Educational Administration: Theory and Practice
2024, 30(4), 9521-9533
ISSN: 2148-2403
https://kuey.net/

Research Article

'Too Small to Succeed' OR 'Too Big to Fail': How Much Does Size Matter in Bank Merger and Acquisition?

Nazim Ullah[1*], Mohin Uddin[2], Mohammad Mamunur Rashid[3], Md Akther Uddin[4], Kazi Mohammad Abrar Hasan[5]

[1*]Assistant Professor of Finance, Department of Business Administration, International Islamic University Chittagong (IIUC), Bangladesh. Email: kmnazm_90@yahoo.com, *Orcid: 0000-0003-0494-8109*
[2]Assistant Lecturer in Finance & Banking, Department of Business Administration International Islamic University Chittagong (IIUC), Bangladesh. Email: mohin1uddin2@yahoo.com
[3]Lecturer of Economics, Department of Economics & Banking, International Islamic University Chittagong (IIUC), Bangladesh. Email: mamunurrashid9864@gmail.com
[4]Associate Professor, University of Science and Technology Chattogram (USTC), Bangladesh. aktherpu@gmail.com
[5]Associate Professor, Public Health, Business &Medicine (CMC), Email: dr.kmah@yahoo.com

Citation: Nazim Ullah, et al (2024) 'Too Small to Succeed' OR 'Too Big to Fail': How Much Does Size Matter in Bank Merger and Acquisition?, *Educational Administration: Theory and Practice*, *30*(4), 9521-9533
Doi: 10.53555/kuey.v30i4.4429

ARTICLEINFO

ABSTRACT

Bank size remains a puzzle to the banking sectors, meaning whether banks can be 'too small to succeed' and 'too big to fail'. This paper examined the relationship between bank sizes with merger and acquisition on operational performance and stability of the banking sectors. This paper employs panel data techniques (POLS, Fixed Effects & Random Effects) to analyze a set of samples for 24 banks involved in merger and acquisition during 2009Q1 to 2018Q3 from 6 countries. The results indicated that bank size shows significant impact on the operational performance and stability of 3 years pre & post-merger and acquisition. More specially, smaller banks have better merger and acquisition performance than larger and medium-sized banks, whilst larger and medium-sized banks outperformed bank stability. Hence, the bank size impacts merger and acquisition performance and bank stability. Policymakers and stakeholders get the proper hints for which size of banks are the more potential for merger and acquisition deals.

Keywords: Merger and Acquisition, Bank Sizes, Operational Performance, Stability, Banking Sectors.

1. Introduction

Merger and acquisition (hereafter, M&A) is one of the best business expansion strategies in use since 1895. This strategy is being used by all sectors: the services sector, the technology sector, the manufacturing sector, etc. This analysis focuses on the banking sectors as a part of the services sector. The banking sectors use M&A due to financial (i.e., M&A could boost banking performance) and non-financial (i.e., M&A could reduce competition from the market) reasons. As far as bank sizes are concerned, studies reveal that "too big to fail" for conventional banks (Baker, & McArthur, 2009; and Ennis, & Malek, 2005) while other studies note that "too small to succeed" for Islamic banks (Naseri, Bacha, & Masih, 2020). Therefore, the paper's main purpose is to analyze the impact of bank sizes on operational performance and bank stability due to M & M&A.

With regards to M&A in the financial sector, the banking sector has gone through intense competition, structural modification of the financial system, financial enlargement, technological innovation, and low demand for financial products due to globalization and financial deregulation. These have led to massive bank failures. This scenario has also impacted developing countries. Financial institutions need to employ competitive strategies and face the problem arising through M&A as a business approach.

Interestingly, since the inception of the M&A deal in the late nineteenth century, studies on M & M&A in the financial sector only involved conventional banks. As far as the development and increase in interest in M & M&A in the Islamic banking sector are concerned, it is surprising that very little is known about this topic (Ibrahim & Rizvi, 2017; Kandil, et al., 2014 Iqbal, 2008).

Few theories are applied to support the purpose of this paper. Resource dependency theory represents bank sizes i.e., total assets, total deposits, and operating income. This theory states that resources explain the organizational phenomenon (Kandil & Chowdhury, 2014; and Morris ,2004). Efficiency theory implies that M&A happens due to better performances since it helps to minimize cost, economies of scale, economies of scope, and maximize their resources through portfolio diversification (Daniya, Onotu, & Abdulrahaman, 2016; and Weitzel, & McCarthy, 2011).

This paper is tested based on the baseline model, OLS, and panel data techniques such as fixed and random effects. Unbalanced panel data comprises 24 banks, 10 Islamic banks, and 14 conventional banks from 2009Q1 to 2018Q3. The 4th quarter is removed due to the unavailable data in the database. The motives behind applying panel techniques are, it takes care of time-invariant characteristics that vary over time and cases. Another reason is that data is an unbalanced panel data. Although there are arguments among the researchers regarding OLS, the OLS method is used as a baseline model and to check the robustness of the results.
The analysis findings imply that small banks gain the most from the M&A activities while impacting bank performance. Small bank size significantly affects the bank's operational performance (i.e., ROA & ROE). The finding is inconsistent with Naseri, Bacha, & Masih (2020), who highlighted "too small to succeed". Additionally, the level of bank sizes such as small, medium, and large are the new dimension for the resource dependency theory. The finding adds value to the literature as well as the theory.
The objectives of the research are as follow,

i. To examine the factors especially bank size associated with M&A on the operational performance and bank stability.
ii. To investigate the level of bank sizes (large, medium & small) in relation to operational performance and bank stability.

The remainder of this paper is structured as follows. The following section presents a brief literature review of M & M&A in the banking sectors, i.e., theoretical and empirical underpinning. Section 3 represents the methodology of the paper, while section 4 discusses the estimation result. The final section is the conclusions and policy recommendation of the paper.

2. Literature Review and Hypotheses Development

2.1 Theoretical underpinning

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 & McCarthy, 2011). The efficiency theory explains shareholder holder's value maximization while the management entrenchment theory and hubris theory explain shareholder value reduction theory. There are also other theories applied in M&A, which are behavior theory & neoclassical theory, to explain the merger.

Accordingly, the efficiency theory of merger is explored by [Daniya, Onotu, & Abdulrahaman (2016); and Weitzel & McCarthy (2011)] while Polemis & Paleologos (2014); and Petmezas (2009)] have used neoclassical theory; moreover, the behavioral approach has used by [(Polemis & Paleologos, 2014; and Shleifer & Vishny, 2003]. Furthermore, (Kandil & Chowdhury, 2014; and Morris, 2004) have used the resource dependency theory. Meanwhile, shareholder's non-value maximization theory, i.e., management entrance theory, is used by Weitzel & McCarthy (2011) and Shleifer & Vishny (1989).

