The Performance of Commercial Banking Industry:
How it is Determined?
An Evidence of the Listed Commercial Banks at ADX

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Abstract: - The study objects for determining whether some selected accounting and marketing-based factors affecting the performance of listed commercial banks at Abu Dhabi Securities Exchange. The performance of commercial banks is measured through Return on Equity (ROE), while five independent variables were examined to determine whether each of them has a significant effect on the performance of commercial banks, including, capital adequacy, bank size, loan ratio, liquidity ratio, and Tobin's Q. To achieve the objectives of the study, the required data, covering the period 2008-2016, was collected from eight out of 12 listed commercial banks at ADX. Four banks were excluded because no complete information along the period of the study regarding these banks four banks is available. Descriptive statistics are used in data analysis, whereas, simple and multiple linear regression were used in hypotheses testing underline 0.05 predetermined coefficient of significance. The study demonstrates that capital adequacy, bank size, and bank liquidity, each of which, has a significant effect on the performance of commercial banks, whereas, no significant effect had been found for loan ratio and Tobin's Q.

Key Words: Financial Performance, Bank Size, Capital Adequacy, Liquidity, Loan Ratio, Tobin's Q.

1 Introduction

The efficiency of commercial banking industry is of high importance for economic growth of different countries [Rashid, 2010]. Commercial banks are considered as the most important component of the financial system of any country and different societies. Five components are normally existing and constructing the countries' financial system. These components are financial markets, financial institutions, financial instruments, financial services, and money. Actually, the consideration of these five components reveals that commercial banks play the most important role among the five components of the financial system. Commercial banking industry also plays an important role in money supply, and therefore its existence is important for business organizations and producing units. Let us imagine a society without commercial banks to perceive how much the existence of commercial banks is necessary for purchasing, trading, purchasing, importing, selling, and exporting, especially when raw materials are imported from outside the boarders and goods are produced to be sold outside the country, and when the seller and buyer are in the same country, but they are far from each other [Brigham and Houston, 2011]. In addition, nobody can deny the role of commercial banking industry in the monetary policy of countries. Furthermore, commercial banks play a vital role in the allocation process of economic resources of most countries, and can activate investments and simplifies and attract more foreign investments [Ongore and Kusa, 2013].

Accepting deposits from those who have excess amounts of cash than their needs, and lending these deposits to those who have less cash than their needed amounts, is the main activity the commercial banks exercise, but many other activities are performed by these banks. Business organizations borrow a large amounts of cash from commercial banks to pay for purchasing assets and other expenses when their net cash flows are less than the required payments. These borrowings may be short-term or long term borrowings, depending on cash

flows and the time period of needs. As a result, we find that producing units use these borrowed amounts from commercial banks in producing goods and activities, so these deposits increase the investment and therefore, commercial banks contribute in economic growth.

During the last few years ago, several banks merged together, where merging occurs among business organizations, when the profitability of some of them, is low, so these business go for merging with other similar organizations to protect itself from bankruptcy as a result of continuous weak performance. The study investigates the financial performance of the listed commercial banks at ADX, and attempts to determine the most important internal factors affecting its performance. Therefore, the problem of the study can be better presented through the following question: what are the most important factors affecting the performance of listed commercial banks at ADX? And, how each of these proposed determinants affect the performance of banks?

The study stems its importance from the importance of commercial banking industry of several countries. We find that governments try to support commercial banks when these banks face a shortage in liquidity or financial difficulties, because of the importance of this industry to the economic situation and prices stability. Commercial banking industry of Abu Dhabi is stable and faces no or less problems when compared with the same industry of other countries. Therefore, the importance of the study seems clear because is attempts to examine the performance of commercial banks of Abu Dhabi, and tries to determine the most important factors affecting the financial performance of these banks. When these factors are clearly identified, correcting actions can be taken to protect this industry from failure, and therefore can rescue the overall economic units from bankruptcy, and therefore, can reduce the period of depression and extend the period of prosperity. In brief, the findings of the study enable managements of commercial banks and all interested people in these banks, to understand the commercial banking industry, and can provide banks managements with possible procedures and policies for performance improvement.

The main objective of the study is to evaluate the financial performance of listed commercial banks at ADX, and determine the associated weaknesses and strengths with the industry. It also aims to determine the most important factors affecting the performance of commercial banks. In addition, the study adds more literature to the performance of commercial banks, where this leads to deep understanding of commercial banks performance.

The remaining of the study is structured to be as follows. Section 2 presents the related literature, and summarizes the related prior researches. The hypotheses that had been developed based on literature review and prior researches, are shown in section 3, while the methodology followed by the authors, is shown in section 4. Section 5 presents the data analysis and shows the results, whereas, section 6 highlights the findings and conclusions of the study.

2 Literature Review and Prior Researches

Measuring the financial performance of business organizations is necessary to be done, at least one time a year, where this process of evaluation is better to be done by the end of each quarter. When the financial performance is measured at a regular form, correction actions and decisions, may be taken to overcome the problems that may hinder the firm towards achieving its objectives. Performance measurement is the process of measuring the action's efficiency and effectiveness [Neely, Gregory, and Platts, 2005]. Performance measures is also defined as "a process wherein the organization manages its performance to match its corporate and functional strategies and objectives [Bititci and McDevitt, 1997].

