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Article

# Determinants of Development Banks' Performance in Malaysia

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**ABSTRACT -** Development bank has been established to ensure operational efficiency and financial soundness aligned with national economic goals. The study emphasises the importance of researching development banks and asserts that understanding their performance is crucial for the country's prosperity. The study is to analyse the determinants affecting the efficacy of development banks in Malaysia. The study considers return on average assets (ROAA) and return on average equity (ROAE) as dependent variables, while the independent variables encompass liquidity, credit risk, capital adequacy ratio, and bank size. Utilising the Fitch Connect database, this paper extracts secondary financial data from Malaysian development banks. The analysis employs the ordinary least squares (OLS) regression model using EViews while panel data analysis using STATA software, with the sample comprising development banks in Malaysia from 2012 to 2021. The empirical findings indicate a significant impact of the capital adequacy ratio on both ROAA and ROAE. However, there is no significant effect between credit risk on both ROAA and ROAE. Regarding other independent variables, liquidity exhibits a considerable positive impact on ROAA, whilst bank size reveals a significant positive influence on ROAE. The study specifically focuses on financial data derived from development banks in Malaysia, distinguishing itself from numerous studies and scholarly journals that predominantly explored the determinants of performance in commercial and Islamic banks.

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## INTRODUCTION

Development banks are specialised financial institutions created with specific mandates to foster and advance essential sectors vital to the comprehensive socioeconomic progress of the nation. They enhance traditional banking institutions by providing specialised financial products and services tailored to meet the long-term requirements of specific sectors. The Malaysian Government has introduced a robust regulatory and supervisory framework to strengthen the financial conditions and operational structures of development banks. A significant milestone in this endeavour was the enactment of the Development Financial Institutions Act 2002 (DFIA), aimed at ensuring the operational efficiency and financial soundness of development banks. Additionally, this act is intended to align the vision of development banks in Malaysia with the government's policies to realise national economic development agendas.

Despite playing monumental roles in socioeconomic development and being integral components of the financial sector, there is an apparent scarcity of studies on development banks. Most study tends to focus on the performance of commercial banks, both conventional and Islamic, local, and foreign due to the retail products and services they provide for consumers in

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creating capital and liquidity. However, without diminishing the pivotal functions of commercial banks, there is a need for more studies on development banks. These studies should be conducted by scholars and market players, given that the sectors financed by development banks are crucial to the prosperity of the country.

Institutions like Lembaga Tabung Haji assist Muslims in Malaysia in fulfilling the fifth pillar of Islam, which is performing the pilgrimage to Makkah. Bank Kerjasama Rakyat Malaysia Berhad was established to contribute to providing financing facilities for agriculture, production, marketing, fishing, transportation, housing, and other businesses that promote the well-being of its members (Aziz, 2016). The number of studies conducted to investigate the factors affecting the performance of Tabung Haji, the first financial institution in Malaysia to observe the principles of Shariah and its values, is minuscule.

Banks' profitability is a critical indicator of economic health and efficiency and can be used to predict financial crises (Demirgüç-Kunt & Huizinga, 1999). Special focus is given to internal factors or bank-specific indicators, as these determinants are within the control of the banks (Idris et al., 2011), and previous studies have indicated that these firm-level indicators are crucial for analysing variations in the performance of banks (Goddard et al., 2009). This study on the determinants of development bank performance is intended to pique the interest of academia and establish a precedent for the expansion of study in comparison to development banks. The findings of this study will serve as guidance for banks in issuing new policies and making business decisions that will surely affect the prosperity of the financial system of this nation (Said & Tumin, 2011).

This study is divided into sections: Section 1 exhibits the introduction and study objective. The literature review concerning the dependent and independent variables, study framework, and study hypotheses is presented in Section 2. Section 3 details the methodology employed, including data collection, study model and measurements of variables. The outcomes of this study are presented in Section 4, and the discussion regarding the findings is provided in Section 5. Lastly, section 6 concludes the study.

