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Ullah, Nazim

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# The Impact of Mergers and Acquisitions on Operational Performance of Islamic Banking sector

Nazim Ullah<sup>1</sup> Fauzias Mat Nor<sup>2</sup> Junaidah Abu Seman<sup>3</sup>

## ABSTRACT

Merger and acquisition (hereafter M&A) is the business expansion strategy. Islamic bank is the niche banking sector compared to its peers while it is categorized as too small to succeed. The paper aims to analyze the impact of M&A on the operational performance of the Islamic banking sector. This study employs empirical research methods, namely cross-sectional pooled regression and panel data regression to analyse a set of samples consisting of 10 Islamic banks involved in M&A from 6 countries, drawn from the International Monetary Fund (IMF), World bank, FitchConnect and Bloomberg over the years of 2009Q1 to 2018Q4. The operational performance is estimated using accounting-based measures while the Herfindahl-Hirschman Index (HHI) and the concentration ratio (CR) are applied to signify market structure. Total assets, total deposits and operating income variables are used to represent bank size. The findings indicate that bank size shows negative impact on operational performance. While the segregated level of bank size which is larger banks and concentrated market structure have a greater impact on the operational performance of Islamic banks in the post-M&A period. The paper concludes by discussing policy implications for policy-makers and academicians for having the strategic decision on the M&A deal and further research.

**Keywords:** Bank Sizes, Islamic Banking, M&A, Market Structure, Operational Performance

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<sup>1</sup> Ph.D. Candidate, Faculty Economic and Muamalat, Universiti Sains Islam Malaysia (USIM), [kmnazm\\_90@yahoo.com](mailto:kmnazm_90@yahoo.com)

<sup>2</sup> Professor of Finance, Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia (USIM), [fauzias@usim.my.com](mailto:fauzias@usim.my.com)

<sup>3</sup> Senior Lecturer, Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia (USIM), [junaidah@usim.my.com](mailto:junaidah@usim.my.com)

## 1.0 INTRODUCTION

Merger and acquisition (M&A) is defined as a process of amalgamation of bidder and target. The terminological definition of the merger is the combination of two or more banks whereas either a new entity exists or a combination of both (e.g.  $\text{bank}_A + \text{bank}_B = \text{bank}_C$  or  $\text{bank}_{AB}$ ). Usually, it happens with equal-sized banks “merger of equals”. Whereas acquisition implies the combination of two or more banks and target bank cease to exist (e.g.  $\text{bank}_A + \text{bank}_B = \text{bank}_A$ ). Normally, an efficient bank acquires an inefficient bank. M&A transactions happen with different payment modes such as cash, stock or a combination of both. M&A is a business strategy in which the ownership, business structured, liabilities, assets as well as management of the bank are transferred or combined. The main motive or objective of having M&A is to have commercial potentiality such as create more value (Synergy) compared to being on an individual stand. More specifically, M&A refers to the aspect of corporate strategy with the buying, selling or combining of the bank that enables a bank in a given industry to grow rapidly without creating another business entity (Nicholas et. al., 2015).

In line with that M&A has been in the mainstream news in the recent past (Massoudi and Fontanella-Khan, 2016). The global trend shows a record of 2.5 trillion value of M&A deal in the first half of 2018 which is 61per cent higher than the first half of 2017 but the number of deals reduced by 10per cent. Globalization and the financial deregulation of the banking sector went through a period of considerable consolidation during the 1990s. The financial world has experienced the downside of financial innovation and deregulation in the recent global financial crisis which leads to massive bank failures in the developed economies. Moreover, this scenario has been spread in developing countries as well.

In addition, due to the competitive business arena, structural modification of the financial system, financial enlargement, technological innovation, and demand for financial products. Financial institutions have to face numerous problems and need to change their business approach accordingly. With a view to keeping pace with this changing trend of the market, financial institutions need to espouse strategy to survive in the competition as well as structural modification of the business world.

In line with that, as explained by microeconomic theory, a market structure influenced the behavior of their respective companies (Nurwati, Achسانی, Hafidhuddin, & Nuryartono, 2014). Two competing hypotheses have been discussed such as the structure conduct performance (SCP) hypothesis, also called collusion hypothesis and efficiency hypothesis (Al-Muharrami, and Matthews, 2009; Samad, 2008; and Katib, 2004).

**Interestingly, from the beginning (i.e., beginning of twenty centuries) of the M&A deal, the research has been done in the case of the conventional banking sector**

**while Islamic banking is yet to be found. Although it is concerned by academicians, professionals and regulators, [Ibrahim and Rizvi, 2017; Kandil, et al., 2014; Iqbal, 2008] in-depth research is scarce. With having motives, this paper is going to analyses impact of M&A on the operational performance of Islamic banking sector empirically with the idea of the conceptual design of Ibrahim and Rizvi (2017), Kandil, et al. (2014) and Iqbal (2008). Moreover, focusing on the level of bank sizes such as large, medium and small.**

The multivariate results of M&A in the Islamic banking sector are reported in Table 3 and Table 4. The results are divided into pre-M&A, and post-M&A period. The findings of the study indicate that the relatively pre-M&A period and post-M&A period result is better compared to pooled samples, however, comparing to the pre-M&A, post-M&A shows better performance. Similarly, market structure has a direct effect on operational performance. Based on the market structure which shows that market is very concentrated rather highly competitive, highly regulated, and anti-trust system.

