

## Islamic bank stability and efficiency: A cross-country analysis

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### Abstract

**Purpose** — The study investigates the impact of the efficiency of Islamic banks on banking stability.

**Method** — A panel data analysis using the Least Squares Dummy Variable Corrected (LSDVC) method is employed to examine the impact of efficiency on banking stability in Islamic banks. The study has a sample of 54 Islamic banks across eight countries from 2013 to 2021.

**Findings** — The findings reveal that the efficiency of Islamic banks has a positive and significant effect on banking stability. In addition, financial turmoil has a negative and significant impact on the stability of Islamic banks, but does not significantly affect institutional development. Additionally, financial turmoil can influence how effectively Islamic banks manage their businesses in response to banking stability. The outcomes are robust across various robustness methods.

**Implications** — The results imply that Islamic bank efficiency plays a pivotal role in banking stability, particularly at higher levels of efficiency. To ensure the stability of Islamic banks, practitioners and regulators of Islamic banks have to achieve and maintain the efficiency of Islamic banks by implementing the required policies and guidelines.

**Originality/Value** — Previous studies examining the impact of Islamic banks' efficiency on banking stability remain limited. The paper fills a research gap by examining how Islamic bank efficiency affects banking stability, accounting for the effects of financial turmoil and institutional development.

**Keywords** — Islamic bank, efficiency performance, banking stability, LSDVC, Institutional Development.

## Introduction

Even though Islamic banks have been developing significantly (ICD-Refinitiv, 2022), there is ongoing debate within the Islamic banking sector about financial stability. Some studies reveal that Islamic banks conduct the same banking operations as conventional banks (Chong & Liu, 2009). As a result, the risk exposure of Islamic banks is no different from that of their counterparties, particularly in terms of banking stability. On the contrary, studies by Abedifar et al. (2013) document that Islamic banks exhibit different risk exposures because their business models align with the Shariah principles. Hence, the risks faced by Islamic banks are different from those of

conventional banks. Despite the debate, Islamic banks have faced failures, such as Ihlas Finans House in Turkey in 2001, during a period of financial crisis (Ali, 2007). Therefore, understanding the factors that contribute to banking stability, especially in the case of Islamic banks, is important to this issue.

The studies on Islamic banking stability are voluminous, in which banking efficiency empirically becomes a determinant of the level of stability of the bank. This is because efficiency is a critical indicator of banking financial performance. Several studies regarding banking efficiency and how it impacts banking performance have been conducted previously by Al-Khasawneh et al. (2012) in the Middle East and North African Countries, Ahmad and Luo (2010) in European Countries, Rosman et al. (2014) in the global banking industry, Alqahtani et al. (2017) in Middle East countries, Safiullah and Shamsuddin (2022) conducted in 28 countries, and Asmild et al. (2019) was conducted specifically in Bangladesh.

Apart from that, some studies specifically examine the relationship between the level of efficiency and banking stability, a relationship that has also been explored by previous researchers from various perspectives. For example, Danlami et al. (2022) conducted research on the relationship between banking efficiency and stability in the Organisation of the Islamic Conference (OIC) countries (Miah & Sharmeen, 2015) in Bangladesh, Miah and Uddin (2017), Hidayat et al. (2021), and Alsharif (2021) in Middle Eastern countries, Sakti and Mohamad (2018) in Indonesia, and Saeed and Izzeldin (2016) in Middle Eastern countries and three non-Middle Eastern countries.

The findings of the study show that the level of efficiency reduces the level of stability of Islamic banking (Danlami et al., 2022). This is because of the presence of a "trade-off", where financial efficiency does not give banks sufficient flexibility to manage risk. It increases the risk of bankruptcy in Islamic banking. This is also similar to the findings of Saeed and Izzeldin (2016) and Miah and Uddin (2017), which state that banks with a lower efficiency level have a better level of banking stability. In contrast, Hidayat et al. (2021) recently found that higher the level of banking efficiency is associated with better banking financial performance.