Good performance of commercial banks means high profitability, where a bank that achieved high profits, its performance is considered good, despite that there are some differences between performance and profitability. Despite of the slight differences between financial performance and profitability of business entities, it is found that high profitability is associated with good performance, or good performance leads to high profitability, and weak performance will not lead to profits, but mostly leads to losses. Profitability can be measured based on income, assets or equity [Boolaky and Auhammud, 2015]. Return on Assets (ROA) is the most common measure of firms' profitability or performance, where some studies referred that ROE and income can't be considered good measures of banks performance, because it is unreasonable to make comparisons between banks with different proportion of equity in its capital structure. In addition, ROE disregards most of the associated risks with high and financial leverage.

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Financial performance is normally measured based on different accounting measures, but the most common measures used for this purpose are ROA and ROE, whereas, it can explained through some accounting, market, or economic-based measures, despite that a mix of these measures is followed, and can be acceptable, when it includes some accounting- based measures.

The determinants of the performance of commercial banks can be classified into internal and external macroeconomic determinants. To a large degree, managements of commercial banks can affect and control the internal determinants, whereas, these managements have no control over the external economic and market-based determinants. The current study focuses on some internal determinants of financial performance of the listed commercial banks at Abu Dhabi Securities Exchange. It takes in to consideration 4 internal accounting determinants, in addition to one market-based measure. The 4 accounting determinants include capital adequacy, bank size, bank loan, and bank liquidity, while the market-based measure, and is Tobin's Q.

Three theories regarding the performance of commercial banks had been appeared, where each of which is needed to be illustrated in this location. The efficient structure theory states that the most efficient banks achieve the highest profits, which means that the bank should be efficient to achieve profits, and inefficient bank can't achieve enough profits. Two approaches are available underline the efficient structure theory. The first is called x-efficiency approach, which states that more efficient banks achieve higher profits because efficient banks incur lower costs. The second is called the scale approach, where this approach states that focuses on economies of scale, where larger banks achieves less cost per one unit.

The portfolio balanced model of assets diversification is related to banks performance. Based on this model, the optimum holding of each asset in a portfolio is a function of the size of that portfolio, the vectors of return on all assets held at the portfolio, and the vectors of risks associated of ownership of all assets held at that portfolio. The portfolio balance model implies that the portfolio diversification and the composition of a commercial bank portfolio is the result of bank management [Nzongang and Atemnkeng, 2006].

The market power theory states that the performance of a bank is affected by the structure of banking industry as a whole. Two approaches are classified underline this theory. The first is called the structure-conduct performance, which states that the level of focus in the banking market gives rise to potential market power by banks, and this gives rise to banks profitability. The second approach is called the relative market power, and states that the profitability of a commercial bank is influenced by its market share, where large banks that provide more differentiated service can increase the profits and affect the prices.

The importance of commercial banking industries stimulated academics and authors for evaluating the performance of this industry in different countries and societies. Some prior studies focused on some internal determinants of the performance of commercial industry, and some investigated the external determinants, but few studies took into consideration both of the internal and externals factors that may have an effect on the performance of commercial banking industry. Nevertheless, the current study made a survey to the most important related researches to the assessment of banks performance and the determinants of that performance.

Ales and Njaba, [2018], investigated the effect of bank size on bank financial performance. Bank size is measured in the study through number of branches, deposits, capital base, and loan book. Data from the 42 banks of Kenia, that covering the period 2012-2016, is collected and used in the analysis and hypotheses testing. Using the multiple linear regression method, the study finds that bank size has a clear significant effect on bank performance.

Charmler et al, [2018], examined the level, trend, and effect of bank liquidity on the financial performance of commercial banks of Ghana. The main purpose of the study is to examine the effect of liquid assets on bank profitability based on 21 banks over the period 2007-2017. Descriptive statistics, correlation, and regression were used in data analysis and hypotheses testing. The study showed that on average the ratio of liquid to total assets is 20 percent, and there is a significant effect of liquidity of assets on the financial performance of commercial banks of Ghana. The study also found an existence of a positive relationship between net interest margin, bank size, capital adequacy, foreign ownership, and bank profitability.

Banna, Ahmad, and Koh [2017], investigated the efficiency of commercial banks of Bangladesh based on banking data covering the period 2000-2013. The study focused on the effect of the global financial crisis and other factors on the efficiency of commercial Banking industry of Bangladesh. Using the Data Envelopment Analysis (DEA) method, the

study found that commercial banks of Bangladesh achieved the highest efficiency during 2001, while it demonstrated its least efficiency in 2010. In addition, the study showed that the global crisis along with, bank size, capital adequacy ratio, return on average equity, and the real interest rate have a significant effect on the efficiency of commercial banking industry of Bangladesh.

Musyoka [2017], also investigated the effect of capital adequacy and other factors such as bank size, assets quality, and liquidity. The study findings are based on the data analysis of 42 commercial banks of Nairobi. The linear regression method had been used in data analysis that covers the period 2012-2016 , and in testing the hypotheses of the study. The study demonstrated that capital adequacy and bank size have a significant effect on the financial performance of commercial banks, while no significant effect had been found for asset quality and liquidity.

