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Bank Efficiency Analysis: Study of Indonesia's Conventional Bank

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This study aims to examine the efficiency of the banking industry sector in Indonesia. Many efficiency tests have been carried out in Indonesia, but they only discuss technical efficiency. In this study, we discuss efficiency even further. The efficiency tested in this study includes technical efficiency, allocative efficiency, and cost-efficiency. Efficiency testing in this study uses BUKU 1, BUKU 2, BUKU 3, and BUKU 4 categories. Our finding shows that BUKU category has a varied effect on the bank efficiency.

Key words: *Allocative efficiency, BUKU, cost efficiency, DEA, technical efficiency.*

Introduction

Indonesia experienced deregulation in the financial sector at the end of 1980s. This deregulation made banks, particularly, to enter the neo-liberalisation era. Hence, the liberalisation era caused banks to compete with each other. This tight competition also encouraged the banks to be efficient.

Efficiency is one of the parameters of banking performance that theoretically underlies all company performance. According to Blejer (2006) and Sarjono (2008), bank efficiency is a key matter due to it amplifying financial stability. The ability to maximise available inputs to produce high output is a measure of expected performance. In the banking industry, the conditions for how to obtain existing inputs by minimising the level of input. To see the efficiency of a bank can be identified as the level of output and input by further analysing the causes (Sarjono, 2008). In a speedily transforming worldwide financial sector, bank managers, investors, and administrators pay attention to convert their sumptuous inputs into different financial services and products more efficiently (Isik & Hasan, 2002).

The Financial Services Authority (FSA) at the end of April 2016 through the OJK Circular Letter number 14 / SEOJK.03 / 2016 officially enacted regulations on the provision of incentives for efficient banks. The incentive was given in the form of a discount on Core Capital Allocation (AMI) for the requirements to establish a branch office. OJK measures the level of efficiency of these banks through two things, namely NIM and operating expenses on operating income (BOPO). With this circular, spurring the banking sector at a more technical level, banking institutions are expected to have a high level of efficiency so that they can score high levels of profits from their operational activities and channel third party funds at competitive costs.

The thing to note is the efficiency of banking in Indonesia. Banking efficiency in Indonesia has been in the spotlight recently. Like a vein of the economy, banks are required to operate at the optimal efficient point to bridge between the capital owners and those in need. In the banking industry, efficiency is not only used to look at operational and management performance, but efficiency also plays a role in seeing the probability of a company going bankrupt, whereas bankrupt banks generally begin with a low level of efficiency. Therefore banks make various efforts to reduce the level of inefficiency.

Each bank tends to control the interest rate spreads to maintain the efficiency and effectiveness of operational activities. In the annual report published by nine banks listed on the stock market, state-owned or private companies in the last five years, most banks have relatively high NIMs, reaching above five percent. The FSA set a NIM of five percent as a limit to banking efficiency. This provision applies to those categorised as banks based on business activities (BUKU) 3 and 4, namely banks with a capital of IDR 5 trillion to less than IDR 30 trillion (BUKU 3) and with a core capital of at least IDR 30 trillion (BUKU 4).

Of the nine banks listed on the stock market, in the last five years (2015-2019), Bank Danamon has the highest NIM among other banks. The net interest margin of the private bank ranges from eight to nine percent. Bank Danamon's lowest NIM occurred in 2015 by 8.20 percent. The decrease was influenced by a decline in total consolidated assets by four percent and an increase in the ratio of bad loans or non-performing loans (NPLs) in certain business lines. The other highest NIM is owned by state-owned bank BRI. The bank's net interest margin is around eight percent. Only in 2017 BRI's NIM dropped to 7.93 percent. Two private banks: Bank Permata and OCBC NISP have the lowest NIM ratio among other banks. The net interest margins of the two banks range below five percent, lower than the national average.