Specifically, many studies have used the efficiency theory and resource dependence theory (RDT) in the banking sector. 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 & McCarthy (2011) mention that the main motive of M&A is to gain synergy in terms of operating and financial synergy. These synergies could reduce costs or increase revenue. The symmetric expectations of gains result in a 'friendly' merger being proposed and accepted. If the gain in value to the target is not favorable, it is suggested that the target firm's owners would not sell or submit to the acquisition; similarly, if the gain is negative to the bidders, the bidder will refuse deals.

The Resource Dependency Theory (RDT) explains how an organization's external resources (i.e., skilled worker, total assets, money, technology, raw materials, etc.) affect the organization's behavior. Nair, Trendowski & Judge (2008) claim that a firm's resources consist of tangible assets, human and other intangible assets that produce effective services planned by the firm.

There is a strong interconnection between M&As and bank stability. For instance, merged banks may integrate several resources, i.e., human capital, technology, and assets. They mobilize the efficient and intellectual personnel know-how to make financing and how to collect deposits. Therefore, integrated personnel can manage the bank's core functions efficiently and effectively improve the bank's performance. Ultimately, it helps the bank to be more financially stable in the competitive market.

Meanwhile, bank stability represents the soundness of a bank that indicates that a bank is financially stronger and less fragile to any systematic shocks. Bank stability is measured by the Z-score (Ibrahim & Rizvi, 2018; Wahid, & Dar 2016).

Large banks are more stable (Ibrahim & Rizvi, 2018). Larger banks and higher Z-score could lower earnings volatility by reducing the level of risk (De Haan, & Poghosyan, 2012). Larger banks can better diversify and generate economies of scale in information production, monitoritransaction cost (Skully, & Perera, 2012) and achieve total gain (i.e., cost efficiency, risk sharing, revenue enhancement, performance, and diversification of resources along with increasing market power and bank stability). A recent statement by the Central Bank of Malaysia, Bank Negara Malaysia (BNM), on 5th February 2020 supports larger banks that promote financial stability and economic growth. BNM has announced that country's three largest banks (in terms of capitalization) of the country as the domestic systematically important bank (D-SIBs). While Čihák, & Hesse (2010) found mixed results, small Islamic banks are more stable than small conventional banks while large Islamic banks are less stable than large conventional banks (Wahid & Dar, 2016). Diaconu & Oanea (2015) stated that the most important categories that affect both stability and profitability are internal determinants (i.e., capital ratio, efficiency ratio, liquidity, and lending activity) and external determinants (GDP). Similarly, bank stability depends on interest and non-interest activities (Skully & Perera, 2012).

2.2 Empirical underpinning

Based on the US banking sector, Abbas et al. (2014) find a direct positive relationship between M&A performance on productivity, profitability, and shareholders' value. Similarly, Daniya et al. (2016), Okpanachi (2011), and Al-Sharkas et al. (2008) that M&As can improve financial performance and cost-efficiency contributing to financial efficiency in Nigerian banks. Meanwhile, Okpanachi (2011) states that the post-M&As period is more financially efficient than the pre-period.

Better performance is a very important motive of M&A. Without proper justification no financial organization would engage in the deal (Smirnova, 2014). Better performance can be achieved through economies of scale and scope, cost minimization strategy, market expansion, innovation and development of products & services, value creation strategy, the amalgamation of the human capital, liquidation strategy, reduction of tax liability and adjustment of debt, reduction of competitors and maintaining the corporate growth and good selection of strategy (Hitt, Ireland, & Harrison, 2001).

2.2.1 Does bank size matter in M&A?

Bank size is an essential factor affecting the banking sectors. Throughout the literature review, bank size continues to posit a dilemma to the sectors. Some studies declare it too big to fail for conventional banks, while others suggest that some banks are too small to succeed for Islamic banks.

Kwenda, Oyetade & Dobreva (2017), Aladwan (2015), and Haron (2004) stated that there is an inverse relationship between bank size and bank performance. Bank performance tends to increase when bank size decreases. Kosmidou, Pasiouras, Doumpos, & Zopounidis (2006) argue that smaller banks are better than larger banks in financial performance. Interestingly, using 20 Malaysian commercial banks from 1989 to 2000, Katib and Mathews (2000) find that medium-sized banks are more efficient than large banks. Surprisingly, Amene, & Alemu (2019) finds that larger banks enjoy better profit than smaller banks in the Ethiopia banking sector. Micco et al. (2007) reported that size does not matter in determining bank performance by applying the GMM method. Similarly, Abduh, & Idrees (2013) finds a negative relationship between bank size and performance. On the contrary, Nafti et al. (2017), and Ruslan, Pahlevi, Alam, & Nohong (2019) find that bank size positively influences bank profitability through bank efficiency. Fang, C. K. Lu, Tan, & Zhang (2019) has conducted a study in Chania and found a relationship between the bank's sizes and the bank's performance. Therefore, the following hypothesizes are suggested.

***Hypothesis 1; H_1:* Factors, specifically bank size associated with M&A, have significant impact on operational performance and stability for the banking sectors.**

Kosmidou, Pasiouras, Doumpos, & Zopounidis (2006) suggested two types of bank sizes, i.e., big and small banks, based on total assets. The findings showed that small banks performed better compared to large banks. Aladwan (2015) finds that small and medium-sized banks have a statistically significant impact on the Jordanian commercial banks from 2007 to 2012. Meanwhile, other studies showed that medium-sized banks are more efficient than large banks (Katib & Mathews, 2000). Kosmidou, Pasiouras, Doumpos, & Zopounidis (2006) and Aladwan (2015) found that small banks can outperform larger ones. These arguments form the basis of the following hypothesis.

Hypothesis 2; H_1: **Level of bank sizes (large, medium and small) has significant impact on operational performance and stability for the banking sectors.**

Meanwhile, several studies revealed that M&As deals have less impact on the performance of the banking industry. Kandil et al. (2014), Gattoufi et al. (2014), and Ismail et al. (2011) state that M&As activities have no significant impact on the operational performance of the banks involved. Goyal & Joshi (2011) also argues that acquisitions often negatively affect 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).
Besides, M&A activities also contribute to abnormal returns and adversely impact profitability, efficiency, liquidity, leverage, size, and employee behavior in the banking industry
(Banal-Estanol & Ottaviani, 2006, 2007). Malatesta (1983) revealed that shareholders of the acquiring firm experienced value reduction during both announcement time and over the following years of the merger. Moreover, Sufian et al. (2012) reports that bank's revenue efficiency has not significantly improved during the post-merger compared to the pre-merger period.
There are mixed results found in several studies on the impact of M&A on bank performance. By using information from public listed companies from ASEAN countries, R. Rao-Nicholson et al. (2016) finds the negative effect of M&As on banks performance of the banks. However, in terms of 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 M&A. 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 to higher performance, whereas diversity in their capital and cost structure negatively impacts performance [(Antoniadis et al., 2014; and Altunbaş & Marqués, 2008)].
Sufian & Habibullah (2014) and Jatkar (2012) observed that acquiring banks are relatively more productive than the target banks in Malaysia. The Malaysian financial sector consolidation can be traced back to the early 1990s when Bank Negara Malaysia (BNM) introduced a two-tier banking system to promote mergers among small domestic banking institutions. Antoniadis et al. (2014) conducted literature for M&As in the European banking sector. They stated that there are positive abnormal returns for target banks due to investors' expectations for better utilization of their assets.

