

DOCTORAL (PH.D.) DISSERTATION

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**Evaluation Banks Financial Performance Using CAMELS Model: A
Comparative Study of Local Commercial Banks in Qatar, Kuwait &
Jordan.**

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**EVALUATION BANKS FINANCIAL PERFORMANCE USING CAMELS
MODEL: A COMPARATIVE STUDY OF LOCAL COMMERCIAL BANKS IN
QATAR, KUWAIT & JORDAN.**

The aim of this dissertation is to obtain a doctoral (Ph.D.) degree in the scientific field of
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I undersigned Rawan Abuzarqa date of birth: 10/09/1984 declare under penalty of perjury and certify with my signature that the dissertation I submitted in order to obtain doctoral (PhD) degree is entirely my own work.

Furthermore, I declare the following:

- I examined the Code of the Károly Ihrig Doctoral School of Management and Business Administration and I acknowledge the points laid down in the code as mandatory;
- I handled the technical literature sources used in my dissertation fairly and I conformed to the provisions and stipulations related to the dissertation;
- I indicated the original source of other authors' unpublished thoughts and data in the references section in a complete and correct way in consideration of the prevailing copyright protection rules;
- No dissertation which is fully or partly identical to the present dissertation was submitted to any other university or doctoral school for the purpose of obtaining a PhD degree.

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Chapter 1: INTRODUCTION

Banks are considered the main engine in the economy and social life; moreover, the banking sector is a critical factor in strengthening confidence in the state policy and supporting economic interests, as well as plays a vital role in linking entities with financial surpluses (savers) and entities with financial deficits (investors) (Chandani et al., 2014). So banks are the actual mirror that reflects the real face of the states' economies

Banks are essential units in developed and growing countries, including the large relative size of banks compared to other financial and industrial firms and the stakeholder diversity relating to the bank, investors, depositors, and borrowers. Moreover, the national economy integrity and a country's monetary policy effectiveness depend on the financial system's integrity, specifically banks (Berger et al., 2020)

The banking industry is built on risk assessment art. If a bank works with higher risk, it may reach greater profits nowadays (Pyle, 1999). Banks aspire to obtain two main aims: gain a profit and sustain the business. Applying an administration capable of running banking risks using an integrated scientific approach based on the design and implementation of measures to reduce the possibility of loss or adverse financial impact to the minimum. (Ghosh et al., 2003). Any risk it faces in this sector can affect all elements of the system without exception, and this encouraged researchers and specialists in finance and banking researcher to develop a financial model that can detect risks creating weak points in different transactions and reduce the seriousness of threats in the sector (Tongurai & Vithe, 2020).

Given the importance of creating a good relationship between the shareholders and the bank, it has become necessary to control banks directly to ensure their security and integrity and avoid exposure to undesirable events affecting the stakeholders and the economy. Numerous studies, such as those (Laeven & Valencia, 2018; Bradrania et al., 2017), indicates that the weakness of the banks' management and supervisory system is one of the most critical factors that lead to bank failure and cause banking crises.

The banking stumble is a dangerous phenomenon threatening many banks globally, especially after the 2008 global financial crisis that hit many commercial banks in the United States of America, led by LEHMAN Brothers Bank. Consequently, this crisis spread to the rest of the world because of the financial and monetary relations and communications networks. Moreover, the continuation of the banking failure without a solution has increased the problems

of this crisis, which extends to the economy in all its sectors leading to its overall collapse (Laeven & Valencia, 2013).

The failure and the banking sector crisis urged many international financial institutions and researchers to study the causes of the bank crises and concentrate on bank management. Hence, the concepts of risk evaluation and control thus trying to develop solutions and suggestions that try to decrease risk and end the failure of the banking system (Klaassen & Van Eeghen, 2015).

