The impact of operational risk on profitability: Evidence from banking sector in the MENA region

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A B S T R A C T

The aim of this paper is to explore the potential correlation among operational risk and the profitability of Islamic banks in the MENA region. Different measures for profitability were relied upon in previous studies, however, in this article depend on return on assets and return on equity to measure profitability, and efficiency ratio calculated by operating expenses to total assets to measure operational risk. To achieve this objective, the sample comprises 20 Islamic banks from 12 MENA countries, creating panel data for a period of ten years from 2011 to 2020. The analysis was conducted using fixed effect models. The study will analyze and interpret the findings from two financial performance measures, namely, ROA and ROE to get insights into the banks' overall financial situation and their ability to generate profits from their assets and equity. Using one type of operational risk measured by (efficiency ratio) as an independent variable, along with profitability measures by (ROA and ROE) as dependent variables. These measures had a significant negative impact by the operational risk measured by (efficiency ratio). This means when the operational risk increases, this indicates that the management is not controlling the operations of the bank in the best way and inability or failure of the bank's management to effectively utilize the available resources and assets to generate satisfactory profits. This leads to an increase in the operating expenses and hence a decrease in profitability measures.

1. Introduction

Banks serve as the primary artery of the economy, facilitating financial transactions, providing loans and credit, and supporting various economic activities (Chen et al., 2009). The Islamic financial system encompasses institutions, companies, and mechanisms that generate profits without engaging in interest-based transactions and distribute these profits or losses among all involved parties (Iqbal, 1997). As a result, the risks and rewards of investments are shared among the participants, promoting fairness by distributing actual profits based on their respective investments (Alzoubi, 2018). Later on, due to the increase in the number of Islamic banks and the activities they carry out several risks have appeared such as risk related to the bank's capacity to fulfill its debts towards lenders, creditors and suppliers depend on the current assets and cash generated from operating cycle (Warrad, 2014), managers of Islamic banks face risk how to manage operating cost effectively in order to enhance profit and avoid the risk of bankruptcy. Therefore, it is important to manage operations within the bank with a high degree of efficiency and effectiveness (Al-Gasawneh et al., 2022; Alsmadi et al., 2022).

This paper examines the most common and most threatening risks to the Islamic banks' profitability, to understand the banks' earnings through studying and analyzing the profitability in addition to studying the influence of operational risk on the profitability of Islamic banks, since the mismanagement of these risks can have an adverse impact on their profitability (Mennawi. 2020).

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The global rise in the Muslim population and the growing interest of non-Muslim customers in Islamic banks have significantly increased the prominence of Islamic finance worldwide (Alqsass & Maali, 2022a). This has led to the emergence of various types of risks, including operational risk. The primary concern addressed in this article is the mismanagement of operational risks by Islamic banks, which can potentially have adverse effects on their profitability (Alqsass & Maali, 2022). As a result, this mismanagement has broader repercussions that extend to all banks' stakeholders, causing a negative impact on their interests. The management of operating expenses must be carefully studied because the efficiency ratio may have significant effects on profitability and financial performance overall.

The primary aim of this study is to investigate how changes in the efficiency ratio affect the profitability indicators of Islamic banks in the MENA region during the period from 2011 to 2020. The research aims to determine whether this impact is positive or negative using various statistical methods, and how to manage operating expenses effectively to achieve an appropriate return.

In this section, the central question that requires an answer is whether operational risk influences the profit earned by Islamic banks. The primary inquiry will be:

Will the efficiency ratio influence the profit earned by the banks?

2. Theoretical framework and literature review

The major hypothesis states that the operational risk that arising in Islamic financial institutions will affect their profitability either in the short term or long term. In this section, the study will mention the theoretical argument of the authors supporting this hypothesis which was built on the assumption that there is a strong correlation among operational risk and the profit earned by the banks. Moreover, the authors who endorse and support this hypothesis expect the management of operational risk leads to maximizing profit in the long run while others expect the profit to be immediate. Muthia et al. (2019) indicated when risk from operational efficiency is managed appropriately, this could lead to higher profitability, Al-Tamimi et al. (2015) recommended that management must give more attention to operational efficiency since it is concerning to the uncertainty of a firm's financial gains caused by failures. On the other hand, the study will mention the opinions of the authors opposing the hypothesis. The authors believe that the risk management policy followed by the banks has no influence on the income earned by Islamic banks. Based on the results of the study performed by Al-Omar and Al-Mutairi (2008) believe this hypothesis is true related to efficiency ratio, they explained the operating expenses to total assets ratio does not affect profitability.