3. Methodology and Data

3.1 Data samples and measurement

This paper employs an unbalanced panel data of 24 banks consisting of 10 Islamic banks and 14 conventional banks from 6 countries, 2009Q1 to 2018Q3. Data is collected from several secondary sources, namely Bloomberg, FitchConnect database, Bank's financial statement, IMF, and World Bank database. After filtering, 53 banks were omitted from the data set because outlier, missing financial information, and data range do not fall within the selected time.

Using this sample, data is divided into three categories, namely pooled; pre & post-M&A deal (i.e., 2009Q1 to 2018Q3 M&A period), pre-M&A deal (i.e., 3 years before M&A deal), and post-M&A deal (e.g., 3 years after M&A deal) M&A operational performance. Three years are chosen due to the unavailability of the longer data set. Moreover, this range is based on the previous studies (Abbas Hunjra, Azam, Ijaz, & Zahid, 2014; Al-Sharkas et al.,2008; and Yener & Ibáñez, 2004).

Panel data techniques, namely the static model [i.e., fixed effect (FE) and random effect (RE)] along with the baseline model, Ordinary Least Square (OLS). 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. This is the benefit of FE used to estimate the effect of omitted independent variables on the dependent variable. Meanwhile, the random effect (RE) model is the estimator if we believe that some omitted variables that 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. Since 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.

Accounting-based indicators are used to measure M&A performance in the banking sectors. Since all variables are from the accounting-based data while management has a significant influence on performance. Hence accounting-based indicators are used for the paper. The endogenous variables such as return on asset (ROA) and return on equity (ROE) are used as a proxy for operational performance and Z-score is used to measure bank stability. Several explanatory focus variables are used such as bank size (i.e., total assets, total deposits, operating income), 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 the cost to income (economies of scale) & loan to deposit (economies of scope) and the non-financial intermediary role is measured by non-

interest expense to non-interest income. Several control variables are applied, such as liquidity ratio, capitalization ratio, and credit risk; macroeconomic variables consist of GDP & inflation. Table 1 explains the variables.

Table 1 Variables explanations

Variables	Code	Definition	Features/ Description	Sources	Expected sign
Operational Performance	ROA and ROE	ROA and ROE measure the operational performance of the banking sector. ROA; how the manager is efficient to have better ROA by using bank assets. While ROE implies profit generated with the money shareholder have invested.	Return on asset (ROA) is defined as income after tax as a percentage of total assets. Return on equity (ROE) is defined as income after tax as a percentage of total equity.	FitchConnect database, bankscope and bank's annual report	Positive
Bank Stability	Z-score	Bank Stability	Measure the level of risk of the banking sector. It is measured by Z-score = (return on asset (ROA) + equity to total asset) / standard deviation of return on asset (ROA).	Author calculation	Positive
Level of bank sizes	$BSTA_{LMS}$ $BSTD_{LMS}$ $BSOI_{LMS}$	Bank size total assets large, medium, and small ($BSTA_{LMS}$) Bank size total deposits large, medium, and small ($BSTD_{LMS}$) Bank size operating income large, medium, and small ($BSOI_{LMS}$)	Sorting banks measure the level of bank sizes from the lowest to the largest. i.e., there are 24 banks. All banks are arranged from the lowest to the largest. And then, the first 8 banks are sorted as the small banks, the second 8 banks are sorted as medium-sized banks while the last 8 banks are sorted as the largest banks.	Author calculation	Positive Positive

3.1.2 Model specification

The following models are designed for the analysis of M&A.

$$Y_{nt} = \alpha_{nt} + \beta X_{nt} + \varepsilon_{nt} \quad \text{..... (Eq 1)}$$

Operational performance

$$ROA_{nt} = \alpha_{nt} + \beta_1 BSTA_{LMSnt} + \beta_2 BSTD_{LMSnt} + \beta_3 BSOI_{LMSnt}\ \beta_4 Escale_{nt} + \beta_5 Escope_{nt} + \beta_6 NFIR_{nt} + \beta_7 FIN_{nt} + \beta_8 LIDY_{nt} + \beta_9 CAP_{nt} + \beta_{10} CR_{nt} + \beta_{11} GDP_{nt} + \beta_{12} INF_{nt} + \beta_{13} FIN_{nt} + \varepsilon_{nt} \quad \text{..... (Eq 2)}$$

Bank stability

$$Z\text{-}score_{nt} = \alpha_{nt} + \beta_1 BSTA_{LMSnt} + \beta_2 BSTD_{LMSnt} + \beta_3 BSOI_{LMSnt}\ \beta_4 Escale_{nt} + \beta_5 Escope_{nt} + \beta_6 NFIR_{nt} + \beta_7 FIN_{nt} + \beta_8 LIDY_{nt} + \beta_9 CAP_{nt} + \beta_{10} CR_{nt} + \beta_{11} GDP_{nt} + \beta_{12} INF_{nt} + \beta_{13} FIN_{nt} + \varepsilon_{nt} \quad \text{..... (Eq 3)}$$

Where,
α; constant term,
β; coefficient for other variables,
ROA; return on asset,
Z-score; bank stability,
$BSTA_{LMS}$; bank size- total assets -large, medium and small
$BSTD_{LMS}$; bank size- to
tal deposits -large, medium and small
$BSOI_{LMS}$; bank size- operating income -large, medium and small
Escale; cost to income ratio,
Escope; loan to total deposits,
NFIR; non-interest cost to non-interest income,
LIDY; liquid asset to total assets,
CAP; equity to total assets,
CR; loan loss reserve to gross loan,
GDP; gross domestic products,
INF; inflation,
ε; error term.

3.4 Diagnostic test

Multicollinearity, heteroscedasticity, and auto-correlation are tested for the data set's accuracy and avoid any bias in the estimations.

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, the Whites (1980) heteroskedastic-consistence covariance matrix estimation is used throughout the regressions to solve the issues. Table 1 summarizes the diagnostics test results.

Table 2: Diagnostics tests

Test	Test value	Decision role
Multicolinearity	Vif = 8.10	Since the value is less than 10, it shows no multicollinearity problem
Heteroskedasticity	chi2 (19) = 6800.10, Prob>chi2 = 0.0000.	Since the p-value is less than 5%, Ho hypothesis is rejected i.e., Heteroskedasticity problem exists
Auto-correlation	F(1, 17) = 10.473, Prob > F = 0.0049	Since the p-value is less than 5%, Ho hypothesis is rejected, i.e., the auto-correlation problem exists

4. Results and discussions

The descriptive statistics of the unbalanced panel data set for relevant variables are presented in Table A1.1. It shows preliminary features of the data. The results are divided into three parts, pre & post-M&A, pre-M&A, and post-M&A. The shows that the mean of all variables is positive. Interestingly, the mean after M & M&A is better (i.e., with expected sign) than the pre-M&A period except for a few variables. At the same time, Table A1.2 presents the correlation matrix. It shows that there is no problem of multicollinearity, whereas heteroskedasticity and autocorrelation problem are exits. To solve the problem, Whites (1980) heteroskedastic-consistence covariance matrix estimation and vce (robust) is used throughout the regressions are used throughout the regressions.

