The Effect of Income Diversification and Moderating Role of Health Crisis on the Profitability Performance and Financing Risk of Islamic Banks in MENA and SEA Region

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Abstract. This study analyses the influence of income diversification on the profitability performance and financing risk of Sharia banks in the Middle East and North Africa (MENA) and Southeast Asia (SEA) region. The research introduces a novel approach by using a health crisis (Covid-19 / Covid-19 Pandemic) as a moderating variable for us to assess the conditional effects of income diversification towards Sharia banks' profitability performance and financing risk. This study uses regression analysis with interaction terms to capture how health crises moderate these relationships. Results show that income diversification increased Sharia banks' performance and lowered financing risks. However, the impact of income diversification weakens during the health crisis. These suggest that Sharia banks can diversify income streams as they may experience a buffering effect during economic downturns.

Keywords: Income Diversification, Sharia Banks, Profitability Performance, Financing Risk.

1 Introduction

The Islamic finance sector is experiencing a boom, with Islamic financial assets surging by an impressive 17% in 2022 [1]. This robust growth highlights the sector's resilience, evident in its recovery rate mirroring pre-pandemic (Covid-19 pandemic) levels of 17.4% [2]. This rapid post-crisis rebound indicates strong potential for further development within Islamic finance.

Islamic banking plays a dominant role in the Islamic finance sector, accounting for 68.7% of total assets [1]. While the Islamic Financial Services Board (IFSB) reports a 6.5% annual growth rate (CAGR) for Islamic banking assets in 2021, which is lower than the 2019 figure of 12.4% [3], this growth still demonstrates the strength of Islamic banking during the recent health crisis. Islamic banks are viewed as capable of continued growth and contributing to economic stability, particularly post-crisis. One of the key roles of Islamic banks is to keep on providing financing for both individuals and businesses in any economic situation [3].

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Furthermore, the evolution of Islamic banking is bolstered by the increasing digitalization of these institutions. Notably, digital Islamic banks are emerging in countries with non-Muslim majorities like Germany and the United Kingdom [1]. Although the Gulf Cooperation Council (GCC) still holds the largest share of Islamic banking assets, significant growth is also evident in the Middle East and North Africa (MENA) region, Asia (particularly Southeast Asia or SEA), Africa, and other areas [3].

MENA is the pioneer in Islamic banking, which has undergone an earlier growth stage than other regions. In 2002, this region had 41 out of 100 Islamic banks worldwide [4]. The region alone has 40% of all Islamic banking assets globally, with Iran having the highest—up to 45%. Furthermore, some banks have begun to convert from conventional to Islamic banks, such as the Faysal Bank in Pakistan in 2023.

However, the growth and government interventions in Islamic banking development have fostered a more competitive landscape, leading to a situation akin to a *double-edged sword*. On the one hand, healthy competition can improve performance among Islamic banks. Nevertheless, due to the different circumstances in banking environments across countries, intense competition could also negatively affect their performance [5], [6]. The competition between Islamic banks is one of many factors at play. The unstable macroeconomic conditions can also cause significant disruption to Islamic banks' performance [7]. Great turmoil like the global health crisis—the COVID-19 pandemic, SARS, Ebola—and other disruptions that occur on a worldwide scale also serve as an additional external factor impacting Islamic bank performance [8].

While the health crisis impacted both Islamic and conventional banks, evidence suggests Islamic banks may have shown greater resilience. A study of the 2008–2009 financial crisis shows that Islamic banks experienced higher financing and asset growth compared to conventional banks despite the stagnant profitability [9]. Moreover, the COVID-19 pandemic delivered a new challenge compared to past crises. Unlike previous health crises, COVID-19 has had a global impact and resulted in significant uncertainty. This is supported by the quantified impact number published through The Economist Intelligence Report [10]. Further highlighting the severity of the crisis, the IMF highlighted that the global economy experienced a drastic decline of 3.1% in 2020 [11]. This unprecedented crisis highlighted the critical role of banks in supporting the economy during challenging times. Even as banks are expected to increase lending during crises, robust risk mitigation strategies remain crucial to maintain performance and financing levels [12].

