The Relationship between Financial Risks and Commercial Banks' Performance in Malaysia

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ABSTRACT

This research examines the relationship between financial risks and the performance of commercial banks in Malaysia from 2018 to 2022. Financial risks considered include operational risk, credit risk, and liquidity risk. The study aims to identify how these risks impact the efficiency and stability of commercial banks, and how such risks influence investor confidence and capital inflows. Using data from various Malaysian commercial banks, this study employs regression analysis to assess the significance and strength of the relationships between different types of financial risks and bank performance. The findings contribute to a better understanding of the financial dynamics within the Malaysian banking sector, providing valuable insights for investors and financial analysts to make informed decisions. This research is crucial given the increased financial uncertainties and economic challenges in the post-COVID-19 era.

Keywords: Financial Risks, Bank Performance, Operational Risk, Credit Risk, Liquidity Risk, Malaysian Commercial Banks, Investor Confidence, Economic Challenges.

INTRODUCTION

During the last five years, the banking sector in Malaysia has successfully managed a constantly changing environment characterised by a series of challenges that had a significant impact on financial risks and the overall performance of financial institutions. The industry faced numerous kinds of complex challenges, including prominent financial scandals, worldwide economic disruptions, political instabilities, and rapid technological progress. This analysis provides a clear understanding of the main challenges encountered by Malaysian banks in the years spanning from 2018 to 2022. It offers valuable observations on the changing financial and operational environment in the country. The resilience and adaptability of Malaysia's banking sector have been tested by the reverberations of the financial scandal, the unprecedented impacts of the COVID-19 pandemic, and ongoing geopolitical tensions. These challenges have influenced the trajectory of the banking sector in a rapidly changing global environment.

Malaysian banks struggled to navigate the complexities of global economic uncertainties. Malaysia has been impacted by the economic tensions between the world's two largest economies, the United States and China, resulting in the US-China trade war in 2019. According to Iwamoto (2019), the Malaysian economy experienced a slowdown in the initial quarter of 2019 due to the adverse impact of the ongoing trade tensions between the United States and China on the country's exports. Due to its significant reliance on international trade, Malaysian banks had to navigate the difficulties arising from the potential consequences on worldwide economic growth, trade patterns, and the profitability of loans associated with export-oriented industries.

However, the most significant and widely influential obstacle encountered by Malaysian banks during this time was the emergence of the COVID-19 pandemic in 2020. The pandemic caused unparalleled disruptions, encompassing extensive business closures and job losses, supply chain disruptions, and heightened loan defaults. To address the economic consequences, both the government and Bank Negara Malaysia (BNM), the central bank, had to promptly implement measures to minimise the impact on the profitability, liquidity, and overall stability of the banking sector. Banks are very susceptible to credit risk, counterparty risk, and liquidity issues due to the obligation of borrowers to repay the interest and principal of their loans on the predetermined date agreed upon prior to the implementation of the movement control order. (MCO) (Khoo, 2022).

The focus on economic recovery in 2021 was a reaction to the disruptions caused by the pandemic in the previous year. The banking sector played a crucial role in supporting businesses and individuals as Malaysia aimed to reconstruct its economic foundation. The improvement of economic conditions resulted in enhanced asset quality and profitability for banks, signifying a favourable transition from the uncertainties of the pandemic era. Nevertheless, persistent apprehensions regarding the future course of the economy emphasise the necessity for ongoing attentiveness and strategic foresight within the banking sector.

Fundamentally, the Malaysian banking sector has demonstrated resilience and adaptability in navigating a range of challenges over the past five years. These challenges include financial scandals, intricate global economic dynamics, and the significant impacts of a global health crisis. The capacity of Malaysian financial institutions to successfully navigate and surmount these challenges has not only influenced their own path but has also emphasised the sector's significance as a vital foundation in the overall economic well-being of the nation.

LITERATURE REVIEW

There are a few previous studies related to the relationship between operational risk and bank performance. Karunakaran (2022) found that operational risk has significant impact on ROE and ROA through regression analysis. The validation of the hypothesis confirms a significant correlation between operational risk and bank performance. Besides that, the study found that operational risk has a positive and significant impact on the performance of banks in West Africa, as evidenced by a positive coefficient value observed in both Nigerian and Ghanaian banks (Iyinomen et al., 2019). On the contrary, Cheng et al. (2020) found that The presence of operational risk factors such as portfolio concentration, bank leverage, lawsuits, and the resignation of key directors was found to have a negative correlation with bank profitability.

