia

Abstract. The bank's top management's efforts to manage the bank operations increase sustainable profitability. This study examines the effect of liquidity, efficiency, and bank overhead on the profitability of banks in Indonesia that implement digital banking. Bank profitability has an essential role as a measure of the success of bank operations in balancing Asset Liability Management efficiently. This paper examines the determinants of the bank's profitability in Indonesia. The research sample is the six banks in Indonesia that implemented digital banking from 2007 to 2019. The data analysis used multiple regression analysis. The results showed that liquidity, efficiency, and bank overhead significantly influenced banks' profitability in Indonesia simultaneously. The effect obtained partially is that liquidity has a significant impact on increasing research profitability. In addition, bank efficiency carried out by management can have a positive impact on profitability. Finally, bank overhead can increase the profitability of bank in Indonesia. This research contributes to the theory of corporate financial management and provides insight for bank managers in increasing profitability on an ongoing basis.

Keywords: Liquidity · bank efficiency · overhead · Bank Profitability

1 Introduction

Bank profitability is related to bank operational efficiency [1]. Bank liquidity influences how banks do business [2]. Information technology helps banks to grow, especially in developing bank services to customers, increasing productivity, and managing risk [3]. Information technology contributes to bank operations. Online banking facilities such as credit cards, debit cards, smart cards, electronic payment systems, online banking, internet banking, and mobile banking are helped by the existence of information technology. Information technology plays a role in increasing bank operational efficiency, which in turn will increase bank profitability [4]. Increased bank overhead due to information technology will increase the bank's profitability [5]. Furthermore, current bank profitability is an indicator of bank profitability expectations in the future because the part of bank profitability is not distributed in the form of dividends. The profitability, namely retained earnings, is an internal funding source that can support bank capital in funding bank operations in the future [6].

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Banks as intermediary institutions have a high dependence on funds borrowed from the public. Still, the number of funds borrowed to total assets must be managed to not be too large compared to the ability to distribute. The funds that have not been can channel in the form of increased credit. It has the opportunity to encourage the bank to distribute it to debtors in a less selective way immediately. However, increasing non-performing loans will reduce bank profitability [3, 7]. Banks continuously strive to reduce operational costs to increase efficiency and profitability [8–10]. The most significant component of operational costs in banks is in the form of interest expenses because the main business of banks is to collect funds from customers and then distribute them in the form of providing credit to debtors. Develop digital banking to offer better services for customers [11]. Digital technology will continue to change the banking landscape in Indonesia. Banks that have gone public view bank profitability as necessary because shareholders have standards for achieving bank profitability. The higher the profitability of the bank, can convince investors of the bank's prospects in the future [12]. Previous research has focused more on the effect of bank management's efforts to manage bank operations on profitability. The results of previous studies tested the impact of bank liquidity, bank efficiency, and bank overhead on bank profitability.

This study further studied the effect of bank management efforts to manage bank operations by implementing digital banking on bank profitability [6]. Banks run the banking business by getting customers through an adequate system. The ability of banks to provide good services to customers has consequences for the operational costs used, so overhead costs are the main component. Bank overhead costs are costs incurred indirectly in getting customers, namely the cost of labor and information technology used [5]. The use of information technology enables banks to reduce certain overhead costs as a form of cost efficiency [13]. Information technology contributes to the development of mobile telecommunication operators, internet service providers, computer hardware manufacturers, software developers, mobile device manufacturers, and software manufacturers, which help the banking sector to accelerate services [4]. Customers with light operating software (cell phones, smartphones, tablets, and personal digital assistants will be able to transact through banks in various places without time restrictions. Currently, the banking environment is becoming very competitive. Banks and financial institutions offer many valuable services to potential and existing customers. Banking management realizes that with the application of information technology, banks will be able to keep up with the times to maintain customer satisfaction so that they remain interested in bank services [11].

