Information Management and Business Review (ISSN 2220-3796)
Vol. 15, No. 2, pp. 186-196, June 2023 (SI)

The Utilization of CAMEL Framework in Analyzing the Financial Soundness of Commercial Banks in Malaysia: Pre and in the time of Covid 19

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Abstract: The COVID-19 pandemic has impacted many aspects of the economy, including commercial banking. This research aims to analyze the health of Malaysia's commercial banks before and during the COVID-19 pandemic. To accomplish this, the authors employed the CAMEL framework, widely recognized as one of the best tools for evaluating a bank's health. The study aims to comprehend the pandemic's impact on the financial health of banks during the pandemic. Secondary data was gathered from the financial statements of eight local commercial banks from 2017 to 2021. Results from this study suggest that the performance of commercial banks in Malaysia was generally stable and well-capitalized, with low non-performing loans and strong profitability before and during COVID-19. This study offers a new understanding of the effect of the pandemic on banking operations in Malaysia, a country whose financial system depends mainly on banks.

Keywords: *Bank performance, financial soundness, CAMEL framework, COVID-19 pandemic, Malaysia banking sector.*

1. Introduction

A negative impact of the COVID-19 pandemic was felt across almost all economic sectors (Albada & Nizar, 2022; Shen et al., 2020). There was no exception for the financial industry (Elnahass et al., 2021; Neef & Schandlbauer, 2021). The pandemic adversely affected the banking system in many ways. For example, the closure of business activities during the Movement Control Order (MCO) led to many businesses and individuals experiencing financial difficulties (Tajudin et al., 2021). Firms that stopped working during the MCO started missing out on revenues and could not pay their loans (Xiazi & Shabir, 2022). At the same time, individuals who lost their jobs during the crisis were furloughed or had less income and, as a result, could not repay their loans. Such a situation created a possibility of an increase in non-performing loans and adversely affected the performance of banks (Xiazi & Shabir, 2022). During the pandemic, central banks worldwide, including Malaysia, cut interest rates to stimulate economic growth (BNM, 2020). This move reduced banks' profitability as lower interest rates meant lower returns on loans and investments. Banks were also negatively affected when bonds and other traded financial instruments lost value, resulting in further losses. This situation had a detrimental impact on profits and banking capital, necessitating the need for extra provisions. The outbreak forced financial institutions, notably banks, to be ready for extremely difficult and diverse future challenges that could result from an immediate exogenous shock (Couppey-Soubeyran et al., 2020).

Considering the COVID-19 pandemic, the authors examined the capital, assets, management, earnings, and liquidity ratios of local commercial banks in Malaysia. This study is significant because the banking industry is one of the primary components of the financial system and contributes significantly to economic health and productivity (Agovino et al., 2022). To ensure a healthy, solid, and stable banking sector, the banks must be analyzed and evaluated to allow the smooth correction and removal of potential vulnerabilities. Additionally, financial services disruption is costly, so it is essential to address the issue of banking soundness.

A growing body of literature has observed the potential impact of the COVID-19 pandemic on the financial performance of banks (Demirgüç-Kunt et al., 2021; Elnahass et al., 2021). The present study differs as it used the CAMEL approach. The CAMEL approach is a widely accepted and internationally acclaimed system of banks and financial institutions (Kumar & Bindu, 2022). The CAMEL approach was proposed in 1988 by the Basel Committee on Banking Supervision of the Bank of International Settlements (BIS). Secondly, the study focused on Malaysian banks. As COVID-19 spreads globally, the impact of it on the banks' performance varies with institutional quality and the level of financial development. In other words, different countries may react differently in response to the pandemic. Therefore, the current paper's outcomes are helpful to Malaysian

banks and government bodies in implementing corrective measures in response to an economic crisis such as COVID-19.

The findings illustrate that the performance of banks remains stable before and during COVID-19. CAMEL ratios, on the other hand, significantly decreased during COVID-19. Furthermore, the effects of the COVID-19 epidemic on the bank's performance vary from one bank to another. This study contributes to the field by offering a new understanding of the effect of the pandemic on banking performance in Malaysia, a country whose financial system depends mainly on banks.

The study is organized as follows: Part two comprises a brief overview of the literature, part three is devoted to the data and methodology employed, part four is dedicated to the analysis and discussion of the selected banks' soundness, and part five is devoted to the concluding observations.

