OPERATIONAL RISK AND FINANCIAL PERFORMANCE OF BANKS IN THE MIDDLE EAST AND NORTH AFRICA

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ABSTRACT

This study examines the relationship between operational risk and financial performance of banks in the Middle East and North Africa (MENA), utilising data from 135 banks spanning 14 countries from 2015 to 2019. The results show that operational risk negatively affects banks' financial performance in the MENA region. This study recommends that banks tailor and constantly improve their risk management process to put operational risk management and control processes in place. The findings entail the importance of developing relevant frameworks and policies for prompt action in reporting and recording operational loss. Thus, banks' management should formulate and implement appropriate procedures to ensure that timely information is obtained, especially regarding profit and loss, which will ultimately help boost the banks' financial performance in the MENA region. This study is unique as it contributes to the existing

body of knowledge by investigating the role of operational risk in determining banks' financial performance in the MENA region.

Keywords: Operational risk, financial performance, MENA region.

JEL Classification: G01, G21.

INTRODUCTION

Financial systems should be more resistant to any risk contributing to a decline in bank performance. Risks are defined as anything that can pose obstacles to attaining specific objectives, internal or external factors, and unexpected variability of turbulence in returns (Fatemi & Fooladi, 2006; Holton, 2004). Market risks, liquidity risks, operational risks, and credit risks are examples of risks that may affect performance (Dimitrakopoulos et al., 2010; Pham et al., 2023; Tafri et al., 2009). It is believed that inadequate management of these vulnerabilities may fuel a sovereign debt crisis (De Jongh et al., 2013). Mohamad and Mohd Amin (2005) discuss the idea of financial risk management which include identifying, containing, assessing and monitoring risk level which is very crucial for every firm. Banks also seem prone to any risk resulting from uncertainty in the economy. Determining the appropriate level of capital is crucial to mitigate risks and adequately compensate for the risks taken. It is crucial to explore the risk-performance nexus to understand real operational scenarios from different markets and regions.

According to Chernobai et al. (2011), the lack of internal controls and mismanaged operational risks were significant factors in many high-profile losses. Operational risk requires the projection of losses due to rare or neglected processes, structures, or guidelines (Kinyua & Warui, 2020). Additionally, poor performance might be due to employee error, system failure, or scammer activities. Other justifications for this loss are internal operational risk factors from inadequate process problems, existing system failures, poor hardware and software maintenance, and communication errors (Chen et al., 2021). Besides, quantifying the impact is essential as large operational losses can lead to equally large reputational losses (Galletta et al., 2022). Thus, the instability of the banks might be caused by internal and/or external problems, which could affect operational risk and cause poor performance.

Otero et al. (2020) show that financial markets are unstable and are easily affected by operational risks. The results highlighted a spate of critiques on risk management techniques, spurring a search for a better approach(s) to cope with unexpected events with a significant impact. Deregulation of banking institutions has boosted productivity, profitability, performance, and international competition in many economies. Developing countries have worked tirelessly with the World Bank and the International Monetary Fund (IMF) to improve their financial and economic performance. Market structure is heavily impacted during economic crises, especially at the institutional level, where inflation and GDP are strongly related to the whole cost function. Regulators should create regulations that help the financial market sector prepare for future crises. Similarly, MENA has also seen problems with reduced bank profitability and liquidating assets. This shows the MENA banks' volatility and difficulty in recovering their capital and returns after the crisis (Saif-Alyousfi et al., 2021).

Countries in the MENA region are developing rapidly and becoming significant players in the global economy. Geographically, the region acts as a bridge between Europe and Asia and is known as one of the world's most affluent areas in natural resources, especially oil. It also houses some of the world's largest Islamic banks, such as Al Rajhi Bank, Qatar National Bank, and National Bank of Egypt. The global financial crisis in 2007–2008 has led to the regulators and bank managements' concern about the operational risk that could contribute to the decrease in financial performance due to the increase in losses borne by banks. Banking institutions play a significant role in the development of any economy by facilitating businesses and trade, ensuring the reasonable allocation of idle funds and implementing government monetary policies. Banking is also one of the foundations for economic growth and national stability to improve public finances (Nguyen et al., 2020). However, the inability of banks to meet their intermediation obligations introduces a vulnerability in the financial system.