The results of previous studies found that related to the effect of bank liquidity on bank profitability [2]. The banks need to maintain liquidity by maintaining a balance between depositors and withdrawals of depositors and creditors [14]. Banks' ability to maintain liquidity can provide a significant increase in the performance determined by profitability [3]. In addition, bank efficiency has a significant effect on bank profitability, and more efficient bank operations will encourage a decrease in bank operating costs, increasing bank profitability [3]. Banks carry out cost efficiency by maximizing output and minimizing waste in Indian banking [13]. Internet finance on commercial banks in China can positively impact profitability and efficiency, and vice versa, negatively impacting bank liquidity [15]. Increasing efficiency in banks is a form of financial service that can increase profitability [16]. The banking system is essential to ensure the financial stability of a country's economy. Banking has a vital role in the financial sector, such as risk management, asset management, compliance with central bank regulations, profitability management, and the stock market [3, 7]. Based on the above discussion, four research objectives are as follows: first, to obtain the magnitude of the influence of liquidity on bank profitability. Secondly, to get the extent of efficiency's effect on banks' profitability. Third to convey the importance of the impact of the overhead expenses of commercial banks in Indonesia on profitability, and fourth, to obtain the effect of simultaneous liquidity, efficiency, and overhead costs on profitability.

2 Literature Review

2.1 Asset and Liability Management (ALM)

Banks as business organizations must manage their assets and liabilities in a balanced manner by determining a reliable strategy to achieve the targeted financial performance [12]. Asset liability management is related to liquidity, referring to the bank's ability to meet the availability of funds when customers withdraw funds [14]. Liquidity management ensures that banks have sufficient cash and liquid assets to meet the demands of customers who will borrow funds and customers who will withdraw savings and pay bank fees. Liquidity management involves daily analysis and detailed estimation of the size and timing of cash inflows and outflows over the coming days and weeks to minimize the risk of not being able to provide funds when customers withdraw their savings. Banks of various sizes providing services can face multiple risks, such as credit, interest, and liquidity [3]. Banks must continuously monitor the bank's financial position through ALM. The ALM aims to analyze the gap between assets and liabilities that have matured so that banks can minimize the risks arising from these gaps, primarily from interest rate and liquidity risk [17]. Risks that can manage include interest rate risk, market risk, credit risk, liquidity risk, and financial risk [8]. Risk provisions, return, and capital is contained in all banking activities. How effectively a bank uses its money will determine its success. Asset liability management encourages banks to manage and balance the risks arising from managing bank assets, which come from loans. Banks must manage various risks, including credit risk, market risk, interest rates, and liquidity risk management [8].

Bank loans are banks' most significant assets and primary source of income. Banks accept deposits from customers and use these funds to lend to debtors in the form of credit that will generate interest income. Bank liquidity, represented by the loans to total assets, influences bank profitability [7, 18]. The bank liquidity is because the more extensive the loan funds obtained by the bank from the customer, the potential to increase the idle fund if the bank cannot channel it optimally in the form of credit. Therefore, Bank liquidity, measured by the loan to total assets, has a positive effect on profitability [2]. Banks play an essential role in the stability and development of the economy by increasing the efficiency of reallocating the use of funds in the economy. Therefore, efficiency stability will impact bank profitability and play an essential role in a country's stability and economic growth. The bank liquidity effects on bank profitability in sustainable manner [17].