Ibrahim [2017], carried out a study to examine whether the liquidity has an impact on the profitability of commercial banks of Iraq based on a data of a sample consisting of five large banks over the period 2005 to 2013. The independent variables for liquidity were, loan deposit ratio, deposit asset ratio, and cash deposit ratio. The least squares method had been used in data analysis and hypotheses testing. The study observed that any increase in liquidity ratios leads to an increase in return on assets.

Almekhlafi and others [2016], studied the relationship between credit risk and banks performance of Middle East and North Africa. This study came as a result of the slow growth of commercial banks working in this area of the world along the period 1970-1990, depending on a sample consisted of six commercial banks of Yemen. The authors focused on Yemen banks because these banks were dominated by the public sector banks, where in such this approach the government interventions is clear in credit allocation, losses and liquidity, and non-performing loans. The study investigated the determinants of credit risk and its implications on bank performance of Yemen, where data covering the period 1998-2013 is used in the analysis and hypotheses testing. The study demonstrated that non-performing banks have a negative effect on the profitability of these banks. The most important finding of the study is that a causal relationship exists between non-performing loans and the performance of banks.

Pradhan and Shrestha [2016], examined some determinants of the profitability of Nepalese banks.

Four independent variables had been taken into consideration including; investment ratio, liquidity ratio, capital ratio, and quick ratio, while ROA and ROE were used as the dependent variables of the study. Secondary data was collected from the annual reports of Nepalese banks, where correlation and regression were used in data analysis and hypotheses testing. The study found a negative correlation of liquidity ratio and quick ratio with ROA and ROE, but a positive correlation had been found of investment ratio and capital ratio with ROA and ROE.

The commercial banking industry of Mexico was among the interests of Chavarin [2015]. The purpose of the study was to identify the main determinants of the profitability of commercial banking industry of Mexico. The author collected a data covering the period 2007-2013 belongs to 45 commercial banks of Mexico. Different methods and models were used in analyzing the data and hypotheses testing of the study. The study demonstrated that the profitability of commercial banks can be sustained by the level of capital, commissions and fees charging, operating expenses control, and certain market entry barriers.

Aladwan, [2015] focused on investigating the effect of bank size on performance. The author studied whether this effect is available for commercial banks of Jordan. Data covering the period 2007-2012, had been collected regarding the most commercial banks, had been collected and analyzed using the regression method. Based on two-sample t-test on the means of ROE, for three selected groups, the study finds that the profitability of commercial banks tends to increase as assets of banks decrease.

Al Nimer, Warrad, and Al Omari [2015], investigated the impact of liquidity on the profitability of commercial banks of Jordan. The authors exactly examined whether liquidity through quick ratio has a significant influence on profitability of banks, measured through ROA. A data of a sample consisting of 15 commercial banks of Jordan, had been collected and used in the analysis. The authors used descriptive statistics in data analysis and the simple regression method in in hypotheses testing. The study demonstrates that liquidity has a significant impact on the profitability of listed commercial banks at Amman Stock Exchange.

The profitability of commercial banks of Pakistan is also had been investigated by Tariq and others [2014]. The purpose of the study was to identify the effect of some determinants on the profitability of commercial banking industry of Pakistan. Based on

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data covering the period 2004-2016 of 17 commercial banks of Pakistan, the study shows that banks' capital strength has a significant influence on commercial banks performance, along with assets quality, bank size, inflation, and NIGI. In more details, while it shows that bank capital, assets quality, bank size has a positive effect on profitability of banks of Pakistan, inflation rate and NIGI have a negative effect.

Jaber [2014], carried out a study to investigate some internal and external determinants of commercial banks of Jordan. Data covering the period 2007-2012, had been collected and used in the analysis. The internal factors that the study investigated, include capital adequacy, liquidity ratio, cost to income ratio, and bank size, while the external factors that the study investigated, are the inflation rate, gross domestic product, total assets of the deposit money banks divided by the GDP, stock market capitalization to total assets, and the ratio stock market capitalization to GDP. Among its findings, the study reveals that except capital adequacy and liquidity, other internal factors have a significant effect on bank performance, and bank size is insignificant for the transformed and untransformed models. The study found that inflation, total assets of the deposit money banks divided by the GDP, and stock market capitalization to total assets, have a significant effect on the profitability of commercial banks, with both the transformed and untransformed models.

Ch [2014], investigated some internal and external determinants of commercial banks' performance of state commercial banks of India. Using the regression method data, covering the period 2009-2013. Based on the regression method in analysis, the author examined the effect of bank size, operational efficiency, and non-operational assets, and Tobin's Q. The study finds an existence of a significant effect of asset size, nonperforming assets, and operational efficiency on internal bank performance, measured by ROA, and insignificant effect of asset size, non-performing assets, and operational efficiency on external financial performance of state commercial banks, measured by Tobin's Q.

Al Karim and Alam [2013], measured the performance of commercial banking industry of Bangladesh. The authors selected a sample of 5 commercial listed banks in both Dhaka Stock Exchange Chittagong Stock Exchange. The authors used ROA as an internal-based performance measure, Tobin's Q as a market-based performance measure, and economic value added, as an economic-based performance measure. Time series data of 2008-1012 had been used, and using the multiple linear regression in data analysis, the study demonstrated that ROA is the strongest measure of performance, and affected by credit risk, assets management, and bank size. In addition, the study showed that economic value added, as an economic-based measures is a moderate measure of banks performance, and it is exactly affected by only the bank size and assets management, where operational efficiency and credit risk did not demonstrate a significant effect on EVA. The study also showed that Tobin's Q, as a market-based performance measure is the least efficient measure of banks performance. In brief, the study found that ROA is the strongest measure of banks performance, followed by economic value added, where economic value added is followed by Tobin's Q.