## LITERATURE REVIEW

Researchers have been concentrating on the performance of commercial institutions and have developed a methodology to investigate the factors that influence their performance. Kadir et al. (2013) analysed using financial ratios as independent variables, specifically the profitability ratio, liquidity ratio, risk and solvency ratio, and efficiency ratio, the performance and profitability of Islamic and conventional commercial banks during the Asian Financial Crisis of 1997. In comparison to Islamic banks, the study demonstrated that conventional banks were more profitable, had a higher level of risk, and were more efficient in utilising assets, but were less productive during the crisis (Kadir et al., 2013). Moreover, understanding and accurately identifying the strength factors in Islamic banks has the potential to significantly boost their profitability (Mohd Aziz, 2017). Consequently, this underscores the significance of a comprehensive conception of the critical components or variables that influence the performance of both commercial banks and development banks.

Another study conducted by Choong et al. (2012) aimed to determine which parameters were more significant in measuring the performance of Islamic commercial banks in Malaysia. The regression model employed in the study determined that credit risk, as assessed by the loan loss provision-to-loan ratio, was the most significant determinant of Islamic banks' return on assets (ROA) or return on equity (ROE) (Choong et al., 2012).

Abduh and Idrees delved into industry-specific and macroeconomic indicators to determine the profitability of Islamic banks in Malaysia. The study established, from an industry-specific markers standpoint, that bank size is a crucial influence on the bank's profitability, assessed through return on average assets (ROAA). The study also demonstrates that inflation, a

macroeconomic factor, has a substantial positive impact on the profitability of Islamic banks. (Abduh & Idrees, 2013). In Europe, a comparable study into the factors that determine the performance of banks established that the profitability of banks was influenced by both macroeconomic and bank-specific factors. (Kosmidou, 2008; Petria et al., 2015).

Existing literature has established that liquidity is an essential internal determinant for the performance of banks, as it is vital in meeting the banks' short-term financial obligations. Banks hold liquid assets to avoid insolvency, which, however, compels banks to compromise (Said & Tumin, 2011). Molyneux and Thornton (1992) established a negative correlation between a bank's profitability and its liquidity, which is consistent with the fact that liquid assets are generally associated with a reduced rate of return.

Risks are uncertainties that could adversely affect financial institutions in terms of financial losses, failure to meet strategic goals, and tarnishing good reputations (Eid & Asutay, 2019). Exposure to risks would effectively reduce the profitability of banks and would require a robust risk management framework to mitigate any preventable losses. As a result, credit risk is projected to have a negative impact on bank profitability (Idris et al., 2011). The loan-to-deposit and short-term financing ratios provide a forward-looking evaluation of the bank's exposure to default and worsening asset quality, making them an effective instrument for measuring credit risk (Flamini et al., 2009).

A high capital adequacy ratio is indicative of the capacity of banks to finance operating activities and contribute to profit generation, as well as their ability to endure risks (Samail et al., 2018). Additionally, this ratio manifests the bank's ability to withstand losses and express its capacity to pay liabilities and withstand credit risk and operational risk, which in turn influences the profit of the banks (Wasiuzzaman & Tarmizi, 2010).

The size of a bank, quantified as the natural logarithm of its total assets, is employed to assess the correlation between size and profitability. From one perspective, larger banks are less likely to be allowed to fail by the government, denoting lower risk for the banks. Larger banks also enjoy lower costs of capital and would only require lower profits obtained from interest rates charged to borrowers (Flamini et al., 2009). In Malaysia, Sulong et al. (2020) found that conventional banks are more stable than Islamic banks. However, this trend reverses for smaller banks, where smaller Islamic banks show greater stability. Studies by Trad et al. (2017) and Rashid & Jabeen (2016) indicate that a bank's size significantly affects its performance consistency. Thus, this is important to consider bank size as a crucial factor in evaluating and understanding the performance within the banking sector especially development banks.

Existing studies have provided the framework to investigate the performance of banks. Dependent and independent variables were identified through comprehensive literature reviews. This study employed the same framework as those that determined the performance of commercial banks and Islamic banks, as there is a scarcity of literature and research on the performance of development banks (refer to Figure 1). The study framework is developed based on prior empirical studies that examined the effects of asset quality, liquidity, operating efficiency, and capital adequacy on bank performance (e.g., Molyneux & Thornton, 1992; Demirgüç-Kunt & Huizinga, 1999; Flamini et al., 2009; Abduh & Idrees, 2013).

The efficacy of development banks, as measured by the return on average assets (ROAA) and return on average equity (ROAE), serves as the dependent variable in this study. The efficacy of development banks was evaluated using the following independent variables, such as, liquidity, credit risk, capital adequacy ratio, and bank size.