In past studies, it was found that credit risk has a significant relationship with bank performance. This is proven by Samuel (2015) through his research that found the relationship between credit risk and commercial bank performance is negative and significant. In his study, the findings indicate that there is a negative correlation between the ratio of loan and advances to total deposit and profitability and there is also negative correlation between the ratio of non-performing loans to loan and advances and profitability. Furthermore, according to Kayode et al. (2015), there is a strong and inverse relationship between credit risk and bank performance, as measured by return on assets (ROA) which indicate that a higher level of credit risk exposure has a negative impact on the profitability of banks. However, there is also a study that have contradict result which indicate a significant positive relationship between credit risk and bank performance (Cheng et al., 2020). In their study, the credit risk consists of non-performing loan ratio, capital adequacy ratio, and cost per loan, meanwhile bank profitability includes ROA, ROE, and NIM. Additionally, Rudra (2009) mentioned in his research that the relationship between credit risk and ROE is inverse.

There are several past related studies found regarding the relationship between liquidity risk and bank performance. According to Kalimashi et al. (2022), found that liquidity risk shows an inverse correlation with return on assets, while displaying a positive correlation with loans-to-total deposits, cash plus investments-to-total deposits, and capital adequacy ratio. Jamal et al. (2023) detected there is a negative significant impact of liquidity and credit risks on selected commercial banks' financial performance in Afghanistan. In addition, Iyinomen et al. (2019) revealed that liquidity risk has a negative and significant effect on the performance of banks in Ghana and Nigeria, as measured by the Return on Assets (ROA) model. This impact was statistically significant at a 1% level of significance. However, when using the Return on Equity (ROE) model, the negative effect of credit risk on banks' performance was found to be statistically insignificant. On the other hand, the other study found that liquidity risk was not significantly related to bank performance, as indicated by the regression results. Therefore, the hypothesis of a significant relationship between liquidity risk and bank performance was not validated (Karunakaran, 2022).

METHODOLOGY

This research delves into an analysis of the relationship financial risk and performance of commercial banks in Malaysia. A total of 26 samples were taken from Bank Negara Malaysia (BNM) to use in this study which consists local and foreign banks. The secondary data was obtained from financial websites which is Orbis.com that contains the historical data of financial over a five-year period from 2018 to 2022. The bank performance of the selected banks is measured using Return on Equity (ROE). The Return on Equity is then use as the dependent variables, meanwhile operational risk, credit risk, and liquidity risk are use as the independent variables. The list of the sample commercial banks in this research is presented in the table below.

Table 1: Commercial Banks in Malaysia

Commercial Banks In Malaysia	
Affin Bank Berhad	India International Bank (Malaysia) Berhad
Alliance Bank Malaysia Berhad	Industrial and Commercial Bank of China (Malaysia) Berhad
AmBank (M) Berhad	J.P. Morgan Chase Bank Berhad
Bangkok Bank Berhad	Malayan Banking Berhad
Bank of America Malaysia Berhad	Mizuho Bank (Malaysia) Berhad
Bank of China (Malaysia) Berhad	MUFG Bank (Malaysia) Berhad
BNP Paribas Malaysia Berhad	OCBC Bank (Malaysia) Berhad
China Construction Bank (Malaysia) Berhad	Public Bank Berhad
CIMB Bank Berhad	RHB Bank Berhad
Citibank Berhad	Standard Chartered Bank Malaysia Berhad
Deutsche Bank (Malaysia) Berhad	Sumitomo Mitsui Banking Corporation Malaysia Berhad
Hong Leong Bank Berhad	The Bank of Nova Scotia Berhad
HSBC Bank Malaysia Berhad	United Overseas Bank (Malaysia) Berhad

Conceptual Framework

The conceptual framework in this research consists of one dependent variable (DV) and three independent variables (IV).