Regarding the influence of bank-specific variables, financial turmoil, and institutional development, previous studies document that size matters for banking stability (Ibrahim & Rizvi, 2017). Bigger Islamic banks tend to be more stable than smaller Islamic banks in terms of asset size. The bigger banks have also been found to be more profitable than the European banks (Terraza, 2015). In contrast, a bigger Islamic bank is more unstable because the bank tends to be more aggressive in financing activities (Aysun, 2016). During the financial turmoil reflected in the COVID-19 pandemic period, some studies highlighted that the banking sector experienced an adverse effect of financial turmoil Demir and Danisman, 2021; Elnahass et al., 2021; Anto et al., 2022; and Fakhrunnas et al., 2021) because it increased the financial risk. Institutional development also affects banking performance, as explained by Albaity et al. (2022) and Nabi and Suliman (2009) within the concept of the institutional theory framework. On the contrary, Shakil et al. (2019) and Azmi et al. (2021) argue that in developing countries, institutional development is hindered by high economic uncertainty and an immature regulatory system.

Given the inconclusive findings, more studies are needed to provide a clearer understanding of the impact of efficiency performance on banking stability. Thus, the study aims to shed light on the effect of efficiency performance on banking stability in Islamic banks. In response to that objective, some questions then arise: (1) Does efficiency performance significantly influence Islamic banking stability? (2) Does the size of Islamic banks matter for efficiency performance on banking stability?, and (3) what is the impact of financial turmoil and institutional development on banking stability concerning the importance of efficiency performance?

The contribution of the study consists of threefold. Firstly, it enriches previous research on the impact of Islamic banks' efficiency performance of Islamic banks on banking performance, as this has already been studied by Al-Khasawneh et al. (2012), Asmild et al. (2019), Alqahtani et al. (2017), and Danlami et al. (2022). Secondly, the study provides a novel perspective on the impact of changes in bank size on banking stability, considering the role of efficiency performance in Islamic banks. Ibrahim and Rizvi (2017) highlighted the role of size in the banking sector to examine whether size matters for Islamic banks. However, according to the recent literature, no

studies have examined the importance of Islamic bank size for efficiency performance in relation to Islamic banking stability. Understanding this relation sheds light on whether possessing a certain level of size benefits efficiency performance or vice versa. Thirdly, the study elaborates on the role of financial turmoil, specifically during the COVID-19 pandemic, and its impact on institutional development and banking stability, considering the role of efficiency performance in Islamic banks.

Furthermore, there are numerous aspects of the study to go over. After the introduction, the first section is the methodology, which explains the data, research model, and analysis strategy. The second section is the results and analysis, ending with the conclusion and recommendation.

## Method

To achieve the study's objective, samples are drawn from Islamic banks in eight countries: Saudi Arabia, Malaysia, the United Arab Emirates (UAE), Kuwait, Bahrain, Bangladesh, Turkey, and Indonesia. These countries represent more than 80% of Islamic banking development worldwide (ICD-Refinitiv, 2022). We exclude Islamic banks in Iran because there is a significant difference between Islamic banking concepts and practices in Iran and the rest of the world (Meisamy & Gholipour, 2020). The study period runs from 2013 to 2021, using balanced panel data from Fitch Connect and the World Bank Indicator (WBI). Our sample consists of 54 Islamic Banks across countries. The model of the study is as follows;

$$Bank\ Stability_{it} = a_0 + a_1EFF_{it} + a_2Bank_{it-1} + a_3Macro_{jt} + a_4Gov_{jt} + a_5COVID_{jt} + \varepsilon_{ijt} \quad (1)$$

Where  $i$  denotes bank-level variables, and  $t$  and  $j$  denote time- and country-level variables, respectively. In addition,  $a_0$  and  $\varepsilon_{ijt}$  are the symbols of the constant and error-term for each. In the model, the dependent variable is bank stability, measured by ZSCORE, calculated from the log of  $\frac{ROA + ETA}{}$ , where ROA is return on total assets, and ETA is equity to total assets (Chiaromonte et al., 2016). A higher score of ZSCORE indicates the bank has more financial stability, and it means the inverse when the bank has a low score of ZSCORE.

In addition, efficiency performance (EFF) is measured as total cost divided by total revenue, with lower scores indicating high efficiency and higher scores indicating low efficiency (Danlami et al., 2022). We use a lagged bank-specific variable (Bank) to address the issue of reverse causality as suggested by Castro (2013). The bank-specific variables consist of CAPLIB, which measures the Islamic bank's capital relative to its liabilities; LOANGR, which explains the Islamic bank's financing growth each year; and ASSET, measured by the log of the Islamic bank's total assets. Furthermore, the macroeconomic variable (Macro) is proxied by the yearly growth of gross domestic product (GDP), while institutional development (GOV) is proxied by the cumulative score of the governance index based on the World Bank indicator. Furthermore, COVID is measured using a dummy variable (1) for the period 2020-2021, while 0 represents other periods.