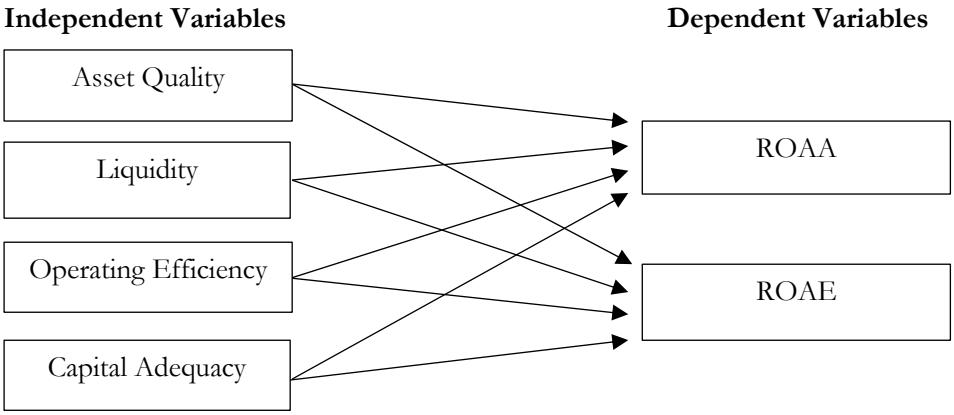


**Figure 1**: The study framework of the relationship between the determinants of development bank and financial performance in Malaysia

As literature has provided the framework for the research, it has also offered predictions regarding the effects of independent variables on the dependent variables. The following are the null and alternative hypotheses for this study:

**H1**: Asset Quality has a significant effect on the financial performance (ROAA and ROAE) of development banks in Malaysia.
**H2**: Liquidity has a significant effect on the financial performance (ROAA and ROAE) of development banks in Malaysia.
**H3**: Operating Efficiency has a significant effect on the financial performance (ROAA and ROAE) of development banks in Malaysia.
**H4**: Capital Adequacy has a significant effect on the financial performance (ROAA and ROAE) of development banks in Malaysia.

## METHODOLOGY

### Sample

The financial data used to assess the performance of development banks in Malaysia were sourced from the Fitch Connect database. Table 1 presents the list of ten banks examined in this research. Among these ten, only five are officially designated as development banks by Bank Negara Malaysia, namely, Bank Kerjasama Rakyat Malaysia Berhad, Bank Pembangunan Malaysia Berhad, Bank Simpanan Nasional, Export-Import Bank of Malaysia Berhad, and Small Medium Enterprise Development Bank Malaysia Berhad. The remaining banks, namely Credit Guarantee Corporation Berhad, Employees Provident Fund, Lembaga Tabung Haji, Malaysia Industrial Development Finance Berhad, and Sabah Development Bank Berhad were categorised as development banks by the Fitch Connect database and will be treated as such in this study. The study focuses on data from 2012 to 2021, and the analysis employs the linear regression method, specifically Ordinary Least Squares, to investigate the correlation between dependent variables and independent variables.

**Table 1**: List of development banks in Malaysia

| No. | Development Banks |
|---|---|
| 1. | Bank Kerjasama Rakyat Malaysia Berhad |
| 2. | Bank Pembangunan Malaysia Berhad |
| 3. | Bank Simpanan Nasional |
| 4. | Export-Import Bank of Malaysia Berhad |
| 5. | Small Medium Enterprise Development Bank Malaysia Berhad |
| 6. | Credit Guarantee Corporation Malaysia Berhad |
| 7. | Employees Provident Fund |
| 8. | Lembaga Tabung Haji |
| 9. | Malaysia Industrial Development Finance Berhad |
| 10. | Sabah Development Bank Berhad |

**Research Model and Measurement**

The study uses the ordinary least squares regression model provided by EViews software for the analysis of the direct impacts of variables that affect the performance of the development banks in Malaysia. In addition, the panel data analysis method is used, provided by the STATA software, for the examination of the assumptions that need to be considered when estimating the model. This analysis aims to examine the relationship between the dependent variables, which are the profitability of the Malaysian development banks measured by ROAA and ROAE, and the independent variables, liquidity, credit risk, capital ratio, and size, defined by the equation:

$$ROAA_{it} = \alpha + \beta_1 LIQ_{it} + \beta_2 CR_{it} + \beta_3 CAPITAL_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} \quad (1a)$$

$$ROAE_{it} = \alpha + \beta_1 LIQ_{it} + \beta_2 CR_{it} + \beta_3 CAPITAL_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} \quad (1b)$$