With the highly developed banking systems in the MENA region, the competition among banks is beyond monitoring (Albaity et al., 2019). Large banks are intensely competitive, putting them at risk of reduced profits and insolvency. Most of the well-established MENA banks come from less competitive markets. Banks' profits may decline in the highly competitive market, putting them in a volatile position as they take excessive risks (Albaity et al., 2019). Besides, ongoing problems related to the economic crisis, terrorism, political issues, oil prices,

and civil war have exacerbated banks' vulnerability. These problems have slowed down the economic growth in the MENA region and led to inefficient bank performance (Mrad & Mateev, 2020) and exposed banks to operational risk (Elamer et al., 2020). Thus, MENA banks face significant challenges in reducing the impact of operational risk on profitability.Given the abovementioned issues, there is a solid need to analyse and comprehend operational risk management and how it affects banks' financial performance in the MENA region. The contribution of this research fills a gap in the literature by evaluating how operational risk influences MENA banks' financial performance, focusing on the cost-income ratio. The organisation of the study is as follows: the next section introduces the empirical and theoretical perspectives from the literature, followed by a discussion of data sources (Section two) and the research methodology (Section three). Section four elucidates the empirical findings, and the final section concludes by highlighting several implications and recommendations for future research.

LITERATURE REVIEW

Institutional theory provides a ground principal regarding the nexus between operational risk and financial performance. Under this theory, DiMaggio and Powell (1983) and Scott (2005) found that creating an institutional environment through rules, norms, structures, and schemes significantly encourages entities to create authoritative guidelines and develop formal organisational structures. While Azim and Nahar (2022) stated that strong governance and legitimisation assist organisations to survive during economic uncertainty. Scott (2008) emphasises that the institutional environment might significantly influence the establishment of formal organisational structures more than market pressures. The environment justifies innovative structures that increase technological efficiency in early-adopter institutions. Institutional theory suggests a broader perspective on economics than just considering rationality.

Operational risk management practice varies from one organisation to another. There is no consistency in its implementation so far. This has caused misinterpretation, and half-hearted implementation, which eventually denies the full function of its capabilities to support a business operation. Previous studies have provided limited exposure in finding the best practice for operational risk management implementation

(Zainuddin et al., 2023). The institutional theory explains that the political and economic level influence the organisational field level by supplying suitable establishment resulting in norms and values at the top level being absorbed into the organisational field level (Dillard et al., 2004). With regard to institutional theory, it was found that risk had become a major concern for governments, which in turn influence the leadership of banks. According to Chandler and Hwang (2015) and Ntim and Soobaroyen (2013) on institutional theory, banks frequently respond to social norms and constraints (i.e., coercive, societal, and institutional pressures) during strengthening risk management and disclosure practices to acquire organisational legitimacy. An operational risk naturally arises as the institution exposes itself to operational errors whenever it updates and improves its investment model (Abdullah et al., 2011; Van Greuning & Iqbal, 2008). Revisiting the theory, Powell and DiMaggio (2012) emphasise that institutional theory concerns organisations' relationships and environments. Thus, the operational procedures of organisations are seen primarily through the sociological aspect of institutional theory, (Willmott, 2015). It is believed that the optimal exposure to operational risk may decrease the level of internal operational risk, making exposure to market risk less volatile. Financial constraints interact with internal or external operational risk, and prompt the institution to adopt a more sophisticated model. While such conditions are always detrimental when operational risk is internal, they may be beneficial when external, despite inducing excessive sophistication. The risks are caused by a failure in the information system, reporting system, or internal risk control regulations. Thus, internal processes should be implemented on time within a certain level of risk tolerance (Yang et al., 2018).

As for financial performance, prior studies define it as the ability to manage operating decisions and investment strategies to achieve financial stability for a corporation. Financial performance is important for several bank stakeholders, including shareholders and bondholders, direct competitors, regulators, financial markets, credit rating agencies, depositors, and other market players (Golesorkhi et al., 2019). Abdelaziz et al. (2022) suggests that the determination of bank profitability differs between countries and regions. Thus, a thorough review is needed in setting mechanisms to reduce the risks and their related effects, which, once crystallised, make them less vulnerable to structural issues (Berger et al., 2022). According to Vieira et al. (2019), the determinants of financial performance differ

depending on the objectives of their research. They found that among the important indicators of firm performance are investor sentiment and insider ownership. Alharthi (2022) emphasize the importance of deposit volume and oil prices on Kuwaiti banking sector performance.