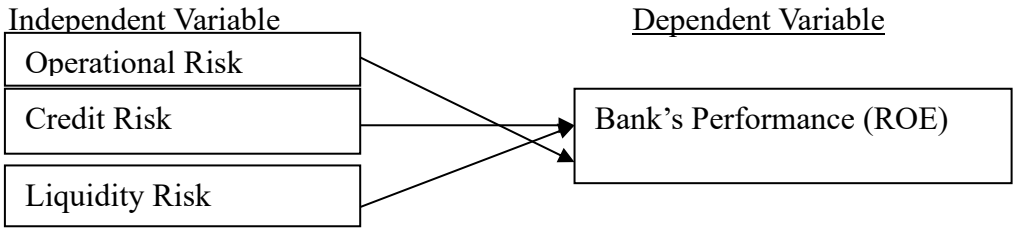

Figure 1: Conceptual Framework

This study's research framework focuses on the impact of financial risk on the performance of 26 commercial bank groups in Malaysia. Bank performance is the dependent variable, which are proxied by ROE. Meanwhile, financial risk in banking refers to various types of risk, including operational, credit, market and liquidity risk. As a result, the independent variables in this study are credit risk, liquidity risk and operational risk.

Dependent Variable

Bank Performance

Bank performance can be measured using ROE which offers a perspective on the efficiency with which a bank utilises its equity capital to generate profits. A higher return on equity (ROE) signifies that the bank is effectively utilising the capital provided by shareholders to generate greater profits. The equation for Return on Equity is:

$$Return\ on\ Equity = \frac{Net\ Income}{Total\ Equity}$$

Independent Variable

Operational Risk

Operational risk refers to the potential for financial loss due to insufficient or unsuccessful internal procedures, systems, personnel, or external events. It includes a broad spectrum of potential hazards that can emerge from the day-to-day activities of a bank. Operational risk is a prominent form of risk encountered by financial institutions and businesses in general. Operational risk could be measured by dividing earn before interest and tax (EBIT) by its total assets. The equation for operational risk is:

$$Operational\ Risk = \frac{EBIT}{Total\ Assets}$$

Credit Risk

Credit risk (CR) is the possibility that a counterparty, or borrower, won't fulfil its financial commitments, leaving the lender or investor with losses. Lending and extending credit are common practices in the finance and banking industries, making it a fundamental risk in these fields. Credit risk is synonymous with default risk. Credit risk could be measured by dividing non-performing loan (NPL) by its total loan. The equation for credit risk is:

$$Credit\ Risk = \frac{Non - Performing\ Loan}{Total\ Loan}$$

Liquidity Risk

Liquidity risk refers to the potential incapacity of an individual or entity to fulfil its immediate financial commitments because of a lack of liquid assets or the incapability to swiftly convert assets into cash without experiencing substantial losses in value. Financial risk management is crucial and applicable to businesses, financial institutions, and investors. Liquidity risk can be measured by dividing current asset by current liability. The equation for liquidity risk is:

$$Liquidity\ Risk = \frac{Current\ Asset}{Current\ Liability}$$

Table 2: Variables' Measurement

Variable name	Abbreviation	Measurement Description
Dependent variable (Bank Performance)		
Return on Equity	ROE	Net Income divided by total equity
Independent Variables (Financial Risk)		
Operational Risk	OR	EBIT divided by total assets
Credit Risk	CR	Non-performing loan divided by total loan
Liquidity Risk	LR	Current asset divided by current liability

Data analysis

Descriptive analysis

Descriptive analysis refers to the process of using statistical techniques to describe and summarize data. It involves computing and interpreting measures that convey key aspects of the data, providing insights into its general characteristics. Besides, descriptive analysis provides a foundational understanding of the data, enabling researchers to identify patterns, trends, and anomalies. It does not involve making predictions or inferences but rather focuses on presenting the data in a meaningful and interpretable way.

Regression Analysis

Ordinary Least Squares regression (POLS) is a tool for predicting the coefficients of linear regression equations that explain the relationship between the independent quantitative variables and a dependent variable. This method is appropriate for this study, as it involves independent variables such as OR, CR, and LR, and dependent variables such as ROE. By employing this approach, the study can yield a panel that exhibits the following characteristics:

i. $$\boldsymbol{ROE_{it} = \alpha + \beta_1 OR_{it} + \beta_1 CR_{it} + \beta_2 LR_{it} + \varepsilon i}$$

Where:
α = Intercept
ROA/ROE = Return on Asset / Return on Equity

OR = Operational Risk
CR = Credit Risk
LR = Liquidity Risk
ε = Error

Hausman Test Analysis

The Hausman test is a statistical test employed in econometrics to ascertain the suitability of either a fixed effects model or a random effects model for panel data analysis. The test evaluates the correlation between the unique errors (individual effects) in the model and the regressors (independent variables). The hypotheses are below:

H0: The individual effects are uncorrelated with the regressors.
H1: The individual effects are correlated with the regressors.