Where $ROAA_{it}$ is return on average total assets (net income to average total assets) of bank i at time t; $ROAE_{it}$ is return on average total equity (net income to average total equity) and both proxy of financial performance. $LIQ_{it}$ is net loan to total assets and represents bank liquidity; $CR_{it}$ represents credit risk with the calculation loans divided by deposits and short-term funding; $CAPITAL_{it}$ is total equity to total assets representing capita; adequacy ratio and lastly, $SIZE_{it}$ represents natural logarithm of totals assets for bank size.

The pooled model predicts a single set of parameters for each unit and time by combining all the data into a single dataset. This indicates that for every unit and time, the pooled model automatically assigns the identical intercepts and slopes. However, heterogeneity bias may exist in the pooled model's outcomes. To deal with the problem, the random-effects model and the fixed-effects model specify that each unit owns a distinct intercept. In other words, the problem of the heterogeneity of the results of the pooled model can be reduced by:

$$\varepsilon_{it} = \lambda_{it} + \mu_{it} \quad (2)$$

For the implementation of both random and fixed effects, the calculation is given by:

$$ROAA_{it} = \alpha + \beta_1 LIQ_{it} + \beta_2 CR_{it} + \beta_3 CAPITAL_{it} + \beta_4 SIZE_{it} + \lambda_{it} + \mu_{it} \quad (3a)$$

$$ROAE_{it} = \alpha + \beta_1 LIQ_{it} + \beta_2 CR_{it} + \beta_3 CAPITAL_{it} + \beta_4 SIZE_{it} + \lambda_{it} + \mu_{it} \quad (3b)$$

To choose the preferred model, the statistical tests used for determining the appropriate model for panel data analysis categorise the choice of model into three tests: the partial F-test, the Breusch-Pagan Lagrange Multiplier test, and the Hausman test. It can thus be said that for the choice of the model for analysis, which could be the Pooled Ordinary Least Squares (OLS),

Random Effects Model (REM), or Fixed Effects Model (FEM), the three statistical tests are necessary.

This study carried out the diagnostic tests for the existence of heteroscedasticity and serial correlation after the determination of the ideal model for analysis. Heteroscedasticity tends to widely occur in both cross-sections and time series datasets. For this study, the test for the existence of heteroscedasticity was carried out using the Modified Wald Test. The null hypothesis is rejected if the test's p-value is less than 5%, indicating the presence of heteroscedasticity. Assessing the equality of variances of the regression errors is aided by the test for heteroscedasticity. Consequently, for the model accounting for the above challenges, the study used a random or fixed effects model that allows for heteroscedasticity-robust and serial correlation-robust standard errors.

Table 2 summarises the dependent and independent variable descriptions, the measurement of the proxies, and the expected coefficient signs.

**Table 2**: Descriptions and measurements of variables

| Variables | Notation | Descriptions/ Measurements | Expected Sign |
|---|---|---|---|
| **Dependent** | | | |
| Financial performance | ROAA | Return on Average Total Assets (Net income / Average total assets) | |
| | ROAE | Return on Average Total Equity (Net income / Average total equity) | |
| **Independent** | | | |
| Liquidity | LQ | Net Loans / Total Assets | + |
| Credit Risk | CR | Loans / Deposits & Short-term Funding | + |
| Capital Adequacy Ratio | CAPITAL | Equity / Total assets | + |
| Bank Size | SIZE | Natural log of total assets | + |

## RESULT

The findings from correlation analysis, descriptive statistics, and static regression model estimations are presented in this section. We obtained solutions with standard errors that are asymptotically robust to general heteroscedasticity, and the results interpret different techniques to verify the robustness of the results.

### Descriptive Statistics

All variables utilised in the study are shown in Table 3 along with their mean, median, minimum values, and standard deviations. Between 2012 and 2021, the average ROAA and ROAE for all ten development banks was 1.7043 and 10.4596, respectively. The net loan to total assets ratio exhibits the highest ratio at 4252.186, along with the highest standard deviation of 18577.37. The high standard deviation suggests a significant variation in the amount of loans granted by the development banks. This variation is evident as the maximum value for the ratio is 161100.0, while the minimum value is 2.8500. Meanwhile, the equity to total assets ratio shows a mean of 32.18400 with a standard deviation of 27.3668.