2. Literature Review

CAMEL is an acronym for six key performance parameters. C stands for capital adequacy, A for asset quality, M for management efficiency, E for earnings sufficiency, and L for liquidity position. The parameters are derived from published annual reports' balance sheets and income statements. Several existing studies used the CAMEL approach (Abdul Rahman & Masngut, 2014; Roman & Şargu, 2013; Rostami, 2015; Sarker, 2005) to examine the bank's performance.

The CAMEL approach is usually used as an internal instrument to identify the strengths and weaknesses of the bank's overall condition (Kamaruddin & Mohd, 2013). Using this approach indicates banking soundness and the solvency status of banks (Uhde & Heimeshoff, 2009). CAMEL ratios are also crucial for the investor and the financial regulator as a guideline to monitor a bank's performance. Studies done by Louzis et al. (2012) and Salas and Saurina (2002) show that the variables that relate to the bank-specific factors are considered early warning signals for future changes in banking stability. However, the findings are mixed (different), depending on the definition and interpretation of the measurement of the bank's ratio chosen for the studies.

Even though the CAMEL approach has a drawback, such as it is an internal instrument used to analyze the bank's overall condition based on its financial, operational, and managerial characteristics, this approach provides valuable information for assessing a bank's current situation. Many studies have been conducted to evaluate the performance of the banking sector in different countries using the CAMEL framework. For instance, Rafiq (2016) measured the performance of banks in Bangladesh, and Nurazi & Evans (2005) did the same in Indonesia. Another study conducted by Baselga-Pascual et al. (2015) indicated that bank-specific variables (i.e., asset structure, capitalization, profitability, liquidity, and revenue diversification) were the factors that influence banking stability. Previous studies (Abdul Rahman & Masngut, 2014; Kabir & Dey, 2012; Muhmad & Hashim, 2015; Roman & Şargu, 2013) documented that the CAMEL is among the most popular methods for predicting the failure and closures of banking institutions.

3. Data and Methodology

The sample period of this study was from 2017 to 2021. The study period ended in 2021 simply because 2021 was the latest date the study could cover. The sample comprised eight local commercial banks operating in Malaysia, as reported in Table 1. All data used in this study were produced annually and extracted from each bank's annual reports. The authors chose the CAMEL framework to evaluate and analyze the soundness of Malaysia's commercial banks.

Table 1: Local commercial banks

No.	Banks	Acronym
1.	Malayan Banking Berhad	MBB
2.	CIMB Bank Berhad	CIMB
3.	Public Bank Berhad	PB
4.	Hong Leong Bank Berhad	HLB
5.	RHB Bank Berhad	RHB
6.	Affin Bank Berhad	Affin
7.	Alliance Bank Malaysia Berhad	Alliance
8.	AmBank (M) Berhad	Ambank

a. Capital Adequacy Ratio

Capital adequacy is a crucial factor in determining banking activities. Achieving and maintaining a minimum capital adequacy requirement (CAR) is necessary to prevent banks' failure. The current study measured capital adequacy using the Common Equity Tier 1 (CET 1 Capital Ratio) and Tier 1 capital ratio. These measurements are parallel to BASEL I, II, and III requirements. Based on the definitions of capital used in the Basel Capital Account, the CET 1 Capital Ratio measures the bank's capital adequacy by determining the degree of robustness of banking institutions to withstand shocks to their balance sheets.

In contrast, the Tier 1 Capital ratio measures a bank's capital adequacy based on the core capital concept of the Basel Committee on Banking Supervision (BCBS). A higher ratio indicates a higher level of capital adequacy. According to Gersl & Hermanek (2010), this ratio measures the banks' ability to absorb unexpected losses. Past literature has indicated that the capital adequacy ratio is essential in maintaining a bank's stability (Abdul Rahman & Masngut, 2014; Bourkhis & Nabi, 2013; Kamaruddin & Mohd, 2013).

b. Asset Quality Ratio

This study used the gross impaired loan (GIL) to represent the asset quality ratio. GIL is directly associated with the exposure of banking vulnerabilities (Gersl & Hermanek, 2010). An increasing GIL ratio signals a deterioration of the quality of the credit portfolio, which may affect the bank's stability (Albulescu, 2010). This ratio could also portray how banks face their financial problems and the prediction of distress (Rahim & Zakaria, 2013). Hence, the level of gross impaired loans is an essential indicator of a bank's asset quality and credit risk.