Multivariate Results of M&A on Operational Performance (ROA)

Table 3 shows the multivariate results of M&A on the bank's operational performance (ROA). The results are shown as pre-M&A and post-M&A for pooled samples. The results are estimated by applying OLS and static models, i.e., fixed and random effects. Based on the Hausman test, the fixed-effects model is selected. Moreover, there are two measurements for operational performance, namely, return on assets (ROA) and return on equity (ROE). However, most of the variables do not show a significant impact on ROE, and hence the results of ROE are not reported.

In the pre-M&As scenario, Table 3 posits operational performance (ROA). R-squared is 0.13, which means that ROA is variance explained by the explanatory variables (Model-3). Firm size is an important determinant of profitability (Dickerson et al., 1997). Throughout the findings, it is shown that the level of bank sizes (large, medium and small) based on total assets show comparative impact on the ROA. The results show that large banks (BSTA_L) show 0.723 units less impact on the ROA than reference groups (BSTA_L & BSTA_S) that are statistically significant at 10% level (Model 1). While BSTA_M also show the same impact but are not statistically significant (Model 2). Finally, BSTA_S show 0.507 units impact on ROA compared to the reference group (BSTA_L & BSTA_M) which is statistically significant at 10% level (Model 3). Therefore, it concludes that BSTA_S show a better impact on ROA than reference groups (BSTA_L & BSTA_M). The finding is consistent with Muhammad, Waqas, & Migliori (2019), who found that small organizations are more likely to bear fruitful results of M&A in comparison to the larger organizations, as they later may pose greater challenges for management. Furthermore, the findings are supported by the resource dependency theory, which said that resources significantly impact the organization's outcome.

Intermediary role (financial and non-financial) Based on the results, it shows that intermediary bank roles (financial and non-financial) play a significant impact on the pre-M&As of the banking sectors. The findings show that (Model 3), financial and non-financial intermediary role show negative and statistically significant impacts on operational performance. Pointing to the results, for every 1-unit increases (decreases) Escale and Escope tend to decrease (increase) ROA by 0.011 units and 0.005 units, respectively which is statistically significant at 1% level. The finding is inconsistent with Brown (2014) who found that the cost to income ratio (economies of scale) had significant and negative ROA. Likewise, the non-financial intermediary role (NFIR) is negatively associated with ROA. Looking at the findings, 1-unit increases (decreases) to NFIR that would tend to decrease (increase) ROA by 0.065 units that is significant at 5% level. The findings are supported by efficiency theory and the theory of financial intermediation. Efficiency theory states that the main reason for M&As is to

generate better performance, while the theory of financial intermediation implies that bank performance depends on the intermediary activities of banks.

Liquidity (LIDY) and capitalization (CAP) show positive impact on ROA. Meaning that 1 unit increase to LIDY and CAP would increase ROA by 0.085 units and 0.009 units which is statistically significant at 5% and 1% level, respectively. The finding of liquidity is inconstant with Brown (2014), who found that liquidity does not significantly impact ROA. While although the coefficient of credit risk is negative but not statistically significant. On the other hand, macro-economic variables also show significant and positive impact on operational performance. Diaconu & Oanea (2015) stated that banks' internal determinant greatly impacts bank stability, which means that 1 unit increase in the GDP and inflation (INF) would increase ROA by 3.076 units and 0.090 units, which is statistically significant at 10% and 1% level respectively.

In the post M&As scenario, Table 3 shows significant results of operational performance (ROA) for banking sectors. R-squared (within) is 0.751which means that ROA is the variance explained by the explanatory variables. Post-acquisition performance can be influenced by size (Dickerson et al., 1997). The level of bank sizes (large, medium and small) significantly impacts operational performance (ROA). The coefficient of large banks is not statistically significant.

In contrast, medium sized banks are significant at 1% level, which means that medium-sized banks impact 2.355 units less on the operational performance than reference groups (large and small). Similarly, small-sized banks show positive impact on operational performance. Meaning that the operational performance of the banking sectors is 1.475 units more compared to reference groups (large and medium) that is significant at 1% level.

Interestingly the impact is 0.968 units more compared to pre-M&As. Aladwan (2015) noted that performance deteriorated with increased size, performance becomes less when bank size increase. Kosmidou, Pasiouras, Doumpos, & Zopounidis (2006) observed that small banks performed better than larger banks. Al-Sharkas, Hassan & Lawrence (2008) suggested that small banks merger recorded greater cost efficiency improvement than large banks mergers.

Intermediary role (financial and non-financial) shows significant impact as well. When 1 unit increase (decrease) to the financial intermediary role (economies of scale) reduces operational performance by 0.019 units which is significant at 10% level. The finding is consistent with Jaouad & Lahsen (2018) and Brown (2014), who showed that cost to income ratio had a negative and significant impact on performance. Compared to the pre-M&As, the effect is 0.01 units more in post-M&As. This result is consistent with Nguyen et al. (2012), who indicated that larger banks are the possibility of minimizing costs and benefiting from economies of scale. While 1 unit increase to economies of scope would tend to increase operational performance by 0.014 units, which is statistically significant at 1% level. The impact is 0.013 units more compared to pre-M&As.

On the contrary, the non-financial intermediary role negatively associated with operational performance. 1 unit increase to the non-financial intermediary role that ten to increase operational performance by 0.076, significant at 5% level. The impact is 0.011 units more compared to pre-M&As.

Modes of financing show significant impact on M&As. Looking at that, M&As financing by cash impacts operational by 0.023 units more than stock financing. Kwenda, Oyetade, & Dobreva (2017) said that in post-M&As, acquirers' performance is also influenced by modes of financing. The results are consistent with Bertrand and Betschinger (2012), who mentioned that the financing method positively impacts performance. While the finding is opposite of Sullivan et al. (1994) who found that returns to acquirers are not influenced by the method of financing M&As deals. Accordingly, Dogru, Kizildag, Ozdemir, & Erdogan, 2020) said that the acquirer's performance is lower due to the higher free cash flow. Furthermore, the finding is opposite of the free cash flow hypothesis, which mentioned that M&As performance lower due to the conflict between managers and shareholders choosing M&As strategy. Lang, Stulz, & Walkling (1991) observed that the free cash flow hypothesis posits that cash flow increases the agency costs of firms with poor investment opportunities.