A study investigated the performance of commercial banks of Kenya is carried out by Ongore and Kusa, [2013]. The purpose of the study was to determine the most important factors affecting the performance of commercial banks of Kenya. In more details, the study investigated the impact of capital adequacy, asset quality, management efficiency, liquidity management, GDP, and inflation rate, on the commercial banks of Kenya. Based on data covering the period 2001-2010 of 37 banks working in Kenya, the study finds that capital adequacy, asset liquidity, and management efficiency have a significant effect on banks performance, while no significant effect of liquidity had been found on banks performance. This is for internal factors, but regarding the external macroeconomic factors, the study shows that inflation has a negative significant influence in banks performance, but GDP doesn't.

Andrew [2013], followed a different methodology when he investigated some factors affecting the performance of commercial banking industry in Kenya, Bungoma County. The study is different in the instrument and data used, where it depended on a questionnaire as a primary resource of data, with secondary published data of commercial banks. Descriptive statistics had been used in data analysis and hypotheses testing. The main conclusion of the study is that commercial banks performance of Kenya, Bungoma County is strongly affected by clientele, followed by competition, and sources of funds. The study showed that leadership and promotional strategies have less effect on the performance of commercial banks.

Ikpefan [2013], investigated the effect of capital adequacy and management efficiency on the performance of commercial banks of Nigeria. The authors used a data covering the period (1986-2006) for 14 out of 24 banks. The study demonstrates that capital adequacy has no significant effect on the performance of Nigerian commercial banks, whereas it finds that management efficiency has a negative effect on the return on capital.

Bin Moussa [2013], studied the relationship between the capital and the financial performance of commercial banks, using data covering the period 2000-2009, of a sample consisting of 19 Tunisian commercial banks in analysis and hypotheses testing. The study revealed that there is a positive relationship between capital and financial performance as measured by ROA, ROE, and Net Income Margin. (NIM), but no individual separate relationship had been found between capital and ROA.

One study that carried out by AlKhatib [2012], and investigated the different types of determinants of Palestinian commercial banks. The purpose of the study was to empirically examine the financial performance of five Palestinian listed commercial banks at Palestine Stock Exchange. The author of the study used three indicators; internal-based performance, market-based performance, and economic-based performance, where internal based performance is measured by ROA, the market-based performance had been measured through Tobin's Q, and economic-based performance is measured through the economic value added. Correlation and the multiple linear regression methods were used in data analysis and hypotheses testing of the study. The study shows that commercial banks' performance is affected by size, credit risk, operational efficiency, and assets management.

Teker, Teker, and Kent [2011], investigated the performance of commercial banking industry of Turkey. The purpose of the study was to analyze the performance of listed commercial banks at Istanbul Stock Exchange. Data covering the period 2003-2010 of a sample consisting of 13 commercial banks, had been gathered and used in the analysis. Six different characteristics are defined as the financial performance components for banks, and several factors used in measuring each characteristic, in the study. The study demonstrates that the performance of commercial banks is affected on management efficiency, profitability, liquidity, capital adequacy, and asset quality and growth.

Nzioki, [2011], investigated the effect of capital adequacy on the performance of the listed commercial banks at Nairobi Stock Exchange. Based on analyzing the data of a random sample consisting of 9 listed banks, and using the regression method in hypotheses testing, the study finds that capital adequacy positively contributes to the profitability of commercial banks.

Naifar [2010], carried out study to determine the most important determinants of financial bank performance, based on pooled time-series and cross sectional data using data covering 1999-2007 of 10 banks of Tunisia. A group of internal determinants had been investigated in their effects on commercial banks performance including, bank loans, bank size, liquidity ratio, expenses management, capital ratio, ownership structure, and number of managers. The study found a significant effect of expenses management, ownership structure, and bank loans, on the performance of commercial banks.

One study that carried out by the African Department of International Monetary fund (IMF) through Flamini, McDonald, and Schumacher [2009], had investigated the determinants of commercial banks' profitability of Sub-Saharan Africa (SSA). Depending on data covering the period 1998-2006 of 389 Banks in 41 SSA countries, the study found that the higher returns on assets of banks are associated with bank size, activity diversification, and private ownership. The study shows that bank returns are affected by macroeconomic factors such as macroeconomic policies which its adoption promote low inflation and stable output growth. It also shows that the returns of these banks are not retained as addition to equity, where it means that most of these returns are paid to shareholders as dividends.

Nyanga [2009], investigated some internal and external determinants of commercial banks performance of Kenya. Data covering the period 2001-2010 of 43 Kenyan commercial banks and the Central Bank of Kenya had been used in investigating the determinants of performance of commercial banks. Using correlation and regression methods, the study demonstrated that capital adequacy and exchange rates are negatively correlated with banks performance, where liquidity, operating cost efficiency, bank size, risk, GDP, and inflation rate, affects ROE, as a measure for commercial banks performance. The study reveals also a negative relationship between exchange rates and ROA, as another measure of banks performance. The main conclusion of the study is that none of the investigated determinants had found significantly

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affecting banks performance, underline 5 percent coefficient of significance.