Based on previous studies that dealt with the topics of analysis of financial statements and risk predictive methods in different regions of the world and at different years, and after analyzing the financial performance of banks, it was found that there is a difference in the results reached by researchers. Therefore, the term banking performance is a difficult concept to define and measure, as it is considered the outcome of the activities of the banks.

Banks' exposure to many crises has increased the interest in measuring the banks' performance and developing different methods, such as PEARLS, PlaNet Rating (GIRAFE), and CAMELS methodology (Klaassen & Van Eeghen, 2015). However, since the process of evaluating or measuring performance is primarily based on trying to expose the strengths and weaknesses of any institution, Many international institutions , and forums, including the Basel Committee, focused on three main themes for strengthening the financial and banking system: *The regulatory standards for financial statements and how they should be provided appropriately and reliably for all variety of users*, whether managers, shareholder, customers or regulatory authorities, *the issue of banking risk management*, and *measuring changes in performance and the financial position in the financial institutions* (Van & Brajovic, 2009).

Many methods have limitations in giving the bank's management comprehensive warning indicators in the performance evaluation process because they depend on quantitative, not qualitative analysis. Such as:

- PEARLS methodology for the World Council of Credit Unions. This methodology represents a set of forty-five financial ratios used to assess and monitor the financial stability of credit unions that are members of the World Council of Credit Unions. These ratios fall into six areas of financial performance
 - asset protection,
 - the effectiveness of financial structures,
 - asset quality,

- rates of return and costs,
- liquidity management (appropriately), and
- growth indicators (Richardson, 2002).

PEARLS deals with financial performance in terms of quantity rather than quality. Thus, it was found that the PEARLS methodology is not explicitly concerned with management, as the financial performance of an organization reflects part of its management systems but not all of them (Richardson, 2002).

- PlaNet Rating (GIRAFE) methodology is a branch of PlaNet Finance, an international non-profit organization in Paris. GIRAFE method has 26 indicators that fall under six areas of credit risk: general management system and decision-making process, information and management tools, credit analysis, loan portfolios, financing, efficiency, and profitability. The last two areas are the two most important pillars on which valuation and profitability depend (Gonzalez & Javoy, 2011). However, Gutierrez-Nieto and Serrano-Cinka (2007) found that this methodology mostly depends on its assessment of "credit risk" in the way financing institutions are managed and the possibility of the institution failing to meet the expectations of investors and shareholders due to deficiencies in systems, processes, and organization. Therefore, the focus of GIRAFE's methodology on management goes beyond its focus on risk.

As a result, it became necessary for banks to have a new evaluation system that tries to cover most of its quantitative and qualitative terms, keeps pace with global economic developments, and moves away from traditional methods. That encouraged a group of designated supervisory regulators in the United States to work together to create a new, more efficient, and more reliable model for measuring banks' and financial institutions' overall financial and management performance. Hence, it was called (CAMELS Rating System). These supervisory regulators include the Federal Reserve, the Office of the Comptroller of the Currency, the National Credit Union Administration, the Farm Credit Administration, and the Federal Deposit Insurance Corporation (Aspal & Dhawan, 2016).

CAMELS' six categories are Capital Adequacy, Asset Quality, Management Quality, Earnings and Liquidity, and Sensitivity to market risk. Financial ratios are usually used most often to measure the bank's overall financial position and management quality (Singhal, 2020).

CAMELS phenomena have become the most commonly used rating and evaluating the model in banking systems, financial institutions, and even some central banks worldwide (Datta,

2012), as it is clear from the number of previous studies that used this tool in their financial analysis. However, in this specific research, we conducted an analytical study of commercial banks for three different countries in the Middle East (Qatar, Kuwait, and Jordan), which is considered the first study of its kind.

The Middle East has been an unstable region since a long time ago and has witnessed many crises and wars during its history. The cumulative results of these crises established an unstable environment that affected all aspects of life and the economy, including the banking sector.