As mentioned earlier, a number of control variables are used in the present study. For example, bank-specific variables namely liquidity, credit risk and capitalization, while macro-economic variables, namely GDP and inflation. Credit risk and capitalization show the positive impact on operational performance. Meaning that 1 unit increase to credit risk and capitalization would increase operational performance by 0.041 units and 0.042 units which is statistically significant at 5% and 1% level respectively. The coefficient of liquidity is not statistically significant in explaining the changes in ROA and then the results are left undiscussed. The result is inconsistent with Brown (2014) who found that liquidity significantly impacts ROA. On the other hand, macro-economic variables also show significant and positive impact on operational performance. Meaning that 1 unit decrease to inflation would decrease operational performance by 0.176 units, which is significant at a 5% level. While GDP does not show any significant impact on explaining the relationship between M&As and operational performance.

Table 3: Multivariate results of the bank's operational performance (ROA)

	Pre M&A			Post M&A		
	FE (1)	FE (2)	FE (3)	RE (1)	RE (2)	RE (3)
BSTA_L	-0.723*			1.926		
	(0.093)			(0.235)		
BSTA_M		-0.330			-2.355***	
		(0.192)			(0.000)	
BSTA_S			0.507*			1.475***
			(0.076)			(0.000)
Escale	-0.013***	-0.013***	-0.011***	0.073**	-0.079**	-0.019*
	(0.000)	(0.000)	(0.001)	(0.030)	(0.027)	(0.068)
Escope	-0.004*	-0.004**	-0.005***	-0.039***	-0.012***	0.014***
	(0.066)	(0.047)	(0.007)	(0.000)	(0.000)	(0.003)
NFIR	-0.025**	-0.043	-0.065**	0.006***	-0.094	-0.076**
	(0.005)	(0.205)	(0.019)	(0.000)	(0.353)	(0.024)
LIDY	0.049	0.058*	0.085**	0.055	0.024	0.057
	(0.152)	(0.098)	(0.043)	(0.816)	(0.153)	(0.651)
CR	-0.0118**	-0.009**	-0.006	0.078***	0.021	0.041**
	(0.022)	(0.029)	(0.813)	(0.009)	(0.424)	(0.019)
CAP	-0.0145	-0.009	0.009***	0.010***	-0.0279	0.042***
	(0.467)	(0.589)	(0.007)	(0.007)	(0.464)	(0.005)
GDP	18.880	21.510**	3.076*	0.792*	0.843***	-0.043
	(0.284)	(0.017)	(0.067)	(0.060)	(0.000)	(0.399)
INF	0.052***	0.058	0.090***	-0.036***	-0.231**	-0.176**
	(0.000)	(0.629)	(0.005)	(0.005)	(0.048)	(0.020)
FIN				0	0	0.023***
				(.)	(.)	(0.004)
_cons	-18.070	-20.820	-2.290	0	0	0.023***
	(0.316)	(0.294)	(0.346)	(.)	(.)	(0.004)
Chow test: POLS vs FE	0.000	0.000	0.000			
LIM test: POLS vs RE	1.000	1.000	1.000			
Hausman test: FE vs RE	0.000	0.000	0.000			
R-sq within	0.121	0.118	0.127	0.645	0.752	0.751
R-sq between	0.11	0.094	0.082	0.014	0.002	0.012
R-sq overall	0.067	0.059	0.057	0.066	0.023	0.043
N	207	207	207	213	213	213
p-values in parentheses						

Notes: samples consist of 24 banks from 6 countries, year from Q1 2009 to Q3 2018. All; general bank size, Large; the largest volume of 8 banks out of 24 banks, Medium; the medium volume of 8 banks out of 24 banks, small; the lowest volume of 8 banks out of 24 banks, BSTA; bank size total assets, BSTD; bank size total deposits, BSOI; bank size operating income, Escale; cost to income, Escope; loan to deposit, NFIR; non-interest cost to non-interest income, LIDY; liquidity, CR; loan loss reserve to gross loan, CAP; equity to total assets, GDP; gross domestic product, INF: inflation and FIN; modes of financing cash or stock.

4.2 Multivariate Results of M&A on Bank Stability (Z-score)

Table 4 shows the multivariate result of bank stability (Z-score). The results are reported in pre-M&A and post-M&A. Based on the Hausman test, the fixed effects model is selected. Bank size shows negative effects, i.e., 1% increases in bank size reduces bank stability by 0.19%. While the large and medium-sized banks imply better bank stability, i.e., 1% increase in larger and medium-sized bank assets increases bank stability by 1.5% and 0.2%, respectively.

In pre-M&A scenario, the bank sizes, namely large, medium and small, significantly impact bank stability. Referring to these, the coefficient of large-sized banks (BSTA_L) is positive but not statistically significant. Although the coefficient is not statistically significant, it seems that there is the probability that BSTA_L positively impact on the Zscore. Accordingly, BSTA_M imply 1.15 units more impact on bank stability than reference groups (BSTA_L and BSTA_S), which is statistically significant at a 5% level. Whereas BSTA_S show 2.34 units lower impact on Zscore comparted to the reference group (BSTA_L & BSTA_M), which is statistically significant at 1% level. Therefore, it is concluded that the large and medium-sized banks more impact bank stability compared to small-sized banks.

Intermediary roles (financial and non-financial) show significant impact on the bank stability as well. 1 unit increase Escope that would tend to reduce Zscore by 0.041 units statistically significant at 1% level. Another proxy for financial intermediary (Escale) does not show any statistically significant in explaining the changes in Zscore. On the contrary, the non-financial intermediary role (NFIR) positively associated with Zscore. Meaning that 1 unit increase to NFIR that tend to increase Zscore by 0.007, significant at 1% level.

Liquidity (LIDY) and capitalization (CAP) show positive impact on stability (Zscore). Meaning that 1 unit increase to LIDY and CAP would increase Zscore by 0.082 units and 1.107 units which is statistically significant

at 10% and 5% level, respectively. The findings are consistent with Marembo (2012), who said that adequate capitals help lessen the chance that banks will become insolvent if sudden shocks occur, ensuring financial sector stability. While credit risk (CR) does not show any statistically significant impact on stability. On the other hand, macro-economic variables also show significant and positive impact on Zscore. Meaning that 1 unit increase to the GDP would tend to increase Zscore by 1.5 units that is statistically significant at 1% level. At the same time, inflation (INF) does not impact Zscore since the coefficient is not statistically significant. Therefore, it concludes that favorable economic conditions are fundamental for the strong solvency of banking sectors. The more the value of the bank stability the less fragile of the banking sectors.

In the post M&As scenario, the level of bank sizes, namely large (BSTA_L), medium (BSTA_M) and small (BSTA_S), based on total assets, significantly impact bank stability. Referring to these, the coefficients of BSTA_L and BSTA_M are positive and statistically significant. The BSTA_L has more impact, meaning Zscore compared BSTA_M and BSTA_S. Whereas BATS_M also show the same impact as BSTA_L. On the other hand, BSTA_S show 1.980 units less impact on bank Zscore than BSTA_L and BSTA_M. Therefore, it is concluded that the BSTA_L and BSTA_M more impact bank Zscore compared to BSTA_S. The findings are consistent with Ibrahim & Rizvi (2018), who implied that larger banks are more stable. However, these findings are inconsistent with Čihák, & Hesse (2010) found that small banks are more stable, whereas Al-Sharkas, Hassan & Lawrence (2008) stated that small and larger banks are more profitable. Ibrahim & Rizvi (2018, Demirgüç-Kunt, & Merrouche (2010) suggested that bigger is better for bank stability. Increasing bank size would reduce earnings volatility and make the bank less fragile (Moutsianas & Kosmidou, 2016**).** However**,** this is the opposite of Čihák & Hesse (2010), who opined that small banks are more stable.