The structures of the paper are, review of literature, research methodology, results, and discussions followed by conclusion.

## **2.0 REVIEW OF LITERATURE**

Theories of M&A are divided into two namely shareholder's value maximization (value creation strategy) and shareholder's non-value maximization (value reduction strategy) (Weitzel and McCarthy, 2011). Shareholder holder's value maximization is explained by the efficiency theory while shareholder value reduction theory is explained by the management entrenchment theory and hubris theory. There are also other theories applied in M&A which are behavior theory and neoclassical theory to explain the merger waves.

Specifically, within the sphere of the banking sector, many studies have used the efficiency theory and resource dependence theory (RDT). According to the efficiency theory, mergers are planned, and it will only occur when they are expected to generate enough realizable synergies to make the deal beneficial to the parties, bidder, and target. Several studies [i.e., Daniya et al. (2016) and Weitzel and McCarthy (2011)] mention that the main motive of M&A is to gain synergy in terms of operating and financial synergy. These synergies could be either in the form of a cost reduction or increase revenue. It is the symmetric expectations of gains that result in a friendly merger being proposed and accepted. If the gain in value to the target is not positive, it is suggested that the target firm's owners would not sell to the acquisition. Similarly, if the gain negative to the bidder's owners, the bidder would not complete the deal.

Whereas Resource Dependency Theory (RDT) is defined as an explanation of how the external resources (i.e., skilled workers, total assets, money, technology, and raw materials etc.) of an organization affect the behavior of the organization. Nair, Trendowski and Judge (2008) claims that the resources of a firm consist of tangible assets, human and other intangible assets that produce productive services planned by the firm.

Since the market structure is concerned as well, according to microeconomic theory, a market structure influenced the behavior of their respective companies (Nurwati, Achسانی, Hafidhuddin, & Nuryartono, 2014). Two competing hypotheses have been discussed in the previous studies such as the structure conduct performance (SCP) hypothesis and efficiency hypothesis, Al-Muharrami, and Matthews, 2009). Market structure is measured by several tools such as HHI, Concentration ratio, Gini coefficient, Rosenbluth Index (ROS), Entropy Index (ENT), Linda Index, Lorenz Curve, Lerner Index, Horwath Index (HOR), Industrial Concentration Index (CCI), Hausas Indices, U index, Hanna-Keys Index (HKI) etc. [Barra., and Zotti, 2019; Galetić, and Obradović, 2018; Ginevičius, and Čirba, 2007; and Bikker, and Haaf, 2002)].

Based on the above mentioned conflicting theoretical underpinning, following empirical analysis is reviewed to analyses whether theses theoretical foundation explains the issue empirically.

A positive relationship between bank performance and M&As deal find by Abbas et al. (2014). The study focuses on the US banking sector that finds a direct positive performance on productivity, profitability as well as shareholders' value. Similarly, Daniya et al. (2016), and Al-Sharkas et al. (2008) analyze and reveal that there is an improved and robust financial performance and cost-efficiency owing to mergers and acquisitions, leading to financial efficiency in the Nigerian banks.

According to the analysis of Kwenda, Oyetade & Dobрева, 2017; Aladwan, 2015; and Haron, 2004 which state that the impact of size on the performances of the Jordanian commercial banks. The estimation result explains that there is an inverse relationship between size and bank performances, i.e., bank performance tends to increase when bank size decreases. Shed light on that, Kosmidou, Pasiouras, Doumpos, & Zopounidis (2006) argues that small banks are better than larger banks producing more performances. Interestingly, Katib and Mathews (2000) has estimated the efficiency of 20 Malaysian commercial banks from 1989 to 2000 and found that medium-sized banks (total assets) are more efficient than large banks. Surprisingly, Amene, and Alemu (2019) finds that larger banks enjoy better profit than smaller banks in Ethiopia banking sector.

While by applying GMM method, Micco et al. (2007) has conducted a study in Kenya in commercial banks and the finding reveals that the size does not matter in determining bank performance. Similarly, Abduh, and Idrees (2013) has found a negative relationship between bank size and performance. On the contrary, Nafti et al. (2017), and Ruslan, Pahlevi, Alam, & Nohong (2019) have found that bank size has a positive and significant influence on bank profitability through bank efficiency (mediating effect). Fang, C. K. Lu, Tan, & Zhang (2019) has conducted a study in Chania and found that there is a relationship between the bank's sizes and the bank's performance.

Sufian (2011) mentions that the reason to have M&As deal is to achieve economies of scope rather than economies scale. Mustafa et al. (2017) and Piloff and Santomero (1998) who mention that M&As reduce earnings volatility as well as uncertainty through the scale and scope of economies that potentially support these. Whereas Focarelli et al. (2002) state that acquisition is made for improving the quality of the portfolio of acquired banks. Shed light on that Linder and Crane (1993) explains that the acquirer banks are able to have both economies of scale i.e., by reducing manpower, shrinking the operation and reducing the cash and securities and economies of scope i.e., by the large volume of financing.