The "bad luck" hypothesis proposed by Berger & DeYoung (1997), namely Non-Performing Loans (NPLs) which increases due to external factors that cannot be controlled by management such as declining economic conditions. A high NPL can cause banks to not have

operational efficiency. In other words, NPL has an effect on banking technical efficiency. Hauner, (2005) explains that basically bank size influences efficiency in two ways, first, if bank size is positively related to market power, banks with larger input costs will be lower. Second, there is the possibility of increasing returns to scale, which is a situation where the ratio of input to output decreases with increasing company costs. Increasing returns to scale can come from fixed costs (e.g. costs for research or risk management) or 10 specialised workforces. In other words, the size of the bank can affect the operational efficiency of the bank.

Literature Review and Hypothesis Formulation

Several of recent researches studied the cost and profit efficiency in conventional banks. These research-studies found that the varied levels between cost and profit efficiency are caused by the wastefulness on the revenue side (e.g. Rogers, 1998; Berger and Mester, 2003). Revenue can be described as how effectively a bank sells its outturn. Maximum revenue is obtained as a result of producing the outturn tie up efficiently. In fact, revenue efficiency consists of technical and allocative efficiency which are connected to managerial determinants and is regularly associated with regulatory factors. Isik and Hassan, (2002) postulates that in sequence to discover revenue efficiency, banks should sharpen both technical efficiency (managerial operating on the production possibilities) and allocative efficiency (bank producing the revenue maximising the mix of outputs based on certain regulations).

Another way to ameliorate the revenue efficiency suggested by several studies is for banks to bring on higher quality services, apply higher prices and fight to overcome any improper choice of inputs and outputs quantities and mispricing of outputs (Rogers, 1998). The revenue wastefulness could be well identified via the profit function because this function combines both cost and revenue efficiency to evaluate profit efficiency. Revenue efficiency would totally affect profit efficiency even when cost efficiency is high.

In principle, revenue efficiency would be the significant factor that determines profit efficiency. Berger and Humphrey (1997), Bader et al. (2008) and Kamarudin et al. (2016) affirm that there has been limited research done on revenue efficiency of banks. Kamarudin et al. (2014a) notice that revenue efficiency seems to be the main factor leading to lower or higher profit efficiency levels not only in Islamic banks but also conventional banks in the developing countries.

Kamarudin et al. (2014b) recommend that asset quality, non-traditional activities, management quality, and liquidity mainly influence the improvement in revenue efficiency of conventional banks in the developing countries. The improvement in revenue efficiency of

the conventional banks in the developing countries was also influenced by inflation and concentration ratio of the largest banks operating in the national banking sector. The above literature reveals the following research gaps. First, the majority of these studies have mainly concentrated on the conventional banking sectors of the western and developed countries but not categorised by banking activity due to different sizes. Second, empirical evidence on the developing countries, is varied. Finally, virtually nothing has been published on the cost, revenue, and profit efficiency and its determinants in the conventional banking sector. In the light of these knowledge gaps, the present paper seeks to provide new empirical evidence on the cost, revenue, and profit efficiency and its determinants in the Indonesian conventional banking sector.

Siudek (2008) in his research, defines efficiency as an indicator that shows the ability of managers and company staff to maintain the level of increase in income and profits above the level of increase in operational costs. Besides, Jaworski (2006) also revealed that efficient activities are activities that not only lead to the achievement of certain objectives but also guarantee higher economic benefits from the inputs used.

Sexton, Silkman, & Hogan, (1986) define efficiency as the ability to complete work correctly and can be written mathematically as the ratio of output and input or the amount of output produced from an input used. Furthermore, Muazaroh et al. (2012) state that efficiency can be defined as the ability of organisations to maximise output by using certain inputs or using inputs minimally to produce certain outputs. This is in line with what was explained by Gordo (2013) that efficiency is the ratio between output and input. This measure refers to technical or operational efficiency (TE) which reflects the company's ability to obtain optimal output from an input used, or vice versa, the company's ability to utilise at least an input to produce a certain amount of output.

