Abstract - This study investigated the determinants of commercial banks’ profitability by selecting capital adequacy, credit risk, management efficiency and liquidity risk as the main drivers toward profitability of ROA and ROE. The main motive behind this study is to acknowledge the reasons of Malaysian banking in having different rates of profitability despite sharing similar loan growth in the country. A regression analysis was performed using the panel dataset comprising eight commercial banks from 2011 to 2017. To this end, the empirical data were collected from DataStream and Annual Report. Among all the determinant variables, capital adequacy did not show statistically significant impact on profitability. The regression findings revealed that credit risk, management efficiency and liquidity risk were among the most significant determinants that dictated banks’ profitability. The variables exerted stronger influence on the profitability of ROE, when compared on ROA. In view of these findings, some suggestions may be functional for bank regulatory authorities to intensify and to sustain both robustness and stability of the banking sector in the country. This study had bridged an important gap in the existing literature by enhancing understanding of bank profitability in Malaysia.

Keywords: Performance, Determinants, Banks, Profitability, Malaysian banking sector

1. Introduction

Banks play a crucial role towards sustainability in economy progression. Financial institution triggers major acceleration of economic growth that facilitates custodian on deposit money, financing and investment activities. An efficient financial system indicates a progressive of banks in injecting the volume of funds to borrowers, which later will transform the output into bank’s profitability. Profits earned by banks are generated by interest on lending to businesses and individuals. Profit is measured over a long periodic cycle. Banks often perform aggressive operation to enhance its function to serve their customers with good services in every edge of area. It is notable for banks to earn more profit to maintain its position in the industry, especially when there is unlikely event, such as poor economic condition or political changes. The ability of banks in absorbing negative pressure on economic performance reflects its financial stability and soundness to maintain resilience in the financial system. Political changes also affect the banking procedure from the new government in terms of Base Lending Rate, housing loan and interest rate.
In the advent of new technology, banks have embraced the use of big data, artificial intelligence and sophisticated banking systems to overcome the challenges posed by technological inventions towards developing a high standard of financial system and being competitive in the market. High cost is required in upgrading the management and banking system. In fact, online and mobile banking has become one of banking conveniences for everyone from worldwide in managing financial transaction. With internet banking, customers can access their bank account and simply check their current balance, transfer funds and pay bills with a touch of their fingertips. Internet banking can be accessed via smartphone by downloading the application. The application is friendly–user and flexible in making payment without barrier. Sophisticated and development in information technology had incurred huge amount of investment by banks. Yet, the risk is also mammoth and equivalent with high profit earnings.

Banks’ profitability can be measured using loan growth as it serves as a key factor in boosting banks’ revenue. An impressive loan growth indicates high quality of bank in serving borrowers with low fee, and followed by appropriate benchmark of credit standard. It is crucial to note that credit standard helps banks to determine the creditworthy of potential borrower to curb the default of loan payment. Literally, the supreme sources of the banks are contributed from loan and advances, financing, investment, interest and deposits. Profit earned by banks is rolled for financing the surplus unit to deficit unit and most of it involves foreign investment. Banks also strive hard to promote its’ banking business to maximize shareholder’s return with good dividend yield, instead of focusing on maximizing their wealth.

Commercial banks in Malaysia have approximately recorded a moderate loan growth (BNM Monthly Highlights 2018). The revenue gained by each bank differs due to varying bank sizes and asset allocations. The varieties of loans offered by commercial banks are corporate loan, staff loan (housing loan, hire purchase loan and sundry loan), share margin, syndicated loan, bridging loan and term loan, whereby the highest income comes from corporate loans due to higher margin. As banks must make provision for allowance on impairment loan, the level of credit risk serves as an indicator to measure loan growth. Low credit risk of bank depicts a stable of loan growth, in which the latter key aspects are crucial in measuring the profit of banks.