On the contrary, several studies have examined and revealed that M&As deal has less impact on the performance of the banking industry. Among the researchers, Kandil, et al. (2014), and Gattoufi et al. (2014) state that M&As activities have no significant impact on the operational performance of the banks involved. In the similar vein, Goyal and Joshi (2011) and Piloff et al. (1998) argue that acquisitions often have a negative impact on employees behavior resulting in counterproductive practices, absenteeism, low morale, and job dissatisfaction. It appears that an important factor affecting the successful outcome of acquisitions is the top management's ability to gain employee trust (Amihud et al., 2002).

In addition, M&A activity contributes to the abnormal returns and show a negative impact on profitability, efficiency, liquidity, leverage, size and employee behavior in the banking industry. According to the earliest studies of Firth (1980) and Malatesta (1983), the result has shown and revealed that shareholders of the acquiring firm face the situation of value reduction during the period of both announcement time and over the following years of the merger.

On top of that mixed results were also found in several studies. By using information from public listed companies from the ASEAN countries, R. Rao-Nicholson et al. (2016) finds the negative effect of M&As deal on the performance of the banks. However, concerning domestic consolidation, they argue that friendly deals help the integration process between the two companies and managers can work proactively to derive synergistic gains from the M&As activity. In the case of domestic deals, it can be quite costly to integrate institutions that are dissimilar in terms of their loan,

earnings, and cost, deposit and size strategies. As for cross-border mergers, differences between merging partners in their loan and credit risk strategies are conducive for higher performance, whereas diversity in their capital and cost structure has a negative impact from a performance standpoint (Antoniadis et al., 2014).

Furthermore, using data on Malaysian banks, Sufian and Habibullah (2014) and Jatkar (2012) explore and investigate that the acquiring banks have relatively more productivity as compared to the target banks. Malaysian financial sector consolidation can be traced back to the early 1990s when Bank Negara Malaysia (BNM) introduces a two-tier banking system as an incentive to promote mergers among the small domestic banking institutions. While Antoniadis et al. (2014) review and highlights the literature for M&As in the European banking sector and state that there are positive abnormal returns for target banks due to investor's expectations for better utilization of their assets.

However, based on the above theoretical as well as empirical analysis, the impact of M&A on the operational performance of the Islamic banking sector is lacking, inconclusive, controversial and mixed. It needs to revise, re-examine and further efforts are needed.

### **3.0 RESEARCH METHODOLOGY**

#### **3.1 DATA COLLECTION**

This paper employs an unbalanced panel data of 10 Islamic banks<sup>4</sup> from six countries<sup>5</sup> from the year 2009Q1 to 2018Q4. Data is collected from several secondary sources to the name of few Bloomberg, FitchConnet database, Financial statement of bank, IMF and World Bank database. Panel data techniques namely static model i.e., fixed effect and random effect along with OLS are used. FE is also known as within estimator or least square dummy variable estimator or covariance estimator. Fixed effects (FE) regression is used to control for omitted variables that differ between cases but are constant over time. Therefore, this is the benefit of FE to observe the effect of omitted independent variables on the dependent variable. It imposes equality of all slope coefficients and error variance across the variance and only the intercept across units are allowed to vary.

**On the other hand, the random effect (RE) model is the estimator if we believe that some omitted variables are constant over time and differ across the cases and others may be fixed between cases and vary over time. It is the less restrictive estimator. It also imposes the equality of all slope coefficients but allows error**

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<sup>4</sup> Ithmaar Holding BSC, Al Salam Bank-Bahrain BSC, Warba Bank KSCP, Kuwait Finance House KSCP, Meezan Bank Ltd, Masraf Al Rayan QSC, Qatar International Islamic Bank QSC, Al Rajhi Bank, Dubai Islamic Bank PJSC, and Abu Dhabi Islamic Bank PJSC.

<sup>5</sup> Bahrain, Kuwait, Qatar, Saudi Arabia, United Arab Emirates and Pakistan

variances and intercept to differ across countries. It assumes random intercepts, the mean of which is captured by the constant term and the variance of which is captured by the variance of the error term. Moreover, the paper also can apply OLS but there are arguments that OLS results might be biased due to the failure to control time-invariant heterogeneity. Hausman test is used to select between fixed effect and random effect. Furthermore, due to the scarce's observations, the study unable to apply GMM techniques.

### 3.2 VARIABLES

The dependent variable is the operational performance of the Islamic bank which is measured by ROA and ROE. While, several explanatory variables such as focal variables; the level of bank sizes (dummies), i.e., large, medium and small based on total assets, total deposits and operating income, the financial intermediary role is measured by cost to income (economies of scale) and loan to deposit (economies of scope) and the non-financial intermediary role is measured by non-interest expense to non-interest income. Similarly, several control variables are applied for example liquidity ratio, capitalization ratio and credit risk, Macroeconomic variables namely GDP and inflation, dummy variable cash to stock and last but not least market structure based on HHI and concentration ratio.