According to rejection rule, if p-value>0.05, do not reject the null-hypothesis.

Breusch-Pagan Test

The Breusch-Pagan test is a statistical test applied to identify heteroskedasticity in a regression model. Heteroskedasticity is a situation in which the variability of the errors (residuals) is not constant across all levels of the independent variables. This can lead to inefficient and biased estimates. The hypotheses are below:

H0: Homoskedasticity is not present (constant variance of the errors).
H1: Heteroskedasticity is present (non-constant variance of the errors)

Based on the rejection rule, if p-value>0.05, do not reject the null-hypothesis.

FINDINGS AND DISCUSSION

This research used Return on Equity (ROE) as a measure of bank performance in Malaysia. The purpose of Return on Equity (ROE) is to assess the efficiency with which a firm utilises the capital contributed by its shareholders to generate earnings. A higher return on equity (ROE) signifies that the company is more proficient in generating profits from the equity financing it receives from shareholders. The table below indicates the ROE of 26 commercial banks in Malaysia within 5 years which is 2018 until 2022.

Table 3: Return on Equity of commercial banks in Malaysia (2018-2022)

Bank	**2018**	**2019**	**2020**	**2021**	**2022**
Affin	6.03	5.49	2.83	5.84	11.32
Alliance	9.38	7.08	5.73	8.93	10.05
Ambank	11.1	8.25	11.85	10.05	9.77
Bangkok	2.15	0.11	0.99	1.6	3.01
Bank of America	6.22	8.21	10.33	3.77	11.93
Bank of China	9.41	3.10	4.77	4.11	6.34
BNP	8.3	7.64	10.13	6.32	5.43
China Construction	1.38	1.93	5.98	1.34	1.34
CIMB	9.64	9.62	2.22	5.02	8.51
Citibank	15.55	15.68	10.24	11.72	20.19
Deutsche bank	10.72	11.72	13.63	6.09	11.25
Hong leong	10.46	9.16	9.71	10.61	11.23

HSBC	11.58	9.37	3.28	3.65	7.94
India international	9.89	9.33	6.92	6.14	4.85
Industrial bank	7.13	4.32	3.34	3.67	4.34
Jp morgan	5.81	7.84	11.07	3.31	7.69
Maybank	10.75	10.08	7.84	9.4	9.42
Mizuho	8.38	5.54	5.27	4.99	4.85
MUFG	8.41	4.82	8.51	5.63	8.07
Nova Scotia	1.91	1.68	1.46	1.52	1.63
OCBC	10.91	11.55	6.43	7.44	13.51
Public Bank	13.47	12.47	10.19	11.59	11.97
RHB	9.87	9.64	7.54	9.36	9.43
Standard Chartered	10.78	8.37	7.93	8.77	8.76
Sumitomo	6.81	5.93	5.43	4.81	5.18
United Oversea	12.22	11.21	8.88	9.69	5.18

Based on table 3, The data reveals significant variations in return on equity (ROE) among various banks and over different years, which are impacted by shifts in profitability, economic circumstances, and factors unexpected to each bank. Several banks consistently exhibit outstanding performance. Citibank stands out itself with continually strong Return on Equity (ROE), achieving its highest level of 20.19% in 2022. OCBC exhibits solid performance, particularly in 2022, with a Return on Equity (ROE) of 13.51%. Public Bank consistently maintained a strong Return on Equity (ROE) over the years, reaching a peak of 13.47% in 2018. This demonstrates the bank's capacity to earn significant profits from the funds invested by shareholders.

On the other hand, certain banks demonstrate varying Return on Equity (ROE). The Bank of America exhibits significant fluctuations, reaching a peak of 11.93% in 2022 following a low of 3.77% in 2021. Ambank undergoes substantial fluctuations, although manages to maintain a relatively good Return on Equity (ROE) overall, despite a decline in 2019. Affin Bank has seen a significant improvement, with its performance increasing from 2.83% in 2020 to 11.32% in 2022, suggesting a good recovery.

Certain banks routinely exhibit a pattern of reporting low Return on Equity (ROE). Nova Scotia's performance is notably poor, as its greatest return on equity (ROE) in 2018 was a mere 1.91%. China Construction Bank consistently exhibits a low Return on Equity (ROE), reaching a maximum of 5.98% in 2020 but maintaining low values for the rest of the year. These banks should assess and modify their strategy to improve profitability and optimise the use of shareholders' equity.