Maintaining Islamic banking performance is crucial, and diversification has emerged as a potential solution. A study by Molyneux & Yip [13] examined the outcome of income diversification strategies on Islamic banking performance in several countries (Malaysia, Saudi Arabia, Kuwait, Qatar, Bahrain, and the UAE). Their findings suggest that increasing non-financing income as a diversification can help stabilize Islamic banking performance by improving profitability ratios and risk-adjusted returns. This concept is further supported by research conducted in different regions [14]–[17].

Several studies have explored the direct and moderating effects of the COVID-19 pandemic on the banking system. Research by [16]–[18] investigated the pandemic's shock effect on banking performance. Demir and Danisman [19] also confirmed the significant negative effects the pandemic had on banking sector risks. This is further proven by [18], who focused on nine countries in the MENA, where Islamic banks generally experienced continuous losses during the 2020–2022 crisis. Ikhwan and Riani [20] conducted a similar study in Indonesia, finding that while Islamic banking

outperformed conventional banking, the COVID-19 crisis negatively impacted it, evidenced by a decline in Return on Assets (ROA) and reduced efficiency. However, the severity of COVID-19's impact varied across regions. Jallad [21] found that the pandemic did not significantly affect Islamic and conventional banks in Palestine.

Aside from the performance stability during COVID-19, the same goes for reducing financing risk. As the IMF [12] suggested, during a crisis, banks are supposed to manage their financing levels despite the increase in financing frequencies. Studies conducted by [22], [23], [16] found that income diversification helped to lower the financing risks for banks during the COVID-19 pandemic, regardless of an increase in financing.

Le et al. [17] conducted research to observe the impact of diversification on Islamic banking performance during COVID-19 across 24 countries. Their research found that income diversification can support the Islamic banking system and minimise the pandemic's adverse effects. However, their study employed a "dummy variable" for 2020 and 2021 to account for pandemic uncertainty, which presents a limitation. Moreover, existing research on diversification's impact within specific regions yields mixed results due to a need to consider regional pandemic impact.

This research gap motivates the proposed study, which investigates how income diversification impacts Islamic banking profitability and financing risk in the MENA and the SEA regions, particularly during the COVID-19 pandemic. Results show that income diversification increases profitability while decreasing financing risk. Nevertheless, the pandemic weakens the positive effect on profitability and strengthens the negative effect on financing risk.

2   Literature Review, Research Questions, and Hypotheses

2.1   Conceptual Framework, Research Questions and Hypotheses

The research questions and hypotheses are based on the conceptual framework depicted in this section. It is presented in Figure 1.
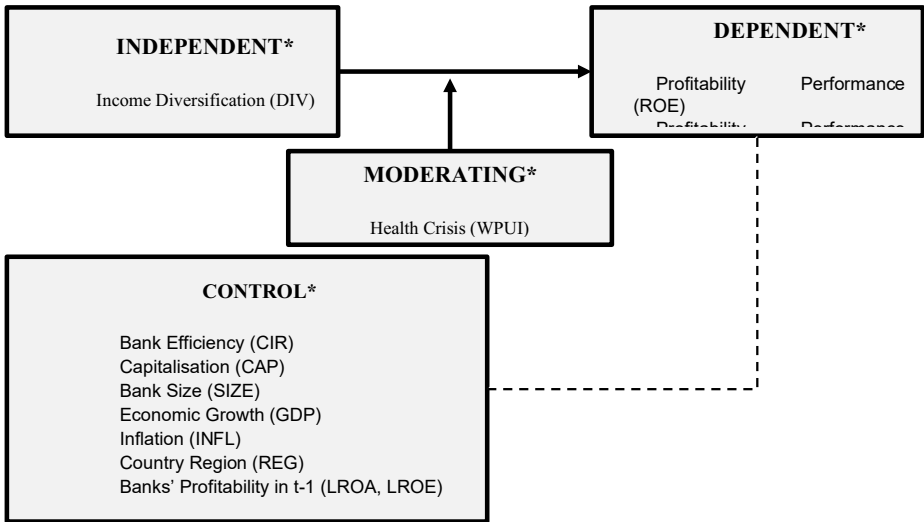
Figure 1. Research Conceptual Framework

*Variables used

Based on the conceptual framework, the following research questions and the related null hypotheses are presented below.

First question: How positively has income diversification affected the profitability performance of Islamic banks?
H0: Income diversification does not have a positive effect on the profitability performance of Islamic banks.