Saiful and Puspita (2019) examined the influence of managing various types of risks (operational, credit and liquidity risk) on financial performance banks that operate in Indonesian, during the period from 2012 to 2016, the study employed a sample composed of 11 Islamic banks and 26 conventional banks and reported that for conventional banks, a higher efficiency ratio was associated with improved earnings for the banks. Moreover, Muthia et al. (2019) assessed whether the efficiency ratio impacts the profitability of Islamic banks or not based on two ratios of return of equities (ROE) and return on assets (ROA) as a diminution to measure profitability, after analyzing data extracted from observations comprising of 14 Islamic banks in Indonesia region covered the term from 2016 to 2018, they concluded that profitability positively was impacted by banks size and operating cost to the total asset, while negatively it was impacted by operating cost to income ratio. This explains that appropriate control of operating costs leads to improved profitability at the short-term and long-term levels, Therefore, bank managers must give great attention to operating expenses, as they have a great influence on the overall financial position and stability.

Shair et al. (2019) seek to identify any significant correlations or patterns between profitability and different types of risks and competition from 26 Islamic and foreign banks in Pakistan. The sample relied upon consists of data extracted by the global Banks and the Ministry of Finance in Pakistan from 2007 to 2017. The results demonstrate net interest margins which have a positive influence on operational risk, but a negative influence on profitability in terms of return on assets and profitability before tax to the total asset. Suseno and Bamahriz (2017) conducted an investigation into the influence of risk on profit derived by Islamic banks. The authors utilized a sample of 75 Islamic banks from 24 nations in the year 2015. The researchers considered profitability as the problem of this study, which was defined by 3 operational definitions: namely ROE, ROA and value-added. The independent variables encompassed various aspects of banks' risk, including risk related to liquidity, risk attributed to credit, risk regarding insolvency, and risk concerning efficiency. Additionally, bank size and inflation were considered as controlling variables. The study's findings revealed profitability had a negative influence by the risk associated with the efficiency ratio. Finally, they recommend focusing and giving primary attention to efficiency ratio to increase profitability of Islamic banks, since it holds significant importance in influencing profitability of Islamic banks.

Al-Tamimi et al. (2015) investigated the relationship between financial performance and financial risk faced by Islamic banks in GCC, using observations covering 11 Islamic banks from 47 banks in the GCC from 2000 to 2012 and the result showed efficiency ratio, calculated by operating cost to net income, and capital risk, calculated by shareholders equity to total assets, had a negative influence on the financial performance indicators of ROA and ROE. They recommended more focus on the capital risk because it is a most important risk because it is a primary determinant of performance, followed by the efficiency

ratio that must give more attention because this risk may cause fluctuations in the bank's earnings. Samad (2015) seeks to analyze how various factors influence profit earned by banks, depending on observations consisting of 42 banks in Bangladesh between 2009 and 2010 and their results show the efficiency that calculated by Operating expense to total assets had a positive impact on ROA and ROE.

Noman (2015) seeks to analyze how macroeconomic determinants and bank-specific factors influence the earnings of Islamic banks and collected data from 7 Islamic banks in Bangladesh during the period 2003-2013. The result of this study showed that cost efficiency had adversely affected profitability in terms of ROA, ROA and Net Interest Margin. Additionally, Ahangi (2013) examined the impact of several factors on profitability in Malaysia Islamic banks, using observations consists of 16 Islamic banks in Malaysia during the period 2008-2012 and the outcomes indicated the efficiency ratio calculated by expenses related to operation attributed to total assets had a positive influence on ROE and ROA.