Most researchers analyzed sources of banks’ profitability and its relationship between internal forces and revenue. Due to varied internal pressure from financial statement, this research assessed the determinants that influenced the profit earned by domestic commercial banks in the country, in line with the moderate trend of loan growth for over seven years. As mentioned before, banks generate most of their profits from loan on interest charging. Hence, this analysis focused on conventional banks (CBs) only. Emphatically, loan is the most natural part of banking business that portrays the backbone of bank income.

According to Tan (2018), the Malaysian banking system has witnessed robustness in macroeconomic conditions with rapid loan growth predicted at 6% to 7% for the next 12 and 18 months, respectively. The strong macroeconomic conditions can help domestic commercial banks to improve their asset quality and to escalate their profitability. Although banks share similar loan growth, their profitability varies among each other. Hence, it is crucial to investigate the key factors that contribute toward Malaysian banks’ profitability by excluding bank size and asset, as they do not necessarily determine the condition of supreme banks. For instance, the bigger the size of the bank, the stronger and the stable the bank is in...
the industry. Although the theoretical statement is genuine and seems logical, small-sized banks can also perform well and sustain in the industry if they are cost-effective and well-capitalized.

This study bridges the gap on the varied profit growth recorded by commercial banks in the country by investigating capital adequacy, credit risk, management efficiency and liquidity risk in the financial statements from Affin Bank Berhad, Alliance Bank Malaysia Berhad, AmBank (M) Berhad, CIMB Bank Berhad, Hong Leong Bank Berhad, Maybank Berhad, Public Bank Berhad and RHB Bank Berhad between 2011 and 2017.

2. Literature Review

2.1. Profitability (ROA, ROE)
Profitability represents banks’ ability in generating revenue either through sales, fees, or investment activities. It reflects the financial health of a bank and its capability in maximizing shareholders’ values by expanding their businesses by inventing new products and by competing in the lowest service fees among the peers. Based on the investigation on bank profitability in Latvia and Lithuania from 2008 to 2014, a positive relationship was established between bank size and profitability expressed in volume of deposits and ROE, respectively (Titko, Skvarciany, & Jurevičienė, 2015). Yet, the study found that operational efficiency did not display positive effects on bank profitability.

Ramlan and Adnan (2016) discovered that Islamic Banks (IBs) were more profitable, when compared to CBs in Malaysia, due to the concept of risk-sharing (murabahah) that exerted a positive impact on the level of ROA for IBs. The study mentioned that both ROA and ROE were significant components in determining banks profitability for both IBs and CBs. Yanikkaya, Gümüş, and Pabuçcu (2018) claimed that the application of murabahah has encouraged the performance of IBs after calculating banks profitability using net profit margin and ROA. Increment of interest margin revenue can enhance bank profitability and stability (Mirzaei, Moore, & Liu, 2013). However, rigid market concentration tends to reduce bank profitability and vice versa (Kanas, Vasiliou, & Eriotis, 2012). The study also highlighted that business cycle, short-term interest rates, inflation expectations, credit risk, and loan portfolio structure to influence U.S. banks’ profitability in a non-parametric manner.

A study investigated the effects of bank-specific characteristics, macroeconomic variables and industry-specific factors on profitability of commercial banks ranging from low, middle and high income countries. The results showed that the level of income exerted a significant impact on the determinants of bank profitability, whereby undeveloped countries had the least competitiveness that contributed to high profitability and vice versa (Dietrich & Wanzenried, 2014).

2.2. Overview of Independent variables
2.2.1. Capital Adequacy
Initially, capital adequacy was measured under Basel I and II frameworks, as introduced by Basel Committee on Banking Supervision of the Bank for International Settlements (BIS) under Basel Accord. The introduction of Basel III Accord was effective from 2013 to 2019 after the financial crisis hit in 2008 in light of risk exposure from market, operation and
credit, which enhanced quality and increases size of bank equity base. Thus, national regulator in every nation has imposed their own measurement on capital adequacy requirement, as determined by the central bank (Bitar, Pukthuanthong, & Walker, 2018).