Intermediary roles (financial and non-financial) show significant impact on bank stability. Looking at the findings, 1 unit increase to Escale and Escope would tend to reduce Zscore by 0.083 units and 0.073 units, respectively, which is statistically significant at 1% level. On the contrary, the non-financial intermediary role (NFIR) positively associated with stability. Meaning that 1 unit increase to NFIR that tend to increase stability by 0.096 units that is significant at 1% level.

Modes of financing (FIN) also show a significant and positive impact on stability (Zscore). Meaning that 1.506 units increase bank stability when M&A s financed by cash compared to the stock financing that is significant at 1% level.

Liquidity (LIDY) and capitalization (CAP) show positive impact on stability (Zscore). Meaning that 1 unit increase in LIDY and CAP would increase Zscore by 0.033 units and 0.832 units respectively which is statistically significant at 1% level. While credit risk (CR) shows negative impact on Zscore. I unit increase (decrease) to CR that would reduce Zscore by 0.008 units significant at 10% level. On the other hand, macro-economic variables, namely GDP and inflation (INF) do not show a statistically significant impact on the bank stability of post-M&As.

Table 4: Multivariate results of bank stability (Z-score)

	Pre M&A			**Post M&A**		
	FE (1)	FE (2)	FE (3)	**RE (1)**	**RE (2)**	**RE (3)**
BSTA_L	4.833			0.738		
	(0.229)			(0.674)		
BSTA_M		1.15**			8.960***	
		(0.029)			(0.000)	
BSTA_S			-2.34***			-1.98***
			(0.000)			(0.000)
Escale	0.013	0.002	-0.025	-0.132***	-0.095***	-0.083***
	(0.522)	(0.955)	(0.203)	(0.000)	(0.000)	(0.000)
Escope	-0.059***	-0.041***	-0.037***	-0.091***	-0.092***	-0.073***
	(0.000)	(0.006)	(0.001)	(0.000)	(0.000)	(0.000)
NFIR	-0.007	0.007***	-0.048	-0.044***	-0.015**	0.096
	(0.282)	(0.007)	(0.645)	(0.000)	(0.020)	(0.232)
LIDY	0.128*	0.082*	0.018	0.034***	0.019**	0.033***
	(0.100)	(0.073)	(0.234)	(0.000)	(0.017)	(0.000)
CR	0.236***	0.114	0.058	-0.535***	-0.425***	-0.278
	(0.000)	(0.252)	(0.705)	(0.003)	(0.007)	(0.101)
CAP	1.472**	1.107**	0.981***	1.057***	1.053***	0.832***
	(0.023)	(0.049)	(0.000)	(0.000)	(0.000)	(0.000)
GDP	25.200	13.500*	-22.180*	-1.831***	-3.129***	-0.394
	(0.142)	(0.108)	(0.099)	(0.000)	(0.000)	(0.113)
INF	-3.818	-3.048	-1.009	-0.543	-0.414	0.0611
	(0.198)	(0.171)	(0.195)	(0.308)	(0.362)	(0.896)
FIN				1.670	2.009	1.506***
				(0.261)	(0.224)	(0.010)
_cons	-230.500	-138.800	44.910***	9.086***	12.030***	17.430***
	(0.131)	(0.155)	(0.002)	(0.001)	(0.000)	(0.000)
Chow test: POLS vs FE	0.000	0.000	0.000			

LIM test: POLS vs RE	1.000	1.000	1.000			
Hausman test: FE vs RE	0.000	0.000	0.000			
R-sq within	0.668	0.752	0.785	0.609	0.712	0.763
R-sq between	0.072	0.143	0.107	0.252	0.538	0.444
R-sq overall	0.026	0.110	0.092	0.339	0.565	0.552
N	207	207	207	207	207	207
p-values in parentheses						

Notes; samples consist of 24 banks from 6 countries, year from Q1 2009 to Q3 2018. All; general bank size, Large; the largest volume of 8 banks out of 24 banks, Medium; the medium volume of 8 banks out of 24 banks, small; the lowest volume of 8 banks out of 24 banks, BSTA; bank size total assets, BSTD; bank size total deposits, BSOI; bank size operating income, Escale; cost to income, Escope; loan to deposit, NFIR; non-interest cost to non-interest income, LIDY; liquidity, CR; loan loss reserve to gross loan, CAP; equity to total assets, GDP; gross domestic product, and INF; inflation and FIN; modes of financing (cash or stock).

5. Conclusion

This paper examines and analyses the impact of bank size on M&A affecting operational performance and stability in the banking sectors. Return on asset (ROA) and return on equity (ROE) show operational performance while Z-score shows the bank stability. Based on the results, bank size plays an important role in M&A affecting bank performance and stability. Based on the findings, this paper accepts both research hypotheses. Firstly, bank size negatively impacts the operational performance while positive impact on the bank stability. Secondly, level of bank size; small banks show a significant impact on the relationship between M&A and operational performance. Meanwhile, large and medium-sized banks promote better bank stability.

Other variables like control and macro-economic variables have significant impact on M&A activities. Therefore, policymakers, namely the government, professionals, and academicians, should emphasize the level of bank sizes and conduct further research.

Based on the findings, the paper concludes that small is beautiful for operational performance. Meanwhile, medium is optimal, and larger is better for bank stability. It is argued that large banks can minimize costs, gain economies of scale, economies of scope and diversify their resources (Grave, Vardiabasis, & Yavas, 2012).

The number of observations in this paper remains a limitation. The number of banks and countries should be increased in future research. Moreover, new methodology may be adopted.