The three countries selected reflect three different banking levels: high, medium, and low an overview of the main features of Qatar, Kuwait, and Jordan bank sectors and their current economic situation will be presented in the third chapter. In this research, various types of risk that face the bank sector have been studied by the researcher, who explored the financial and management performance to identify different types of risk that may affect this sector. Also, risk management and the world practices that manage these risks. This study will create a clear picture of the selected banks' performance and then detect the main differences.

This study applies eighteen ratios related to the CAMELS system to analyze the most critical factors affecting the performance of selected local commercial banks in Qatar, Kuwait, and Jordan from 2014 to 2019. This method helps identify performance strengths and weaknesses, identify banking risks of the banks' financial and operational administrative processes that needed special attention, and determine the necessary evaluation priorities. The descriptive and analytical approach was used by analyzing the financial data published during the six years using eighteen financial ratios.

Furthermore, to compare the financial performance among the local commercial banks selected in the three countries and rank them according to the CAMELS ranking system results.

Panel Regression, Panel data analysis was employed as one of the key methodologies of this investigation because the dataset includes cross-sectional and time-series data. In addition, panel models with fixed effects models have been frequently used to evaluate performance across countries and sectors.

Profitability indicators consider one of the main elements to test corporate performance. Therefore, we want to examine how the same indicators included in the CAMELS analysis affect ROA and ROE and NP/II indicators. The panel model answers which of the given

variables impact the given profitability indicators and to what extent their impact. While the CAMELS analysis is a multi-perspective examination that can provide a more informed picture of corporate financial and management performance, plus ranks banks through indicator-based ranking.

Other methods applied in the research were: **MANOVA, ANOVA, T-test, and Multidimensional scaling.**

Importance of the study

Performance evaluation has a significant priority for any financial institution and economy, especially in the current period in which the world is witnessing bankruptcy and the collapse of many international companies. The importance of this study appears in the following points:

- Explaining the importance of evaluating the financial and administrative performance of banks. It focuses on ensuring liquidity and profitability by considering investment and financing decisions and their risks. Third, considering that the objectives of the financial management are embodied in increasing the current value of the enterprise unit and maintaining its liquidity to protect it from the risk of bankruptcy and liquidation and achieve a proper return on investment (profitability).
- The study's importance is that it links the CAMELS model's elements with the performance of commercial banks, as the CAMELS model is considered one of the essential tools that many central banks now use in many countries to evaluate their performance. Furthermore, its findings are of great importance to the supervisory authorities of banks because it gives them an understanding of the performance of banks instead of relying on several systems or other analytical tools that may provide inaccurate or conflicting results.

Implementing international experience and benefit from other countries' experiences using the CAMELS evaluation system and applying it to commercial banks in Qatar, Kuwait and Jordan encourage banks operating in these countries and even other countries in the Middle East to use this system to identify and measure banking risks. As a result, the banking sector supports depositors' and investors' confidence, thus achieving the bank's strategic goals, enhancing its role in society, and supporting the national economy. Moreover, this study contributes to the previous related studies for future research.

The Problem and Questions

Financial institutions and banks, in particular, are considered the most sensitive to economic changes. Traditional performance evaluation systems have limitations in giving warning signs to bank management, as their analyses rely on quantitative rather than qualitative analysis. The research problem revolves around the possibility of adopting and implementing a comprehensive evaluation model that includes all aspects of the bank in a way that gives an accurate picture of its financial position, risk, and weaknesses, which is reflected positively on the general bank performance and thus achieving the elements of its profitability and continuity. Accordingly, the research problem can be expressed in the following questions:

1. Are financial statement analysis outputs considered the best tools to measure commercial bank performance?
2. Which areas in the CAMELS analyses should be a concern (red flag) in Qatar, Kuwait, and Jordan banking systems?

The following sub-questions separate these questions:

- What is the CAMELS model's ability to accurately assess each model element (Capital, Asset quality, Management quality, Earnings, Liquidity, Sensitivity to Market Risk)?
- What is the effect of the classification or ranking process on the performance evaluation results of the selected banks?