### 3.4 MODEL SPECIFICATION

Following models have designed for the analysis

#### Return on Asset (ROA) and return on equity (ROE)

$$ROA \text{ and } ROE = \alpha + \beta_1 BSA + \beta_2 BSOI + \beta_3 BSTD + \beta_4 BSA_{LMS} + \beta_5 BSOI_{LMS} + \beta_6 BSTD_{LMS} + \beta_7 E_{scale} + \beta_8 E_{scope} + \beta_9 NFIR + \beta_{10} FIN + \beta_{11} LIDY + \beta_{12} CAP + \beta_{13} CR + \beta_{14} GDP + \beta_{15} INF + \beta_{16} MC\_HHI + \beta_{17} MC\_CR3 + \epsilon \dots \dots \dots (1)$$

### 4.0 RESULTS AND DISCUSSIONS

The descriptive statistics of the unbalanced panel data set for relevant variables is presented in Table 1. This shows some preliminary features of our data. According to the result, it shows that the mean of all variables is positive. Especially the mean after M&A is better (i.e., with expected sign) compared to the pre-M&A period. In the table, three sets of the summary are reported, i.e., statistical summary for pre and post-merger operational performance, pre-merger operational performance and post-merger operational performance, respectively.



**Table 1 Descriptive Statistics**

<b>Variables</b>	<b>Pre M&amp;A</b>				<b>Post M&amp;A</b>			
	Mean	Std. dev.	Min	Max	Mean	Std. dev.	Min	Max
<b>Dependent variables</b>								
ROA	1.212	2.968	-6.950	12.371	0.834	1.225	-0.284	9.418
ROE	3.858	5.518	-17.543	26.776	5.293	5.935	-0.967	35.920
<b>Independent variables</b>								
<b>Bank sizes</b>								
BSA	3.356	0.984	1.157	4.819	3.794	0.682	1.574	4.989
BSOI	1.808	0.895	-1.255	3.535	2.000	0.824	-0.118	3.534
BSTD	3.104	0.868	1.144	4.329	3.663	0.737	1.517	4.678
<b>Financial intermediary role</b>								
Escale	43.609	78.439	0.259	294.574	23.792	36.013	0.374	196.498
Escope	46.519	109.003	0.344	819.248	45.308	127.371	0.200	978.456
<b>Non-financial intermediary role</b>								
NFIR	3.406	2.026	0.971	6.777	2.073	1.472	0.860	9.342
<b>Mode of financing</b>								
FIN	0.773	0.421	0.000	1.000	0.784	0.414	0.000	1.000
<b>Control variables</b>								
LIDY	4.755	9.509	0.126	57.370	2.151	2.611	0.068	7.717
CAP	11.525	16.433	0.425	77.433	7.153	7.453	0.340	34.715
CR	2.509	7.076	0.135	48.170	1.197	1.330	0.159	6.120
<b>Macro-economic variables</b>								
GDP	4.452	0.382	3.763	4.943	4.566	0.432	3.734	5.185
INF	2.040	0.085	1.948	2.278	2.052	0.102	1.938	2.336
<b>Market structure</b>								
MC_LHHI	3.514	0.092	3.367	3.624	3.522	0.090	3.367	3.624
MC_CR3	0.825	0.063	0.720	0.900	0.827	0.061	0.720	0.900

NOTES: The samples consisting of ten Islamic banks involved in M&A from six countries, from the years of 2009 to 2018. ROA; return on asset, (ROA); ROE; return on equity, BSA; bank size-total assets, BSOI; bank size-operating income, BSTD; bank size total deposits, Escale; economies of scale is measured by cost to income, Escope; economies of scope is measured by loan to deposit, NFIR; non-financial intermediary role is measured by non-interest cost to non-interest income, FIN; Dummy mode of financing (cash or stock), LIDY; liquidity ratio-liquid asset to total assets, CAP; capitalization ratio-total equity to total assets, CR; credit risk-loan loss reserve to gross loan, GDP; gross domestic product, INF; inflation, MC\_HHI; market concentration is measured based on Harpindahl-Hirschman Index, MC\_CR3; market concentration based on concentration ratio-largest three banks.

#### 4.1 DIAGNOSTIC TEST

Multicollinearity, heteroscedasticity, and auto-correlation are tested for the accuracy of the data set and avoiding any bias in the estimation. Multicollinearity occurs when independent variables in a regression model are correlated. This correlation is a problem because independent variables should be independent. If the degree of correlation between variables is high enough, it can cause problems. Heteroscedasticity implies a linear regression model and assumes that the error terms are normally distributed. It tests whether the variance of the errors from regression is dependent on the values of the independent variables. Autocorrelation is a characteristic of data that shows the degree of similarity between the values of the same variables over successive time intervals. In conclusion, based on the diagnostics tests, it is shown that there is a problem of heteroskedasticity and autocorrelation while no multicollinearity problem exists. Therefore, to solve the problems, the Whites (1980) heteroskedastic-consistence covariance matrix estimation is used throughout the regressions. Table 4 summarizes the diagnostics test results.