In managing efficiency there are several opinions in the categorisation of efficiency including, according to (Ascarya & Yumanita, 2006) there are two types of efficiency, namely technical efficiency, and economic efficiency. Economic efficiency has a macroeconomic picture, while technical efficiency has a microeconomic picture. Measurement of technical efficiency is only for techniques and operational relationships in the process of user input to output. In measuring economic efficiency, prices cannot be considered predetermined but prices can be influenced by macro policies.

Farrel (1957) distinguishes efficiency from technical and price (allocative) efficiency. The company is said to be technically efficient if it succeeds in selecting an optimal set of inputs and then can produce maximum output. In this case, the company must be able to measure how the quality of the inputs used in producing output. Whereas price efficiency is a measurement of the proportion of inputs in producing maximum output where each change in

input will have an impact on price changes, for example, labour (input) which is measured using working hours. If there is a change in the proportion of labour, it will have an impact on changing working hours so as a result of these changes it must be compensated to the unit price. The greater the changes that occur, the greater the costs incurred.

Berger & Humphrey, (1991) offers three ways to define financial outputs of a financial institution, namely the asset approach (the output is loans issued by banks and other assets), the user cost approach (outputs that have contributed. efficiency which is also used by Haddd, et al. (2003) and is the concept of efficiency used by banks in defining the relationship of input-output in running from financial institutions; with parametric and nonparametric methods is the production approach, intermediation approach, and asset approach

The production approach defines financial institutions as producers of deposit accounts and loans; it also defines output as the sum of the accounts or related transactions. The inputs, in this case, are calculated as the sum of labour, capital expenditure on fixed assets, and other materials.

The intermediation approach views a financial institution as an intermediary, i.e. converts and transfers financial assets from surplus units to deficit units. In this case institutional inputs are labour and capital costs and interest payments on deposits, with output measured in the form of loans and financial investments. Finally, the asset approach holds that the main function of a financial institution is as the creator of loans. In the asset approach, that visualises the primary function of a financial institution as the creator of loans, it is very close to the intermediation approach, where output is defined in terms of assets.

In measuring efficiency by using DEA two models are often used, namely: Constant Return to Scale (CRS) and Variable Return to Scale (VRS). The DEA Constant Return to Scale (CRS) model was first introduced by Charnes, Cooper, and Rhodes in 1978. The input-oriented model is based on the assumption of constant return to scale so it is known as the CCR model. In the constant return to a scale model, each DMU will be compared with all DMUs in the sample assuming that the DMU's internal and external conditions are the same. Critics of this assumption are that the constant return to scale assumption is only appropriate for conditions where all DMUs operate at an optimal scale. However, in reality, although the DMU operates with the same resources (input) and produces the same output, the internal and external conditions may be different, so that it can cause the DMU not to operate at an optimal scale. According to Casu & Molyneux, (2003) CRS models that have assumptions that are only suitable for use when all DMUs are operating at an optimal scale.

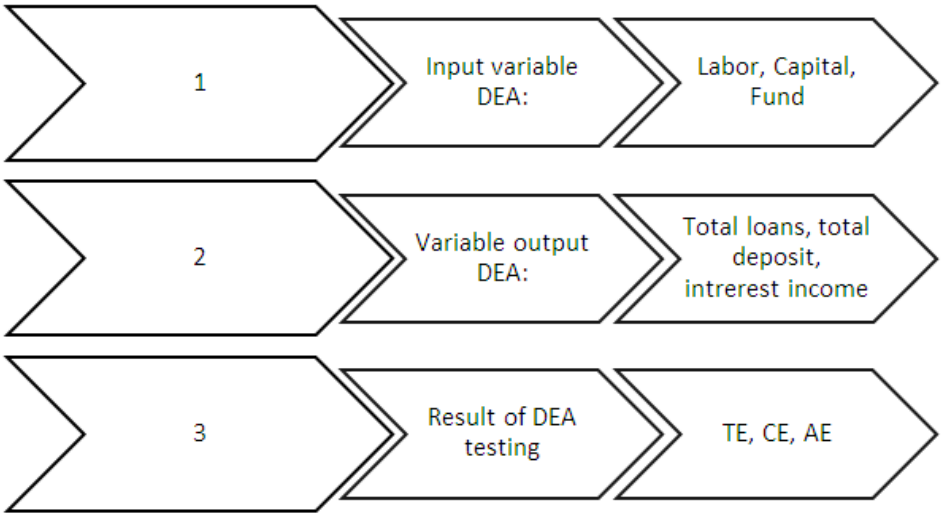
The Variable Return to Scale (VRS): This approach model is relatively more appropriate to be used in analysing performance efficiency in service companies including banks. In