**Table 3**: Descriptive statistics

| | ROAA | ROAE | LIQ | CR | CAPITAL | SIZE |
|---|---|---|---|---|---|---|
| Mean | 1.7043 | 10.4596 | 4252.186 | 11.4616 | 32.1840 | 10.4338 |
| Median | 1.4700 | 5.6911 | 179.270 | 9.1550 | 19.6500 | 10.2861 |
| Maximum | 5.9300 | 256.300 | 161100.0 | 53.8400 | 94.4600 | 12.0325 |
| Minimum | -5.3000 | -31.8600 | 2.8500 | 1.2300 | -1.4400 | 9.5999 |
| Std. Dev. | 1.9006 | 28.0866 | 18577.37 | 12.3376 | 27.3668 | 0.6924 |

**Correlation analysis**

The correlation between independent variables is shown in Table 4 to show how each variable affects the other variables. The correlation matrix demonstrates that none of the variables are substantially related to each other, as all correlation values are below 0.7 (Wasiuzzaman & Tarmizi, 2010). A low correlation between variables confirms the independence of the independent variables from each other. Therefore, there are no issues of multicollinearity.

**Table 4**: Correlation matrix

| Variable | ROAA | ROAE | LIQ | CR | CAPITAL | SIZE |
|---|---|---|---|---|---|---|
| ROAA | 1.0000 | | | | | |
| ROAE | 0.1747* | 1.0000 | | | | |
| LIQ | 0.2953*** | -0.0376 | 1.0000 | | | |
| CR | 0.0830 | -0.1784* | 0.5167*** | 1.0000 | | |
| CAPITAL | 0.6916*** | -0.1422 | 0.3281*** | 0.2257** | 1.0000 | |
| SIZE | 0.3543*** | 0.1913 | -0.2314** | -0.6060*** | 0.3961*** | 1.0000 |

Note: *, ** and *** represent coefficients that are statistically significant at the 10%, 5% and 1% levels, respectively.

**Ordinary least squares (OLS) regression model**

The regression models for ROAA and ROAE using EViews are presented in Table 5. The R-squared value for the ROAA regression model is 0.502357, signifying that 50 percent of the variation in the ROAA of development banks is explained by its relationship with the independent variables, namely, liquidity, capital adequacy ratio, credit risk, and bank size. The correlation between ROAA and the independent variables is notably high, emphasising the importance of considering other independent variables, such as macroeconomic factors, in addition to bank-specific factors. At the five percent level, the computed F-value of 23.97500 indicates statistical significance. This value indicates that there is a strong correlation between ROAA and the independent variables and that the model utilising these predictors is successful in predicting the outcome variable.

Table 5 indicates that only the beta coefficients for the capital adequacy ratio and liquidity ratio are statistically significant at the 5 percent and 10 percent levels, respectively. These coefficient values indicate that for every one percent increment in the capital adequacy ratio, ROAA will increase by 0.043038 percent. Meanwhile, a one percent growth in the liquidity ratio will lead to a rise of 0.0000158 percent in ROAA. Additionally, this regression shows that the capital adequacy ratio has a stronger predictive power for Malaysian development banks' profitability.

The R-squared value for ROAE is 0.114578, indicating that merely 11 percent of the fluctuations in the financial performance of development banks, as assessed by ROAE, are elucidated by the chosen independent variables. The low correlation between ROAE and liquidity, capital adequacy ratio, credit risk, and bank size reveals that macroeconomic factors such as gross domestic product (GDP) growth, inflation, money supply, and market interest rate are more accurate and conclusive in explaining the variance of ROAE in development banks in Malaysia. However, the selected independent variables in this study like liquidity, capital adequacy ratio,

credit risk, and bank size still have a relationship with the dependent variable and influence the profitability of development banks in Malaysia. The F-value of 3.073379 is statistically significant at the 5% level.

At the 5% level, the beta coefficients of the capital adequacy ratio and bank size are statistically significant. The negative correlation between the capital adequacy ratio and ROAE is established by this discovery. A 0.4 percent decrease in ROAE is the consequence of a one percent increase in the capital adequacy ratio. In contrast to the capital adequacy ratio, bank size has been demonstrated to have a positive correlation with ROAE. For example, a one percent increase in bank size would result in a 17.70 percent increase in its ROAE.