In Malaysia, the capital adequacy requirement is calculated as the value of capital of a bank to its risk-weighted assets in the computational of percentage. Capital adequacy ratio (CAR) is comprised of Common Equity Tier 1 (CET1) and Common Equity Tier 2 (CET2), whereby both serve as a cushion to absorb financial losses. In fact, banks have to maintain the minimum total CAR with 8% by adhering to the capital buffer requirements. In 2018, the BNM had set up an increment of capital buffer by \( 1.875\% \) \( (8\% + 1.875\% = 9.875\%) \) of the total CAR. It is essential for banks to adhere to the guideline of CAR framework because the capital buffer would continue to increase with varied values at annual basis, which aims to further grant depositors and creditors protection in meeting claims on liquidation (Bank Negara Malaysia, 2018).

The relationship between capital adequacy and profitability displayed a positive impact on performance of banks in Nigeria (Udom, 2018). The studied indicated that an adequate proportion of capital can stimulate banks performance, which later allows the banks to operate their business well. Noting that retained earnings (RE) is part of capital adequacy, banks ought to ensure both CAR and RE can grow simultaneously to stimulate impressive profitability. Without serving high value of RE, banks may fail to enlarge their capital, thus resulting in poor and inefficient profit making. Banks also need to maintain their assets quality, apart from securing their income from loan to serve as the main earnings of the banks. Another study discovered that the most profitable banks tend to secure higher CAR, without considering liquidity as a direct substitute for capital (Mili, Sahut, Trimeche, & Teulon, 2017). Banks may incur major loss if they have the least proportion of CAR. Holding CAR above the minimum threshold is one way to prevent the banks from financing failure (Kabir Hassan, Unsal, & Emre Tamer, 2016). An adequate proportion of CAR ascertains banks to have foreseeable sufficient capital, which later serves as a backup plan when they have the least amount of cash in financing their business to customer.

2.2.2. Credit Risk
Credit risk can be defined as a failure of borrower to honor debt obligation to bank in light of maturity, terms and conditions agreement. It is inevitable that loan is the biggest contribution to default payment and it is the bank’s number one source for credit risk. According to BNM Credit Risk Framework, the vast evolving Malaysia financial landscape has affected the scale and nature of credit risk. A study recommended that credit risk management should possess sound practices pertaining to asset quality, provision adequacy, as well as reserves and disclosure of credit risk (Ayog, Apanga, Appiah, & Arthur, 2016). It is important for banks to measure the credit risk in ascertaining the reliability of bank in responding to market changes. According to Lassoued (2018), CBs are keen to be more vulnerable on credit risk, when compared to IBs, whereby the concept of Profit Sharing Ratio (PSR) is used to operate their banking business. It is undeniable that PSR gives advantage to IBs to cover their financial losses due to profit-sharing basis pre-agreed ratio made by both parties i.e. the capital provider and the entrepreneur in distributing risk (Mukhopadhyay, 1986). Simply put, both parties tend to protect themselves in the default of credit, such as inability for banks to offer positive return on investment and obliged the default on account receivable. While CBs envisaged with high possibility in credit risk and impaired loan due to one-side obligation from the bank only.
It is crucial to determine borrowers’ creditworthiness for the bank to impose precautionous strategies so as to avoid from becoming an impairment loan. For instance, banks in China implement credit scoring to determine risky borrower in automobile and cards loan (Gan, Li, Wang, & Kao, 2012). Some banks still use 5Cs of credit (character, capacity, collateral, capital and conditions) to grant loan to borrower. Hence, it is crucial to identify the credit risk in the early stage and post borrowing to avoid instable financial institutions (Khemakhem & Boujelbene, 2018).

Credit risk represents financial health of a bank as it has interrelation with profitability. Literally, poor credit risk stimulates low profit earnings, but an investigation on LLP indicated negative effect on defaulted loans in financial reporting. The LLP did not reflect financial health resulting from changes on conditions, but affected borrowers (Yaziz Mohd Isa, Voon Choong, Yong Gun Fie, & Zabid Hj Abdul Rashid, 2018). Practically, despite LLP being able to cover impairment loans, default payments, etc., the level of credit risk cannot be easily abolished in financial position as banks still have to tackle the issue to ensure viable solutions in handling credit risk.