The effect of operational risk on banking financial performance has been widely researched. Chernobai et al. (2011) found that operational risk exists due to a shortage of internal controls and mismanaged operational hazards. For instance, De Jongh et al. (2013) claimed that the 2008 financial crisis was caused by banks' and mortgage brokers' inability to manage operating risk. According to Gadzo et al. (2019), financial institutions, mainly African banks, have faced heavy mergers and acquisitions in recent years. This impedes financial inclusion and reduces public trust in the financial system. According to Altaf et al. (2022), increase in operational risk resulted in huge losses incurred by banks. Thus, managing operational risk is critical because it facilitates in disclosing illegal activities, lowers operating costs and reduces future risk exposure. The impact of the operational risk may also allow firms to maintain their competitiveness, which has a better effect on firms' investment in research and development (R&D), innovation, and productivity (Chou et al., 2022).

Based on the above discussion, operational risks may lead to unpredictable financial performance. Operational risk helps banks manage all risks to which they are susceptible, even without having management knowledge or skills.. They may have a negative impact on bank profits and erode the net wealth of banks. The challenges faced by banks resulting from operational risk have forced regulators to shed light on the banking industry, increasing the need for improved controls and better risk management. In consideration of this, studies on the relationship between operational risk and financial performance remain relevant.

RESEARCH METHODOLOGY

Data and Sample

This study analyses the relationship between operating risk and financial performance. We employed data from 135 commercial banks in 14 MENA countries from 2015 to 2019. We selected 2015 as the starting year in line with the introduction of BASEL III, where

banks were required to restructure their core capital. The operational risk and control variables data were obtained through the Bankscope database, while annual data on MENA countries' GDP was collected from the World Bank database. Table 1 presents a tabulation of the sample for five years (2015–2019). There are 555 banks in the Middle East, accounting for 82.22 percent of the total observations, and 120 banks in North Africa, accounting for 17.78 percent of total observations. The highest number of banks, with 80 (11.85%), is from the UAE, whereas Palestine has the least number of banks, with 25 (3.7%) based on a total of 675 observations a year for the analysis. It is quite interesting to note that 67% (91 banks) from the sample are conventional banks while only 33% (44 banks) are Islamic banks.

Table 1

Tabulation of Banks' Regional Location and Countries

	Freq. (1 year)	Freq. (5 years)	%	Cum.
Regional location				
Middle East	111	555	82.22	82.22
North Africa	24	120	17.78	100.00
Total	**135**	**675**	**100.00**	
Country				
Bahrain	10	50	7.41	7.41
Egypt	9	45	6.67	14.07
Iraq	12	60	8.89	22.96
Jordan	11	55	8.15	31.11
Kuwait	10	50	7.41	38.52
Lebanon	6	30	4.44	42.96
Morocco	6	30	4.44	47.41
Oman	8	40	5.93	53.33
Palestine	5	25	3.70	57.04
Qatar	9	45	6.66	63.70
Saudi Arabia	11	55	8.15	71.85
Syria	12	60	8.89	80.74
Tunisian	10	50	7.41	88.15
UAE	16	80	11.85	100.00
Total	**135**	**675**	**100.00**	
Type of Bank				
Islamic	44	220	32.59	32.59
Conventional	91	455	67.41	100.00
Total	**135**	**675**	**100.00**	

Model and Measurements

The following equations demonstrate the association between operational risk and financial performance.

$$FP_{it} = \beta_0 + \beta_1 CIR_{it} + \beta_2 logBSZ_{it} + \beta_3 AGE_{it} + \beta_4 GDP_{it} +$$
$$\beta_5 REGION_{it} + \beta_6 COUNTRY_{it} + \beta_7 YEARS_{it} + \beta_8 BANKS\_TYPE_{it} + \varepsilon_{it} \quad (1)$$

Where:
FP = banks' financial performance proxied by ROA, ROE, and NIM.
CIR = cost-income ratio of bank i at time, t.
logBSZ = bank size proxies by the natural logarithm of total assets.
AGE = bank age, natural log of years since bank started operating.
GDP = country's annual gross domestic product.
REGION = dummy (1= Middle East region; 2=North Africa region).
COUNTRY = dummy variable.
YEARS = Years of observation.
BANKS_TYPES = Types of bank dummy variables (1 = Islamic banks; 0 = conventional banks).
$\beta0$ = the intercept.
ε = the error term.