$$\text{GIL} = \frac{\text{Gross Impaired Loan}}{\text{Gross Loan}}$$

c. Management Efficiency Ratio

The management efficiency ratio is a financial metric used to measure how effectively a bank's management uses its resources to generate revenue. In this study, the cost-to-income ratio was used to measure banks' management effectiveness, as reported in previous studies (De Jonghe, 2010; Kabir et al., 2015; Muhmad & Hashim, 2015). The total cost includes all the costs of running the bank, such as salaries and wages, rent, and utilities as a percentage of the generated income. The growth and success of banking institutions depend on efficient management practices to detect, monitor, and control risk exposures, thereby ensuring the safety and efficiency of the banks' activities (De Jonghe, 2010). A low management efficiency ratio indicates that a bank's management uses its resources effectively to generate revenue. On the other hand, a high ratio suggests that a bank's management is not using its resources efficiently, which can lead to reduced profitability and lower returns for investors.

The formula for calculating the management efficiency ratio is as follows:

$$\text{CIR} = \frac{\text{Total cost}}{\text{Net operating income}}$$

c. Earnings Ratio

The earnings ratio assesses the bank's profitability relative to its total assets or equity (Cheang & Choy, 2011). Earnings ratios can be further categorized into return on assets (ROA) and return on equity (ROE). The ROA describes the ability of banks to generate profit based on their assets (Morales & Estrada, 2010). The ROA is calculated by dividing net income by the average value of total assets. The higher the ROA, the more efficiently a bank profits from its assets (Albulescu, 2010). The ROE ratio measures the bank's efficiency in using its capital (Gersl & Hermanek, 2010). In other words, it shows the ability of banks to absorb losses by using their resources and fund effectively. The ROE is calculated by dividing net income by the average value of capital (IMF, 2006). As with the ROA, the higher the indicator, the more effectively the bank generates profits (Sarker, 2005).

$$ROA = \frac{\text{Net Income}}{\text{Total Asset}} \qquad ROE = \frac{\text{Net Income}}{\text{Equity}}$$

d. Liquidity Ratio

The loan-to-deposit ratio (LDR) is the liquidity ratio. Banks' liquidity ratios indicate their ability to meet their current obligations when they are due. The liquidity level suggests the banking sector's ability to withstand fund shocks without experiencing liquidity problems (Muhmad & Hashim, 2015). Withdrawal of current accounts and saving deposits may present the bank with formidable obstacles. In other words, in the case of severe maturity mismatches, insufficient liquidity may threaten the stability of a bank.

$$LDR = \frac{\text{Total Loans}}{\text{Total Deposits}}$$

Below is the summary of the CAMEL ratio used in this study.

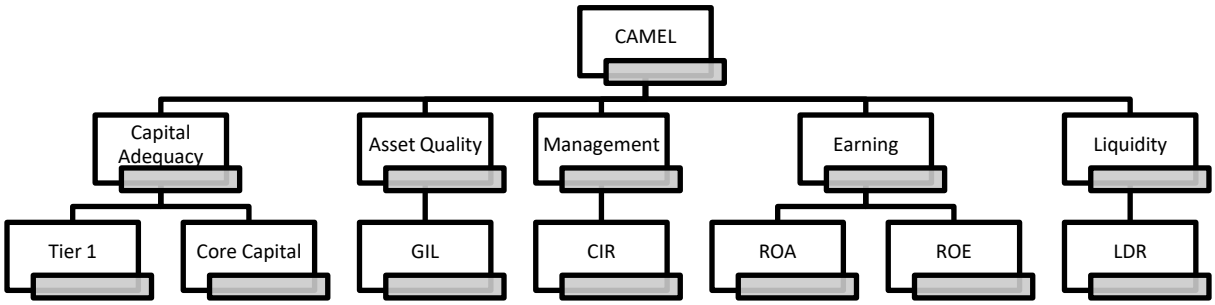


Figure 1: CAMEL indicator.