Kithinji (2010) stated that there is inversely related non-performing loan (NPL) to total loan of financial institution, which led to the study on the relationship between ROA and ROE with credit risk. The study revealed that earnings from commercial banks did not depend on credit amount and NPL due to its negative impact on profitability. Regulation seemed crucial for the banking system to capture the factors of credit risk beyond supervision of finance (Ahmad & Ariff, 2007).

2.2.3. Management Efficiency
A bank becomes efficient when they fully optimize their resources to stimulate an impressive profit earnings (Aguenaou, 2017). The study used CAMEL framework, where the abbreviation is known as Capital Adequacy, Asset Quality, Management Efficiency, Earning Performance and Liquidity, in determining the significant correlation with banks performance in Morocco. Management efficiency displayed a negative correlation with profitability, while the other components showed opposite effects. Surprisingly, capital adequacy indicated the most significant effect on bank’s efficiency.

Afsharian, Kryvko and Reichling (2011) suggested data envelopment analysis (DEA) in evaluating productive efficiency by reviewing cost, revenue and profit. The study discovered cost and revenue efficiency to possess the ability to stimulate positive performance on bank earnings. Capital market players depict banks output as banks deposit in operating activities. This statement is related to the components of cost, revenue and profit by displaying efficiency cost as the most significant effects, whereas profit efficiency failed to show positive impact on performance of banks. Subsequently, a positive effect has noted between profit and cost efficiency in Chinese banks ranging from year 2003 to 2011. Dong, Girardone and Kuo (2017) recommended high bank’s profit and cost efficiency influenced by board characteristics where women directors had lower traditional banking risk. The study also agreed that gender diversity on boards exerted a positive impact on bank performance, but not foreign directors, due to unfamiliarity with the local system. Unfortunately, the perspective on characteristics of board directors appeared to be mixed up when a study reported the positive effect on foreign directors toward bank efficiency and asset quality as they are exposed well in international trade and high networking. The study on the relationship between efficiency and shareholder value remains relevant for commercial banks (Kasman & Kasman, 2011).
Spectacular globalization economy also can affect banking operation that contributes to economy progression (Odunga, 2016). In this study, interbank ratio, LLP, equity capital to total asset ratio, profitability, and bank size contribute toward achieving efficiency in banking operation. Nevertheless, from these entire components, market share matters the most in bank’s operational efficiency as well as in remaining competitive in the market industry. Odunga (2016) emphasized on the importance of bank size in determining the operational efficiency by capturing and embracing market share, such as opening more branches and increasing the number of deposits.

2.2.4. Liquidity Risk
According to the Liquidity Coverage Ratio (LCR) reported by BNM, banks have to maintain a minimum 90% of LCR, which has been effective since January 1 2018. The requirement of LCR to increase gradually by 10% annually is to promote High Quality Liquid Asset (HQLA) in the event of liquidity stress for over 30 days. The difficulty faced by banks to convert financial assets into cash without incurring loss is called liquidity risk. Therefore, banks ought to maintain HQLA to meet liquidity demand. It is said to be vulnerable when there is an increase in deposit inflow and cash outflow in meeting credit demand during intense market (Pagratis, Topaloglou, & Tzionsas, 2017).

A study on Malaysian commercial banks indicated short term liquidity risk, which tends to be susceptible in IBs, especially in the involvement of real estate financing, yet neither for CBs (Abdul-Rahman, Sulaiman, & Mohd Said, 2016). This study weighed in commercial banks in Malaysia for over 20 years from 1994 to 2014, and found that the real estate sector is more consolidated against liquidity risk due to bank’s negligence in determining default borrower. Nonetheless, CBs did not display positive influence within short term on liquidity risk as increased funding may lower bank liquidity risk. The study added that IBs have slashed the amount of financing to hinder liquidity risk. Otherwise, banks with high amount of financing tend to maintain more capital, thus resulting in high liquidation.