**Table 2 Results of Diagnostic Tests**

<b>Test</b>	<b>Test value</b>	<b>Decision role</b>
Multicollinearity	Vif = 9.15	Since the value is less than 10, it shows no multicollinearity problem
Heteroskedasticity	chi2 (19) = 93.28, Prob>chi2 = 0.0000.	Since the p-value is less than 5per cent, unable to accept Ho hypothesis i.e., Heteroskedasticity problem exists
Auto-correlation	F(1, 17) = 3.903 Prob > F = 0.0956	Since the p-value is more than 5per cent, unable to reject Ho hypothesis i.e., there is no problem of auto-correlation.

#### 4.2 MULTIVARIATE RESULTS OF M&A

The results are divided into two, pre-M&A period, and post-M&A period those are reported in Table 3 and Table 4.

**Table 3 Significant Results of Operational Performance (ROA) of Pre-M&A**

Level of bank sizes	Overall (bank size)			Large			Medium			Small		
	OLS	FE	RE	OLS	FE	RE	OLS	FE	RE	OLS	FE	RE
Measurement tools	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
Performance measurement	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
BSA	-0.131 (-0.58)	-0.131 (-0.58)	-0.131 (-0.58)	21.01 -2.17	.	21.01** -2.17	.	.	-21.01** (-2.17)	.	.	.
BSOI	-0.168 (-1.67)	-0.168 (-1.67)	-0.168* (-1.67)	.	.	.	21.01 -2.17	.	.	.	.	.
BSTD	-0.304 (-0.24)	-0.304 (-0.24)	-0.304 (-0.24)	3.349*** -7	.	3.349*** -7	-3.34** (-7.00)	.	-3.34*** (-7.00)	.	.	.
Escale	-0.284* (-11.3)	-0.284* (-11.35)	-0.284*** (-11.35)	-0.3*** (-10.24)	-0.30** (-10.2)	-0.3*** (-10.24)	-0.30** (-10.2)	<b>-0.3***</b> (-10.2)	-0.3*** (-10.24)	0.300*** (-10.24)	-0.30*** (-10.24)	-0.30*** (-10.24)
Escope	-0.0038 (-1.38)	-0.0038 (-1.38)	-0.0038 (-1.38)	-0.0043 (-1.82)	-0.0043 (-1.82)	-0.043* (-1.82)	-0.0043 (-1.82)	<b>-0.004</b> (-1.82)	-0.043* (-1.82)	-0.0043 (-1.82)	-0.0043 (-1.82)	-0.0033* (-1.82)
NFIR	0.221 -3.46	0.221 -3.46	0.221*** -3.46	0.256** -3.32	0.256** -3.32	0.256*** -3.32	0.256** -3.32	<b>0.256**</b> -3.32	0.256*** -3.32	0.256** -3.32	0.256** -3.32	0.256*** -3.32
FIN	19.96 -1.48	.	16.52 -1.24	.	.	.	.	.	.	22.29 -2.28	.	18.82** -1.97
LIDY	-0.0484 (-2.03)	-0.0484 (-2.03)	-0.0484** (-2.03)	-0.050* (-2.64)	-0.059* (-2.64)	-0.06** (-2.64)	-0.06* (-2.64)	<b>-0.051*</b> (-2.64)	-0.05** (-2.64)	-0.051* (-2.64)	-0.051* (-2.64)	-0.051* (-2.64)
CAP	0.27 -2.03	0.27 -2.03	0.270** -2.03	0.298* -2.57	0.298* -2.57	0.298** -2.57	0.298* -2.57	<b>0.298*</b> -2.57	0.298** -2.57	0.298* -2.57	0.298* -2.57	0.298** -2.57
CR	0.366 -1.44	0.366 -1.44	0.366 -1.44	0.434 -2.23	0.434 -2.23	0.434** -2.23	0.434 -2.23	<b>0.434</b> -2.23	0.434** -2.23	0.434 -2.23	0.434 -2.23	0.434** -2.23
GDP	-0.636 (-0.42)	-0.636 (-0.42)	-0.636 (-0.42)	0.00935 -0.01	0.00935 -0.01	0.00935 -0.01	0.00935 -0.01	<b>0.009</b> -0.01	0.00935 -0.01	0.00935 -0.01	0.00935 -0.01	0.00935 -0.01
INF	-7.826 (-1.78)	-7.826 (-1.78)	-7.826* (-1.78)	-7.235 (-2.29)	-7.235 (-2.29)	-7.235** (-2.29)	-7.235 (-2.29)	<b>-7.235</b> (-2.29)	-7.235** (-2.29)	-7.235 (-2.29)	-7.235 (-2.29)	-7.235** (-2.29)
MC_LHHI	.	.	-27.23*** (-8.72)	.	.	.	.	.	.	.	.	27.44*** (-7.00)
MC_CR3	-23.73* (-8.72)	.	.	.	.	.	.	.	.	23.92*** (-7.00)	.	.
_cons	19.53 -0.99	19.88 -2.25	97.56*** -4.66	-7.402 (-0.46)	14.26 -1.67	-7.402 (-0.46)	-4.053 (-0.26)	<b>14.26</b> -1.67	16.96** -2.08	11.89 -0.76	14.26 -1.67	90.54*** -4.73
R2	0.99	-	-	0.99	-	-	0.99	-	-	0.99	-	-
Hausman test FE vs RE	-	1.000	-	-	1.000	-	-	0.000	-	-	1.000	-
R2-within	-	0.99	0.99	-	0.99	0.99	-	0.99	0.99	-	0.99	0.99
R2-between	-	0.142	1	-	0.15	1	-	0.15	0.00	-	0.15	1
R2-overall	-	0.018	0.99	-	0.01	0.99	-	0.01	0.99	-	0.02	0.99
N	14	14	14	14	14	14	14	<b>14</b>	14	14	14	14