Second question: How negatively has income diversification impacted the Islamic financing risk?
H0: Income diversification does not have a negative impact on the Islamic financing risk.

Third question: Does the health crisis weaken the positive effect of income diversification on Islamic banks' profitability performance?
H0: The health crisis does not weaken the positive effect of income diversification on Islamic banks' profitability performance.

Fourth question: How does the health crisis weaken the negative effect of income diversification on Islamic bank financing risks?
H0: The health crisis does not weaken the negative effect of income diversification on Islamic bank financing risks.

2.2   Financial Intermediaries in Islamic Banking

The concept of financial intermediaries, connecting lenders and borrowers, also applies to Islamic banking [24]. Banks, as intermediaries, enhance economic efficiency by providing liquidity, risk-sharing, and addressing information asymmetry [25]. In Islamic banking, deposits are used for financing and investments that generate income for the bank and its clients [26] in [27]. This aligns with the core principle of Islamic finance, where activities must be based on profit-sharing or asset ownership.

2.3   Islamic Banks' Performance

The standardized CAMEL rating system is commonly used to evaluate the performance and ranking of banks, including Islamic banks. It assesses Islamic banks' health, focusing on capital adequacy, asset quality, management capability, earnings ability, and liquidity (CAMEL). It also standardized the measurement between banks to allow the comparison of Islamic and conventional banks [49]. The study by [49] used the CAMEL framework to analyze the financial distress of Islamic banks in Malaysia.

   Out of all aspects, profitability and asset quality are the key performance areas. Profitability, measured mainly by Return on Assets (ROA) and Return on Equity (ROE), reflects a bank's income-generating ability. Asset quality is assessed using the Non-Performing Financing (NPF) ratio, which indicates the percentage of bad financing on a bank's books. These ratios are used since they directly reflect a bank's income generation and asset management effectiveness [28] – [29].

2.4   Income Diversification

Islamic banks can improve their performance through the diversification policy [17]. One approach to diversification is the Modern Portfolio Theory (MPT) developed by Harry Markowitz [30]. MPT states that diversification can maximize returns or minimize risk [31]. For Islamic bank cases, diversification can involve financing or asset diversification, as well as income diversification. The primary income source of Islamic banks is financing, which can be divided into profit-loss-sharing (PLS) and non-profit-loss-sharing (non-PLS) products [32]. To reduce risk and income volatility, Islamic banks can also focus on increasing non-financing income sources, such as fees and investments [30], [13], [23], [17]. Le et al. [17] propose the Herfindahl-Hirschmann Index (HHI) to measure income diversification. This method considers financing-based income, investment-based income, fee-based income, and other income categories within a bank's overall revenue stream. Through income diversification, Islamic banks could achieve greater financial stability and resilience.

2.5   Income Diversification and Performance

This subsection answers the first null hypothesis (H0) testing. Islamic banking is considered less diversified than conventional banking; thus, income and asset diversification strategies could be crucial in optimising Islamic banking performance [17]. Moudud-ul-Huq [23] found that income diversification strengthens banks' ability to navigate crises, aligning with the findings of [16] and [17], who found a positive impact of income diversification on both conventional and Islamic bank performance. [17] further added Return on Equity (ROE) and Return on Assets (ROA) metrics to measure Islamic banking performance, resulting in a significant positive effect. They

also highlight the potential for activities exclusively related to Islamic banking, such as sukuk underwriting and religious pilgrimage facilitation (Hajj), which could also escalate profitability.

2.6   Income Diversification and Financing Risk

This subsection answers the second null hypothesis (H0) testing. Implementing diversification strategies, especially income diversification in banks, affects not only the bank's profitability but also financing risk [22], [23], [16]. Li et al. [16] found a negative impact of income diversification towards banking risks during the COVID-19 pandemic, which means that the diversification of the income stream leads to a decrease in financing risk.

2.7   Health Crisis and Islamic Banks' Performance

This subsection answers the third and fourth null hypotheses (H0) testing. The COVID-19 pandemic stands out as a global health crisis with a severe impact on health and socio-economic systems [33]. The financial sector, particularly banks, experienced significant strain during the pandemic compared to other industries (Aldasoro et al., 2020, cited in Demir & Danisman, 2021). Prior research on bank performance during health crises has relied mainly on reports from global regulators. However, the COVID-19 pandemic has opened new avenues for investigating its impact on bank performance, especially Islamic banks.