Singh and Sharma (2016) determined Indian banks’ liquidity with banks specific and macroeconomic factors by using OLS, fixed effect and random effect from 2000 to 2013. The outcomes showed that foreign and private banks had a huge impact on liquidity toward bank ownership, when compared to public banks during global financial crisis. The Indian public banks had backing system from the government in serving high liquidity level, which did not respond directly toward the crisis. The impact between margin requirement and liquidity risk is a major concern among banks and policymakers. Bakoush, Gerding and Wolfe (2018) discovered a systemic liquidity crisis that occurred due to strong effects from procyclicality and propensity. This study found HQLA was able to improve if there was heavy daily derivatives mark-to-market and margin calls resulting from high volatility in interest rate within the interbank market.

Moving forward, the supply of risk-free assets is correlated with liquidity and capital requirement since financial crisis has hit the global market (Adrian & Boyarchenko, 2018). The study revealed high liquidity cost was affected by low level of risk-free asset, otherwise it would affect liquidity requirement. Tran, Lin and Nguyen (2016) assessed liquidity creation, regulatory capital, and bank profitability of U.S. banks. The study found that both regulatory capital and liquidity creation had positive effects in handling bank profitability with small banks stated the most contribution. Nonetheless, more liquidity and illiquidity risk can lower banks’ profitability. To this extend, Elfandi, Anghel and Sales, (2015) discovered
the relationship between funding liquidity and bank risk taking in the U.S. banks from 1986 to 2014 by providing evidence on reduction of liquidity risk that injected risk-weighted asset and stimulated liquidity creation.

3. Research Methodology

This study employed annual data of eight local commercial banks (i.e., Affin Bank Berhad, Alliance Bank Malaysia Berhad, AmBank (M) Berhad, CIMB Bank Berhad, Hong Leong Bank Berhad, Maybank Berhad, Public Bank Berhad and RHB Bank Berhad) from 2011 to 2017. A panel dataset was obtained from Thomson Reuters DataStream and Annual Report.

3.1. Variables

3.1.1. Measurement of Dependent Variable

ROA and ROE are common measurements used in calculating the level of profitability. ROA enables banks to identify profit earned through the usage of total assets. Measuring ROE encourages banks and investors to compare, as well as evaluate bank’s performance with its peers. ROE is determined by dividing the net income with shareholders’ equity, which becomes a detrimental in determining bank’s dividend growth rate in the long-run period, together with its rate of retain retention.

\[
\text{ROA} = \frac{\text{Net Income}}{\text{Average TA}} \quad \text{ROE} = \frac{\text{Net Income}}{\text{Average TE}}
\]

3.1.2. Measurement of Independent Variables

Table 1 summarizes the list of independent variables used in this study, including the expected sign and supporting literatures on the selection and prediction of signs of each variable.

<table>
<thead>
<tr>
<th>No.</th>
<th>Variables</th>
<th>Measurement</th>
<th>Exp. Sign</th>
<th>Past Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Credit risk</td>
<td>Non-Performing Loan against total loan</td>
<td>-ve</td>
<td>Konovalova, Kristovska and Kudinska (2016)</td>
</tr>
<tr>
<td>3.</td>
<td>efficiency</td>
<td>Operating expenses over operating income</td>
<td>-ve</td>
<td>Titko, Skvarciany, and Jurevičienė (2015)</td>
</tr>
<tr>
<td>4.</td>
<td>Liquidity risk</td>
<td>Loan to deposit ratio: loans against deposits</td>
<td>+ve</td>
<td>Titko, Skvarciany, and Jurevičienė (2015)</td>
</tr>
</tbody>
</table>