2.2 Bank Overhead

Bank activities can be divided into three main functions: collecting public funds with excess funds to be distributed to people who need funds. Savings facilities offered by banks include demand deposits, savings deposits, and time deposits. Second, allocating funds to people who need funds can borrow money at the bank and will be charged interest on the loan. Interest from credits is one of the sources of income for banks. Suppose the bank is unable to extend credit to third parties. The bank's income will also not be optimal because it should pay interest to customers who keep their money in the bank, both those that have been distributed and those that have not been distributed in the form of credit. Third, providing banking services to continue to increase its profitability. Commercial banks offer money transfers (transfers), book-entry, collection of securities, letters of credit, collections, and other services. Users of these bank services will be charged a fee which is one source of income for commercial banks, and the system used by banks to carry out these three activities as a bank system becomes the bank's operational cost [9, 19]. Currently, commercial banks are competing to innovate in offering their services. Banks must improve technology and information systems to provide fast, accurate, and secure services [5]. In the era of technology, bank customers no longer need to come to a bank teller to perform banking transactions but directly deal with electronic banking such as automatic teller machines, smartphones, and the internet [4]. Customers can make bill payments, transfer funds to other banks, top-up credit and make payments using electronic banking facilities [6]. Almost all these transactions are charged with user fees and collected as additional income for the bank [11]. Bank overhead costs are simply incurred by banks indirectly related to efforts to get customers [2]. The use of technology can reduce certain overhead costs to increase profitability [4, 13].

The bank overhead has influences on bank profitability [20]. Bank overhead in conventional bank operations is attempted to be suppressed to reduce bank operating costs and increase bank profitability [9]. However, with the development of digital banking, the need for bank information technology investment is included in the overhead account, following accounting treatment in accommodating developments technology that takes place rapidly [5]. Financial service companies, including banks, have a sharp difference from manufacturing companies in the amount of income generated from non-interest income with the non-interest expense.

2.3 Bank Financial Performance

Good financial performance is something that every bank must achieve because financial performance reflects the bank's ability to manage and allocate financial resources [3]. Financial performance is the work achievement that has been achieved by the bank in a certain period and is stated in the bank's financial statements. Financial performance measurement aims to measure business and management performance compared to the bank's goals or is a tool for management to control its business [12]. One of the measurements of financial performance is by analyzing the accounts in the bank's financial statements, which are published periodically where the measurement results can be used to assess a bank's economic performance.

Banks in their operations must maintain operational efficiency [9]. Bank's operational efficiency, as measured by the total operating expenditure of total assets, most of which is interest expense, was found to influence bank profitability [19]. Bank operational efficiency where one of the elements being managed, namely interest expense, needs to be kept to a minimum through the bank's asset and liability management [3]. The bank management continuously strives to streamline bank operations, especially in reducing interest expenses paid to customers, to increase bank profitability. The emphasis on interest costs is not meant for banks to pay interest to a minimum because the interest on deposits offered by banks to customers must be competitive. However, it can emphasize interest expenses by obtaining funds from customers through bank services in facilitating daily customer transactions. The more service facilities offered to customers, the more funds that can be collected, apart from savings deposits and deposits from customers.

Bank profitability plays an essential role in the operation of every bank because the primary assessment of bank success is measured through profitability [17]. Therefore, the achievement desired by the shareholders for banking operations is to maximize the achievement of profitability by utilizing the equity they have [4, 6].

2.4 Relationship Between Liquidity, Efficiency and Overhead on Financial Performance

Banks play an essential role in creating liquidity, impacting the economy [3]. Banks create liquidity through their balance sheets by converting illiquid assets, such as business loans, into liquid liabilities, such as deposit transactions [14]. This theory also recognizes that banks create liquidity through the balance sheet by using loan commitments and similar claims for liquid funds [2].

Bank loans are banks' most significant assets and primary source of income. Banks receive deposit funds from customers and use these funds to lend to debtors in the form of credit, generating interest income [2]. The Loans to total assets, a measure of liquidity, harm profitability [18]. On the other hand, Bank liquidity risk affects bank profitability [8]. Different things happen to commercial banks in China, where internet banks have a positive impact on profitability and a negative effect on liquidity [15]. Higher liquidity allows banks to increase credit which can increase interest income, contributing to increased profitability.

H1: Bank liquidity has a significant effect on Bank Profitability.