Past research by [18] found the direct and moderating effect of the COVID-19 pandemic in the MENA region, which shows a decline in profitability (ROA & ROE) during the first year, followed by recovery. This aligns with [17], who found a negative impact of the COVID-19 pandemic on Islamic banking profitability. Notably, [17] also identified a positive interacting effect between income diversification and the pandemic, suggesting it can mitigate the negative impact.

Furthermore, building on past pandemics' impact on economies and banks as a nation's financial foundation, it was expected that the COVID-19 pandemic in 2020 would have a similar or even more severe impact. Studies by [19], [16], and [18] confirm the significant negative effects of the pandemic on banking sector risks.

3   Methodology and Variable Specification

3.1   Research Data

This research uses a sample of Islamic banks in selected countries in the MENA and SEA regions, excluding Islamic window banks. The samples are based on data from Moody's Analytics BankFocus, financial reports, and IFSB data for dependent and control variables, the World Pandemic Uncertainty Index (WPUI) for moderating data, World Bank Open Data for macroeconomic data, and researcher's calculation for the independent variable. Using purposive sampling, the criteria used to choose the sample were as follows: (i) Public and Non-Public Islamic Banks in MENA and SEA, (ii) Islamic Banks with complete financial reports FY 2013–2021, and (iii) Islamic Banks with complete research variable data. The initial sample included 252 Islamic banks. After filtering for full-fledged banks and data availability, the final research sample consists of 72 Islamic banks operating in 14 countries from 2013 to 2021. MENA has

43 Islamic banks from 10 countries while 29 Islamic banks are from three countries in SEA.

3.2   Variable Specification

Table 1 presents the variables used in this study, including their measures.

Table 1. Variable Specification

Variable Name	Explanation	Measurement	References
Dependent Variables			
Return on Assets (ROA)	Profitability ratio for banks' performance	Ratio of net income to total assets	[16], [17], [35]
Return on Equity (ROE)	Profitability ratio for banks' performance	Ratio of net income to total equity	[16], [17], [36]
Non-Performing Financing (NPF)	Measurement of financing risk in Islamic banks	Ratio of outstanding NPF to total gross financing	[23], [37], [38]
Independent Variables			
Income Diversification (DIV)	Measuring the concentration of income diversification	1-HHI Index	[14], [17], [39]
Moderation Variables			
Health Crisis (WPUI)	Evaluating the effect between independent & dependent variables	n "uncertain" on Economist Intelligence Unit report	[17], [40], [45]
Control Variables			
Bank efficiency (CIR)	Calculate the comparison between the cost a bank has incurred to its income	Ratio of total operating cost to total gross income	[17], [23], [41]
Bank capitalisation (CAP)	To understand bank's financial health and ability to absorb losses	Ratio of total equity to total assets	[17]
Bank size (SIZE)	Measurement control of banks' ability in financial strength and risk tolerance	Natural log of total assets	[14], [23], [41]
Performance in Previous Periods (LROA, LROE)	Measure the lagged effects from certain variables	ROA and ROE numbers in the previous period (t-1)	[17], [42], [43]
Economic growth (GDP)	Measure the macroeconomic factors from different countries	GDP growth (%)	[41]
Inflation rate (INFL)	Measure the macroeconomic factors from different countries	Consumer Price Index	[41]
State territory (REG)	Dummy variables for MENA and SEA categorisation.	1=banks in MENA 0=banks in SEA	[14], [44]

Based on the hypotheses discussed earlier, the research models are described as follows.

Model 1:
The impact of income diversification on bank profitability performance.

$$PERF_{i,t} = \alpha_{i,t} + \beta_1 DIV_{i,t-1} + \beta_2 CIR_{i,t-1} + \beta_3 CAP_{i,t-1} + \beta_4 SIZE_{i,t-1}$$
$$+ \beta_5 PERF_{i,t-1} + \beta_6 GDP_{i,t-1} + \beta_7 INFL_{i,t-1} + \beta_8 REG_i + \varepsilon_{i,t}$$

(1)

Model 2:
The impact of income diversification on financing risk of Islamic banks.