Furthermore, to answer the importance of Islamic banks' size on banking stability, considering a change in efficiency performance, we follow Ibrahim and Rizvi (2017), Law et al. (2020), and Danlami et al. (2022) to examine the marginal effect of Islamic banks' size due to a change in efficiency performance of Islamic banks. The equation is formulated as follows,

$$\frac{\partial ZSCORE_{it}}{\partial EFF_{it}} = \beta_2 + \alpha ASSET_{it} \quad (2)$$

Where  $\beta_2$  explains the coefficient of EFF, and  $\alpha$  is the coefficient of the interaction variable of EFF and ASSET.

Finally, we use a dynamic panel approach employing the least-squares dummy variable corrected (LSDVC) estimator, as proposed by Nickell (1981) and Bruno (2005). The reasons behind adopting this method are: (1) A correlation exists between the error term and the first lag of ZSCORE, resulting in an endogeneity problem. Hence, the use of fixed or random effect is not appropriate in the model (Ibrahim & Rizvi, 2017). (2) The use of panel dynamics, particularly employing the generalized method of moments (GMM), addresses the issue of the endogeneity

problem. However, in this study, the number of N of the data is considered to be limited. The application of GMM will introduce bias because it requires a large number of data points (Dang et al., 2015; Ibrahim & Rizvi, 2017). (3) LSDVC allows the study to use the model even though the number of data is limited with error correction. In addition, LSDVC addresses endogeneity in small samples (Dang et al., 2015).

## Results and Discussion

Table 1 provides a descriptive statistic of the data used in the study. A total of 486 observations are used. The number of Z-Scores indicates that the stability among Islamic banks does not differ significantly, as evidenced by the standard deviation of the data. A higher level of ZSCORE indicates greater banking stability for an Islamic bank. Moreover, the data description from the efficiency performance explains that the mean is 0.568. It shows that the efficiency of Islamic banks can generate roughly twice the total revenue as total cost. A lower EFF score indicates that the Islamic banks are more efficient, and they become less efficient as the score increases.

**Table 1.** Descriptive Statistic

VARIABLE	OBS.	MEAN	STD. DEV.	MIN	MAX
ZSCORE	486	3.299	0.596	1.689	4.291
EFF	486	0.568	0.181	0.300	0.941
CAPLIB	486	14.1%	7.5%	6.8%	57.4%
LOANGR	486	11.1%	12.5%	-12.7%	44.6%
ASSET	486	12,100	18,700	24.65	166,000
GDPGR	486	3.5%	2.6%	-2.1%	7.1%
GOV	486	-0.024	0.478	-1.120	0.663

Note: ASSET is in USD Million

In addition, Islamic banks' financing growth (LOANGR) is relatively high, with average growth rates in the 2-digit range. It indicates that the bank has aggressive financing activity in the economic. However, at times, financing growth becomes negative due to the adverse effects of the pandemic, which disrupts Islamic banking operations in some countries. In terms of the size of Islamic banks, the standard deviation value remains high, indicating a significant gap in the assets of Islamic banks in the sample. The largest Islamic bank has USD 166,000 million in assets, while the smallest Islamic bank has only USD 24.65 million in total assets. Regarding the correlation analysis, as shown in Table 2, there is a high correlation between ASSET and EFF, with a correlation coefficient of -0.602. Another correlation considered high is between COVID and GDPGR, with a value of -0.516. However, overall correlation scores between the two variables are less than 0.8 or -0.8, indicating that there is no issue of autocorrelation in the research model.

**Table 2.** Correlation Result

	ZSCORE	EFF	CAPLIB	LOANGR	ASSET	GDPGR	COVID	GOV
ZSCORE	1.000							
EFF	-0.376	1.000						
CAPLIB	0.165	0.081	1.000					
LOANGR	-0.076	-0.121	-0.127	1.000				
ASSET	0.446	-0.602	-0.250	-0.011	1.000			
GDPGR	-0.164	0.159	-0.104	0.090	-0.252	1.000		
COVID	-0.039	-0.076	0.007	-0.115	0.095	-0.516	1.000	
GOV	0.127	-0.173	0.004	-0.132	0.209	-0.147	0.069	1.000

Furthermore, to examine the impact of efficiency performance on banking stability in Islamic banks, several methodologies are utilized. Firstly, we separate the analysis into four equations, each with specific bank-level variables (Model 1), bank-specific and macroeconomic

variables (Model 2), and bank-specific, macroeconomic, and financial turmoil variables (Model 3). Finally, we include all variables in the equation (Model 4). The objective of using different equations is to test the consistency of the results. According to the baseline results, efficiency performance has consistently been negative and significant for banking stability in Islamic banks. It indicates that the bank tends to be more stable when its efficiency performance is high.