Hypotheses

In light of the research problem and its importance, the following hypothesis has formulated to answer the main question of the research:

Hypothesis 1 (H1): Qatar leads Kuwait and Jordan in the case of Capital Adequacy attribute.

Hypothesis 2 (H2): Banks in Qatar perform better than banks in Jordan and Kuwait in terms of Asset Quality attributes, considering the indicators of the CAMELS model.

Hypothesis 3 (H3): Qatar banks have the most efficient management system.

Hypothesis 4 (H4): Qatar banks have the highest profits, which leads to the highest Earnings Attribute.

Hypothesis 5 (H5): Jordanian banks have lower leverage and less liquidity than Qatar and Kuwait. Accordingly, Jordanian banks are exposed to higher risks than other countries.

Hypothesis 6 (H6): The indicators of the CAMELS model have a significant effect on the indicators determining the performance of banks in each country.

Objectives

The research intends to achieve the following objectives:

- Shedding light on the current situation of commercial banks operating in the banking sector in Qatar, Kuwait, and Jordan to know the unique features of this sensitive sector.
- Implementing CAMELS evaluating and ranking model on the commercial banks to determine the strengths and weaknesses of the bank's financial and administrative operations by analyzing the commercial banks' financial statements.
- Ranking the selected banks based on the findings of financial indicators.
- Comparing the financial performance of the selected banks of the three countries.

Dissertation Structure

The dissertation is divided into five chapters to understand all aspects and fundamentals of the research and answer its problems and questions:

Chapter 1: Describe the thesis's subject and objectives, research questions and ,hypotheses methodologies, and the thesis sections.

Chapter2: Provides a literature review related to the thesis topics. It deals with the theoretical and applied literature of the study to give a comprehensive theoretical review of the topic. Accordingly, it is divided into three main axes: commercial banks, banking risk management, and a brief review of BASEL agreements and requirements I ,II , and III .Clarifies the concept of financial performance ,bank financial performance ,and measuring banking financial performance and discusses the theoretical framework for the American ranking and evaluation system (CAMELS analysis). Furthermore, the literature shows previous studies in different countries that applied the CAMELS model to evaluate their bank performances.

Chapter 3: The Methodology part presents the dataset and the thesis research methodology. This chapter defines the CAMELS model's basic concepts. Then, it reviews how it evaluates and ranks banks ,research variables together with the 18 ratios formulation, research sampling, and population. It includes a brief introduction of the main features of Kuwait, Qatar, and Jordan bank sectors and their current economic situation. This chapter also presents the data collection and analysis techniques to get the results. ANOVA and MANOVA to compare

banks based on ratios and attribute in the countries examined. Multidimension scale (MDS) method was also used to show the Bank distances using the results of the analysis ratios of the 6 CAMELS attributes. The final method used was panel regression analysis.

Chapter 4: Presents the research findings and their evaluations. It is a thorough analysis of the impact of the CAMELS variables on the banks 'financial performance and a comparison between the results of the three countries and the ranks of the banks of each country.

Chapter 5: Answer the research questions, prove the hypotheses, and provide the main conclusion and the summary of the thesis, also the recommendations along with the limitations of the study.