In essence, the specific determinants of commercial banks’ profitability in Malaysia are estimated in the following equations:

\[
\text{ROA} = \beta_0 + \beta_1 \text{capital adequacy} + \beta_2 \text{credit risk} + \beta_3 \text{management efficiency} + \beta_4 \text{liquidity risk} + \epsilon
\]

\[
\text{ROE} = \beta_0 + \beta_1 \text{capital adequacy} + \beta_2 \text{credit risk} + \beta_3 \text{management efficiency} + \beta_4 \text{liquidity risk} + \epsilon
\]

Where:

\[
\beta_0 = \text{Constant parameter}
\]

\[
\beta_1-\beta_4 = \text{Coefficients of independent variables}
\]

\[
\epsilon = \text{Error term}
\]

1 The ratio has been proposed by Dietrich and Wanzenried (2014) to measure banks’ profitability.

2 Ibid.
4. Empirical Results

4.1. Preliminary Results

Table 2 presents a summary of statistics for profitability of commercial banks in Malaysia and its determinants variables. The highest mean was recorded at 47.75 percent, which belongs to management efficiency. As the mean is below 50 percent, the average of Malaysian banking in handling their cost to income seems to be fairly good. The standard deviation is 8.14 percent, which is quite high among the other independent variables. This depicts that the spread between maximum and minimum values is fairly moderate and displayed inconsistency in managing cost efficiency as the values were varied from the highest to the lowest amount. Although the banks did not show a wide gap, it can be interpreted that the banks in the country is attempting to improve the cost to income ratio within the year as the figure is still relevant for this case. Bitar, Pukthuanthong and Walker (2018) opined that higher cost to income ratio, such as managerial inadequacy, signified lower management efficiency.

Table 2. Descriptive Statistics on variables from 2011 to 2017

<table>
<thead>
<tr>
<th>Variables (%)</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Risk</td>
<td>0.02</td>
<td>0.00</td>
<td>0.05</td>
<td>0.01</td>
</tr>
<tr>
<td>Liquidity Risk</td>
<td>0.93</td>
<td>0.51</td>
<td>1.19</td>
<td>0.10</td>
</tr>
<tr>
<td>Return on Asset</td>
<td>1.27</td>
<td>0.55</td>
<td>1.73</td>
<td>0.28</td>
</tr>
<tr>
<td>Capital Adequacy</td>
<td>15.68</td>
<td>12.87</td>
<td>19.38</td>
<td>1.42</td>
</tr>
<tr>
<td>Return on Equity</td>
<td>12.75</td>
<td>4.55</td>
<td>24.98</td>
<td>4.14</td>
</tr>
<tr>
<td>Management Efficiency</td>
<td>47.75</td>
<td>29.81</td>
<td>61.27</td>
<td>8.14</td>
</tr>
</tbody>
</table>

The lowest mean belongs to the credit risk with 0.02 percent and the standard deviation is 0.01 percent. The findings displayed that the average of credit risk was close to both minimum and maximum amounts, which depicted credit risk as having the least volatile. Since the outcome of the standard deviation was very little, it indicated that credit risk was less affected and under control. This showed that commercial banks in the country are concerned about credit risk exposure because it has become a significant risk faced by the banking industry, which constitutes along with market and operational risks. Bitar et al. (2018) stated that bank can enhance their efficiency and profitability if credit risk management and bank risk are under control.

Based on the correlation matrix presented in Table 3, no multicollinearity problem was noted for all variables below the 0.90 cut-off point (Asteriou & Hall, 2015).

Table 3. Correlation Matrix among Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Asset</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return on Equity</td>
<td>0.78</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital Adequacy</td>
<td>-0.08</td>
<td>-0.17</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit Risk</td>
<td>-0.02</td>
<td>-0.30</td>
<td>0.04</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management Efficiency</td>
<td>-0.56</td>
<td>-0.71</td>
<td>0.01</td>
<td>0.59</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Liquidity Risk</td>
<td>0.22</td>
<td>0.11</td>
<td>-0.11</td>
<td>0.11</td>
<td>-0.08</td>
<td>1</td>
</tr>
</tbody>
</table>