$$NPF_{i,t} = \alpha_{i,t} + \beta_1 DIV_{i,t-1} + \beta_2 CIR_{i,t-1} + \beta_3 CAP_{i,t-1} + \beta_4 SIZE_{i,t-1} + \beta_5 GDP_{i,t-1}$$
$$+ \beta_6 INFL_{i,t-1} + \beta_7 REG_i + \varepsilon_{i,t}$$

(2)

Model 3:
The moderating role of a health crisis on the relationship between income diversification and profitability performance of Islamic banks.

$$PERF_{i,t} = \alpha_{i,t} + \beta_1 DIV_{i,t-1} + \beta_2 DIV * WPUI_{i,t-1} + \beta_3 CIR_{i,t-1} + \beta_4 CAP_{i,t-1}$$
$$+ \beta_5 SIZE_{i,t-1} + \beta_6 PERF_{i,t-1} + \beta_7 GDP_{i,t-1} + \beta_8 INFL_{i,t-1}$$
$$+ \beta_9 REG_i + \varepsilon_{i,t}$$

(3)

Model 4:
The moderating role of a health crisis on the relationship between income diversification and financing risk of Islamic banks.

$$NPF_{i,t} = \alpha_{i,t} + \beta_1 DIV_{i,t-1} + \beta_2 DIV * WPUI_{i,t-1} + \beta_3 CIR_{i,t-1} + \beta_4 CAP_{i,t-1}$$
$$+ \beta_5 SIZE_{i,t-1} + \beta_6 GDP_{i,t-1} + \beta_7 INFL_{i,t-1} + \beta_8 REG_i + \varepsilon_{i,t}$$

(4)

where

$$DIV_{i,t} = 1 - ((\frac{FIN}{Total\ Income})^2 + +(\frac{TRAD}{Total\ Income})^2 (\frac{INV}{Total\ Income})^2$$
$$+ (\frac{FEE}{Total\ Income})^2 + (\frac{OTHER}{Total\ Income})^2)$$

(5)

3.3   Descriptive Statistics

The descriptive statistics that analyse the research questions are presented in Table 2.

Table 2. Descriptive Statistical Results for All Islamic Banks

Variable	Obs	Mean	Std. Dev.	Min	Max
$ROA_{i,t}$	648	1.059	0.907	-0.630	3.280
$ROE_{i,t}$	648	9.613	8.223	-5.840	29.210
$NPF_{i,t}$	648	3.851	3.266	0.670	11.000
$DIV_{i,t-1}$	643	0.384	0.137	0.006	0.670

$WPUI_{i,t-1}$	648	2.008	5.387	0.000	17.229
$CIR_{i,t-1}$	643	60.205	24.251	24.940	120.470
$CAP_{i,t-1}$	643	13.032	7.022	5.000	31.400
$SIZE_{i,t-1}$	643	15.448	1.398	12.661	17.842
$GDP_{i,t-1}$	648	2.199	3.010	-8.855	8.863
$INFL_{i,t-1}$	648	4.721	7.778	-2.540	39.907
REG_i	648	0.597	0.491	0	1

This research uses 72 samples of Islamic banks over nine years, from 2013 to 2021. Due to variations in participating banks and countries across specific periods, this study used unbalanced panel data. Outliers were identified and addressed using winsorisation for the main independent variable ($DIV_{i,t-1}$) of 1% to eliminate extreme values. This is also applied to the dependent variables $ROA_{i,t}$ and $ROE_{i,t}$, as well as to $CIR_{i,t-1}$, $CAP_{i,t-1}$, and $SIZE_{i,t-1}$ with a 5% lower limit and 95% upper limit. Last, $NPF_{i,t}$ is also being winsorised with a lower limit of 10% and an upper limit of 90%.

Table 2 shows that the average ROA, ROE, and NPF are 1.059%, 9.613%, and 3.266%, respectively, with some companies still experiencing negative ROA and ROE for certain periods. Looking at the diversification, the average number is 0.384 (38.4%) from 13 countries. This shows a relatively low-income diversification strategy compared to the highest number, 0.67 (67%). On the other hand, the health crisis measured by $WPUI_{i,t-1}$, shows a higher number of 17.229 occurring during the COVID-19 pandemic. The number did not vary between countries as the index measures global pandemic severity.