4. Results

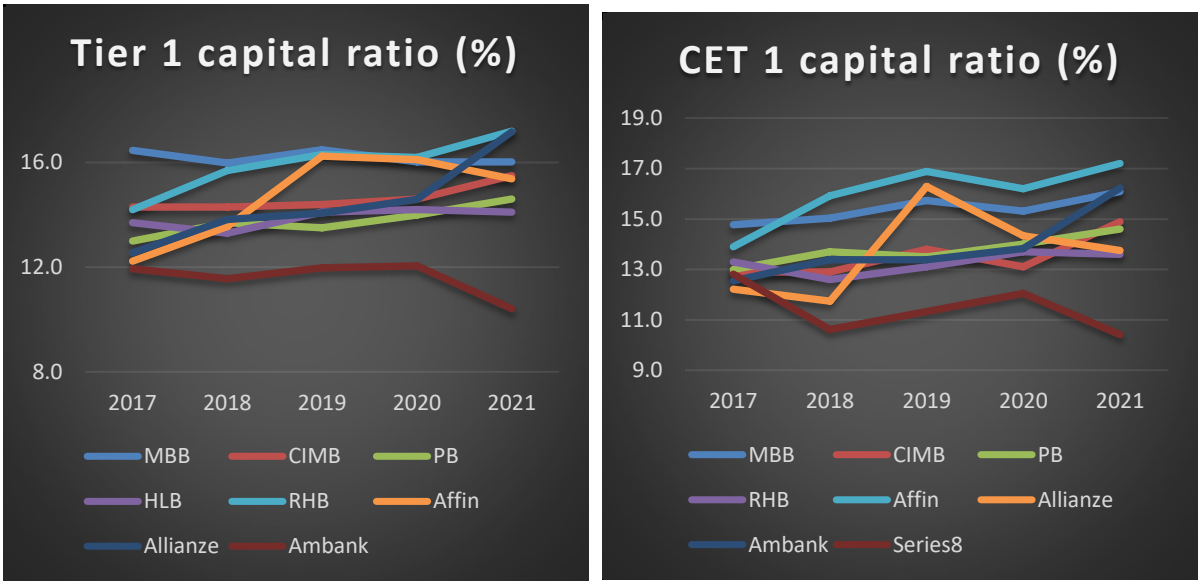
This section analyzes the result of the CAMEL ratio calculation for eight local commercial banks.

Capital Adequacy Ratio

Table 2: Capital Adequacy Ratio (authors' calculation)

	Tier 1 capital ratio (%)					CET 1 capital ratio (%)				
	2017	**2018**	**2019**	**2020**	**2021**	**2017**	**2018**	**2019**	**2020**	**2021**
MBB	16.5	16.0	16.5	16.0	16.0	14.8	15.0	15.7	15.3	16.1
CIMB	14.3	14.3	14.4	14.6	15.5	12.9	12.9	13.8	13.1	14.9
PB	13.0	13.7	13.5	14.0	14.6	13.0	13.7	13.5	14.0	14.6
HLB	13.7	13.3	14.1	14.2	14.1	13.3	12.6	13.1	13.7	13.6

RHB	14.2	15.7	16.3	16.2	17.2	13.9	15.9	16.9	16.2	17.2
Affin	12.2	13.6	16.2	16.1	15.4	12.2	11.7	16.3	14.3	13.8
Alliance	12.6	13.8	14.1	14.6	17.2	12.6	13.4	13.4	13.8	16.2
Ambank	11.9	11.6	12.0	12.0	10.4	12.8	10.6	11.3	12.0	10.4
Average	13.5	14.0	14.6	14.7	15.0	13.2	13.2	14.3	14.1	14.6



Graph 1: Tier 1 Capital ratio and CET 1 capital ratio.

A bank must maintain a minimum amount of capital to prevent unforeseen losses or adverse shocks (Abdul Karim et al., 2014). The bank's goals in capital management are to 1) meet the capital requirements set by the banking markets, 2) ensure the bank can continue as a going concern, generating returns for shareholders and benefits for other stakeholders, and 3) maintain a strong capital base to support the development of its business. Table 2 presents the capital adequacy ratio for eight local commercial banks in Malaysia. The capital adequacy ratios are computed following BNM's Capital Adequacy Framework (Capital Components) under the Basel Framework. The minimum regulatory capital adequacy requirements for CET1 and Tier 1 are 4.5% and 6.0% of total Risk-Weighted Assets (RWA).

The line graph above illustrates the Tier 1 capital ratio and CET1 ratio in all local commercial banks in Malaysia between 2017 and 2021. As of 2021, Ambank's Tier 1 capital ratio was 10.4%, HLB's was 14.1%, PB's was 14.6%, Affin's was 15.4%, CIMB's was 15.5%, and MBB's was 16%. Alliance and RHB had the highest industry Tier 1 capital ratio at 17.2%. For the CET 1 ratio, Ambank was 10.4%, HLB was 13.6%, Affin was 13.8%, PB was 14.6%, CIMB was 14.9%, MBB was 16.1%, Alliance was 16.2%, and the highest CET1 ratio was Alliance at 16.2%. Both ratios showed a steady but significant rise over the period, while the percentage of both ratios for Ambank experienced a downward trend.