For bank-specific variables, LOANGR shows a negative, significant relationship with banking stability. It means that higher financing growth is associated with lower financial stability in Islamic banks. The results are consistent in all four models. Moreover, bank size has a positive and significant impact on the stability of Islamic banks, while financial turmoil during the COVID-19 pandemic reduces the level of banking stability. In contrast, CAPLIB and GOV are insignificant for banking stability, indicating that neither variable affects it econometrically in Islamic banks.

**Table 3.** Baseline Result

VARIABLE	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
L.ZSCORE	0.74*** (13.63)	0.83*** (16.92)	0.75*** (13.00)	0.76*** (13.41)	0.73*** (12.45)	0.76*** (13.51)	0.77*** (13.59)
EFF	-0.21** (-2.21)	-0.20** (-2.50)	-0.22** (-2.23)	-0.22** (-2.26)	-1.91** (-2.03)	-0.22** (-2.24)	-0.23** (-2.35)
CAPLIB	-0.05 (-0.19)	-0.12 (-0.58)	-0.02 (-0.08)	-0.03 (-0.13)	-0.03 (-0.10)	-0.03 (-0.12)	-0.04 (-0.16)
LOANGR	-0.25*** (-3.63)	-0.30*** (-4.89)	-0.32*** (-4.24)	-0.32*** (-4.31)	-0.31*** (-4.01)	-0.32*** (-4.27)	-0.32*** (-4.37)
ASSET	0.02 (0.75)	0.06** (2.13)	0.07** (2.17)	0.08** (2.32)	-0.00 (-0.09)	0.08** (2.32)	0.08** (2.44)
GDPGR		1.27*** (4.13)	0.62 (1.45)	0.67 (1.58)	0.62 (1.39)	0.67 (1.58)	0.71* (1.67)
COVID			-0.06*** (-2.68)	-0.05** (-2.27)	-0.05** (-2.07)	-0.05** (-2.26)	-0.08 (-1.29)
GOV				-0.11 (-0.86)	-0.09 (-0.65)	-0.13 (-0.76)	-0.12 (-0.95)
EFF*ASSET					0.11* (1.80)		
EFF *GOV						0.04 (0.20)	
EFF *COVID							0.05 (0.48)
No. of Obs.	432	432	432	432	432	432	432
No. of Banks	54	54	54	54	54	54	54

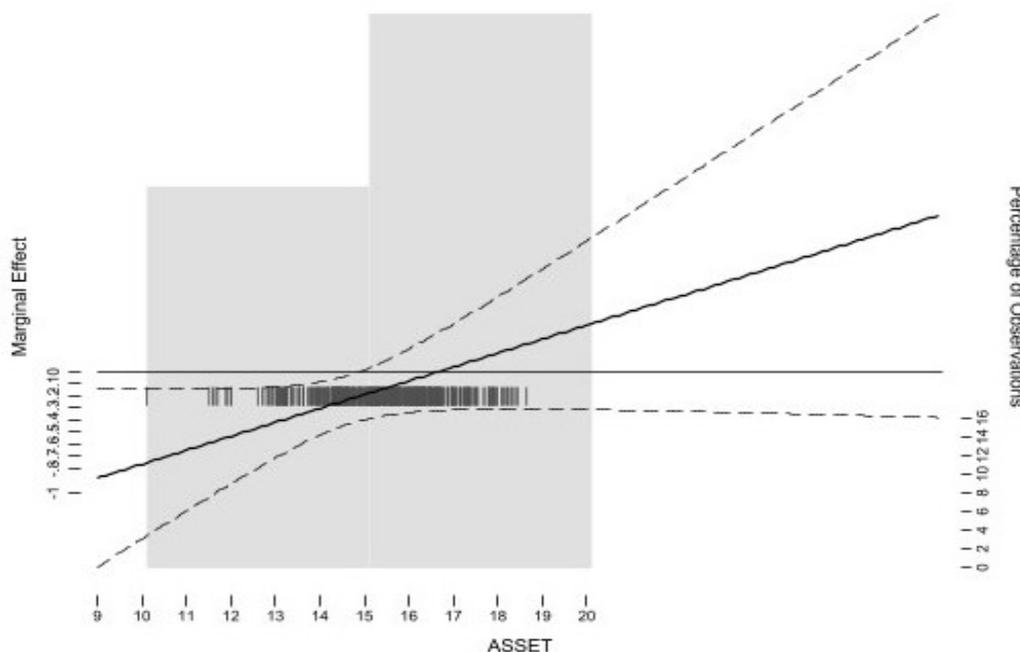
*t* statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Secondly, the study examines the relationship between Islamic banks' size (Model 5) and efficiency performance to investigate the impact of bank size on banking stability. The findings in Table 3 show that efficiency performance remains negative and is significantly related to banking stability at the 5% level of significance. A decrease of 1 point in efficiency performance increases banking stability of 1.91 points. The interaction variables between Islamic bank size and efficiency performance are also significant, but in opposite directions at the 10% significance level.