Kunt [1998] follows an international perspective when she investigated the banks' interests' margin and profitability. The author analyzed the differences in interest margin and profitability of 80 countries and identified several determinants of commercial bank's interests and profitability. The study finds that a larger bank asset to GDP ratio and a lower market concentration ratio lead to lower margins and profits. The study also showed that foreign banks achieved higher profits and margins, compared to domestic banks in developing countries, where the opposite is true in developed countries. The study also found an evidence that the corporate tax burden is completely passed to customers of banks.

3 Study Hypotheses

Based on the consideration of the related literature and prior researches, the most common factors that found affecting the financial performance of commercial banking industry are, Capital adequacy, bank size, loan ratio, bank liquidity, assets management efficiency, credit policy, inflation rate, GDP, interest rate, and Tobin's Q. Because there is no agreement regarding of these factors among the prior researches, where each study demonstrated opposite conclusions regarding a particular factor, the current study focuses on investigating the impact of most important factors affecting the performance of the listed commercial banks at ADX. Definitely, the factors that the study takes into consideration includes, capital adequacy, bank size, loan ratio, bank liquidity, and Tobin's Q.

Therefore, the hypotheses of the current study are presented, in their null form, as follows:

HO_1. The capital Adequacy of listed commercial banks at Abu Dhabi Securities Exchange doesn't affect the financial performance of banks.

HO_2. The size of the listed commercial banks at Abu Dhabi Securities Exchange doesn't affect the performance of banks.

HO_3. Loan ratio doesn't affect the financial performance of listed commercial banks at Abu Dhabi Securities Exchange.

HO_4. Liquidity ratio of listed commercial banks at Abu Dhabi Securities Exchange doesn't affect the performance of these banks.

HO_5: Tobin's Q doesn't affect the financial performance of listed commercial banks at Abu Dhabi Securities Exchange.

HO_6: There is no grouping influence of capital adequacy, size, loan ratio, liquidity ratio, management ratio, and Tobin's Q, on the financial performance of listed commercial banks at Abu Dhabi Securities Exchange.

4 Methodology

Commercial banks perform the same activities, and have the same objectives, and therefore follow similar policies and plans, with few differences in details, to achieve its objectives. The population of the study includes all commercial banks, and those listed commercial banks at ADX, are considered one cluster, where this cluster constitutes the cluster sample of the study. In total, there are 12 banks were listed at ADX, up to the end of 2017. Data covering the period 2008-2019, had been collected, whereas, 4 were listed banks had excluded because no enough data covering the period of the study.

The title of the study refers that the financial performance of commercial banks is the dependent variable, where two indicators can be used for measuring this performance. The most two common indicators for measuring the financial performance of commercial banking industry are, ROA and ROE. In current study, ROE is adopted to be the measure of financial performance, because it focuses on equity interests, and takes with consideration, only those amounts contributed by shareholders, and the earnings by operations of banks. Based on the consideration of the literature and the prior related researches, five independent variables are adopted, and examined to determine whether each of these factors, affects the financial performance of commercial banks, including; capital adequacy, bank size, loan ratio, liquidity ratio, and Tobin's Q.

Capital adequacy is a relation of the book value of equity to total assets, and shows how much of the invested capital in the bank, is contributed by owners or shareholders. Bank size is the second independent variable. Bank size can be determined by total assets, where natural logarithms of total assets is used in the study as a good indicator for the size of banks. Loan ratio is a ratio of loans granted to customers by the bank to its total assets, and shows how much of cash available to a bank, is provided to borrowers as loans. This ratio is important because as the bank grants more loans to customers, it achieves higher profits, despite that more loans granted leads to more bad loans. The fourth independent variable that the study takes into account, is bank liquidity, where this variable can be found by finding the relation of liquid assets of

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commercial banks to total assets. Tobin's Q is the last independent variable the study takes into account. Actually, Tobin's Q is can be found by finding the ratio of a bank market value to its assets replacement cost [Fu, Singhal, and Parkash, 2016]. The market value of a firm, whatever, it's a bank or attributed to another industry, is the market value of its outstanding ordinary shares, in addition to debt and preference shares. In most cases the market value of shares is determined by the stock exchange, whereas the market value of debt and preference shares is equal to its book value.

The regression model used in the study is as follows:

$$ROA = a + bCA + cBS + dLR + eLIQ + fTQ + E \ (1)$$

Where:

ROA: Return on assets
CA: Capital Adequacy
BS, Bank Size
LR: Loan ratio
LIQ: Liquidity ratio
TQ: Tobin's Q
For a, b, c, d, e, and f, they are algorithm constants

Descriptive statistics such as the mean and standard deviation, are used in describing the sample, and in analyzing the collected data. Simple linear regression is used for testing the hypotheses, except for the last hypothesis, where it is tested using the multiple linear regression method. All hypotheses were tested underline 95 percent level of confidence, which means that a null hypothesis is accepted when the computed t-value is less than the tabulated one, which equals, 1.96, or the computed coefficient of significance is more than predetermined coefficient, that equals 5 percent (1 - 0.95 level of confidence), and it is rejected when the computed t-value is higher than the tabulated, or the computed coefficient of significance is less than the predetermined one. Regarding the last hypothesis, it is tested using f-value because it is tested based on the multiple linear regression method, not the method of single linear regression. As a result, the null hypothesis is accepted when the computed f-value is less than the corresponding tabulated one, or the computed coefficient of significance is higher than the predetermined corresponding coefficient of significance that equals 0.05, and in opposite, it is rejected when the computed f-value is higher than the tabulated, or the computed coefficient is less than 0.05 coefficient of significance.