Before the Covid-19 pandemic, all local commercial banks gradually strengthened their CAR in the years before in response to regulatory reforms such as Basel III. The average CAR for banks was around 14%, and most banks had a CAR above the minimum regulatory requirement.

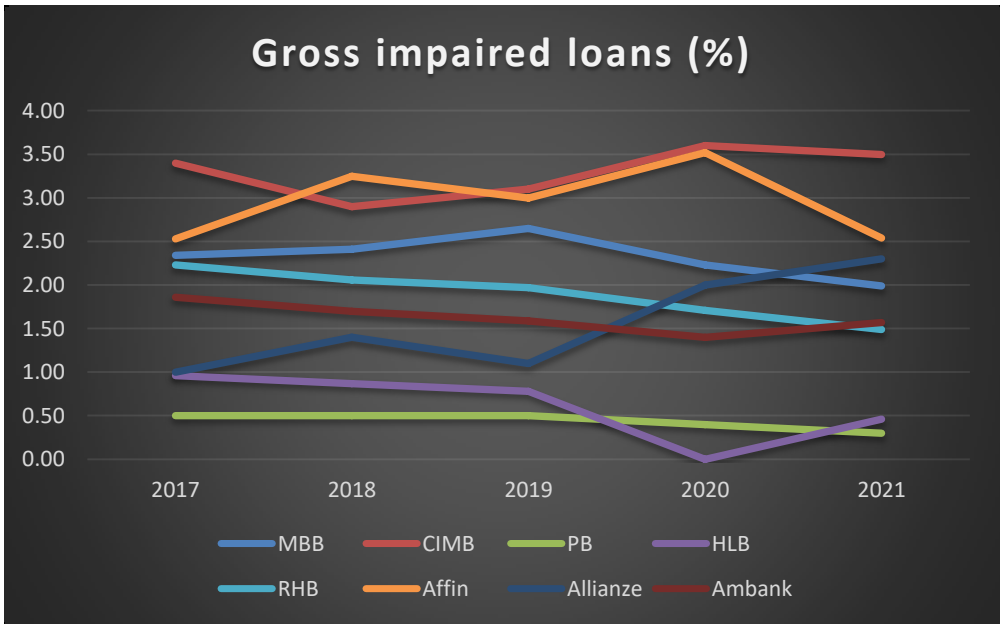
During the COVID-19 pandemic, the pandemic pressured banks' CAR, causing many banks to increase their provisioning for loan losses, thereby reducing their capital and affecting their CAR. Regulators implemented relief measures to assist banks in the short term in maintaining their CAR. Despite the challenges posed by the pandemic, it can be concluded that all local commercial banks in Malaysia have remained well-capitalized and maintained a CAR above the minimum regulatory requirement to withstand major economic shocks and absorb potential losses, particularly during the COVID-19 pandemic. The impact of the COVID-19 pandemic

has shown the importance of ample balance sheet capacity to handle a significant drawdown of corporate lines during the pandemic.

Asset Quality Ratio

Table 3: Asset Quality Ratio (authors' calculation)

	Gross impaired loans (%)				
	2017	**2018**	**2019**	**2020**	**2021**
MBB	2.34	2.41	2.65	2.23	1.99
CIMB	3.40	2.90	3.10	3.60	3.50
PB	0.50	0.50	0.50	0.40	0.30
HLB	0.96	0.87	0.78	0.61	0.46
RHB	2.23	2.06	1.97	1.71	1.49
Affin	2.53	3.25	3.00	3.52	2.54
Alliance	1.00	1.40	1.10	2.00	2.30
Ambank	1.86	1.70	1.59	1.40	1.57
Average	1.9	1.9	1.8	2.1	1.8



Graph 2: Gross Impaired Loan.