**Table 5**: Results of regression analysis

| **Dependent variable: ROAA** | | | | |
|---|---|---|---|---|
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |
| C | -2.4040 | 3.6075 | -0.6664 | 0.5068 |
| LIQ | 0.0000158 | 8.97E-06 | 1.7647 | **0.0808*** |
| CR | -0.0120 | 0.0189 | -0.6324 | 0.5287 |
| CAPITAL | 0.0430 | 0.0073 | 5.8826 | **0.0000**** |
| SIZE | 0.2677 | 0.3451 | 0.7758 | 0.4398 |
| | | R-squared | | 0.5024 |
| Mean dependent var | 1.7043 | Adjusted R-squared | | 0.4814 |
| S.D. dependent var | 1.9006 | S.E. of regression | | 1.3687 |
| Akaike info criterion | 3.5143 | Sum squared resid | | 177.9635 |
| Schwarz criterion | 3.6445 | Log-likelihood | | -170.7143 |
| Hannan-Quinn criter. | 3.5670 | F-statistic | | 23.9750 |
| Durbin-Watson stat | 1.2530 | Prob(F-statistic) | | 0.0000 |
| **Dependent variable: ROAE** | | | | |
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |
| C | -165.0493 | 71.1098 | -2.3210 | 0.0224 |
| LIQ | 0.0002 | 0.0002 | 1.1654 | 0.2468 |
| CR | 0.2319 | 0.3731 | 0.6217 | 0.5356 |
| CAPITAL | -0.3928 | 0.1442 | -2.7238 | **0.0077***** |
| SIZE | 17.6941 | 6.8019 | 2.6014 | **0.0108**** |
| | | R-squared | | 0.1146 |
| Mean dependent var | 10.4596 | Adjusted R-squared | | 0.0773 |
| S.D. dependent var | 28.0866 | S.E. of regression | | 26.9792 |
| Akaike info criterion | 9.4767 | Sum squared resid | | 69148.44 |
| Schwarz criterion | 9.6070 | Log-likelihood | | -468.8359 |
| Hannan-Quinn criter. | 9.5294 | F-statistic | | 3.0734 |
| Durbin-Watson stat | 1.6877 | Prob(F-statistic) | | 0.0199 |

Note: *, ** and *** represent coefficients that are statistically significant at the 10%, 5% and 1% levels, respectively.

**Panel data analysis**

The panel data analysis findings using STATA software are displayed in Table 6. Pooled Ordinary Least Squares (OLS), Random Effects Model (REM), Fixed Effects Model (FEM), and OLS with heteroskedasticity and autocorrelation for robust standard errors make up the estimations.

The regression analysis results with OLS from EViews and STATA showed the same results and therefore, the analysis of the results from OLS is the same as the regression analysis from table 5. This study reveals that there is empirical evidence robustness as similar results are attained whether EViews or STATA is utilised. Referring to Breusch-Pagan Lagrange Multiplier test, p-value approximates to 0.0000. This result shows that the test fails to accept the pooled OLS model due to the existence of panel effects. Additionally, the Hausman test yields a p-value of 0.0054, indicating that the FEM is a better fit in this situation than the REM. Additionally, the presence of heteroskedasticity is confirmed by the Modified Wald test heteroskedasticity (0.0000).

There is no serial correlation, according to the Wooldridge test (0.2952). This consequently means that of all the models, the FEM heteroskedasticity-robust standard errors are the best model to use to predict for ROAA.