4   Analysis and Discussions

4.1   Empirical Findings

The data is processed using the robust least squares fixed-effects model in order to omit the autocorrelation and heteroscedasticity issues, thus, excluding any time-invariant variables that would create a dummy variable trap [46]. The statistical results of the four models of the study are presented in Table 3.

Table 3. Model Estimation Results

VARIABLES	Model 1		Model 2	Model 3		Model 4
	$ROA_{i,t}$	$ROE_{i,t}$	$NPF_{i,t}$	$ROA_{i,t}$	$ROE_{i,t}$	$NPF_{i,t}$
$DIV_{i,t-1}$	0.232	1.802	-2.302***	0.133	1.077	-2.636***
	(0.358)	(2.689)	(0.850)	(0.340)	(2.910)	(0.951)
$DIV*WPUI_{i,t-1}$				0.0381	0.281	0.110
				(0.0331)	(0.268)	(0.104)
$CIR_{i,t-1}$	-0.00516*	-0.0264	-0.0175**	-0.00507*	-0.0259	-0.0172**
	(0.00282)	(0.0181)	(0.00829)	(0.00273)	(0.0179)	(0.00819)
$CAP_{i,t-1}$	0.00867	-0.160*	-0.00366	0.00924	-0.156*	-0.00178
	(0.0135)	(0.0904)	(0.0418)	(0.0137)	(0.0910)	(0.0419)
$SIZE_{i,t-1}$	0.0884	1.200	0.787	0.0855	1.189	0.777
	(0.140)	(1.182)	(0.488)	(0.136)	(1.160)	(0.497)
$LROA_{i,t}$	0.115			0.115		
	(0.0943)			(0.0919)		
$LROE_{i,t}$		0.178***			0.175***	
		(0.0556)			(0.0551)	
$GDP_{i,t-1}$	0.0181	0.0438	-0.0335	0.0168	0.0347	-0.0376
	(0.0113)	(0.0854)	(0.0385)	(0.0111)	(0.0882)	(0.0379)
$INFL_{i,t-1}$	0.0478***	0.414***	-0.0301	0.0475***	0.413***	-0.0313
	(0.00865)	(0.0898)	(0.0361)	(0.00862)	(0.0901)	(0.0354)

YEAR 2015	-0.342**	-2.916**	0.935	-0.167	-0.129	1.652*
	(0.162)	(1.289)	(0.688)	(0.195)	(0.197)	(0.932)
YEAR 2016	-0.326***	-2.161**	1.152	-0.156	-0.119	1.850**
	(0.113)	(0.978)	(0.723)	(0.193)	(0.198)	(0.919)
YEAR 2018	-0.304**	-2.063*	0.158	-0.125	-0.0871	0.891
	(0.117)	(1.129)	(0.559)	(0.184)	(0.187)	(0.785)
YEAR 2020	-0.284*	-3.271**	0.247	-0.104	-0.0674	0.976
	(0.148)	(1.278)	(0.402)	(0.262)	(0.265)	(0.733)
REG1 x Y2013	-0.327	-2.750	1.393*	-0.272	-2.356	1.577*
	(0.217)	(1.681)	(0.717)	(0.208)	(1.695)	(0.792)
REG1 x Y2019	-0.126	-0.573	1.306**	-0.0678	-0.144	1.502**
	(0.195)	(1.517)	(0.580)	(0.195)	(1.634)	(0.682)
Constant	-0.359	-7.952	-6.830	-0.532	-9.369	-7.405
	(2.329)	(19.48)	(8.167)	(2.328)	(19.55)	(8.121)
Observations	638	638	639	638	638	639
R-squared	0.269	0.322	0.081	0.272	0.324	0.084
Bank Number	72	72	72	72	72	72

Robust standard errors inside brackets *** p<0.01, ** p<0.05, * p<0.1

The analysis of the total sample indicates a positive influence of income diversification on Islamic bank performance, regardless of the presence or absence of the health crisis as a moderating variable. While not statistically significant, this result supports the initial hypothesis that Islamic banks can enhance their performance by increasing non-financing income streams rather than solely focusing on financing activities. This aligns with previous research by [30] and [17], who specifically utilised Islamic banks as samples. Even when moderated by the health crisis, income diversification remains positively associated with Islamic bank performance. This aligns with the research of [17], suggesting that income diversification can serve as a viable alternative for Islamic banks to mitigate the negative impacts of economic crises. However, a decrease in the coefficient indicates a weakening relationship between the two variables, thus partially supporting the third hypothesis.