4.2. Main Empirical Results

The output of the regression tabulated in Table 4 for this study best fit the FE model for both measurements in dependent variable; ROA and ROE.
Table 4. Regression results (2011-2017)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Return on Asset</th>
<th>Return on Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Prob.</td>
</tr>
<tr>
<td>Capital Adequacy</td>
<td>0.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Credit Risk</td>
<td>3.55</td>
<td>0.62</td>
</tr>
<tr>
<td>Management Efficiency</td>
<td>-0.02</td>
<td>0.00***</td>
</tr>
<tr>
<td>Liquidity Risk</td>
<td>-0.65</td>
<td>0.03**</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>F-statistics</td>
<td>12.12</td>
<td></td>
</tr>
<tr>
<td>Prob. (F-statistic)</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td>1.12</td>
<td></td>
</tr>
<tr>
<td>Cross-section F</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Cross-section Chi-square</td>
<td>0.00</td>
<td></td>
</tr>
</tbody>
</table>

Note: *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

The equation on profitability of ROA explains that capital adequacy and credit risk have positive relationship, while management efficiency and liquidity risk has a negative correlation. The coefficient of independent variables with profitability of ROE displayed opposite results in this study. For instance, only capital adequacy exerted a positive correlation, when compared to other independent variables. Credit risk, management efficiency and liquidity risk had negative relationships with ROE. Albeit the coefficient showing varied signs of relationship, some variables recorded significance value with 1 percent, 5 percent and 10 percent significance levels. These levels imply the level of confidence that represent the percentage of error incurred in the variables. The adjusted $r^2$ with 0.77 implies that about 77 percent of the variation in ROA was explained by the independent variables. Another 23 percent was explained by other factors excluded from the model. The adjusted $R^2$ with 0.90 implies that 90 percent of the variation in ROE was explained by the independent variables, while another 10 percent explained by other factors. Both probability of F-statistics for ROA and ROE had an approximately significance value at 0.00, which explains the fitness of the models. Since Durbin-Watson are 1.12 (ROA) and 1.32 (ROE), the models display positive serial correlation. However, both p-value for Cross-section F and Cross-section Chi-square were statistically significant at 0.00 after the likelihood ratio test was performed. This had led the study to continue with FE model for both ROA and ROE.

Literally, a positive effect was noted between capital adequacy and profitability, yet statistically not significant. Both ROA and ROE recorded higher p-value of 1.00 and 0.13 respectively, which exceed the 10 percent significance level. Hence, this study failed to accept the null hypothesis as the estimation had more errors. Interestingly, the outcomes obtained was completely opposite than the expectation because most prior studies revealed significant correlation between capital adequacy and profitability. Mili et al. (2017) mentioned that capital adequacy served as an indicator toward bank’s profitability for foreign banks in developed and developing nations. To this point, although the statement does not intertwine with the result, it can be interpreted that capital adequacy in this study did not exert adversity in assessing the determinants of commercial banks’ profitability in the country.
Among the four independent variables, credit risk has a positive relationship with ROA, but statistically not significant. Kithinji (2010) suggested that bank’s profitability did not depend on credit as the study also found similar results in the coefficient. The alternative hypothesis is accepted since there is a negative effect with ROE. This reflects that increment of credit risk by one percent will decrease bank’s profitability by 224.64 percent in terms of ROE measurement. The p-value is 0.00 and statistically significant at significance level 1%. In this case, credit risk was measured by dividing NPL with the total loan. Credit risk is reduced by allowance for NPL on loans, advances, financing and other debts, which are reckoned under income statement. A bank with low credit risk depicts its ability to mitigate the, apart from conducting appropriate internal rating models.