Our dependent variables (FP) were proxied by two financial ratios, which are return on assets (ROA) and return on equity (ROE). Meanwhile, net interest margin (NIM) was used as an alternative performance proxy. ROA was measured as the ratio of net income to total assets. This ratio captures a bank's ability to generate income from asset utilisation (Zarrouk et al., 2016), as a higher ROA indicates that banks can utilise their resources efficiently (Guillen et al., 2014; Alarussi & Gao, 2021). Meanwhile, ROE was measured as the net income ratio to shareholders' equity. High ROE indicates banks' ability to generate profit by utilising shareholders' capital efficiently (Zarrouk et al., 2016; Al-Amarneh et al., 2023). NIM was measured as the ratio of net interest income to earning assets. NIM was also viewed as a direct predictor of a bank's profitability as it captures the critical components of a bank's operation (Egly et al., 2018). Higher NIM indicates that banks make higher margins on their investments, which fuels economic expansion (Nguyen, 2012; Chae et al., 2020).

Regarding our independent variable, operational risk is proxied by the cost-income ratio (CIR), which is the ratio of operating expense to operating income (Epure & Lafuente, 2015; Ali & Dhiman, 2019). CIR reflects banks' efficiency in operation, as a higher CIR indicates

that banks have higher operating expenses and are inefficient in generating income from operations (Onsongo et al., 2020). Banks' exposure to risk might be due to the inefficiency of staff where undetected mistakes in financial reports could cause immense losses to the organisation (Hemrit & Arab, 2012).

For the control variable, we chose the bank's level of control, which is the bank's size (logBSZ) and bank's age (AGE). A natural log of total assets was used to measure logBSZ, and AGE was measured by years of bank operations. For country-level control, we chose the country's GDP as a macroeconomic indicator of countries in MENA. GDP was measured as the sum of gross value added by all resident producers in the country (in USD billion). The bank's regional location (REGION) and country of operations (COUNTRY) were assigned as dummy variables. For REGION, the variable is assigned 1 if the bank is located in the Middle East and 2 if located in North Africa. For COUNTRY, each country was assigned a dummy variable from 1 to 14. We also controlled for YEARS fixed effects, where each year of observation was assigned as dummy variables. Lastly, BANKS_ TYPE was added as controlling variable, where dummy variables were assigned: Islamic banks as 1, and conventional banks as 0. Table 2 presents a summary description of all variables used in this study.

Table 2

Variable Description

Variable	Measurement	Abbreviation	Data Source
DEPENDENT VARIABLE			
Financial performance	ROA = Net Income to Total Assets	**ROA**	Bureau van dijk - Bankscope
	ROE = Net Income to Total Equity	**ROE**	Bureau van dijk - Bankscope
	NIM = Net Interest Income to Earning Assets	**NIM**	Bureau van dijk - Bankscope
INDEPENDENT VARIABLE			
Operational risk	Cost income ratio = Operating Expense to Operating Income	**CIR**	Bureau van dijk - Bankscope

(continued)

Variable	Measurement	Abbreviation	Data Source
CONTROLLING VARIABLE			
Bank's size	Natural logarithm of total assets	**logBSZ**	Bureau van dijk - Bankscope
Bank's age	Years since the firm constitution	**AGE**	Bureau van dijk - Bankscope
Country's economic performance	Annual Gross Domestic Product (USD billion)	**GDP**	World Bank
Bank's regional location	Bank's regional location Measure using dummy variable of bank's location in MENA region	**REGION**	Bureau van dijk - Bankscope
Bank's country	Country where each bank operated	**COUNTRY**	Bureau van dijk - Bankscope
Year	Years of observation	**YEARS**	Bureau van dijk - Bankscope
Type of bank	Islamic or conventional	BANKS_TYPE	Islamic Financial Services Board

RESULTS AND DISCUSSION

Descriptive Analysis

Table 3 presents descriptive statistics for all samples (Panel A); Islamic banks (Panel B) and conventional banks (Panel C). From Panel A, the mean (median) value of ROA is 2.5 percent (1.1 %). The mean (median) value for ROE is 3.7 percent (21.4 %). The mean (median) value for NIM is 1.4 percent (0.8 %). Regarding the operational risk indicator, CIR has a mean (median) value of 137.1 percent (98.1 %), which is in line with studies conducted in MENA (Fadun & Oye 2020; Meshack & Mwaura, 2016; Muthia et al., 2020; Kemunto et al., 2020). The high value of CIR indicates that, on average, banks in MENA countries cannot manage their operational costs efficiently. As for controlling variables, bank size (BSZ) and (logBSZ) has a mean (median) value of USD 0.025 (USD 0.006) billion and 15.577 (15.597), respectively. Meanwhile, bank age (AGE) has a mean value of 40.415 years. The oldest bank in MENA has a period of 76 years, while the youngest bank operating in MENA has an age of 5 years. Regarding GDP, MENA countries have a mean(median) value of USD 188.322 billion (USD 114.57 billion). Meanwhile, the mean (median) value of ROA for Islamic banks (Panel B) is 1.1 percent (1.1 %), mean (median) value for ROE is 2.0 percent (2.1 %) and the mean (median)