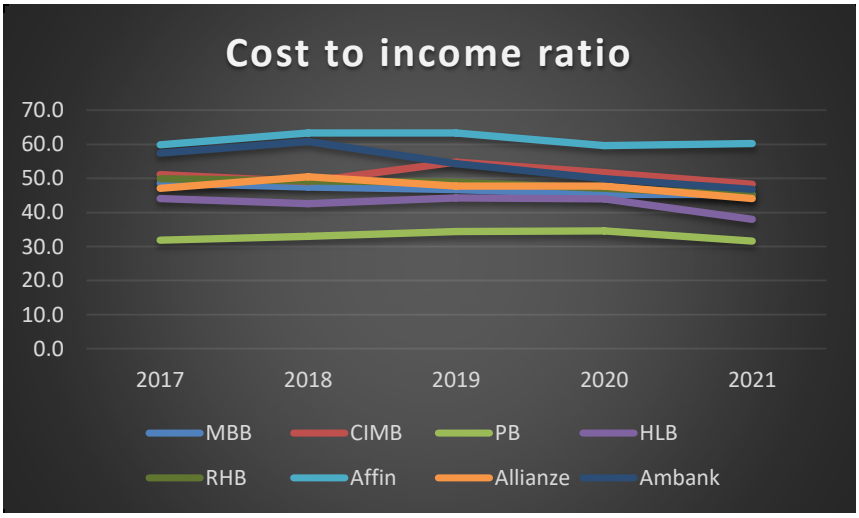
The asset quality ratio, represented by GIL, is the crucial indicator for identifying problems with the loan portfolio quality. A loan is deemed impaired when it is probable that not all principal and interest payments will be collected. The lower the ratio, the better the bank's asset quality (Wasiuzzaman & Gunasegavan, 2013). As of 2022, the GIL ratio for all local commercial banks was lower in 2021 than in 2020, except for Alliance and Ambank. Alliance's GIL increased marginally to 2.30% for the year under review compared to 2.00% last year. The same applies to Ambank, where the pandemic impacted the GIL ratio from 1.40% in 2020 to 1.57% in 2021. The GIL ratio for MBB is 1.99%, which was noticeably lower than its GIL in 2020, 2.23%. The GIL for CIMB improved to 3.50% in 2021 from 3.60% in 2020. The PB's GIL was 0.30%, and HLB was 0.46%. RHB's GIL remained low at 1.49%, as reported in Table 3. Last year, Affin recorded total impaired loans of 1.89%, reducing 98 basis points compared to the previous year's 3.52%. Overall, the GIL ratio remained stable for all local commercial banks in Malaysia, driven by the resumption of loan repayments amid the gradual reopening of the economy. Given the COVID-19 pandemic, extending repayment assistance measures provided much-needed temporary relief to affected borrowers. Strict credit underwriting procedures, close monitoring, and proactive collection efforts are needed to ensure that asset quality remains stable.

In assessing the performance of banks, there are various reasons why banks should concentrate on loan impairment. Firstly, loan impairment can significantly impact a bank's financial performance and profitability. A high level of loan impairment can lead to increased provisions and a reduction in net income. Secondly, the level of loan impairment can indicate a bank's credit risk management practices. Banks with substantial credit risk management practices are less likely to experience high loan impairment levels.

Management Ratio

Table 4: Management Ratio (authors' calculation)

	Cost-to-income				
	2017	**2018**	**2019**	**2020**	**2021**
MBB	48.6	47.5	46.7	45.3	45.3
CIMB	51.1	49.1	54.8	51.7	48.3
PB	31.9	33.0	34.4	34.6	31.6
HLB	44.1	42.6	44.3	44.0	38.0
RHB	49.9	49.3	48.9	47.1	45.2
Affin	59.9	63.4	63.4	59.7	60.3
Alliance	47. 1	50.5	47.8	47.8	44.1
Ambank	57.4	60.8	54.3	49.9	46.8
Average	49.0	49.5	49.3	47.5	44.9



Graph 3: Cost-to-income ratio.