Efforts to increase efficiency are challenging for the financial services industry [16]. Still, cost management is not only concerned with reducing costs but also with efforts to generate more revenue per unit cost. The behavior of these banks is also intuitively influenced by increasing competition from non-bank financial institutions and banks expanding into new markets. This situation puts intense pressure on banks to increase revenue and, at the exact time, control costs. Efficiency is essential to surviving and being sustainable [9]. The most efficient banks have substantial costs and a competitive advantage that exceeds average efficiency [8]. In the digital era, bank efficiency is facilitated by adopting digital banking to improve bank operational efficiency [3, 9].

Efforts to increase bank profitability must focus on bank operational efficiency because bank operational efficiency is a source of success in increasing bank profitability [17]. Bank operational efficiency, mainly in reducing interest expense, was found to positively affect profitability [10, 13]. Moreover, in the digital era, bank operational efficiency can be increased by adopting digital banking [15].

H2: Bank efficiency has a significant effect on bank profitability.

Financial service firms, including banks, are different from manufacturing companies that invest in plants, equipment, and other fixed assets, financial service companies invest mainly in intangible assets such as brands, human capital, and information technology. As a result, bank investment in information technology for bank growth is categorized as overhead according to accounting rules. Overhead costs consist of several costs, which are the most significant contributor to overhead costs for conventional banks, which then switch partly to information technology investments for digital banks, costs of goods and services as a part of operational cost banks [1]. Overhead costs are part of the operating costs issued by banks because of the costs incurred by the company when getting customers [19]. The increase in bank operational costs impacts decreasing profitability due to the rise in bank overhead costs [2]. Information technology banks use by implementing internet banking can increase profitability by reducing overhead costs [4, 6]. On the other hand, the overhead hurts profitability [20]. Banks in India have always focused on reducing overhead costs by eliminating waste that occurs in operations [13].

H3: Bank overhead has a significant effect on bank profitability.

3 Method

This research includes quantitative research and consists of the type of explanatory research, which describes the nature of something that is ongoing at the time the research is conducted and examines the causes of a particular symptom in detail on a specific object over a certain period thoroughly. The population is the entire research subject [21]. The population used in this study are BUKU 4-member commercial banks operating in Indonesia. The sample in this study is saturated because the whole population, namely BUKU 4 member banks, are all banks that have gone public and implemented digital banking as the research sample. Data is collected from the Bloomberg terminal. The research sample consisted of six banks in Indonesia that implemented digital banking from 2007–2018: Bank Mandiri, Bank Rakyat Indonesia, Bank Negara Indonesia, Bank Central Asia, Bank CIMB Niaga, and Bank Panin. This study adopts previous research by linking the concept of corporate finance theory relevant to applying profitability of bank determinants in commercial banks in Indonesia. Data were analyzed using multiple regression analysis. A classical assumption test will precede multiple regression analysis to ensure the feasibility of the data.

4 Result

This study uses regression analysis to test the research hypothesis. The test results with regression analysis are presented in Table 1.

Table 1. .

Hypothesis	**Coefficient**	**p-Values**	**Decision**
Liquidity → Profitability	0.248	0.022	Accepted
Efficiency → Profitability	2.873	0.001	Accepted
Overhead → Profitability	3.855	0.004	Accepted

Liquidity, Efficiency, and Overhead → Profitability with the value of F-test = 9.801 and Sig. 0.000 (Accepted)