5 Analysis and Results

5.1 Sample Description

Table (1) presents the mean, standard deviation, variance, minimum, and the maximum value for the dependent variable and each independent variable of the study. Considering the financial performance as represented by ROE, the table shows that the mean of ROE is 0.2008, with 0.45380 standard deviation. This means that shareholders receive a reasonable profitability on their investments. The table also reveals that capital adequacy mean is 0.1644 with a standard deviation of 0.07429. The mean of capital adequacy refers that the capital of listed commercial banks is also adequate, and no high differences since the standard deviation of capital adequacy is too much low. Bank size has a mean of 7.6212 natural algorithms, and a standard deviation of 0.57612.

Loan ratio which measures whether the banks lend too much of its capital to customers, has a mean of 0.7595, but with high standard deviation that equals 0.71376. Regarding the liquidity ratio, it has a mean of 0.80, with a low standard deviation, and equals 0.12145. The mean of Tobin's Q equals 0.2252, with 0.40346.

Table 1. Descriptive Statistics of the Sample

Variable	Minimum	Mean	Maximum	Standard Deviation	Variance
Performance (ROE)	(0.25)	0.2008	2.81	0.45380	0.206
Capital Adequacy	0.0	0.1644	0.41	0.07429	0.006
Bank Size	6.0	7.6212	8.85	0.57612	0.332
Loan Ratio	0.02	0.7595	6.85	0.71376	0.509
Liquidity Ratio	0.01	0.80	0.2841	0.12145	0.015
Tobin's Q	0.0	0.2252	3.09	0.40346	0.163

Resource: Authors' Calculations

5.2 Correlations

Table 2 shows the coefficient of correlation and the significant of correlations, among the dependent variables, in addition to correlation and significant of correlation between each independent variable and the dependent variable. Considering the table, it appears that loan ratio and Tobin's Q have a week insignificant correlation with the dependent variable, while the other three have significant correlation with the dependent variable. The table also shows that the correlation among independent variables is low except that there is a moderate correlation of -0.601 between capital adequacy and bank size (log. Assets). These weak correlations among independent variables increases the reliability of the data, and therefore of the study as a whole.

Table 2. Correlations among Variables

Variables & Correlations		ROE	Loan Ratio	Cap. Ade.	Liq.	Log. Assets	Tobin's Q
ROE	Cor.	1	- .006	- 0.39	0.49	0.292	0.073
	Sig.	-	0,95	-.000	0.00	0.009	0.521
Loan Ratio	Cor.		1	0.131	0.127	0.044	- 0.054
	Sig.		-	0.245	0.26	0.700	0.631
Cap. Ade.	Cor.			1	0.17	- 0.601	- 0.0105
	Sig.			-	0.11	0.00	0.354
Liquidity Ratio	Cor.				1	0.056	- 0.048
	Sig.				-	0.019	0.674
Log. Assets	Cor.					1	- 0.241
	Sig.					-	0.031
Tobin's Q	Cor.						1
	Sig.						-

Resource: Authors' Calculations

5.3 Hypotheses Testing

It was mentioned above that all hypotheses had been tested using the simple regression method, except the last hypothesis, where multiple regression method had used in testing that hypothesis. It was also mentioned that all hypotheses had been tested underline 0.95 level of confidence, or 005 (1 – 0.095) predetermined coefficient of significance.

5.3.1 Testing the First Hypothesis

Table3. Statistics of Independent Variables

Variable	R	Adj. R_2	T-value	Sig. value	Deg. Of Freedom
Capital Adequacy	0.434	0.188	- 4.028	0.000	71
Bank Size	0.308	0.082	2.711	0.008	71
Loan Ratio	0.010	- 0.014	- 0.084	0.933	71
Bank Liquidity	0.517	0.267	5.053	0.000	71
Tobin's Q	0.081	0.007	0.682	0.498	71

Resource: Authors' Calculations

The first hypothesis states that capital adequacy has a probable influence on the financial performance of commercial banking industry. The hypothesis is presented again, in its null form, as follows:

HO₁. The capital Adequacy of listed commercial banks at Abu Dhabi Securities Exchange doesn't affect the financial performance of banks.

Capital adequacy is the ratio of equity book value to total assets. It shows how much of the amount of invested capital in the bank, is funded by shareholders. In brief, it's the ratio of equity to total assets. Table 3 shows that the coefficient of correlation (R) between capital adequacy and ROE equals 0.ي434 while the adjusted coefficient of determination (R²) equals 0.188. The table also shows that the computed t-value equals – 4.028, and the coefficient of significance equals zero, or a closed value to zero. When the computed t-value is compared with the corresponding tabulated one, which equals 1.96, it is found that the absolute computed t-value is higher than the tabulated. Moreover, the table shows that the coefficient of significance equals zero, and it is less than the corresponding predetermined one, which equals 0.05. Because the absolute computed t-value is higher than the tabulated, and because the coefficient of significance is less than the predetermined one, the null hypothesis is rejected, and instead, its alternative one is accepted. This result means that capital adequacy has a significant influence on the financial performance of commercial banking industry.