The data also indicates the influence of worldwide and regional economic events, such as the onset of the COVID-19 pandemic in 2020, which probably had an impact on the profitability and return on equity (ROE) of numerous institutions. Bank of America and Deutsche Bank are expected to experience substantial increases in their Return on Equity (ROE) by 2022, indicating a recovery from the economic disruptions caused by the pandemic.

Descriptive Analysis

Table 4: Descriptive Statistic's result

	ROE	CREDIT RISK	LIQUIDITY RISK	OPERATIONAL RISK
Mean	7.611215	5.263154	40.51331	1.333015
Median	8.005000	2.370000	36.75500	1.280000
Maximum	20.19000	34.93000	65.84000	3.800000
Minimum	0.110000	1.000000	19.27000	0.030000
Std. Dev.	3.601847	7.432131	12.35583	0.582302
Skewness	0.129855	2.608805	0.467347	1.341946
Kurtosis	3.097232	8.896741	2.106155	6.087236
Jarque-Bera	0.416558	335.8063	9.059975	90.64414
Probability	0.811980	0.000000	0.010781	0.000000
Sum	989.4580	684.2100	5266.730	173.2920
Sum Sq. Dev.	1673.556	7125.517	19693.98	43.74076
Observations	130	130	130	130

Table 4 shows the descriptive statistics for Return on Equity (ROE) and other financial measures, such as credit risk, liquidity, and operational efficiency, that offer useful insights into the performance of commercial banks in Malaysia from 2018 to 2022.

The average return on equity (ROE) is 7.61%, which signifies the typical degree of profitability among the banks. The median Return on Equity (ROE) stands at 8.01%, indicating that half of the banks have a ROE higher than this value, while the rest of the banks have a ROE lower than it. The maximum Return on Equity (ROE) achieved is 20.19%, demonstrating the exceptional profitability attained by select banks. On the contrary, the minimum ROE stands at a meagre 0.11%, revealing that several banks faced considerable challenges in generating profits. The standard deviation of 3.60% indicates a moderate level of diversity in profitability among the institutions. The distribution of ROE exhibits a minor positive skewness, with a skewness coefficient of 0.13, indicating that a small number of banks have significantly higher ROEs. The kurtosis of 3.10, close to the normal distribution value, suggests a moderate peak. The Jarque-Bera statistic of 0.42 with a probability of 0.81 indicates that the ROE distribution does not significantly deviate from normality.

The credit risk has a mean value of 5.26% and a median of 2.37%. The highest recorded credit risk value is 34.93%, while the minimum is 1.00%. The credit risk among the banks is highly variable, as indicated by the standard deviation of 7.43%. The skewness value of 2.61 indicates a notable rightward skew, indicating that a small number of banks possess exceedingly high credit risks. The kurtosis of 8.90 indicates a leptokurtic distribution with a high peak. The Jarque-Bera statistic of 335.81 with a probability of 0.00 shows a significant deviation from normality, highlighting the diverse credit risk profiles among the banks.

The indicator of liquidity has an average value of 40.51% and a median of 36.76%. The maximum liquidity value recorded is 65.84%, and the minimum is 19.27%. The standard deviation of 12.36% indicates a significant amount of variation in liquidity among the banks. The skewness value of 0.47 shows a small rightward skew, while the kurtosis value of 2.11 suggests a platykurtic distribution with a lower peak. The Jarque-Bera statistic of 9.06 with a probability of 0.01 suggests some deviation from normality, indicating variations in liquidity levels across the banks.

Operational efficiency, measured with an average value of 1.33%, has a median of 1.28%. The highest recorded value is 3.80%, while the lowest is 0.03%. The standard deviation of

0.58% indicates relatively low variability in operational efficiency among the banks. The skewness of 1.34 points to a rightward skew, and the kurtosis of 6.09 indicates a leptokurtic distribution with a high peak. The Jarque-Bera statistic of 90.64 with a probability of 0.00 shows significant deviation from normality, highlighting disparities in operational efficiency.

In short, these descriptive statistics demonstrate a variety of performance among commercial banks in Malaysia. While ROE shows moderate variability and is close to a normal distribution, credit risk demonstrates high variability and significant deviation from normality, indicating that some banks face much higher credit risks than others. The level of liquidity differs significantly among banks, and while operational efficiency is less variable, it also exhibits substantial deviation from normality. These insights facilitate comprehension of the banks' financial well-being and operational dynamics within the chosen timeframe.