Following the approach of Law et al. (2020), we employ marginal effect measurement to investigate whether the small-big size of Islamic banks has a distinct influence on banking stability, particularly in terms of efficiency performance, as illustrated in Figure 1. At the 95% confidence level of significance, the X line represents the Islamic bank's size across all samples. According to the findings, most Islamic banks exhibit a negative and significant relationship with banking stability. However, when the value of Islamic banks' size is larger, with the X line roughly above 16.5, a positive and significant relationship is observed.

Thirdly, we also consider the impact of financial turmoil, as reflected by COVID-19 (Model 6) and institutional development (Model 7). The study's findings reveal that efficiency performance has a negative and significant relationship with banking stability in both models. However, COVID and GOV fail to moderate the role of efficiency performance in banking stability, as none of the interaction variables is significant.



**Figure 1.** Marginal Effect of Islamic Bank's Size on Efficiency Performance-Banking Stability Nexus

**Table 4.** Robustness Check

VARIABLE	Model 1	Model 2	Model 3	Model 4	Model 5
L. ZSCORE	0.76*** (9.38)	0.77*** (9.42)	0.79*** (9.34)	0.75*** (9.01)	0.79*** (9.41)
MGT	-0.21* (-1.70)	-0.21* (-1.77)	-0.21* (-1.81)	-3.43** (-2.55)	-0.22* (-1.81)
CAPLIB	-0.07 (-0.26)	-0.11 (-0.39)	-0.12 (-0.41)	-0.03 (-0.10)	-0.12 (-0.42)
LOANGR	-0.26*** (-3.35)	-0.28*** (-3.55)	-0.28*** (-3.65)	-0.27*** (-3.49)	-0.28*** (-3.48)
ASSET	0.09** (2.32)	0.10** (2.47)	0.10*** (2.64)	-0.07 (-0.86)	0.10*** (2.59)
GDPGR		0.62 (0.99)	0.66 (1.08)	0.36 (0.59)	0.67 (1.09)
GOV			-0.08 (-0.61)	-0.03 (-0.25)	-0.18 (-0.86)
MGT*ASSET				0.22** (2.42)	
MGT1*GOV					0.16 (0.65)
No. of Obs.	324	324	324	324	324
No. of Banks	54	54	54	54	54

*t* statistics in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Finally, to assess the robustness of the study, we decided to exclude the period of the outbreak (2020-2021) from the sample, reducing the number of observations to 324. We argue that

during financial turmoil, the condition of Islamic banking sectors is dynamic, as mentioned by [Rashid and Jabeen \(2016\)](#), [Demir and Danisman \(2021\)](#), and [Fakhrunnas et al. \(2022\)](#). Therefore, excluding the period of financial turmoil is expected to confirm the analysis and determine whether the result remains consistent when that period of financial turmoil is included in the sample. According to the results of the robustness check shown in Table 4, from model 1 to model 5, efficiency performance has consistently exhibited a negative and significant relationship with banking stability in Islamic banks. The findings confirm the baseline results, indicating robustness.