References

1. Abduh. & Yameen, I. 2013. Determinants of Islamic banking profitability in Malaysia. Australian Journal of Basic and Applied Sciences 7(2): 204-210.
2. Aladwan, M. S. (2015). The impact of bank size on profitability" an empirical study on listed Jordanian commercial banks". European Scientific Journal, 11(34).
3. Altunbaş, Y., & Marqués, D. (2008). Mergers and acquisitions and bank performance in Europe: The role of strategic similarities. *Journal of economics and business*, *60*(3), 204-222.
4. Amene, T. B., & Alemu, G. A. (2019). Determinants of financial performance in private banks: A case in Ethiopia.
5. Amihud, Y., DeLong, G. L., & Saunders, A. (2002). The effects of cross-border bank mergers on bank risk and value. Journal of International Money and Finance, 21(6), 857-877.
6. Antoniadis, I., Alexandridis, A., & Sariannidis, N. (2014). Mergers and acquisitions in the Greek banking sector: An event study of a proposal. *Procedia Economics and Finance, 14,* 13-22.
7. Baker, D., & McArthur, T. (2009). *The value of the" too big to fail" big bank subsidy*. Washington, DC: Center for Economic and Policy Research.
8. Čihák, M., & Hesse, H. (2010). Islamic banks and financial stability: An empirical analysis. *Journal of Financial Services Research*, *38*(2-3), 95-113.
9. Daniya, A. A., Onotu, S., &Abdulrahaman, Y. (2016). Impact of Merger and Acquisitions on the Financial Performance of Deposit Money Banks in Nigeria. Arabian Journal of Business and Management Review, 6(4), 1-5.
10. De Haan, J., Poghosyan, T. (2012a). Bank size, market concentration, and bank earnings volatility in the US. *Journal of International Financial Markets, Institutions and Money 22*, 35-24.
11. Diaconu, I. R., & Oanea, D. C. (2015). Determinants of Bank's Stability. Evidence from CreditCoop. *Procedia Economics and Finance*, *32*, 488-495.
12. Ennis, H. M., & Malek, H. S. (2005). Bank risk of failure and the too-big-to-fail policy. *FRB Richmond Economic Quarterly*, *91*(2), 21-44.
13. Fang, J., Lau, C. K. M., Lu, Z., Tian, Y., & Zhang, H. (2019). Bank performance in China: A perspective from bank efficiency, risk-taking, and market competition. *Pacific-Basin Finance Journal*.

14. Gattoufi, S., Al-Muharrami, S., &Shamas, G. (2014). Assessment of mergers and acquisitions in GCC banking. International Journal of Accounting and Finance, 4(4), 358-377.
15. Goyal, K. A., & Joshi, V. (2011). Mergers in Banking Industry of India: Some Emerging Issues. Asian Journal of Business and Management Sciences, 1(2), 157-165.
16. Grave, K., Vardiabasis, D., & Yavas, B. (2012). The global financial crisis and M&A. *International Journal of Business and Management*, *7*(11), 56.
17. Haron, S. (2004). Determinants of Islamic bank profitability. Global Journal of Finance and Economics, 1(1), 11-33.
18. Hitt, M. A., Ireland, R. D., & Harrison, J. S. (2001). Mergers and acquisitions: A value creating or value destroying strategy. *The Blackwell handbook of strategic management*, *384409*
19. Ibrahim, M. H., & Rizvi, S. A. R. (2017). Do we need bigger Islamic banks? An assessment of bank stability. Journal of Multinational Financial Management, 40, 77-91.
20. Ibrahim, M. H., & Rizvi, S. A. R. (2018). Bank lending, deposits and risk-taking in times of crisis: *A panel analysis of Islamic and conventional banks. Emerging Markets Review, 35,* 31-47.
21. Iqbal, Z. (2008). The Impact of Consolidation On Islamic Financial Services Industry. Islamic Economic Studies, 15(2), 80.
22. Jatkar, K. (2012). Need for Mergers and Acquisitions in Banking Industry of India. IBMRD's Journal of Management & Research, 1(1), 64-69.
23. Kandil, T., &Chowdhury, D. (2014). Islamic Banks' Mergers and Acquisitions–Impacts on Performance and Financial Crisis in the United Kingdom. The Developing Role of Islamic Banking and Finance: From Local to Global Perspectives (pp. 119-140). Emerald Group Publishing Limited.
24. Katib, M. N., & Mathews, K. (2000). A non-parametric approach to efficiency measurement in the Malaysian banking sector. The Singapore Economic Review, 44(2), 89-114.
25. Kiel, G. C., & Nicholson, G. J. (2003). Board composition and corporate performance: How the Australian experience informs contrasting theories of corporate governance. *Corporate governance: an international review*, *11*(3), 189-205.
26. Kosmidou, K., Pasiouras, F., Doumpos, M., &Zopounidis, C. (2006). Assessing performance factors in the UK banking sector: a multicriteria methodology. Central European Journal of Operations Research, 14(1), 25-44
27. Kwenda, F., Oyetade, D., & Dobreva, R. (2017). Factors affecting the long-term post-acquisition performance of BRICS firms engaging in cross-border mergers and acquisitions. Acta Universitatis Danubius. Œconomica, 13(2).
28. Micco, A., Panizza, U., & Yanez, M. (2007). Bank ownership and performance. Does politics matter? Journal of Banking & Finance, 31(1), 219-241.
29. Morris, T. (2004), Bank mergers under a changing regulatory environment.In Sociological Forum (Vol. 19, No. 3, pp. 435-463).Kluwer Academic Publishers-Plenum Publishers.
30. Nafti, O., Boumediene, S. L., Khouaja, S., & Ayed, W. B. (2017). The Determinants Of World Islamic Banks Efficiency: Empirical Analysis Using A Non Parametric Approach. *Journal of Applied Business Research*, *33*(2), 363.
31. Nair, A., Trendowski, J., & Judge, W. (2008). [Review of the book The Theory of the Growth of the Firm, by Edith T. Penrose. Oxford: Blackwell].
32. Naseri, M., Bacha, O. I., & Masih, M. (2020). Too small to succeed versus too big to fail: how much does size matter in banking?. *Emerging Markets Finance and Trade*, *56*(1), 164-187.
33. Nguyen, M., Skully, M., & Perera, S. (2012). Market power, revenue diversification and bank stability: Evidence from selected South Asian countries. *Journal of International Financial Markets, Institutions and Money*, *22*(4), 897-912.
34. Nor, F. M., Ullah, N., Seman, J. A., Ramli, N. A. B., & Rasedee, A. F. N. B. (2022). Mergers and acquisitions in Islamic banking sector: an empirical analysis on size effect, market structure, and operational performance. *International Journal of Financial Innovation in Banking*, *3*(2), 153-176.
35. Okpanachi, J. (2011). Comparative analysis of the impact of mergers and acquisitions in the financial efficiency of banks in Nigeria. *Journal of Accounting and Taxation, 3(1), 1*
36. Petmezas, D. (2009). What drives acquisitions? Market valuations and bidder performance. Journal of Multinational Financial Management, 19(1), 54-74.
37. Polemis, M. L., &Paleologos, J. M. (2014). Too big to merge? Evidence from the US banking sector. Applied Economics Letters, 21(11), 782-785.
38. Ruslan, A., Pahlevi, C., Alam, S., & Nohong, M. (2019). THE ROLE OF EFFICIENCY MEDIATION IN THE EFFECT OF BANKS SIZE ON BANK PROFITABILITY IN INDONESIA. Hasanuddin Economics and Business Review, 3(1), 49-58.
39. Shleifer, A. and Vishny, R. (2003) Stock market driven acquisitions, Journal of Financial Economics, 70, 295–489.
40. Smirnova, Y. (2014). Motives for mergers and acquisitions in the banking sector of Kazakhstan. Economics questions, issues and problems, 79-98.
41. Sufian, F., &Habibullah, M. S. (2009). Do mergers and acquisitions lead to higher technical and scale efficiency? Counter evidence from Malaysia. African Journal of Business Management, 3(8), 340.