Regression Coefficient Analysis

Table 5: Regression Coefficient's result

Variables	**Coefficient**	**Standard Error**	**t-statistics**	**Probability**
C	7.275225	0.790739	9.200535	0.0000
OPERATIONAL RISK	4.334818	0.375647	11.53961	0.0000
CREDIT RISK	-0.089174	0.029473	-3.025591	0.0000
LIQUIDITY RISK	-0.122751	0.018271	-6.718211	0.0030
No. of observation	130			
R-Squared	0.566621			
Adjusted R-Squared	0.556302			
F-Statistic	54.91278			
Prob (F-statistic)	0.000000			

The regression coefficient analysis examines the influence of operational risk, credit risk, and liquidity risk on bank performance. The constant term has a coefficient of 7.275225, with a t-statistic of 9.200535 and a p-value of 0.0000, indicating a significant and positive baseline level of bank performance. Operational risk has a coefficient of 4.334818, a t-statistic of 11.53961, and a p-value of 0.0000, showing a strong positive impact on bank performance, meaning that increased operational risk correlates with improved performance. Conversely, credit risk has a negative coefficient of -0.089174, a t-statistic of -3.025591, and a p-value of 0.0030, suggesting that higher credit risk leads to lower bank performance. Similarly, liquidity risk has a negative coefficient of -0.122751, a t-statistic of -6.718211, and a p-value of 0.0000, indicating that higher liquidity risk is associated with reduced bank performance. The model's R-squared value of 0.566621 implies that approximately 56.66% of the variability in bank performance can be explained by the model, and the adjusted R-squared value of 0.556302 further confirms the model's explanatory power. Additionally, the F-statistic of 54.91278 with a p-value of 0.000000 indicates the overall statistical significance of the model, demonstrating that the combined predictors significantly explain the variability in bank performance.

Hausman Test Analysis

Table 6: Hausman Test's Result

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.737826	3	0.1920

The Hausman test yielded a Chi-square statistic of 4.737826, with 3 degrees of freedom, and a probability (p-value) of 0.1920. The Chi-square statistic measures the degree of correlation between the unique errors and the regressors. A higher value often signifies a greater correlation, indicating that a fixed effects model should be applied.

However, in this case, the probability value is 0.1920, which is greater than the conventional significance level of 0.05. This high p-value suggests that there is no significant correlation between the unique errors and the regressors. Consequently, the null hypothesis, which states that the random effects model is appropriate, cannot be rejected. Therefore, the Hausman test results indicate that a random effects model is suitable for this dataset, as it does not exhibit significant endogeneity problems with the regressors. To summarize, the analysis of the Hausman test favours the utilization of a random effects model rather than a fixed effects model for the provided panel data.

Breusch-Pagan Test Analysis

Table 7: Breusch Pagan's Result

Test Hypothesis	Cross-section	Time	Both
Breusch-Pagan Statistic	88.20698	0.808961	89.01594
P-value	(0.0000)	(0.3684)	(0.0000)

In this analysis, the Breusch-Pagan test is applied across different dimensions: cross-section, time, and both. The test results include the Breusch-Pagan statistics and their corresponding P-values.

For cross-section Breusch-Pagan statistic, the statistic value is 88.20698, with a p-value of 0.0000. This result indicates strong evidence against the null hypothesis of homoskedasticity across the cross-sectional units, suggesting the presence of heteroskedasticity. In simpler terms, the variability in the data differs across different cross-sectional units.

Besides that, time Breush-Pagan statistic indicates that the statistic value is 0.808961, with a p-value of 0.3684. This result does not provide sufficient evidence to reject the null hypothesis of homoskedasticity over time. Therefore, it can be inferred that there is no significant heteroskedasticity over the time periods considered in the analysis.

The combined test yields a statistic value of 89.01594, with a p-value of 0.0000. This indicates a strong rejection of the null hypothesis of homoskedasticity when considering both cross-sectional and time dimensions together, suggesting that heteroskedasticity is indeed present in the data when both dimensions are taken into account.

According to the results of the Breusch-Pagan analysis, which suggests the presence of heteroskedasticity, and the Hausman test, which supports the random effects model, it is recommended to apply the random effects model with robust standard errors to address the heteroskedasticity. This approach integrates the suitability of the random effects model for data

structure with the essential adjustment for heteroskedasticity to guarantee accurate and reliable results.