The above empirical analysis can be developed into several points. Firstly, efficiency performance holds a pivotal role in determining Islamic banking stability. It is found in all models and robustness checks. The finding aligns with [Hidayat et al. \(2021\)](#), who state that efficiency performance is the primary determinant of banking performance. When the bank is more efficient, it can allocate its resources of funds effectively. It also means the bank achieves its objective of financial stability at the banking level by effectively allocating funds to risk management. Additionally, having an efficient and effective allocation of financial resources also directly increases the probability of the bank achieving higher returns, as it spends lower costs on its banking operations. In this case, Islamic banks employ sound management practices that support the future development of the Islamic banking sector worldwide. Efficient performance also indicates that the bank can effectively supervise lending and borrowing activities and properly manage its portfolio.

Secondly, as noted by [Terraza \(2015\)](#), [Aysun \(2016\)](#), and [Ibrahim and Rizvi \(2017\)](#), the size of banks significantly influences performance. The findings of this study reveal that the interaction between efficiency performance and bank size is positively and significantly associated with banking stability. Efficient performance tends to positively influence banking stability, particularly in Islamic banks, when accompanied by an increase in bank size. Following [Ibrahim and Rizvi \(2017\)](#), [Law et al. \(2020\)](#), and [Danlami et al. \(2022\)](#), we examine the marginal effect of size on banking stability when efficiency performance changes. The result is interesting because the size of small- to medium-sized banks tends to better efficiency performance, negatively affecting banking stability. Inversely, the large banks' size has a positive and significant relationship with efficiency performance and banking stability. It indicates that large banks face a trade-off between efficiency and effectiveness. The bank's management can perform efficiently, but it increases the level of banking instability. As a larger bank incurs higher operational costs, for instance, attempting to achieve efficient performance can result of reduced funds allocated to risk management. As a result, the large banks' size probably yields a higher return due to lower costs, but at the expense of greater instability. The finding is supported by [Aysun \(2016\)](#), who also highlights that the size of large banks tends to be associated with greater risk-taking.

Thirdly, the financial turmoil reflected during the COVID-19 pandemic period has a negative and significant relationship with Islamic banking stability. It can be explained that during the outbreak, Islamic banks became relatively unstable due to external financial shocks. The finding aligns with [Demir and Danisman \(2021\)](#), [Elnahass et al. \(2021\)](#), [Anto et al. \(2022\)](#), and [Fakhrunnas et al. \(2021\)](#), who state that the pandemic creates instability in banking performance. However, the financial turmoil fails to moderate the role of efficiency performance in Islamic banking stability. It confirms that the efficiency of Islamic banks performs well during financial turmoil because they can maintain financial stability at the bank level.

Fourth, institutional development does not have a significant influence on Islamic banking stability. Institutional development also fails to moderate the efficiency-performance relationship in Islamic banking. It indicates that institutional development does not matter for Islamic banking stability. The finding can be explained by the arguments of [Shakil et al. \(2019\)](#) and [Azmi et al. \(2021\)](#). They argue that institutional development plays a limited role in creating a financial industry in developing countries due to high uncertainty and a lack of attention to stakeholders, particularly shareholders. Therefore, institutional performance at the management level of the bank has a significant role in the level of stability, regardless of the level of institutional development in developing countries.

## Conclusion

The main focus of the study is to examine the impact of efficiency performance on banking stability in Islamic banks. The study reveals that Islamic banks with strong efficiency performance are financially stable. Additionally, the size of Islamic banks matters for the stability of Islamic banks in terms of efficiency performance. High efficiency is found to increase the financial stability of small- to medium-sized Islamic banks, but it has the opposite effect on large Islamic banks. It explains that the role of efficiency performance differs across Islamic banks based of their size and efficiency levels.

Furthermore, financial turmoil has a significant influence on Islamic banking stability. However, it fails to serve as a moderating variable for the relationship between efficiency and banking stability. The insignificant influence of the institutional development variable and its failure to moderate efficiency performance indicate that institutional development does not play a pivotal role in Islamic banking stability.

The findings suggest that Islamic banking institutions must ensure efficient operations to strengthen the level of financial stability within Islamic banks. In addition, for large-sized Islamic banks, efficiency performance must consider the effectiveness of fund allocation, especially in terms of risk-management performance. Indeed, these points should be a concern for financial authorities, who should regulate Islamic banks effectively and efficiently to achieve and maintain financial stability, particularly large Islamic banks that pose a higher risk of systemic instability.

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