**Table 6**: Results of panel data analysis

| Variables | Pooled OLS | REM | FEM | OLS with Heteroskedasticity and Autocorrelation |
|---|---|---|---|---|
| **Dependent Variable: ROAA** | | | | |
| LIQ | 0.0000158*<br>(0.081) | 0.00000672<br>(0.415) | 0.00000791<br>(0.325) | 0.00000791*** (0.00) |
| CR | -0.01197<br>(0.529) | -0.01126<br>(0.532) | -0.02940<br>(0.126) | -0.02940 (0.314) |
| CAPITAL | 0.04304***<br>(0.000) | 0.04180***<br>(0.000) | 0.01344<br>(0.348) | 0.01344 (0.248) |
| SIZE | 0.26769<br>(0.440) | 0.03741<br>(0.937) | -5.8706***<br>(0.001) | -5.8706*** (0.001) |
| Constant | -2.40399<br>(0.507) | 0.03741<br>(0.989) | 62.82778<br>(0.001) | 62.82778 (0.001) |
| Adjusted R2 | 0.4818 | - | - | - |
| BP Test (p-value) | 0.0000 | | - | - |
| Hausman Test (p-value) | - | 0.0054 | | - |
| Modified Wald Test (p-value) | - | - | 0.0000 | - |
| Wooldridge Test | - | - | 0.2952 | - |
| Number of banks | 10 | 10 | 10 | 10 |
| Observations | 100 | 100 | 100 | 100 |
| **Dependent Variable: ROAE** | | | | |
| LIQ | 0.00021<br>(0.247) | 0.00012<br>(0.481) | 0.000122<br>(0.472) | 0.000206 (0.248) |
| CR | 0.23194<br>(0.536) | 0.00368<br>(0.992) | -0.475279<br>(0.241) | 0.231935 (0.626) |
| CAPITAL | -0.39282***<br>(0.008) | -0.54320***<br>(0.005) | -1.170435***<br>(0.000) | -0.392816 (0.254) |
| SIZE | 17.69408**<br>(0.011) | 15.49987<br>(0.119) | -47.48666<br>(0.209) | 17.69408 (0.268) |
| Constant | -165.0493<br>(0.022) | -134.3254<br>(0.196) | 548.5246<br>(0.170) | -165.0493 (0.292) |
| Adjusted R2 | 0.0773 | - | - | - |
| BP Test (p-value) | 0.0001 | - | - | |
| Hausman Test (p-value) | - | na | - | |
| Modified Wald Test (p-value) | - | - | 0.0000 | - |
| Wooldridge Test | - | - | 0.0000 | - |
| Number of banks | 10 | 10 | 10 | 10 |
| Observations | 100 | 100 | 100 | 100 |

The results of the FEM heteroskedasticity-robust standard errors show a strong positive correlation between ROAA and liquidity, indicating that asset profitability increases with bank liquidity. This positive and significant correlation also applies to capital adequacy, meaning that when the bank is more operationally efficient and more resilient, the better capitalised it is. However, credit risk and its negative coefficient and lack of significance suggest that credit risk is not a major factor affecting ROAA in the banks considered. On the contrary, size of the bank is the only element that is negatively, and significantly affecting the ROAA, meaning that larger banks, and smaller in comparison to them, are more likely to get lower ROAA. This may be a

result of operational complexity, diseconomies of scale, or both. This model captures about 48% of the variation in ROAA which is shown in the 0.4818 adjusted $R^2$ value.

Results show that the ROAE model rejects the hypothesised pooled OLS specification, which is confirmed by the Breusch-Pagan Test ($p = 0.0001$). However, tests for heteroskedasticity and serial correlation show significant values (Modified Wald Test, $p = 0.0000$ and Wooldridge Test, $p = 0.0000$), thereby requiring further exploration and robust estimation. There is evidence that liquidity positively influences ROAE, but the result is statistically insignificant, suggesting that liquidity and shareholder equity profitability do not directly correlate. Capital has a negative and significant coefficient in ROAE, implying that when capital is overstated, equity profitability is reduced due to trade-offs. Credit risk continues to be statistically insignificant, which implies that its effect on stock returns is limited. Due to economies of scale, diversification, market power, and other benefits, larger banks generate higher returns for their shareholders. This is indicated by the positive and statistically significant association between bank size and ROAE. The adjusted $R^2$ value of 0.0773 implies that there are other variables that affect ROAE. Overall, the findings reveal that bank-specific characteristics affect financial performance differently depending on the performance measure used. ROAA is more sensitive to liquidity management, capitalisation, and bank size, while ROAE is particularly influenced by capital structure and size.

## DISCUSSION

This study examines four independent variables, namely, liquidity, credit risk, capital adequacy ratio, and bank size that determine the profitability of development banks. Notably, credit risk does not have a statistically significant impact on the profitability of development banks in Malaysia, as measured by ROAA and ROAE. This finding could be attributed to the fact that development banks are typically government-run financial institutions with targeted consumers aimed at developing strategic sectors that profoundly affect the growth of the socioeconomic stature of the country. The purpose of development banks necessitates a thorough inspection of the beneficiaries' financial health, ensuring that the funds and capital provided are soundly invested, thus reducing credit risk (Bank Negara Malaysia). The null hypothesis is not rejected since there is no statistically significant correlation between credit risk and Malaysian development banks' profitability.