Random Effect Model Test

Table 8: Random Effect Model's Result

Variables	Coefficient	Standard Error	t-statistics	Probability
C	6.045023	1.183024	5.109807	0.0000
OPERATIONAL RISK	4.085439	0.349890	11.67634	0.0000
CREDIT RISK	-0.122850	0.051665	-2.377802	0.0189
LIQUIDITY RISK	-0.079805	0.025497	-3.130035	0.0022
No. of observation	130			
R-Squared	0.551375			
Adjusted R-Squared	0.540693			
F-Statistic	51.61938			
Prob (F-statistic)	0.000000			

Table 9 shows the Random Effect Model's result which consists of constant (C), credit risk, liquidity risk and operational risk. The coefficient for the constant term is 6.045023, with a t-statistic of 5.109807 and a probability value of 0.0000. This indicates strong statistical significance, meaning that the constant term significantly contributes to the model. Besides that, the coefficient for operational risk is 4.085439, with a t-statistic of 11.67634 and a probability value of 0.0000. This shows a strong positive impact of operational risk on bank performance, suggesting that increased operational risk is associated with improved bank performance. The coefficient for credit risk is -0.122850, with a t-statistic of -2.377802 and a probability value of 0.0189. This negative coefficient suggests that an increase in credit risk is associated with a decrease in bank performance, and the relationship is statistically significant. Furthermore, the coefficient for liquidity risk is -0.079805, with a t-statistic of -3.130035 and a probability value of 0.0022. This indicates a statistically significant negative impact of liquidity risk on bank performance, meaning higher liquidity risk leads to lower bank performance, which may be counterintuitive and worth further investigation.

For r-squared, the value is 0.551375, indicating that approximately 55.14% of the variability in bank performance can be explained by the model. This suggests a good fit of the model to the data. Furthermore, the adjusted R-squared value is 0.540693, which adjusts the R-squared value for the number of predictors in the model. This value accounts for the complexity of the model and provides a more accurate measure of the explanatory power. Meanwhile, the F-statistic is 51.61938 with a probability value of 0.000000 indicates that the model is statistically significant, meaning the combined effect of all the predictors is significant in explaining the variability in bank performance.

In summary, the Random Effect Model Test demonstrates that credit risk and liquidity risk have a negative impact on bank performance, whereas operational risk has a positive impact. The model illustrates a substantial proportion of the variance in bank performance, and all the variables used in the model exhibit statistically significant impacts.

Diagnostic Test

Diagnostic tests are statistical procedures used to assess the validity, reliability, and assumptions of a statistical model or analysis. These tests are conducted to evaluate whether the model meets certain criteria or assumptions necessary for making valid inferences from the data.

Multicollinearity Test

Variance Inflation Factor (VIF)

Table 9: VIF's Result

	Operational Risk	**Credit Risk**	**Liquidity Risk**
Centered VIF	**1.0723**	**1.0753**	**1.1422**

The Variance Inflation Factor (VIF) results from the analysis of the regression model involving Operational Risk, Credit Risk, and Liquidity Risk in relation to bank performance reveal important insights. With centered VIF values of 1.0723 for Operational Risk, 1.0753 for Credit Risk, and 1.1422 for Liquidity Risk, it is evident that multicollinearity among the predictor variables is not a significant issue. VIF values close to 1 indicate a low level of multicollinearity, signifying that these variables are not highly correlated. The results suggest that the predictor variables operate independently in explaining the variability in bank performance, without introducing instability in the estimates. This finding enhances the reliability of the regression model. It strengthens the validity of the statistical inferences drawn from it, underscoring the robustness of the relationship between the risks examined and bank performance in the Malaysian context.

Autocorrelation Test

Durbin-Watson Stat

Table 11: Durbin-Watson Stat's Result

Durbin Watson Stat	1.7137

The table above shows the Durbin-Watson statistic value of 1.7137 suggests that there is a minimal presence of autocorrelation in the model's residuals. A value close to 2 indicates that there is no first-order autocorrelation present in the residuals. The statistic ranges from 0 to 4, where a value around 2 indicates no autocorrelation, values below 2 suggest positive autocorrelation, and values above 2 indicate negative autocorrelation. Therefore, the Durbin-Watson statistic of 1.7137 in this analysis indicates that the residuals do not exhibit significant autocorrelation, implying that the independence assumption of the residuals is not violated. This result enhances the reliability of the regression model and the validity of the statistical inferences drawn from it.