Akhtar et al. (2011) examined if profitability is affected by some factors or not. The study's sample included 11 Islamic banks operating in Pakistan and the study covered the time span from 2006 to 2009. The results demonstrated that ROA and ROE were positively impacted by the deposit ratio, and capital adequacy ratio, additionally, the efficiency ratio positively affects ROA, while its impact on ROE is deemed insignificant.

2. Research Hypotheses and methodology

H_0: *There is no significant relationship between Islamic banks profitability measured by ROA and ROE and operational risk measured by efficiency ratio.*

Sub hypotheses:

$H_{0.1}$: *There is no significant relationship between Islamic banks profitability measured by ROA and operational risk measured by efficiency ratio.*
$H_{0.2}$: *There is no significant relationship between Islamic banks profitability measured by ROE and operational risk measured by efficiency ratio.*

In this section, the paper discusses the population under consideration and the sample selected for the study. It elaborates on the chosen models, focusing on how changes in the efficiency ratio affect the financial performance and profitability indicators in Islamic banks across MENA region countries. The tools and methods employed for data analysis and data collection are thoroughly presented, along with the definitions of various financial ratios. Finally, the section concludes with the description of the study's model.

2.1 Population and Sample

This paper relied on the population consisting of Islamic banks that operate in the Middle East and North Africa countries. The MENA countries were our source to obtain the sample of the Islamic banks. The data relied upon in this research cover the largest bank in each selected MENA country between 2011 and 2020. Additionally, three Islamic banks from countries with a significant presence of such banks, such as Kuwait and Bahrain, are included, with two banks from other countries that include Egypt, Qatar, Yemen and UAE. Furthermore, one bank will be chosen from these countries: Saudi Arabia, Jordan, Palestine, Syria, Sudan, and Lebanon. Whereas these countries that were relied upon in this sample are similar in their application of Islamic Shariah standards.

2.2 Variables Selection and Measurements

This section will demonstrate the operational definition of the study model employed in this paper. These variables have been widely addressed and frequently mentioned in previous research studies.

Dependent Variable

Return on assets depicts the capacity of Islamic institution to utilize their resources effectively in order to enhance earnings. Is a financial metric that represents the proficiency of Islamic banks in utilizing their assets to generate profits. According to Alzoubi (2018), ROA measures the bank's proficiency in utilizing each monetary unit invested in assets to generate profits effectively. The calculation for (ROA) is illustrated as follows:

$$ROA = Net\ income\ after\ tax\ /\ Total\ Assets \qquad\qquad (1)$$

Return on Equity is the capacity of Islamic banks to utilize their shareholders equity effectively in order to enhance earnings. Similarly, also emphasize ROE as a measure that signifies the amount of earnings attributed to equity invested. In essence, ROE demonstrates how well a bank can generate profits based on the capital contributed by its shareholders.

The calculation for (ROE) is illustrated as follows:

$ROE = Net\ income\ after\ tax\ /\ Total\ shareholder's\ equity$ (2)

Independent Variable

Efficiency ratio: Sufian and Habibullah (2009) Indicate that this concept is implemented by evaluating the leadership capacity to enhance operating profit while concurrently reducing costs related to operating. When leadership efficiently controls costs related to operating, it leads to an improvement in earnings and net income, which will have a favorable impact on profitability (Asutay & Izhar, 2007). This research used efficiency ratio measured by Operating Expense attributed to Total Assets to measure operational risk. The calculation for efficiency ratio is illustrated as follows:

$Efficiency\ ratio\ (ER) = Operating\ Expenses\ /\ total\ assets$ (3)

Study Model

The proposed model of this paper examines the influence of efficiency ratio on ROA and ROE, the panel data analysis will involve applying a regression model. The process of selecting a model depends on variables commonly used in prior studies related to the research topic. It will employ various techniques, including ordinary least squares, fixed and random effect, to assess the validation of hypotheses mentioned above. The model will use two various metrics of profitability, namely ROE and ROA, as the dependent variables and one type of risk, operational risk measured by (efficiency ratio) as independent variables. Subsequently, various statistical tests will be employed to identify the most suitable and well-fitted model. These tests include the F-statistic, likelihood ratio, and Hausman test, which will aid in determining the most appropriate model for the analysis.