5.3.2 Testing the Second Hypothesis

The second hypothesis of the study mentions that bank size may has a probable effect on the financial performance of commercial banking industry. The hypothesis is presented again, in its null form, as follows:

HO₂. The size of the listed commercial banks at Abu Dhabi Securities Exchange doesn't affect the performance of banks.

Bank size is normally measured with total assets, where a bank with more total assets, means that it is with larger size, and in opposite as the capital assets are less as the bank size is smaller. Because the number of total assets of different commercial banks is a huge number, and to facilitate the process of analysis and hypotheses testing, the number of total assets in Dirhams is converted to natural algorithms number to be more consistent with the amount of other items.

Table 3 shows that the coefficient of correlation (R) between bank size and ROE, equals 0.308, while the adjusted coefficient of determination equals 0.082. The table also shows that the computed t-value equals 2.711, and the coefficient of significance equals 0.008. When the computed t-value is compared with the corresponding tabulated one, which equals 1.96, it is apparent that the computed t-value is higher than the tabulated one. In addition, the table also shows that the coefficient of significance is less than the corresponding predetermined one, which equals 0.05. Because the computed t-value is higher than the tabulated, and

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because the coefficient of significance is less than the predetermined one, the null hypothesis is rejected, and instead, its alternative one is accepted. This result means that bank size has a significant influence on the financial performance of commercial banking industry.

5.3.3 Testing the Third Hypothesis

The third hypothesis had been developed to enable examining whether the loan ratio affects the financial performance of commercial banking industry. The hypothesis is presented again, in its null form, as follows:

HO_3. Loan ratio doesn't affect the financial performance of listed commercial banks at Abu Dhabi Securities Exchange.

Loan ratio is a ratio of the lent cash by a commercial bank to its total assets. Normally, it is assumed that as a bank lends more cash to customers, as it generates more profits. Information appearing in table (3) refers that the computed t-value equals - 0.010, and the coefficient of significance is 0.933. When the computed t-value is compared with the corresponding tabulated one, that equals 1.96, it is apparent that the computed one is less than the tabulated. Moreover, comparing between the computed coefficient of significance and the corresponding predetermined one, that equals 0.05, it is clear that the computed coefficient of significance is higher. Because the computed t-value is less than the tabulated, and because the computed coefficient of significance is higher than the predetermined, the null hypothesis is accepted, while the alternative one is rejected. This result means that loan ratio has no significant effect on the financial performance of commercial banks.

5.3.4 Testing the Fourth Hypothesis

The 4th hypothesis had been developed to enable testing the probable effect of bank liquidity on its financial performance. Bank liquidity is actually the ratio of liquid asset to total assets of a commercial bank. Liquid assets include cash and due from banks, available for sale securities, and governmental securities. The hypothesis is again presents, in its null form as follows:

HO_4. Liquidity ratio of listed commercial banks at Abu Dhabi Securities Exchange doesn't affect the performance of these banks.

Considering table (3) it reveals that the coefficient of correlation equals 0.517, and the adjusted coefficient of determination equals 0.267, where this means that there is a strong positive correlation between the liquidity ratio and ROE.

Moreover, the table also shows that the computed t-value regarding the effect of bank liquidity ratio to total assets, equals 5.053, and the computed coefficient of significance equals zero. Comparing the computed t-value with the corresponding tabulated one, that equals 1.96, it is apparent that the computed one is higher than the tabulated. In addition, the comparison between the computed coefficient of significance and its corresponding predetermined one, which equals zero, it is apparent the computed coefficient is less. Because the computed t-value is greater than the corresponding tabulated one, and because the computed coefficient of significance is less than the corresponding predetermined one, the null hypothesis is rejected, where its alternative one is accepted instead. This result means that banks liquidity has a significant influence on the financial performance of commercial banking industry.

5.3.5 Testing the Fifth hypothesis

The fifth hypothesis is developed to enable testing whether there is an effect of Tobin's Q on the performance of commercial banking industry. While the other independent variables are accounting based indicators, Tobin's Q is a market-based measure. Tobin's Q is the ratio of a bank market value to the replacement cost of its assets. The fifth hypothesis is again presented, in its null form, as follows:

HO_5: Tobin's Q doesn't affect the financial performance of listed commercial banks at Abu Dhabi Securities Exchange.

Based on the contents of table (3), the coefficient of correlation between Tobin's Q and ROE equals 0.081, which is a very weak. The table shows that the computed t-value equals 0.682. Comparing the computed t-value with its corresponding tabulated one, which equals 1.96, the computed one is less than the tabulated. The coefficient of significance as appearing in the table and equals 0.498. When this coefficient is compared with its corresponding predetermined one, which equals 0.05, it is apparent that the computed coefficient is greater than the computed. Because the computed t-value is less than the tabulated, and because the computed coefficient of significance is higher than the predetermined one, the null hypothesis is accepted, while its alternative is rejected. This result means that no significant effect is available of Tobin's Q on the financial performance of commercial banking industry.