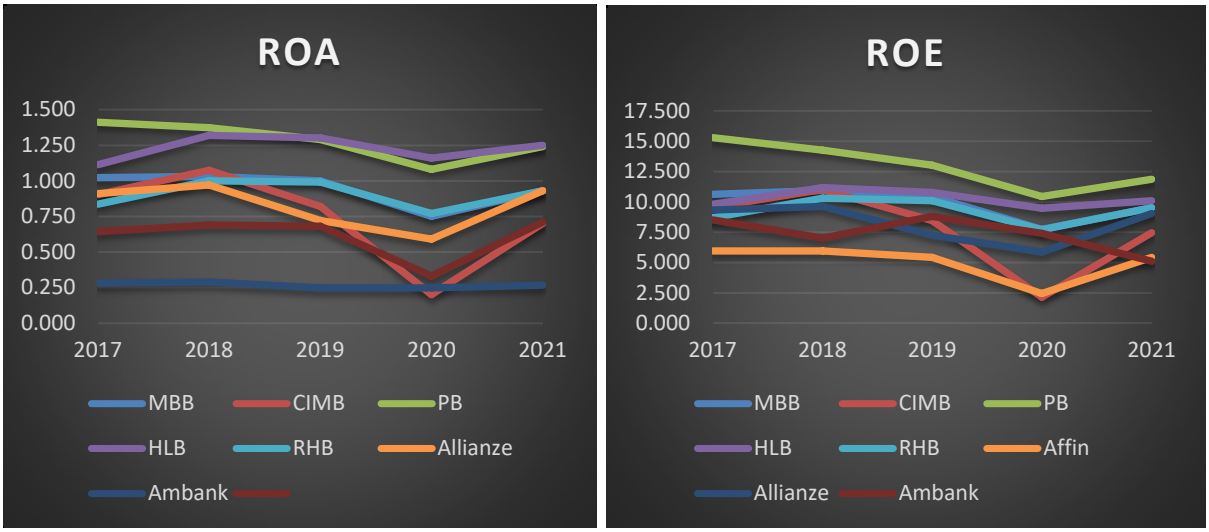
An essential financial indicator for assessing the efficiency of banks is the cost-to-income ratio (CIR). CIR shows how a bank's operating expenses relate to its operating income. The measurement compares a bank's operating income to the operations' cost. Higher ratios suggest that the bank's operating expenses are too high, while lower ratios indicate that the bank is functioning more profitably. Following Muhmad and Hashim (2015), management efficiency was measured by the cost-to-income ratio. The cost-to-income ratio is computed using total cost over the net operating income. Despite the challenges during the COVID-19 pandemic, the CIR remained unchanged for MBB at 4.53%. Meanwhile, the CIR for CIMB, PB, HLB, RHB, Alliance, and Ambank decreased for the previous year. The reasons are due to the cost optimization initiatives of each bank in managing marketing, administrative, and compensation costs. Only Affin's CIR deteriorated slightly to 60.25 from 59.65% in 2020. The reduction in the CIR ratio was attributed to an increase in operating expenses. The banks had to invest in technology and digital transformation initiatives at an accelerated pace in response to changing customer needs and preferences. Overall, all local commercial

banks in Malaysia maintained a relatively strong management ratio due to their focus on digital transformation and operational efficiency.

Earnings Ratio

Table 5: Earning Quality Ratio (authors' calculation)

	ROA					ROE				
	2017	**2018**	**2019**	**2020**	**2021**	**2017**	**2018**	**2019**	**2020**	**2021**
MBB	1.022	1.032	1.000	0.750	0.930	10.629	10.940	10.449	7.730	9.509
CIMB	0.902	1.073	0.820	0.200	0.700	9.567	11.03	8.460	2.140	7.459
PB	1.411	1.372	1.290	1.080	1.240	15.284	14.273	13.029	10.440	11.859
HLB	1.113	1.318	1.300	1.159	1.250	9.794	11.169	10.790	9.470	10.089
RHB	0.835	1.000	0.990	0.770	0.930	8.688	10.300	10.099	7.700	9.519
Affin	0.642	0.689	0.680	0.330	0.710	5.938	5.939	5.419	2.439	5.419
Alliance	0.910	0.970	0.720	0.590	0.930	9.330	9.610	7.240	5.860	9.040
Ambank	0.279	0.289	0.247	0.250	0.268	8.500	7.000	8.800	7.400	5.100
Average	88.93	96.78	88.09	64.11	86.97	971.63	1003.26	928.58	664.74	849.93



Graph 4: ROA and ROE

An institution's profitability is contingent on the bank's effectiveness and efficiency in managing assets and liabilities. The increase in profitability should inspire confidence among depositors, investors, creditors, and the public. The ability to support current and future bank operations is contingent on the earnings and profitability profile (Shar, Shah, & Jamali, 2010). Therefore, earnings quality is crucial in describing banks' financial performance. In assessing the earning quality of banks, this study focuses on the ROA and the ROE ratios. Table 5 above shows the ROA for all the commercial banks ranged from 0.7% to 0.93%, with a significant increase in 2021. It clearly shows the fluctuating trend of profitability of each of the commercial banks before the pandemic (2019) to during the pandemic (2020). In other words, all commercial banks experienced a significant adverse impact on their profits at the onset of the pandemic as economic activity stopped.