$Prof_{x,t} = \alpha + \beta_1\ ER_{x,t} + \epsilon_{x,t}$ (4)

where:

$Prof_{x,t}$: the earnings achieved in terms of ROA and ROE at specific period t.
α: constant.
$ER_{x,t}$: the efficiency ratio related at time t.
$\epsilon_{x,t}$: error of estimation.

3. Results and Discussion

The analysis in this research depended on quantitative data extracted from the annual reports that presented on Islamic banks websites that operated in the MENA region. Statistical indicators that provide insight into the central or typical value of a dataset, such as arithmetic means and medians, are utilized to understand the typical values of the variables. Measures of dispersion, such as maximum and minimum values and standard deviation, provide insights into the variability of the variables. Additionally, correlation and regression analyses are employed to explore the relationships and patterns among the variables. Other statistical techniques may also be utilized to gain further insights from the data.

3.1 Descriptive analysis

Table 1 demonstrates some basic statistics associated with ROA, ROE and ER.

Table 1
Descriptive analysis

	ROA	ROE	ER
arithmetic mean	1.28%	9.17%	1.91%
Median	1.20%	10.17%	1.61%
Min	-5.87%	-136.84%	0.20%
Max	16.96%	58.85%	5.56%
Std. Dev	1.74%	15.55%	0.95%
Observations	200	200	200

According to the analysis of the ROA, the findings indicate that the average profitability of Islamic banks derived based on resources owned by the bank is 1.28%. The minimum earnings achieved by the Islamic banks in relation to assets is -5.87% while the maximum value is 16.96%. The middle point between these figures is 1.20%. The dispersion of values from the arithmetic mean for the ROA is 1.74%. This indicates that within our sample, each Islamic bank carries a 1.74% risk of achieving a profit compared to assets that deviate from the average.

The findings of the ROE analysis indicate that the average profitability of Islamic banks derived from shareholders' investments is 9.17%. The minimum earnings achieved by the Islamic banks in relation to equity is -136.84% while the maximum value is 58.85%. The middle point between these figures is 10.17%. The dispersion of values from the arithmetic mean for the ROE is 15.55%. This indicates that within our sample, each Islamic bank carries a 15.55% risk of achieving a profit compared to equity that deviates from the average.

The findings of the ER analysis indicate that the average for managing the operating expenses efficiently is 1.91%. The minimum efficiency ratio percentage is 0.20% while the maximum value is 5.56%. The middle point between these figures is 1.61%. The dispersion of values from the arithmetic mean for the ER is 0.95% which is due to different policies applied by management that relate to how the operations of the bank should be controlled in the best way. Furthermore, this implies that Islamic banks spend 0.0191 dollars on managing and operating their assets for every dollar invested in those assets. A sample of 20 banks was depended to extract data for this research, the time frame for the study or analysis starts in 2011 and ends in 2020, resulting in a total of 200 observations. The larger number of observations in the sample helps to decrease the standard deviation, thereby reducing errors. With a larger sample size, the results tend to become more accurate and reliable, as the impact of random variations decreases.

3.2 Correlation Coefficients

The magnitude and nature of the relationship among dependent variables and independent is demonstrated in the following table:

Table 2
Correlation matrix

	ROA	ROE	ER
ROA	1		
ROE	0.652	1	
ER	-0.032	-0.211	1

Note: the ROA stands for return on assets while the ROE stands for return on equity. The ER is an abbreviation for efficiency ratio.

According to the correlation matrix, the results exhibit a notable degree of consistency. Operational risk measured by efficiency ratio has a negative or inverse impact that can be noted on the return derived from assets and return derived from shareholders' equity. When the efficiency ratio increases, this leads to an increase in the operating expenses and hence a decrease in profit, this may result in a decline in the ROA and ROE. The results reveal a strong correlation, indicating that the variables selected in this study are considered suitable to explore the problem. The sample selected for the study is representative of the population under investigation, increasing the generalizability of the findings to the larger population. Moreover, there is no indication of a reverse effect between the variables. The presence of a strong correlation among independent and dependent variables indicates the appropriateness of the chosen model. Had no correlation been found, it would have raised concerns about the model's suitability.