Heteroskedasticity Test

Table 10: Heteroskedasticity Test's Result

	P-Value	**Result**

Heteroskedasticity Test	**0.0000**	**Statistically significant**

Based on table 12 the p-value shown 0.0000 indicates that there is strong evidence to reject the null hypothesis that there is no heteroskedasticity across cross-section units in the panel data model. A p-value less than 0.05 suggests that the observed heteroskedasticity in the data is unlikely to occur if there were truly no heteroskedasticity. Heteroskedasticity occurs when the variance of the error terms differs across cross-sectional units, violating the assumption of constant variance in the error terms. This can lead to inefficient and biased estimates, making the results of the regression analysis unreliable. Therefore, a p-value under 0.05 suggests that corrective measures, such as using robust standard errors or transforming the model, should be taken to address heteroskedasticity and ensure more accurate and reliable inference.

Normality Test

The results revealed that the residuals had a skewness value of -0.181243, indicating a very balanced distribution of the residuals around the mean. The kurtosis score of 2.632150 suggests that the distribution of the residuals has a moderate peak. The Jarque-Bera statistic of 1.444678, with a probability of 0.485615, indicates that the residuals' distribution does not depart considerably from a normal distribution. In summary, these results suggest that the standardised residuals from the model have a distribution that is almost symmetrical with a moderate peak, and they closely adhere to the assumptions of normality. The absence of significant deviations from normality in the residuals suggests that the random effects model is a reasonable way to depict the connection between operational risk, liquidity risk, credit risk, and bank performance.

CONCLUSIONS AND RECOMMENDATIONS

Overall, the study found that operational risk, credit risk, and liquidity risk had significant effects on the performance of commercial banks in Malaysia. The identified factors were determined to jointly account for a significant amount of the variation in bank performance, as demonstrated by the model's R-squared value, which indicates a strong fit. Operational risk pertains to the presence of mistakes or shortcomings in internal procedures, persons, and systems, while credit risk relates to the potential that a borrower may fail to meet its obligations. Liquidity risk pertains to the possibility of a bank being incapable of meeting its immediate financial commitments. By pinpointing these risks as significant influencers, the study underscores the necessity for banks to prioritize these areas in their risk management strategies. So, there are recommendations that should be taken by these banks to ensure that they could manage the risk.

One of the recommendations is banks must prioritise enhancing their risk management practices, with a particular focus on credit and liquidity risks. This can be accomplished by developing more resilient credit evaluation procedures that accurately estimate the creditworthiness of borrowers and by maintaining adequate cash reserves to pay short-term obligations without encountering financial hardship. By addressing these areas, banks can mitigate the adverse impacts of these risks on their performance, thereby ensuring greater financial stability and resilience.

Other than that, it is essential to implement consistent monitoring and reporting systems in order to track financial risks and performance. Banks need to utilise sophisticated data analysis techniques and real-time data to make well-informed choices and immediately mitigate emerging risks. This proactive approach allows for the early detection of potential

issues, enabling banks to take corrective actions before risks materialize into significant problems. Consistent monitoring also guarantees that banks adhere to regulatory requirements and uphold transparency in their activities.

In addition, financial institutions need to allocate resources towards adopting advanced technologies in order to optimise their operational efficiency and bolster their capacities in managing risks. Adopting fintech solutions can improve risk assessment processes, enhance customer service, and streamline operations. For instance, advanced data analytics and machine learning algorithms can enhance risk assessments by providing more precise results. Additionally, digital platforms can improve customer relations and operational efficiencies. By integrating technology into their operations, banks can achieve greater agility and responsiveness to market changes.

Last but not least, allocating resources towards training and development programmes for bank workers is crucial in enhancing their comprehension and oversight of financial risks. Regular workshops, certifications, and on-the-job training can keep staff updated on best practices and regulatory changes. Staff who have received comprehensive training are more capable of accurately identifying and reducing risks, hence enhancing the overall stability and performance of the bank. Continuous education and professional development promote a culture of risk awareness and proactive management inside the organisation.

Financial risk is an inherent risk that cannot be avoided, and it necessitates the bank's proficiency in risk management. By comprehending these alterations and implementing appropriate strategies and procedures to manage risks, the banking sector in Malaysia will consistently achieve superior performance in the future.

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