Examining the impact of income diversification on financing risk, the study finds a significant negative impact. Increasing income diversification can effectively reduce the financing risk experienced by Islamic banks. This finding resonates with the core principle of diversification, which posits that risk associated with financing activities can be distributed more evenly by incorporating non-financing income sources. However, when the health crisis is considered, income diversification exhibits a positive, albeit statistically insignificant, association with the non-performing financing (NPF) ratio. This finding aligns with the observations of [30] and [23], suggesting that an optimal level of income diversification exists beyond which it can lead to negative consequences for the bank. Additionally, increased income diversification introduces potential risks associated with the growing uncertainties surrounding non-financing income sources.

Table 3 further highlights the significant influence of year variables for 2015, 2016, 2018, and 2020 on ROA and ROE within Model 1 for the combined MENA and SEA regions. This signifies that these specific years have a distinct impact on the performance of Islamic banks. Interpreting these categorical dummy variables suggests the presence of time-invariant factors that significantly affect Islamic bank performance. Potential contributors to these findings may include external conditions impacting banks within both regions, such as economic turmoil or broader macroeconomic instability. Notably, 2015 and 2016 witnessed prolonged crises and conflicts in the MENA region, leading to a significant economic downturn. During such periods, banks are compelled to intervene to prevent economic decline, even if the

implemented policies result in temporary losses for the bank in exchange for maintaining overall financial stability [48].

The years 2015 and 2016 are also shown to have a significant positive impact on the NPF ratio of Islamic banks in Model 4. Assuming similar circumstances during these years, the crisis and instability within the MENA region likely contributed to the observed rise in the NPF ratio. Policies facilitating financing for businesses operating in affected countries, coupled with the sluggish economic conditions, can increase non-performing loans [33], [47].

4.2   Implications of the Findings

For Islamic Banks, the positive impact of income diversification on profitability performance during normal times emphasises the importance as one of the strategic tools where diversified income streams would enhance the bank's resilience, proven by the negative impact on the NPF number, meaning that it helps to decrease the Islamic banks' financing risk. In unpredicted circumstances, income diversification still helps to leave only a low effect of profitability performance decrease.

For the regulatory bodies, the findings are expected to encourage increasing incentives for Islamic banks to diversify their income sources. The support could be in the form of a standardized regulatory environment, one comprising guidance on diversification strategies and incentives offered for banks to effectively implement the strategy. Furthermore, the findings should be considered as one of the crisis management plans since the banking sector will be the key support during and after the post-recovery of the crisis.

5   Conclusion, Limitation, and Recommendation

5.1   Conclusion

This research investigates the relationship between income diversification, performance, and financing risk of Islamic banks in the MENA and SEA regions. Findings indicate that income diversification positively affects the performance of Islamic banks in both regions and reduces their financing risk. However, considering a health crisis as a moderating factor reveals a nuanced effect. While the crisis does not significantly weaken the positive impact of income diversification towards profitability performance, it lessens the risk-reducing effect of diversification. In fact, the combination of diversification and economic uncertainty due to the health crisis is also proven to increase financing risk for Islamic banks in these regions.

5.2   Limitation

This study recognizes certain constraints that may affect the interpretation of the findings. The use of combined data from BankFocus and financial statements might introduce inconsistencies due to potential variations in data standardization and calculation methodologies, though this was necessitated by limited data availability. Furthermore, the sample's imbalance, particularly the overrepresentation of Malaysian banks, could limit the applicability of the results to other countries within the MENA and SEA regions. Additionally, the study's scope did not allow for an in-depth examination of country-specific regulations or restrictions on income diversification,

which could influence the practical implementation of the recommendations. Lastly, the diverse methodologies for calculating income diversification could lead to varying research outcomes, underscoring the need for future studies employing more robust model estimation techniques.

5.3   **Recommendation**

This study aims to provide valuable insights for Islamic banking stakeholders. For Islamic banking managers, it provides evidence that income diversification can help maintain performance and mitigate financing risks, especially during crises. Regulators can use this research to explore incentives, like regulatory relaxation, to encourage diversification, leading to a more stable Islamic banking sector. Finally, academics can utilize this work as a reference and identify areas for further scholarship regarding income diversification in Islamic banking.

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