Management efficiency contributes to bank’s profitability. In this study, both profitability of ROA and ROE displayed negative coefficient, which indicated the acceptance of the alternative hypothesis. This shows that reduction of one percent in management efficiency increases the profitability by 0.02 percent and 0.10 percent for ROA and ROE, respectively. The p-value for ROA is 0.00, while ROE is 0.04; signifying 1 percent and 5 percent of significance levels, respectively. Authentically, the Malaysian banking has a negative relationship between management efficiency and profitability, yet a statement from the CIMB Annual Report 2017 mentioned that loan growth was largely supported by the country at 6.5 percent on annual basis. A low cost to income ratio depicts that banks are good in cost-operating management too because the growth of loans was predominantly driven by commercial loan, which later can boost the net interest income. Hence, controlled operating expenses at optimum level enables the injection of impressive income to maximize the shareholders’ value with attractive earnings per share (EPS) (Aguenaou, 2017).

Liquidity risk has a negative relationship with ROA and ROE with p-value recorded at significance level of 0.03 each. Since the significance level is below 5 percent, this indicates acceptance of alternative hypothesis. Increment of every one percent of liquidity risk will drop the profitability by 0.65 percent and 6.46 percent for ROA and ROE, respectively. Under this study, LDR was employed as a measurement to evaluate liquidity risk, in which both loans and deposits are categorized under asset in financial position. It is crucial for banks to reduce loan, and advance financing by encouraging an injection of total deposits to improve its total assets. Minimum liquidity risk can assist banks in managing their short term cash obligations in a timely and cost-effective manner, instead of maintaining HQLA through diversified portfolios of liquid asset and sources of fund (Bakoush et al., 2018). Therefore, banks can maintain and sustain a diversified of core deposits that contain savings, demands and fixed deposits.

5. Conclusion and Recommendations

This study analyzed the determinants of commercial banks’ profitability in Malaysia from 2011 to 2017. This study employed capital adequacy, credit risk, management efficiency and liquidity risk as indicators in driving the banks’ profitability in the nation. The findings comprised of three analyses, namely descriptive statistics analysis, correlation matrix analysis and multiple regression analysis. The final outcomes were assessed via regression analysis after the FE model was built for both independent variables with profitability of ROA and ROE.
Based on the descriptive statistics analysis results, two findings are summarized. First, the study found that management efficiency had the highest standard deviation among the independent variables. The results showed that the Malaysian banking is fairly good in management efficiency. Second, the standard deviation of credit risk had the lowest score among the four independent variables. This indicates that the banks had good control of credit risk in generating profit. Through the studies, the correlation matrix analysis indicated three findings. First, credit risk stated a significant effect on ROE since the significance level is below 5 percent. Second, management efficiency recorded the most significant impact on ROA and ROE with 1 percent of significance level each. Third, liquidity risk appeared to have a significant effect on ROA at 10 percent significance level.

Through multiple regression analysis, three significant outcomes were concluded. First, credit risk was significant toward profitability of ROE with 1 percent significant level. Second, management efficiency had statistically significant level at 1 and 5 percent for both ROA and ROE, respectively. Third, liquidity risk had a significant level at below 5 percent each for both ROA and ROE. The results showed that alternative hypotheses are accepted for credit risk, management efficiency and liquidity risk since they displayed negative coefficient with profitability. These determinants showed significant indicators that influenced the injection of profitability in bank. Nonetheless, capital adequacy did not have significant relationship with profitability; for neither ROA nor ROE, as the p-value exceeded the 10 percent significant level. The null hypotheses are accepted for normality test as both histograms between independent variables and profitability scored more than 5 percent of significant level. The regression results also showed that the independent variables are more likely to influence the profitability of ROE, when compared to ROA.

In essence, this study exhibited doubtful findings regarding capital adequacy because it did not exhibit significant effects in determining the determinants of commercial banks’ profitability in the nation. Subsequently, BNM has imposed Capital Adequacy Requirement framework by increasing the capital buffer annually to enhance the size of bank equity. Thus, it is hoped that studies pertaining to capital adequacy and capital management can be extended by future researcher in assessing the correlations between risk appetite, bank growth and profitability of bank. The problem also arises when most of the variables display their effect on profitability in terms of ROE, instead of ROA. This aspect should be investigated to identify the effectiveness of ROA in computing profitability of banks.

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