42. Ullah, N., Nor, F. M., & Seman, J. A. (2021). Impact of Mergers and Acquisitions on Operational Performance of Islamic Banking Sector. *Journal of South Asian Studies*.
43. Ullah, N., Nor, F. M., Abu Seman, J., Ramli, N. A. B., & Rasedee, A. F. N. B. (2023). Acquirer's Operational Performance and Stability of Islamic Banks: Mediation Role of Market Structure. *World Scientific Annual Review of Islamic Finance*, *1*, 127-161.
44. Ullah, N., Nor, F. M., Seman, J. A., Ramli, N. A. B., & Rasedee, A. F. N. B. (2023). The Impact of Bank Size on Pre-and Post-Merger and Acquisition Performance and Stability: New Evidence from GCC and Pakistan. *International Journal of Professional Business Review: Int. J. Prof. Bus. Rev.*, *8*(11), 14
45. Ullah, N., Uddin, M., , M. M., Rashid, Uddin, M. A., Khondker, M. B. U., Uddin, M. G. (2024). Does Acquirer Bank Stable in Post-Merger and Acquisition? - Comparative Analysis of Islamic and Conventional Banks . *European Economic Letters (EEL)*, *14*(2), 82–91. Retrieved from https://eelet.org.uk/index.php/journal/article/view/1274
46. Wahid, M. A., & Dar, H. (2016). Stability of Islamic versus conventional banks: A Malaysian case. *Jurnal Ekonomi Malaysia*, *50*(1), 111-132.
47. Weitzel, U., & McCarthy, K. J. (2011). Theory and evidence on mergers and acquisitions by small and medium enterprises. International Journal of Entrepreneurship and Innovation Management, 14(2-3), 248-275.
48. Yener, A., Ibáñez, D. M. (2004). Mergers and Acquisitions and Bank Performance in Europe the Role of Strategic Similarities. In: European Central Bank Working Paper Series No. 398.

Appendix A

Table A1.1 Descriptive statistics of M&A performance in the banking sector

	Pre & Post M&A				Pre M&A				Post M&A			
Variable	**Mean**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**
Dependent Variables												
ROA	1.557298	2.56455	-6.95	46.68352	1.941467	2.371742	-6.95	12.3714	1.355233	1.063204	-.2835	9.417
ROE	10.23339	7.894439	-17.543	55.87	11.34841	9.64982	-17.543	35.02	10.61	7.252	-.9666	35.920
Bank Sizes												
BSTA	4.066736	.808154	.9141294	6.202057	3.834201	.8852784	1.157295	4.886168	4.165	.6785434	1.574392	5.331
BSTD	3.90245	.8687154	.7534135	6.883992	3.659679	.8624565	1.144273	4.778189	4.03471	.7051801	1.516683	5.121
BSOI	2.328651	.8360608	-1.926892	4.01353	2.228548	.7929657	-1.254892	3.534896	2.391105	.7560788	-.1179569	3.615
Financial Intermediary roles												
Escale	29.88626	33.96656	.1524428	294.574	38.68151	56.18835	.2586113	294.574	30.88844	27.379000	.3739	196.497
Escope	66.49294	91.12687	0	978.4557	63.5235	77.31724	.3435763	819.2475	64.36014	86.57598	.199539	978.455
Non-financial Intermediary roles												
NFIR	1.250036	.5628302	.3958836	9.342298	1.889308	1.619408	.3958836	6.777	1.57603	1.059213	.531266	9.342
Control Variables												
LIDY	10.06683	9.134729	0	57.37	11.17023	10.52067	.126	57.37	10.71211	8.74999	.0675	41.580
CR	2.789806	4.392239	.1352117	48.17	2.63179	5.182744	.1352117	48.17	2.575981	1.88607	.1593	8.990
CAP	10.01983	8.05509	.32856	77.433	12.93379	12.08386	.42476	77.433	10.26168	6.30727	.33966	34.715
Macro-economic Variables												
GDP	4.589304	.4273297	3.734164	5.259261	4.592309	.3988622	3.763496	5.207441	4.649404	.4018549	3.734164	5.235
INF	2.044767	.0911613	1.938483	2.369846	2.013826	.0676713	1.947531	2.27777	2.032571	.0759494	1.938483	2.336
	N= 720				**N=166**				**N= 216**			

NOTES: samples consist of 24 banks from 6 countries, year from Q1 2009 to Q3 2018. Pre & post; all data set, Pre; an average of three years before M&A deal, Post; an average of three years after M&A deals, ROA; return on asset, ROE; return on equity, BSTA; bank size total assets, BSTD; bank size total deposits, BSOI; bank size operating income, Escale; cost to income, Escope; loan to deposit, NFIR; non-interest cost to non-interest income, LIDY; liquidity, CR; loan loss reserve to gross loan, CAP; equity to total assets, GDP; gross domestic product, INF; inflation.

Table A1.2; Correlation matrix of the key variables

	ROA	ROE	BSTA	BSTD	BSOI	Escale	Escope	NFIR	LIDY	CR	CAP	GDP	INF
ROA	1.000												
ROE	0.2966*	1.000											
BSTA	0.0923*	0.4586*	1.000										
BSTD	0.0537	0.4539*	0.9517*	1.000									
BSOI	0.1834*	0.4775*	0.8151*	0.7766*	1.000								
Escale	-0.071	0.0677	-0.094*	-0.0631	-0.162*	1.000							
Escope	-0.0593	0.0264	0.0807*	0.0851*	0.0178	0.5973*	1.000						
NFIR	-0.057	0.0292	-0.214*	-0.206*	-0.175*	0.3543*	0.0744	1.000					
LIDY	0.0338	0.4862*	0.2994*	0.3157*	0.2310*	0.5680*	0.2070*	0.1320*	1.000				
CR	0.0445	0.1736*	-0.0274	-0.0503	-0.0606	0.3385*	0.2105*	0.2215*	0.2831*	1.000			
CAP	0.1287*	0.2809*	0.0852*	0.0983*	0.0898*	0.7189*	0.5640*	0.0695	0.5421*	0.3433*	1.000		
GDP	0.1044*	0.1032*	0.5331*	0.5078*	0.4646*	-0.195*	0.0292	-0.424*	-0.164*	-0.275*	-0.0313	1.000	
INF	-0.084*	-0.0613	-0.543*	-0.519*	-0.397*	0.0491	-0.148*	0.4221*	-0.105*	0.0959*	-0.198*	-0.555*	1.000

NOTES: ROA; return on asset, ROE; return on equity, BSTA; bank size total assets, BSTD; bank size total deposits, BSOI; bank size operating income, Escale; cost to income, Escope; loan to deposit, NFIR; non-interest cost to non-interest income, LIDY; liquidity, CR; loan loss reserve to gross loan, CAP; equity to total assets, GDP; gross domestic product, INF; inflation and * marks represent variables are significant at 5% level.