research (Avkiran, 1999), the return to scale variable is a more appropriate assumption used for large samples. The return to scale variable describes the overall technical efficiency consisting of two components: pure technical efficiency and scale efficiency. Pure technical efficiency illustrates the ability of managers in a company or DMU to utilise available resources. Meanwhile, scale efficiency describes a DMU or a company that can operate on the right production scale.

Based on the description above, the hypothesis proposed by researchers in this study, as follows:

H1a: BUKU 1 bank category has technical efficiency
H1b: BUKU 2 bank category has technical efficiency
H1c: BUKU 3 bank category has technical efficiency
H1d: BUKU 4 bank category has technical efficiency
H2a: BUKU 1 bank category has cost efficiency
H2b: BUKU 2 bank category has cost efficiency
H2c: BUKU 3 bank category has cost efficiency
H2d: BUKU 4 bank category has cost efficiency
H3a: BUKU 1 bank category has allocative efficiency
H3b: BUKU 2 bank category has allocative efficiency
H3c: BUKU 3 bank category has allocative efficiency
H3d: BUKU 4 bank category has allocative efficiency

Figure 1. Framework of Research



Research Method

The object of the study will be examined regarding banking efficiency in Indonesia. This study will use secondary data, including Conventional Banking financial reports in Indonesia, which are published on the website www.ojk.go.id with the variables to be examined in the form of total expenses, interest expenses, labour expenses, other expenses, productive assets, and total credit granted.

Sampling in this study uses a purposive sampling technique; according to Suharyadi and Purwanto (2014), purposive sampling is sampling with certain considerations. These considerations are based on research interests or objectives. Based on this description, the sample withdrawal is conventional commercial banks divided by core capital of banks, categorised by these banks starting from 2016 to 2018, by dividing the BUKU (Commercial Banks based on Business Activities) group, Banks are grouped into 4 BUKUS, that is: BUKU 1 (Banks with core capital of fewer than one trillion rupiahs), BUKU 2 (Banks with core capital of at least one trillion rupiahs to less than five trillion rupiahs), BUKU 3 (Banks with core capital of at least five trillion rupiahs to less than thirty trillion rupiahs), and BUKU 4 (Banks with core capital of at least thirty trillion rupiahs).

Table 1: Number of Commercial Banks Based on 2014 BUKU Group 2018

Group of BUKU	Amount Of Bank			
	2015	2016	2017	2018
BUKU I	34	25	18	18
BUKU II	56	50	54	51
BUKU III	22	24	25	27
BUKU IV	4	4	5	5
TOTAL	106	103	102	101

Source: Indonesian Banking Statistics - Vol. 17 No. 1, December 2018

In conducting this research, we will use a model with the assumption of Variable Return to Scale (VRS). The assumption using this model is that the ratio arising from the addition of inputs and outputs is not the same size (variable return to scale). The meaning is, every time there is an addition of input by 1 time, it will not automatically cause an increase in output by 1 time as well; the increase can be greater or can be also smaller than 1 time. This approach is relatively very appropriate when used for conducting efficiency analysis on companies including banks. Because in this model it is assumed that all UKE conditions are not the same or it can be said that not all UKEs operate optimally. Imperfect competition, financial constraints and so on might cause a company not to operate at an optimal scale.