Based on Table 1, the results hypothesis: the first hypothesis (H1) is accepted, which states that liquidity positively impacts profitability with p-values of 0.022 and below 0.005. The second hypothesis (H2) is found that bank efficiency can have an impact on profitability because efficiency can increase the company's equity, so it can provide tremendous credit to customers so that it has the potential to increase profitability. Overhead to profitability as the third hypothesis (H3) is acceptable. The third hypothesis is obtained because the company has changed the bank's business by implementing a digital bank to increase overhead expenses has positively impact on bank profitability. Table 1 shows that liquidity, efficiency, and overhead simultaneously impact bank profitability. The bank loans are usually the most significant asset and primary source of revenue for banks [2]. The bank accepts customer deposits and uses these funds to lend to customers in the form of credit, which will generate Interest Income. Bank liquidity harms profitability [18]. The liquidity is since the more extensive the loan funds obtained by the bank from the customer, the potential to increase the idle fund if the bank cannot channel it optimally in the form of credit. Therefore, bank liquidity has a significant positive effect on profitability. The study's results found that bank liquidity significantly affected bank profitability. Data for banks in general in 2007–2018 shows increased bank liquidity. The increase in bank liquidity shows that banks have utilized their primary source of income, deposits from customers. Deposits from customers have not been optimally lent to customers through credit. The trend of increasing bank liquidity is due to Indonesia's credit growth decline. Meanwhile, consumer credit tends to increase. However, since the larger credit contribution comes from commercial credit, the impact on total credit has decreased. However, through the Asset and Liability Management of banks that implement digital banking, banks are still able to manage their liquidity so that they can increase bank profitability. The results of this study are in line with research that states that liquidity has an impact on profitability [2, 7, 8, 17].

The bank management continuously seeks to streamline bank operations, especially in reducing interest expenses paid to customers, to increase bank profitability [1]. The emphasis on interest expenses is not meant for banks to pay interest to a minimum because the interest on deposits offered by banks to customers must be competitive. The more service facilities provided to customers, the more funds that can collect, apart from savings deposits and deposits from customers. This study finds bank efficiency has a significant positive effect on bank profitability. The bank's efficiency data shows an increasing trend due to its ability to control the payment of interest expenses. The bank's efficiency shows that banks that implement digital banking can reduce interest expenses, which indicates that banks are increasingly able to operate efficiently. In addition, this also shows an increase in bank services, where the revenue obtained from bank services that apply information technology has become a source of bank funds. The banks can reduce their dependence on funds from customers by focusing on digital banking services, both in terms of internet banking, online banking, mobile banking, and virtual payment service facilities, such as toll payments. In addition, the increase in bank efficiency was also caused by a decrease in deposit interest rates, both for time deposits and savings. Therefore, increasing bank efficiency has an impact on increasing bank profitability. The results of this study support the results of research that states that increasing bank efficiency can increase bank profitability [3, 8–10, 13, 15, 17].

Bank overhead from conventional bank operations must be attempted to be suppressed to increase bank profitability. However, with the development of digital banking, improved bank information technology investment included in overhead accounts will positively affect profitability bank. The investment in information technology for Financial Service Firms is included in overhead expenses. The study's results found that bank overhead significantly positively affected bank profitability. The increase in bank overhead will increase the bank's operational productivity, which in turn will increase the bank's profitability. Digital disruption has encouraged Indonesian banks to consider digital as part of their strategy, and banks have included digital initiatives as part of their bank strategy. This condition enables Indonesian banks to create smartphone-based cellular processes to serve customers. In recent years, Indonesia has been a booming e-commerce and payments sector managed by domestic and regional companies dominating the market. This study supports the results of research that states that information technology provides an increase in bank overhead expenses in the short term but increases efficiency so that it can provide an increase in profitability [1, 4, 6, 13, 20]. However, the research results differ from those that state that overhead costs reduce bank profitability [2, 19].

Simultaneous test results found that liquidity, efficiency, and overhead costs impact banks' profitability in Indonesia. The results of the hypothesis indicate that the better liquidity, the bank can provide larger loans to customers to increase profitability. On the other hand, increasing efficiency also enables companies to increase profitability with the help of information technology as a form of investment that increases digital banks to increase profitability.

5 Conclusions

Banks in Indonesia that implement digital banking, their profitability is influenced by bank liquidity. Banks must use liquidity optimally by channelling it in the form of credit. Bank efficiency also affects bank profitability. Increasing bank efficiency reflects the better ability of banks to manage asset and liability management in their operations which will increase bank profitability. Bank overhead is mostly used for investment in information technology. The increase in bank overhead makes it easier for bank operations to be more efficient. Information technology helps banks to be able to complete a much larger number of transactions with a shorter duration of settlement, thereby reducing bank operating costs and increasing bank profitability.

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