t statistics in parentheses \*\*p<0.1 \*\*\*p<0.05 \*\*\*p<0.01

NOTES: The samples consisting of ten Islamic banks involved in M&A from six countries, from the years of 2009 to 2018. ROA: return on asset, BSA, BSOI & BSTA; bank sizes based on total assets, operating income & total deposits, large, medium & small; is the level of bank sizes, Escale; economies of scale is measured by cost to income, Escope; economies of scope is measured by loan to deposit, NFIR; non-financial intermediary role is measured by non-interest cost to non-interest income, FIN; Dummy mode of financing (cash or stock), LIDY; liquidity ratio-liquid asset to total assets, CAP; capitalization ratio-total equity to total assets, CR; credit risk-loan loss reserve to gross loan, GDP; gross domestic product, INF; inflation, MC\_HHI; market concentration is measured based on Harpindahl-Hirschman Index, MC\_CR3; market concentration based on concentration ratio-largest three banks.

Table 3 shows multivariate results of operational performance for pre [i.e., three (3) years before the M&A deal] M&A period. Based on that,  $R^2$  is 0.99 for OLS estimation which indicates that strong impact of explanatory variables on operational performance i.e., ROA. While  $R^2$  (within) for FE and RE is 0.99 for both. Hausman test is used to select between FE and RE. According to the result of the Hausman test, we unable to reject the  $H_0$  hypothesis meaning that random effect is an appropriate model for the study.

When bank size is large, the coefficient of total assets is statistically significant at 5per cent level for OLS and RE estimation meaning that if the total assets are increased by 0.01 percent, ROA increased by 0.21 percent compared to medium and small-sized. Similarly, the total deposits are also statistically significant at 1per cent level that indicates that 0.01 percent increase in total deposits it would increase ROA by 0.035 percent. When bank size is medium, the coefficient of total assets is -21.01 and this is statistically significant at 5per cent level meaning that 0.01 percent increase in the total assets for the medium-sized bank it would reduce ROA by 0.21 percent compared to large and small.

Similarly, the coefficient of the total deposits is -3.35 at 1per cent significant level indicating that total deposits with medium-sized banks reduce ROA by 0.035 percent compared to large and small-sized. These two-level of bank sizes indicate that when bank size is large it impacts ROA positivity compared to medium and small. As quoted by Ibrahim and Rizvi (2017), “we need bigger Islamic banks”. This result is supported by the analysis of Amene, and Alemu (2019), Ruslan, Pahlevi, Alam, & Nohong (2019), Jaouad and Lahsen (2018), Abduh, and Idrees (2013), and Demirgüç-Kunt, and Merrouche (2010) which state that larger banks might be more efficient due to economies scale. Since the larger bank can easily diversify their assets portfolio while it reduces expenses more efficiently and effectively. But the result is the opposite of the analysis of Aladwan (2015) which states that profitability increases as asset size decrease. On the contrary Kosmidou, Pasiouras, Doumpos, & Zopounidis (2006) and Kasimodou et al. (2006) imply that small banks have higher performance compared to large banks. While Katib and Mathews (2000) find that a medium-sized bank is better to explain performance than a large bank.

Shed light on that, the coefficient of Escale (the cost to income) is -0.3 at 1per cent significant level meaning that if cost increases (decrease) by 1 percent ROA drops (increases) by 0.3 percent. This finding is consistent with the findings of Amene, and Alemu (2019), Fang, C. K. Lu, Tan, & Zhang (2019), Jaouad and Lahsen (2018), and Haron (2004). This is also indicating the intellectual capacity of the manager reducing the probable cost of the operation efficiently and effectively. Therefore, management is the most efficient to minimize expenses that influence operational performance positively. Similarly, the coefficient of Escope (loan to total deposits) is significant at 10per cent level. It indicates that 0.01 percent increase in financing which will reduce ROA by 0.004 percent. As supported by Amel, Barnes, Panetta

& Salleo (2004). It could be due to the bank financing more money for a risky project. If any systematic problem occurs bank has nothing to control the situation. Moreover, these two variables indicate the financial intermediary role of the banks.