value for NIM is 0.6 percent (0.8 %). Regarding the operational risk indicator, CIR for Islamic banks has a mean (median) value of 128.5 percent (103.7 %). As for controlling variables, bank size (BSZ and logBSZ) has a mean (median) value of USD 0.013(0.006) billion and 15.515 (15.554), respectively. Meanwhile, bank age (AGE) has a mean value of 34.295 years. The oldest Islamic bank in MENA has a period of 76 years, while the youngest bank operating in MENA has an age of 5 years. Regarding GDP, MENA countries have a mean(median) value of USD 205.159 billion (USD 114.570 billion).

Regarding conventional banks (Panel C), the mean (median) value of ROA is 3.1 percent (1.1 %). The mean (median) value for ROE is 4.5 percent (2.2 %). The mean (median) value for NIM is 1.8 percent (0.9 %). Regarding the operational risk indicator, CIR for conventional banks has a mean (median) value of 148.2 percent (96.9 %), which is in line with Kemunto et al. (2020). As for controlling variables, bank size BSZ and logBSZ have a mean (median) value of USD 0.03 (0.006) billion and 15.607 (15.679), respectively. The mean value of AGE for conventional banks is 43.374 years. The oldest conventional bank in MENA has a period of 76 years, while the youngest bank operating in MENA has an age of 5 years. Regarding GDP, MENA countries have a mean(median) value of USD 175.807 billion (USD 109.683 billion).

Table 3

Summary Statistics

Variable	Obs	Mean	Median	Std. Dev.	Min	Max	Skewness	Kurtosis	Vif
Panel A: Pooled									
ROA	675	0.025	0.011	0.221	-4.366	1.00	0.000	0.000	
ROE	675	0.037	0.021	0.431	-9.595	1.538	0.000	0.000	
NIM	675	0.014	0.001	0.277	-5.972	1.00	0.000	0.000	
CIR	675	1.371	0.992	2.091	0.043	22.337	0.000	0.000	1.130
BSZ (USD Bil)	675	15.577	15.597	1.861	9.934	20.527	0.027	0.007	1.720
logBSZ	675	2.738	2.747	0.123	2.296	3.021	0.000	0.388	1.890
AGE	675	40.415	43.000	18.343	5.000	76.00	0.303	0.000	1.280
GDP	675	185.373	109.683	200.541	12.453	816.579	0.000	0.000	1.270
logGDP	675	4.635	4.698	1.137	2.522	6.705	0.918	0.000	1.060
Panel B: Islamic banks									
ROA	220	0.011	0.011	0.012	-0.040	0.085	0.001	0.000	
ROE	220	0.020	0.021	0.020	-0.061	0.131	0.000	0.000	
NIM	220	0.006	0.008	0.016	-0.093	0.048	0.000	0.000	
CIR	220	1.285	1.037	1.783	0.114	20.205	0.000	0.000	1.120
BSZ (USD Bil)	220	15.515	15.554	1.447	11.853	18.444	0.171	0.129	1.620
logBSZ	220	2.737	2.744	0.095	2.473	2.915	0.008	0.602	1.950
AGE	220	34.295	32.000	15.349	9.000	76.000	0.012	0.036	1.160
GDP	220	205.159	114.570	212.678	12.453	816.579	0.000	0.023	1.370
logGDP	220	4.696	4.741	1.213	2.522	6.705	0.558	0.000	1.250
Panel C: Conventional banks									
ROA	455	0.031	0.011	0.269	-4.366	1.00	0.000	0.000	
ROE	455	0.045	0.022	0.525	-9.595	1.538	0.000	0.000	
NIM	455	0.018	0.009	0.337	-5.972	1.00	0.000	0.000	
CIR	455	1.482	0.969	2.250	0.043	22.337	0.000	0.000	1.150
BSZ (USD Bil)	455	15.607	15.679	2.032	9.934	20.527	0.053	0.000	1.810
logBSZ	455	2.738	2.752	0.134	2.959	3.022	0.000	0.047	2.020
AGE	455	43.374	46.000	18.946	5.000	76.00	0.267	0.000	1.360
GDP	455	175.807	109.683	193.919	12.453	816.579	0.000	0.000	1.270
logGDP	455	4.605	4.698	1.098	2.522	6.705	0.602	0.000	1.060