Variable Return to Scale (VRS) describes the overall technical efficiency which is formed from two components, namely pure technical efficiency and scale efficiency. Pure technical

efficiency describes the ability of managers in the company (DMU) to maximise the resources available to them. While Scale efficiency describes a company (DMU) to operate according to the right production scale.

The problems in the linear program can be modified to explain the VRS approach by adding convexity constraints to the equation so that the formula is obtained:

Max h_s $= \sum_{i=1}^{m} u_i y_{is} + U_0$ (1)

Subject to $\sum_{j=1}^{m} u_i y_{ir} - \sum_{j=1}^{m} v_j x_{jr} \leq 0$, r = 1,…, N (2)

$\sum v_j x_{js} = 1$ and $u_{i \text{ and }} v_j \geq 0$ (3)

Technical efficiency is calculated as the following equation:

$$Efficiency = \frac{the\ weighted\ sum\ of\ outputs}{the\ weighted\ sum\ of\ inputs} \quad (4)$$

Sources: Charnes, Cooper, Lewin, & Seiford (1994)

While TE measures a proportional reduction in input use, AE measures a proportional reduction in costs if the right mix of inputs is chosen by the bank. Besides, CE is equal to allocating and technical efficiency products and can be represented as:

CE=AE*TE (5)

Banks are said to achieve efficiency on a scale when the bank can operate on constant returns to scale, while the efficiency of coverage is achieved when the bank can operate in a diversified location. The efficiency of allocation is achieved when banks can determine various outputs that maximise profits, while technical efficiency states the relationship between inputs and outputs in a production process (Berger & Mester, 1997). In various works of literature inputs in DEA can consist of table 2 below.

Table 2: Inputs and Outputs in DEA calculations

	Definition	Source	Price Input	Description
I_1	Labour Cost	Profit and Loss	Price Labour	Labour costs are divided by total assets
I_2	Fixed assets-net	Balance Sheet	Price of Physical Capital	Labour costs and non-interest costs divided by fixed assets
I_3	Total deposits (current accounts, savings, time deposits, certificates of deposit, deposits from other banks)	Balance Sheet	Price of Funds	Interest expense on deposits divided by deposit rates
O_1	Total Loans-Net	Balance Sheet		
O_2	Liquid assets and investment securities (cash, Placements with BI, Current Accounts with Other Banks, Placements with other banks, Owned Securities, Reverse repo, bonds)	Balance Sheet		
O_3	Other Operating Income	Profit and Loss		

Source: (Eyceyurt Batir et al., 2017)

Data Analysis and Results

DEA calculation in this study uses DEAP 2.1 which measures the efficiency with approaches to technical efficiency, allocative efficiency, and cost-efficiency. In the DEA calculation results below, there are seven banks analysed based on BUKU 1 category, namely banks with a core capital under 1 trillion. The results of the calculation of efficiency in the bank category BUKU 1 can be seen that the MNC bank is consistent in achieving the maximum level of efficiency both in technical efficiency, allocative, and costs in the period 2016 to 2018. This is indicated by the score of Technical Efficiency (TE), Allocative Efficiency (AE), and Cost Efficiency (CE) with a score of 1 (one). This happens by maximising the input that is owned so that it reaches the maximum level of efficiency in the 2016-2018 period.

Table 3: The output of DEA BUKU 1 Period 2016-2018

Period 2016			
BUKU1	TE	AE	CE
ARTOS	0.969	0.043	0.042
AGRIS	1	0.411	0.411
DINAR	1	0.076	0.076
HARDA	0.967	0.082	0.079
MITRANIAGA	0.837	0.314	0.263
YUDHABAKTI	1	0.213	0.213
MNC	1	1	1

Period 2017			
BUKU1	TE	AE	CE
ARTOS	1	0.069	0.069
AGRIS	0.987	0.271	0.267
DINAR	1	0.153	0.153
HARDA	1	0.113	0.113
MITRANIAGA	0.865	0.376	0.325
YUDHABAKTI	1	0.266	0.266
MNC	1	1	1