5.3.6 Testing the Sixth Hypothesis

The sixth hypothesis encompasses all independent variables. It was developed to enable

testing whether there is a grouping impact of the entire five independent variables on the financial performance of commercial banking industry. The variables that this hypothesis encompasses include; capital adequacy, bank size, loan ratio, liquidity ratio, and Tobin's Q. The hypothesis is presented again, in its null form, as follows:

HO6: There is no grouping influence of capital adequacy, size, loan ratio, liquidity ratio, management ratio, and Tobin's Q, on the financial performance of listed commercial banks at Abu Dhabi Securities Exchange.

Differing of other preceding hypotheses, and because the hypothesis involves a probable grouping effect of the five variables, the current or last hypothesis is tested based on f-value and the coefficient of significance, using the multiple linear regression method. The same level of confidence, as of other hypotheses (0.95) is used.

Table 4. Statistics of the Sixth Hypothesis

	Adjusted R_2	Deg. of Freedom	F-Value	Coe. of Sig.
Ho 6	0.502	71	13.323	0.00

Resource: Authors' Calculations

Table (4) shows that there is more than 71 percent coefficient of correlation between the group of the independent variables together in one hand and ROE in the other hand, as dependent variable. Considering the table, we find that the computed f-value equals 13.323, and the computed coefficient of significance equals zero. Comparing the computed f-value with its corresponding tabulated one, that equals 2.78, it is apparent that the computed one is higher than the tabulated. In addition, the comparison between the computed coefficient of significance and its corresponding predetermined one, which equals 0.05, it is clear that the computed one is less than the predetermined. Because the computed f-vale is greater than the tabulated one, and because the computed coefficient of significance is less than the predetermined one, the null hypothesis is rejected, while the alternative one is accepted instead. This result means that the entire group of independent variables, together have a significant effect on the financial performance of commercial banking industry.

Table (5) summarized the results of hypotheses testing. It actually shows which hypothesis is accepted and which is rejected. Considering the table reveals that the 2 null hypotheses are accepted, whereas 4 alternative hypotheses are accepted. In other and more apparent words, 3 independent variables are found affecting the financial

performance of commercial banks, while 2 others are found with no effect.

Table 5. Summary of Results of Hypotheses Testing

Hyp. No.	t-value & f-value	Sig. Value	Ho	Effect
Ho1, Capital Ade.	- 4.028	0.000	Rejected	Affecting
HO2, Bank Size	2.711	0.008	Rejected	Affecting
HO3, Loan Ratio	-0.084	0.933	Accepted	No Effect
HO4, bank Liq.	5.053	0.000	Rejected	Affecting
HO5 Tobin's Q	0.682	0.498	Accepted	No Effect
HO6 All	13.323	0.000	Rejected	Affecting

Resource: Author's Calculations

6 Conclusions and Findings

The main purpose of the study is to examine whether selected variables have an impact on the financial performance of commercial banking industry. The study focuses on the internal variables more than external. In details, four accounting based probable determinants of the financial performance of commercial banks of Abu Dhabi, were examined, in addition to one market based determinant. Capital adequacy, bank size, loan ratio, and liquidity ratio, are the accounting based determinants, and Tobin's Q is the single market based determinant, that are examined in the study in their probable effect on the financial performance of the listed commercial banks at ADX.

The related secondary data had been collected and analyzed using some descriptive statistics, and the hypotheses of the study were tested using simple and multiple linear regression methods. As a result, the study finds that the entire group, that it is consisting capital adequacy, bank size, loan ratio, liquidity, and Tobin's Q, has a significant grouping impact on the financial performance of listed commercial banks at ADX.

Regarding capital adequacy, the study finds that it has a negative significant effect on the financial performance. This result seems reasonable because as the bank uses more equity, the profit per each dollar invested by shareholders in a bank assets, will

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decline. The result refers to that banks profit doesn't increase as a result of more capital provided by shareholders, or at least, profit increases at a rate of less than the increase of the capital provided by shareholders. This finding is consistent with the findings of Banna, Ahmad, and Koh [2017], Chavarin [2015], Tariq and others [2014], Ongore and Kusa, [2013], Teker, Teker, and Kent [2011], Nzioki, [2011], Musyoka [2017], Nyanga [2009], and Charmler et al, [2018].

In addition, the study finds that bank size, as measured by total assets, has appositive significant effect on the financial performance of commercial banks. This result is also considered reasonable because more used assets by a bank, are assumed to lead for more profits and better performance. Prior research found the same regarding the effect of bank size on the performance of commercial bank, such as Banna, Ahmad, and Koh [2017], Flamini, McDonald, and Schumacher [2009], Tariq and others [2014], AlKhatib [2012], Musyoka [2017], Ales and Njaba, [2018], and Charmler et al, [2018].

One additional conclusion of the study is that bank liquidity has a significant effect on the financial performance of commercial banking industry. This result is agrees with the findings of Charmler et al, [2018], Ibrahim, [2017], and Al Nimer, Warrad, and Al Omari [201], but disagrees with the findings of Pradhan and Shrestha [2016].

Hypotheses testing demonstrates that there is no significant effect of loan ratio and Tobin's Q on the performance of commercial banking industry of Abu Dhabi.

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