While the coefficient of non-financial intermediary role (NFIR) is positive and significant at 1per cent level meaning that 0.01 percent increase NFIR, ROA reduces by 0.256 percent. Economically indicate that bank could not able to grabs benefit from the non-financial intermediary role. The coefficient for the mode of financing is 18.82 that significant at 5per cent level. It means that M&A is financed by cash compared to stock. This is strongly supported since eight banks out of ten finance M&A deal by cash while two banks pay stock. Finally, control variables; LIDY (liquid asset to total assets), CAP (total equity to total assets) and CR (loan loss reserve to gross loan) are also significant at 1per cent and 5per cent level. The coefficient of LIDY is negative meaning that idle money is not good for the bank rather better to invest. Although CAP affects operational performance positively it incurs cost i.e., more equity more cost of equity that will affect performance. Based on the coefficient of CR, it indicates that the bank is very risk-averse since they keep a portion of an asset for future unexpected loss. It is supported by the coefficient of Escope (loan to deposit), the value is negative meaning that the project is very risky. The coefficient of LIDY is negative (-0.051) meaning that 0.01 percent increase in the liquid asset would reduce ROA by 0.051 percent. This result is opposite to (Amene, and Alemu, 2019).

Similarly, capitalization represents that 0.01 percent increase in capital that increases ROA by 0.289 percent. The coefficient of CR indicates that it has an impact on ROA by 0.434 percent. Similarly, INF is statistically significant at 5per cent level. Implying that it would reduce ROA by 7.235 percent when it increases to 0.01 percent, however, GDP is not statistically significant. These findings are inconsistent with the findings of Amene, and Alemu (2019).

**Table 4 Significant Results of Operational Performance (ROA) of Post-M&A**

Level of bank sizes	Overall (bank size)			Large			Medium			Small		
Measurement tools	OLS	FE	RE	OLS	FE	RE	OLS	FE	RE	OLS	FE	RE
Performance measurement	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
BSA	-0.0943 (-0.71)	-0.00326 (-0.03)	-0.0943 (-0.71)	0.555** -2.73	.	0.555*** -2.73	0.877 -1.01	.	0.877 -1.01	.	.	.
BSOI	-0.00876 (-0.13)	0.0379 -0.57	-0.00876 (-0.13)	-5.297 (-1.52)	.	-5.297 (-1.52)	1.432 -1.52	.	1.432 -1.52	-0.414** (-2.18)	.	-0.414** (-2.18)
BSTD	-0.133 (-0.81)	-0.275 (-1.64)	-0.133 (-0.81)	2.658 -1.36	.	2.658 -1.36	-0.47 (-0.88)	.	-0.47 (-0.88)	.	.	.
Escale	0.0241** * (-5.26)	0.0256** * (-5.78)	0.0241** * (-5.26)	0.014** * (-4.23)	0.0174** * (-4.23)	0.0174** * (-4.23)	0.0174** * (-4.23)	0.0174** * (-4.23)	0.0174** * (-4.23)	0.0159** * (-3.83)	0.0174** * (-4.23)	0.0159** * (-3.83)
Escope	-0.00786 (-0.35)	-0.00745 (-0.36)	0.000786 (-0.35)	0.000264 -0.11	0.000264 -0.11	0.000264 -0.11	0.000264 -0.11	0.000264 -0.11	0.000264 -0.11	0.000528 -0.22	0.000264 -0.11	0.000528 -0.22
NFIR	-0.0553 (-0.91)	-0.0999 (-1.25)	-0.0553 (-0.91)	0.270** * (-4.08)	0.270*** (-4.08)	0.270*** (-4.08)	0.270*** (-4.08)	0.270*** (-4.08)	0.270*** (-4.08)	0.254*** (-3.74)	0.270*** (-4.08)	0.254*** (-3.74)
FIN	0.323** -2.65	.	0.323*** -2.65	-4.567 (-1.34)	.	-4.567 (-1.34)	-0.702 (-0.79)	.	-0.702 (-0.79)	0.622*** -3.19	.	0.622*** -3.19
LIDY	0.0288** (-2.36)	0.0302** (-2.78)	0.0288** (-2.36)	0.0255* * (-2.18)	0.0255** (-2.18)	0.0255** (-2.18)	0.0255** (-2.18)	0.0255** (-2.18)	0.0255** (-2.18)	-0.0233* (-1.93)	0.0255** (-2.18)	-0.0233* (-1.93)
CAP	0.0172 -0.28	-0.0189 (-0.26)	0.0172 -0.28	0.132** * -3.66	0.132*** -3.66	0.132*** -3.66	0.132*** -3.66	0.132*** -3.66	0.132*** -3.66	0.144*** -3.92	0.132*** -3.66	0.144*** -3.92
CR	-0.029 (-0.61)	-0.0213 (-0.49)	-0.029 (-0.61)	-0.0326 (-0.84)	-0.0326 (-0.84)	-0.0326 (-0.84)	-0.0326 (-0.84)	-0.0326 (-0.84)	-0.0326 (-0.84)	-0.0219 (-0.55)	-0.0326 (-0.84)	-0.0219 (-0.55)
GDP	-1.211 (-1.12)	0.769 -0.61	-1.211 (-1.12)	2.112 -1.61	2.112 -1.61	2.112 -1.61	2.112 -1.61	2.112 -1.61	2.112 -1.61	0.502 -0.6	2.112 -1.61	0.502 -0.6
INF	4.613** -2.38	-2.182 (-0.69)	4.613** -2.38	-1.742 (-0.48)	-1.742 (-0.48)	-1.742 (-0.48)	-1.742 (-0.48)	-1.742 (-0.48)	-1.742 (-0.48)	2.903 -1.29	-1.742 (-0.48)	2.903 -1.29
MC_LHHI	0.0756 -0.05	.	0.0756 -0.05	27.15 -1.51	.	27.15 -1.51	9.214 -1.44	.	9.214 -1.44	-3.042 (-1.04)	.	-3.042 (-1.04)
MC_CR3	-2.697 (-1.32)	.	-2.697 (-1.32)	.	.	.	.	.	.	4.326 -1.61	.	4.326 -1.61
_cons	0.0555 0	3.298 -0.47	0.0555 0	-95.84 (-1.63)	-5.429 (-0.75)	-95.84 (-1.63)	-37.53 (-1.61)	-5.429 (-0.75)	-37.53 (-1.61)	-0.789 (-0.05)	-5.429 (-0.75)	-0.789 (-0.05)
R2	0.906	-	-	0.89	-	-	0.89	-	-	0.88	-	-
Hausman text FE VS RE	-	0.837	-	-	1.000	-	-	1.000	-	-	0.711	-
R2-within	-	0.85	0.784	-	0.75	0.75	-	0.78	0.75	-	0.75	0.71
R2-between	-	0.712	0.997	-	0.76	0	-	0.76	0	-	0.76	0.99
R2-overall	-	0.286	0.906	-	0.24	0.89	-	0.24	0.89	-	0.24	0.87
N	31	31	31	31	31	31	31	31	31	31	31	31