Equity to total assets was selected as the proxy to measure the capital stability (Wasiuzzaman & Tarmizi, 2010) of development banks in Malaysia. When analysing the ROAA and ROAE of Malaysian development banks, the capital adequacy ratio is the only factor that is statistically significant. The capital adequacy model has a negative association with ROAE and a positive relationship with ROAA, according to the regression model. For every one percent increase in the capital adequacy ratio, ROAA will increase by 0.04 percent; however, it is at the price of a 0.39 percent decrement in ROAE. This finding is congruent with the discoveries of Wasiuzzaman and Tarmizi (2010) and Pratomo and Ismail (2006), who suggested that Islamic banking institutions should not focus on increasing equity to improve profitability. Their findings associated higher leverage, which also means lower equity capital, with higher profit efficiency. Therefore, development banks in Malaysia are like Islamic banks in terms of higher profit generation with a higher level of leverage. As a result, the alternative is accepted and the null hypothesis is rejected.

The logarithm of development banks' total assets serve as a proxy for bank size. According to this study, there is a strong positive correlation between bank size and ROAE, which means that larger banks are more profitable. This result is in line with Abduh and Idrees (2013) and Lee (2018), since larger banks take advantage of economies of scale by making use of the greater resources available to them. The alternative hypothesis is supported by the substantial positive correlation between development banks' profitability and bank size; as a result, the null hypothesis is rejected.

In this study, loans to deposits and short-term funding serve as a stand-in for assessing the liquidity of development banks. The trade-off that banks must make is that these assets offer a poor rate of return, even yet keeping a certain amount of liquid assets is crucial to preventing closure and insolvency (Hassan & Bashir, 2003). According to this study, liquidity and Malaysian development banks' profitability are significantly positively correlated. This outcome runs counter to earlier research by Idris et al. (2011) and Nuhiu et al. (2017), which found a strong inverse link between profitability and liquidity. The null hypothesis is rejected and the alternative is accepted due to the strong correlation between profitability and liquidity.

## CONCLUSION

As specialised financial institutions, development banks are essential to a nation's socioeconomic growth since they meet the long-term demands of particular industries. The Development Financial Institutions Act 2002 in Malaysia serves as an example of the regulatory framework that highlights the government's dedication to guaranteeing these institutions' financial stability and operational effectiveness. Despite their crucial function, research on development banks is noticeably lacking, with majority of studies concentrating on commercial banks. By investigating the factors that influence development banks' profitability, this study seeks to reduce this gap. Notable examples of development banks in Malaysia, such as Lembaga Tabung Haji and Bank Kerjasama Rakyat Malaysia Berhad, highlight their unique contributions to society, ranging from facilitating pilgrimage to supporting agriculture and various businesses. However, the lack of studies investigating factors affecting their performance is a critical gap that needs attention.

The performance of development banks is analysed by focusing on internal factors or bank-specific indicators, as banks' profitability is a critical indicator of economic health. The study endeavours to offer insights that can inform business strategies and policy decisions by analysing bank size, credit risk, capital adequacy ratio, and liquidity. The methodology employed in this study involves a thorough analysis of financial data from ten development banks in Malaysia. The regression models for return on average assets (ROAA) and return on average equity (ROAE) indicate substantial correlations with specific determinants. It is important to note that the capital adequacy ratio and bank size are significant factors that influence ROAA and ROAE. The findings also highlight the significant effect of liquidity, deviating from previous studies. The study's results contribute to the understanding of the unique dynamics of development banks, emphasising the need for a holistic approach that considers both bank-specific and macroeconomic factors. The proposed hypotheses are tested, and the relationships between the selected variables are thoroughly explored.

In conclusion, this study seeks to stimulate further interest and inquiry into the performance of development banks. By shedding light on the intricacies of these institutions, the findings can guide policymakers, scholars, and market players in enhancing the overall financial system's prosperity. The identified determinants, particularly the significant effect of each variable, offer valuable insights that can shape future policies and business decisions in the context of development banks in Malaysia.

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