3.3 Regression Analysis

Table 3
The result derived from regression based on fixed effect, whereas represent fitted tool

	ROA	ROE
C	(*) 0.19	0.93
ER	(***) -0.29	(***) -0.19
Adjusted R Square	0.38	0.35
F – statistic	(***) 4.7	(***) 4.2
Hausman test	(*) 11.6	(***) 44.5
Likelihood ratio	(***) 63.5	(***) 91.7

Note: The * means the p-value indicators tend to 10% significant level. The ** means the p-value indicators tend to 5% significant level. Finally, the *** means the p-value indicators tend to 1% significant level.

The obtained result reveals a low probability P-value for ER, approximately 0.01, which provides strong evidence in support of the alternative hypothesis, which suggests that there is a substantial and significant influence among banks' profitability and operational risk measured by efficiency ratio. This means that when the operational risk (efficiency ratio) increases, this indicates that the management is not controlling the operations of the bank in the best way and the inefficiency of leadership to enhance income. This leads to an increase in the operating expenses and hence a decrease in profit which will accordingly lead to a decrease in the ROA and ROE.

The adjusted R-squared value of 38.74% suggests that the independent variable (ROA) in the model explains and accounts for approximately 38.74% of the variance in the dependent variable, while efficiency ratio explains 35.82% of ROE.

Table 4
The validity of the hypotheses

Hypothesis	
There is no significant relationship between operational risk measured by efficiency ratio and ROA.	Reject
There is no significant relationship between operational risk measured by efficiency ratio and ROE.	Reject

4. Conclusion

In the previous years, numerous studies have analyzed and evaluated the Islamic bank's performances in terms of ROA, ROE and net profit margin. additionally, the profitability determination. The findings of various studies have shown variation and diversity, partly attributed to the differences in sample sizes across different research studies. Many of these studies have relied on relatively small sample sizes, which can contribute to variations in the results and limit the generalizability of findings.

The primary objective of this study is to determine the type and direction of the relationship among operational risk measures measured by efficiency ratio and profitability of Islamic banks. The observations for this paper were gathered from 12 distinct MENA (Middle East and North Africa) countries, which include 20 Islamic banks from various regions from 2011 to 2020. The descriptive analysis is employed in this study to provide an overview and summary of the data, while the fixed effects panel data analysis allows examination of any potential effects and estimates the impact of these variables over time and across different entities. The data utilized in the analysis were extracted from the annual financial reports of the banks.

The findings of this research consistently indicated that both profitability measures had similar outcomes. These metrics had a significant negative influence by the operational risk measured by (efficiency ratio). This means that when the operational risk (efficiency ratio) increases, this indicates that the management is not controlling the operations of the bank in the best way and the inefficiency of the bank's leadership in enhancing earnings. This leads to an increase in the operating expenses and hence a decrease in profit which will accordingly lead to a decrease in ROA and ROE.

5. Recommendations

This paper recommends that Islamic banks' management appropriately control of operating costs leads to improved profitability at the short-term and long-term levels, Therefore, bank managers must give great attention to operating expenses, as they have a substantial influence on the balance sheet. In conclusion, this study suggests that future researchers replicate the findings by acquiring a varied sample from multiple countries with distinct characteristics. Additionally, it is recommended to utilize a larger sample size to minimize the error rate and enhance the representativeness of the sample with respect to the population. By incorporating these recommendations, future studies can further validate and strengthen the results obtained in this research.

6. Limitations

This paper encountered several constraints, particularly in connection with the availability of the data set. Accessing data of Islamic banks proved challenging as not all financial statements were easily accessible through websites or public sources. Consequently, some banks had to be excluded from the sample due to outdated financial statements. Additionally, the study's coverage period from 2011 to 2020 restricted the analysis to a specific timeframe, potentially overlooking a varied economic cycle. Furthermore, the participation in our sample is restricted to 20 banks. These limitations should be acknowledged and considered when interpreting the results and drawing conclusions from the study.

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