t statistics in parentheses =\*\* p<0.1 \*\* p<0.05 \*\*\* p<0.01

NOTES: The samples consisting of ten Islamic banks involved in M&A from six countries, from the years of 2009 to 2018. ROA; return on asset, BSA, BSOI & BSTA; bank sizes based on total assets, operating income & total deposits, large, medium & small; is the level of bank sizes, Escale; economies of scale is measured by cost to income, Escope; economies of scope is measured by loan to deposit, NFIR; non-financial intermediary role is measured by non-interest cost to non-interest income, FIN; Dummy mode of financing (cash or stock), LIDY; liquidity ratio-liquid asset to total assets, CAP; capitalization ratio-total equity to total assets, CR; credit risk-loan loss reserve to gross loan, GDP; gross domestic product, INF; inflation, MC\_LHHI; market concentration is measured based on Harpindahl-Hirschman Index, MC\_CR3; market concentration based on concentration ratio-largest three banks.

Table 4 shows multivariate results of operational performance for the post (3 years after the M&A deal) M&A period. Based on the estimated result,  $R^2$  is 0.89 for OLS and  $R^2$  (within) for FE and RE is 0.75. All  $R^2$  indicates that better impact of the explanatory variables on the operational performance i.e., ROA. Based on the Hausman (0.75) test, we unable to reject the  $H_0$  hypothesis meaning that random effect is an appropriate model for the study.

The coefficient for the level of bank size (total assets) is statistically significant at 1per cent level which meaning that 0.01 percent increase in the total assets for the large bank it would increase ROA to 0.555 percent compared to medium and small size. While operating income for small size is significant at 5per cent. It shows that when 0.01 percent increases for the small asset it would reduce ROA to 0.414 percent compared to large and medium. The coefficient for Escale is negative at 1per cent level. It represents that 0.01 percent increases (decreases) cost to income reduces (increases) ROA to 0.074 percent.

Similarly, the coefficient for the non-financial intermediary role is negative and significant at 1per cent level. Showing that 1 percent raises (decrease) non-financial intermediary activities, it reduces (increases) ROA by 0.27 percent. The dummy variable for the mode of financing is also significant at 1per cent level which shows that cash financing is more compared to stock. LIDY shows significant at 5per cent level meaning that it reduces ROA once the bank keeps liquidity by 0.01 percent more. Capitalization also has a positive impact on ROA by 0.132.

Accordingly, another measurement of operational performance namely return on equity (ROE) is not reported in the analysis since most of the results are not statistically significant.

## **5.0 CONCLUSION AND RECOMMENDATION**

This paper examines and analyses the impact of M&A on the operational performance of the Islamic bank. Based on the results, the ROA indicator shows better significant results compared to ROE. The post-M&A period the better compared to the pre-M&A period. Surprisingly, the findings imply that bank size plays an important role in shaping M&A activities in the Islamic banking sector. Overall bank size shows a negative impact on the operational performance of the Islamic bank. Whereas the segregated level of bank sizes i.e., large banks show a significant positive impact on the relationship between M&A and operational performance. Based on the findings it is concluded that larger banks are better for having better operational performance. These result further support that M&A is better and the potential for an Islamic bank to increase their size and stay above the level of too small to succeed. Other variables namely control variables, macro-economic variables,

and the countries market structure show a significant impact on explaining the relationship between M&A and the operational performance of the Islamic bank. Therefore, the findings are a valuable insight into the policymakers and academicians in taking M&A decisions and further research.

The number of observations in this study is become a limitation. The number of banks and countries should be increased in future research by taking into consideration the data availability for the Islamic banks.



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