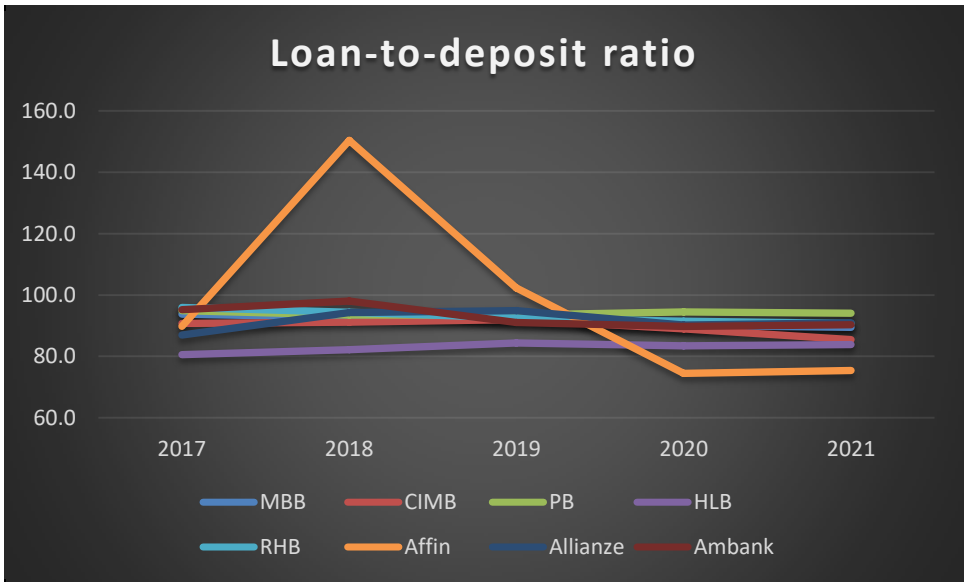
The trend of the ROE ratio for all commercial banks tends to be similar to the ROA ratio before and during the pandemic. At the end of the first year of the pandemic (2020), the return on equity (ROE) of the CIMB fell to 2.140 from 8.460 in the year 2019. This decline in profitability was observed in all banks. Compared to other

banks, CIMB is the most affected by ROE changes (-6.32%), followed by ROE changes for Maybank (-2.719%) and Public Bank (-2.589). This may have occurred as a result of the repeated lockdown of the economy, affected banks' lending activity, and consequently reduced banks' net interest income significantly, which is a major source of earnings for banks.

Liquidity Ratio

Table 6: Liquidity Ratio (authors' calculation)

	Loan-to-deposit ratio				
	2017	**2018**	**2019**	**2020**	**2021**
MBB	93.8	92.7	92.4	90.1	89.5
CIMB	90.8	91.2	92.0	89.0	85.5
PB	94.9	93.6	93.5	94.5	94.1
HLB	80.6	82.2	84.4	83.5	83.9
RHB	96.0	94.4	92.5	91.5	90.8
Affin	89.8	150.4	102.3	74.5	75.4
Alliance	87.0	94.3	94.9	90.2	91 .0
Ambank	95.3	98.1	91.1	89.8	90.4
Average	91.0	99.6	92.9	87.9	87.1



Graph 5: Loan to deposit ratio

A bank's liquidity can be evaluated using the LDR, calculated by dividing the total loans by the total deposits during a given time frame. The LDR is a percentage reflecting a bank's ability to fund its loan portfolio with customer deposits. A lower LDR indicates a greater reliance on alternative sources of financing. The table above shows the LDR trend for all eight commercial banks within five years. As of 2022, the LDR ratio of commercial banks was lower in 2021 than in 2020, except for HLB, Affin Bank, Alliance and Ambank. HLB's LDR increased by 0.04% for the year under review compared to 83.5% last year. The same applies to Affin Bank, the LDR ratio increased from 74.5 % to 75.4 %; Alliance's LDR ratio is 91.0% higher than its LDR in 2020, 90.2%. The LDR ratio for Ambank improved to 90.4% in 2021 from 89.8% in 2020. Financial markets experienced significant volatility due to the pandemic, and many banks experienced increased customer liquidity demand. However, due to their access to central bank funding facilities and other liquidity sources,

all banks could maintain a relatively stable LDR ratio and the liquidity buffers at the current levels are strong enough to cope with the Covid-19 pandemic.

5. Conclusion

This study evaluated the performance of local commercial banks operating in Malaysia. The study used the CAMEL approach to analyze the financial performance of banks. This framework is the best technique for evaluating banks' performance. Results from this study suggested that banks' performance was significantly impacted during the COVID-19 pandemic. Even though some of the ratios under the CAMEL approach showed a declining trend, the local commercial banks in Malaysia were generally stable and well-capitalized, with low non-performing loans and strong profitability. Moreover, the effects of the COVID-19 epidemic on the bank's performance varied from one bank to another.

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