Table 4 presents the correlation matrix of all variables. CIR has a negative correlation with ROA, ROE, and NIM. This indicates that banks with high exposure to risk have lower performance. Banks with high CIR are burdened with high operating expenses, thus making them inefficient in generating profit (Mrindoko et al., 2020). CIR has a negative correlation with logBSZ, indicating that larger banks have lower operational risk as banks with higher assets and capital have wider business diversification, thus reducing exposure to risk. CIR also has a negative correlation with GDP. In order to avoid multicollinearity, each dependent variable: ROA, ROE and NIM are analysed separately and regressed separately. In addition, multicollinearity has no issue since the vif value of all independent variables is less than 5 (Table 3).

Table 4

Pairwise Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) ROA	1.000									
(2) ROE	-0.232***	1.00								
(3) NIM	-0.029	-0.280****	1.00							
(4) CIR	-0.094**	0.008	-0.338***	1.000						
(5) logBSZ	-0.061	-0.082**	0.060	-0.343***	1.000					
(6) AGE	-0.026	-0.039	-0.069*	-0.053	0.436***	1.000				
(7) logGDP	0.125***	-0.015	-0.020	-0.115***	0.468***	0.054	1.000			
(8) REGION	-0.023	0.107***	-0.010	0.064*	0.000	0.204***	-0.001	1.000		
(9) COUNTRY		0.120***	-0.012	0.105***	-0.013	0.128***	-0.010	1.000		
(10) YEARS		-0.034	0.002	0.014	0.077**	0.056	0.000	0.000	1.000	

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Multivariate Regression Analysis

This section presents the results of the multivariate regressions to evaluate the influence of operational risks on banks' performance in the MENA region using panel data analysis. To address the issue of heteroscedasticity and autocorrelation, we applied White-Huber (cluster) robust standard error estimation technique (Hoechle, 2007). We also performed a Pesaran cross-sectional dependent test. The results showed no cross-sectional dependence between variables (p > .05) (Ditzen, 2018). Table 5 provides the results from the first analysis stage, in which ROA and ROE were regressed on CIR, logBSZ, AGE, logGDP REGION, COUNTRY, YEARS and BANKS_TYPE. For pooled sample (Panel A), first, we applied OLS estimations to test the influence of CIR on ROA, ROE and NIM (models 1, 2 and 3) and found that CIR was negatively associated with performance at 1% significance (p < .01). The Hausman specification test showed that fixed effects (model 3 and 4) were more appropriate (p < .05), the findings also showed that banks' ROA,ROE and NIM were negatively associated at 1 % significance level (p< .01) by the operational risk. Besides, bank size as a control variable was also found to be positively associated with the banks' profitability in the fixed effect model at 1% significance. Further, F-test for models 4, 5 and 6 indicated model fitness with 7.99 (p < .05) and 8.15 (p < .05), respectively.

Further examinations on the types of banks, we regressed financial performance with operational risk and all control variables, using fixed effect model. Panel B shows that Islamic banks have positive associations with all three performance measures (ROA, ROE and NIM) at 1 percent significance level (p<.01). In comparison with conventional banks (Panel C), CIR are negatively associated with ROA, ROE and NIM at 1 percent significance level (p<.01). This findings indicate that Islamic banks are able to manage their risks and create profits, which is in accordance with risk-return trade-off perspective (Santacruz, 2020).