Period 2018			
BUKU1	TE	AE	CE
ARTOS	0.868	0.036	0.031
AGRIS	1	0.356	0.356
DINAR	1	0.172	0.172
HARDA	0.977	0.100	0.097
MITRANIAGA	1	1	1
YUDHABAKTI	1	0.224	0.224
MNC	1	1	1

Then in the 2017 period, QNB, INA, and BNP banks managed to record an efficiency score of 1 (one) on Technical Efficiency (TE), Allocative Efficiency (AE), and Cost Efficiency (CE). In the 2018 period, Bank QNB, Nobu, Ina, and BNP succeeded in achieving optimum efficiency levels by recording an efficiency score of 1 (one) on Technical Efficiency (TE), Allocative Efficiency (AE), and Cost Efficiency (CE). Based on table 4, it can be seen that the number of banks that have succeeded in achieving maximum efficiency has increased from 2016 to 2018. This suggests that more and more banks are increasingly paying attention to the efficiency aspects of their operations.

Table 4: The output of DEA BUKU 2 Period 2016-2018

Period 2016			
BUKU2	TE	AE	CE
WOORI	0.050	0.996	0.050
VICTORIA	0.077	0.123	0.010
QNB	0.078	0.999	0.078
NOBU	0.089	0.999	0.089
MASPION	0.088	0.047	0.004
DINAR	1	1	1
ARTAGRAHA	0.076	0.029	0.002
CAPITAL	0.093	0.113	0.010
BANKINDIA	0.086	0.062	0.005
BRIAGRO	1	1	1
BUMIARTHA	0.071	0.022	0.002
CHINACONS	0.076	0.054	0.004
MESTIKA	0.096	0.078	0.008
GANESHA	0.081	0.152	0.012
INA	0.083	0.369	0.031
JTRUST	0.070	0.994	0.069
BNP	0.076	0.995	0.076

Period 2017			
BUKU2	TE	AE	CE
WOORI	1	0.598	0.598
VICTORIA	1	0.907	0.907
QNB	1	1	1
NOBU	0.913	0.726	0.662
MASPION	1	0.084	0.084
DINAR	0.805	0.136	0.109
ARTAGRAHA	0.887	0.094	0.084
CAPITAL	1	0.240	0.240
BANKINDIA	1	0.164	0.164
BRIAGRO	1	0.385	0.385
BUMIARTHA	0.916	0.065	0.059
CHINACONS	0.877	0.140	0.123
MESTIKA	1	0.107	0.107
GANESHA	0.965	0.479	0.462
INA	1	1	1
JTRUST	0.961	0.875	0.841
BNP	1	1	1

Period 2018			
BUKU2	TE	AE	CE
WOORI	1	0.802	0.802
VICTORIA	1	0.951	0.951
QNB	1	1	1
NOBU	1	1	1
MASPION	1	0.102	0.102
DINAR	1	0.139	0.139
ARTAGRAHA	0.805	0.097	0.078
CAPITAL	1	0.239	0.239
BANKINDIA	1	0.204	0.204
BRIAGRO	1	0.626	0.626
BUMIARTHA	0.929	0.069	0.064
CHINACONS	0.969	0.184	0.178
MESTIKA	0.841	0.153	0.129
GANESHA	1	0.528	0.528
INA	1	1	1
JTRUST	0.782	0.924	0.722
BNP	1	1	1

Whereas other banks in the BUKU 3 category still showed fluctuations in their efficiency scores both in the category of technical efficiency, allocative efficiency, and cost-efficiency. This is illustrated in table 5 below:

Table 5: The output of DEA BUKU 3 Period 2016-2018

Period 2016				Period 2017				Period 2018			
BUKU3	TE	AE	CE	BUKU3	TE	AE	CE	BUKU3	TE	AE	CE
BJB	0.834	0.890	0.742	BJB	0.949	0.964	0.914	BJB	0.936	0.838	0.785
BTPN	0.738	0.997	0.736	BTPN	0.797	0.986	0.786	BTPN	0.762	0.906	0.691
BUKOPIN	1	0.706	0.706	BUKOPIN	1	0.776	0.776	BUKOPIN	0.987	0.319	0.314
DANAMON	1	1	1	DANAMON	1	1	1	DANAMON	1	1	1
MEGA	0.946	0.161	0.153	MEGA	0.835	0.211	0.177	MEGA	1	0.168	0.168
MAYBANK	1	0.755	0.755	MAYBANK	1	0.747	0.747	MAYBANK	1	0.732	0.732
PERMATA	1	1	1	PERMATA	1	1	1	PERMATA	1	0.876	0.876
MAYAPADA	1	0.778	0.778	MAYAPADA	1	0.795	0.795	MAYAPADA	1	0.721	0.721
NISPOCBC	1	0.734	0.734	NISPOCBC	1	0.839	0.839	NISPOCBC	1	0.810	0.810
BJATIM	0.796	0.937	0.746	BJATIM	1	0.991	0.991	BJATIM	1	1	1
BTN	1	0.813	0.813	BTN	1	0.830	0.830	BTN	1	0.738	0.738
PANIN	1	0.251	0.251	PANIN	1	0.293	0.293	PANIN	1	0.192	0.192
NIAGA	1	0.998	0.998								

In the DEA calculation results below, there are five banks analysed based on the BUKU 4 category, namely banks with core capital above 30 trillion. The results of the calculation of efficiency in the bank category BUKU 4 can be seen that BABK, BRI, and BCA have managed to record consistent results in achieving maximum efficiency levels both in technical efficiency, allocative efficiency, and cost efficiency in the period 2016 to 2018. This is indicated by the score TE, AE, and CE with a score of 1 (one). Whereas at other banks, such as BNI, Mandiri, and Niaga in the BUKU 4 category, they still showed fluctuations in their efficiency scores both in the categories of technical efficiency, allocative efficiency, and cost-efficiency. This is listed in table 6 below.

Table 6: The output of DEA BUKU 4 Period 2016-2018

Periode 2016				Periode 2017				Periode 2018			
BUKU4	TE	AE	CE	BUKU4	TE	AE	CE	BUKU4	TE	AE	CE
BRI	1	1	1	BRI	1	1	1	BRI	1	1	1
BNI	1	0.863	0.863	BNI	1	0.745	0.745	BNI	1	0.626	0.626
BCA	1	1	1	BCA	1	1	1	BCA	1	1	1
MANDIRI	1	0.698	0.698	MANDIRI	1	0.694	0.694	MANDIRI	1	0.784	0.784
				CIMB				CIMB	1	0.998	0.998

Conclusions and Recommendations

This study was conducted to test the efficiency of conventional banks in BUKU 1 BUKU II, BUKU III, and BUKU IV categories in the 2016 to 2018 period. The efficiency tests used were technical efficiency, allocative efficiency, and cost-efficiency.

The results of technical, allocative, and cost efficiency tests conducted by the DEA method state that the BUKU category does not affect the level of efficiency. This can be determined because based on the DEA test results it shows the results of fluctuating efficiency in the four categories of BUKU tested.

Based on the results of data processing and analysis of the entire research data, suggestions that can be given by researchers from the results of this study are as follows: Academics can test with the same research model in this research, but the object of research can be done on different themes or research objects, for example in other industrial sectors or Islamic banking. Conduct research with a broader scope of research, namely by discussing convention and sharia banking sectors as well as other non-bank financial institutions. Expanding and adding research models conducted by developing new research models such as adding new variables to this research model and conducting further testing, for example by testing efficiency with the SFA method or other methods. The government in its role as a regulator can provide feedback that is appropriate to market conditions and following current conditions so that it can provide appropriate incentives for the banking sector to improve banking efficiency in all categories of BUKU 1, BUKU 2, BUKU 3, and BUKU 4 banking sector to be able to make real and appropriate efforts to achieve better levels of efficiency in each category of efficiency, namely technical, allocative, and cost.

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