Table 5

Panel Data Analysis using OLS and Fixed Effects Model

Panel A: Pooled

	OLS			Fixed effects		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
VARIABLE	**ROA**	**ROE**	**NIM**	**ROA**	**ROE**	**NIM**
CIR	-0.026***	-0.059***	-0.043***	-0.024***	-0.054***	-0.039***
	(0.005)	(0.010)	(0.007)	(0.00709)	(0.0154)	(0.009)
logBSZ	0.107	0.122	0.337	1.434***	3.026***	2.637***
	(0.180)	(0.316)	(0.213)	(0.385)	(0.835)	(0.493)
AGE	-0.001	-0.002	-0.001	-0.002	-0.006	-0.007
	(0.001)	(0.002)	(0.001)	(0.006)	(0.013)	(0.008)
logGDP	0.007	0.028	0.017	0.011	0.037	0.024
	(0.084)	(0.181)	(0.108)	(0.083)	(0.180)	(0.106)
REGION	NO	NO	NO	NO	NO	NO
COUNTRY	NO	NO	NO	NO	NO	NO
YEARS	NO	NO	NO	NO	NO	NO
BANKS_ TYPE	NO	NO	NO	NO	NO	NO
Constant	-0.280	-0.368	-0.938	-3.817***	-8.085***	-6.976***
	(0.566)	(1.057)	(0.685)	(1.085)	(2.351)	(1.388)
Observations	675	675	675	675	675	675
R-squared	0.212	0.275	0.274	0.066	0.067	0.111
F-test				5.4***	5.44***	9.49***
Wald Chi2	55.46***	67.91***	84.44***			
Number of banks	135	135	135	135	135	135

Robust standard errors in parentheses

*** $p<0.01$, ** $p<0.05$, * $p<0$.

Table 6

Panel Data Analysis by Separating the Sample between Islamic and Conventional Banks

	Panel B: Islamic banks			Panel C: Conventional banks		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
VARIABLE	**ROA**	**ROE**	**NIM**	**ROA**	**ROE**	**NIM**
CIR	0.002***	0.004***	0.002***	-0.070***	-0.155***	-0.111***
	(0.000)	(0.001)	(0.000)	(0.014)	(0.029)	(0.017)
logBSZ	0.142**	0.224**	0.266***	1.317**	2.754**	2.505***

(continued)

	Panel B: Islamic banks			Panel C: Conventional banks		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLE	ROA	ROE	NIM	ROA	ROE	NIM
	(0.057)	(0.097)	(0.058)	(0.509)	(1.102)	(0.642)
AGE	0.001	0.001	0.001	0.005	0.009	0.004
	(0.001)	(0.001)	(0.001)	(0.009)	(0.018)	(0.012)
logGDP	-0.0461***	-0.084***	-0.049***	0.063	0.147	0.108
	(0.009)	(0.015)	(0.009)	(0.115)	(0.249)	(0.145)
REGION	NO	NO	NO	NO	NO	NO
COUNTRY	NO	NO	NO	NO	NO	NO
YEARS	YES	YES	YES	YES	YES	YES
Constant	-0.185	-0.247	-0.505***	-3.967***	-8.342**	-7.322***
	(0.138)	(0.233)	(0.140)	(1.494)	(3.238)	(1.886)
Observations	220	220	220	455	455	455
R-squared	0.229	0.236	0.201	0.120	0.121	0.186
F-test	7.17***	7.44***	6.07***	6.96***	7.04***	11.69***
Number of banks	44	44	44	91	91	91

Robust standard errors in parentheses

*** $p<0.01$, ** $p<0.05$, * p<0.

Robustness and Additional Analysis

To address the concern of endogeneity, we used a two-stage least squares estimation technique (2SLS). However, the limitation of conducting 2SLS is identifying the appropriate instrument variable (Dam & Scholtens, 2012). Therefore, we followed a lagged one-year risk indicator (Majumder & Li, 2018) for the 2SLS analysis. Our study used a lagged one-year CIR as an instrument. In order to obtain unbiased estimation models, we applied a two-step dynamic panel System-Generalized Method of Moments (GMM). The GMM models provided similar findings with 2SLS and main analysis as shown in Table 7.

Table 7

Two-stage Least Squares Estimation (2SLS) and Two-Step System Generalized Method of Moments (GMM) Estimators to Address Concerns on Endogeneity

VARIABLE	First stage (1) CIR	Two stage least squares (2SLS)			Two-staged GMM estimators		
		(2) ROA	(3) ROE	(4) NIM	(1) ROA	(2) ROE	(3) NIM
CIR (lagged 1 year)	0.860***						
	(0.020)						
CIR		-0.038***	-0.086***	-0.058***	-0.036***	-0.080***	-0.059***
		(0.011)	(0.022)	(0.014)	(0.006)	(0.012)	(0.008)
logBSZ	-0.151***	-0.165	-0.199	0.026	-0.141	-0.131	0.009
	(0.036)	(0.188)	(0.369)	(0.231)	(0.148)	(0.291)	(0.182)
AGE	0.009***	-0.001	-0.001	-0.001	-0.000	-0.001	-0.001
	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
logGDP	0.543	0.032	0.087	0.048	0.029	0.0816	0.048
	(0.482)	(0.122)	(0.240)	(0.150)	(0.122)	(0.239)	(0.149)
REGION	NO	NO	NO	NO	NO	NO	NO
COUNTRY	NO	NO	NO	NO	NO	NO	NO
YEARS	NO	NO	NO	NO	NO	NO	NO
BANKS_ TYPE	NO	NO	NO	NO	NO	NO	NO
Constant	5.372**	0.371	0.305	-0.216	0.313	0.139	-0.159
	(2.270)	(0.675)	(1.325)	(0.827)	(0.587)	(1.150)	(0.718)
Observations	540	540	540	540	540	540	540
R-squared	0.834	0.159	0.169	0.213	0.160	0.170	0.213
Wald Chi2	-	67.52***	66.23***	83.37***	-	-	-
F-test	103.01***	-	-	-	3.46***	3.63***	4.88***
Hansen J stat	-	-	-	-	2.599	0.279	2.979
p-val	-	-	-	-	0.107	0.597	0.805
Number of banks	135	135	135	135	135	135	135

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

DISCUSSION

Findings regarding negative associations between operational risk and bank performance in MENA countries were in consonant with the findings of previous studies from other countries such as Ghana (Gadzo, et al., 2019) and Jordan (Altarawneh & Shafie, 2018). The

results indicated that banks should be able to manage their operational expenses efficiently to reduce the impact of risk exposure. Failure to do so could lead to the banks' inability to generate profits from their investment, thereby reducing their value. Table 3 provides evidence that on average, MENA banks were inefficient in managing their operational expenses and generating income from operations. This led to the banks being burdened with high operating costs and unable to generate profit. Another possible reason is that banks with operational losses have negative market reactions, which erodes investors' confidence and eventually reduces the banks' valuation (Li et al., 2017). Moreover, as Basel III will be fully implemented by 2023, banks, especially in MENA countries, need to manage their operational cost and operational income efficiently to ensure that their level of core capital meet the BASEL III requirements (Andrle et al., 2019), thus reducing operational risk exposure in the future.

This study has assisted us in determining how operational risk management, which causes financial distress in selected banks, influences financial performance, which in turn provides insight into policymaking and investment in MENA. There are numerous common bank competitiveness indicators based on economic literature and in practice; however, with regard to banking performance, this study has contributed to the existing knowledge. Nonetheless, developed indicators can contribute towards a better understanding of profitability and competition. These indicators must work well to be useful as explanatory variables in a model where competition is significant. The necessary indicators provide adequate information on the competition and achieving profitability. Therefore, we used ROA, ROE, and NIM as substantial sources of bank profitability.

CONCLUSION AND RECOMMENDATIONS

This study examined the influence of financial and operational risks on the financial performance of MENA banks during the period 2015–2019. As the MENA region faces numerous challenges and issues such as geopolitical crises and oil price crises, banks in this region struggle to improve their performance due to these various external institutional forces which come into play leading to a more volatile market. As a result, the MENA region has an extremely competitive

financial market. Therefore, these circumstances has incentivised banks to take unwarranted risks, leading to poor bank performance. The results showed that operational risk, measured by the cost-income ratio (CIR), is negatively significant in affecting the financial performance of MENA banks. The findings indicate the need to develop relevant frameworks and policies for prompt operational loss reporting and recording. Banks' management in the MENA region should formulate and implement relevant policies to ensure that timely information is obtained as to the root cause(s) of operational losses, the product(s) affected, and the accumulated position of each type of loss. This would improve the banks' operations and enhance their performance. To achieve this, board members and management staff should be trained in operational risk management. Investments should also be made to secure appropriate operational risk management software to ensure that risk events are quickly detected, analysed, and reported so that the management can get information to make quick, informed decisions.

This study, however, has several limitations. Firstly, it focuses on financial ratio as a financial performance measure. Financial ratios, such as accounting-based measures, cannot capture the market's reaction to a bank's risk exposure. Hence, future researchers could include a market reaction indicator. Secondly, this study only uses CIR as a risk measurement. CIR can explain a bank's efficiency but cannot capture a bank's risk-taking. As a result, future studies should include a bank's risk-taking measure to learn more about its risk and impact on performance. Therefore, this study recommends that MENA banks tailor their processes to constantly improve their risk management. Moreover, it is essential that all employees are made aware of operational risk issues. It is also critical to develop viable internal approaches to the measurement of operational risks and cost-income ratio and to put in place adequate operational risk management and control processes. This should include the design, implementation, and review of operational risk methodology to ensure that risk is well mitigated and to improve financial performance.

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