Applied research methods

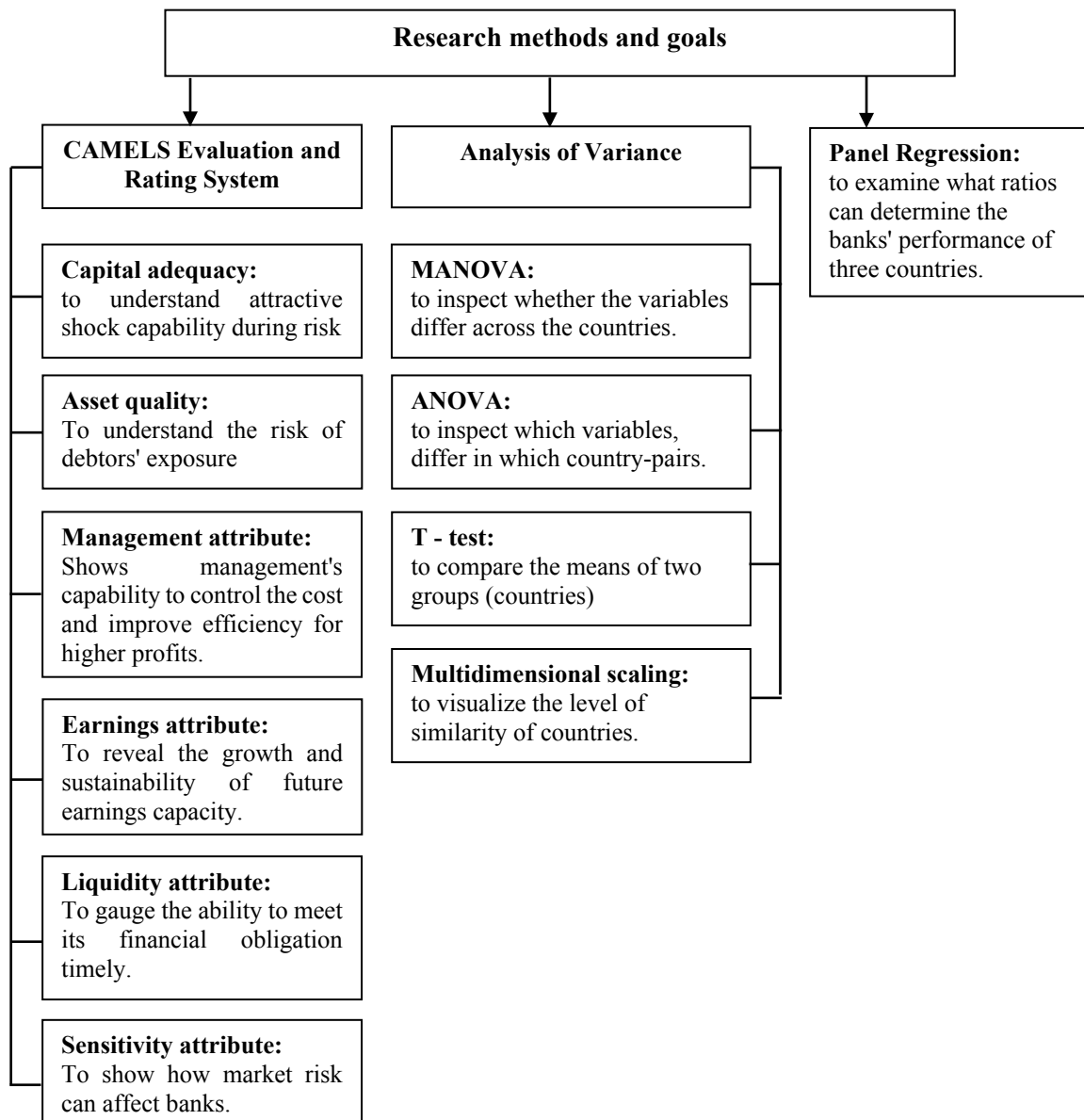


Figure 1. Research methods and goals

Source: Author's compilation

Chapter 2: TECHNICAL LITERATURE REVIEW

As mentioned in the study structure, the literature includes three parts. The first part discusses and determines the related terms and concepts of the thesis as commercial banks, banking risk, types of banking sector risks, and bank risk management process, and gives a brief review of Basel's principles in risk management (Basel I, Basel II, Basel III).

.2.1 Commercial banks

Banks consider the main engine of the various activities of the economy, as they are one of the pillars of the banking sector in any country. Generally, the bank is a credit institution that any country relies on to revive its national economy by providing it with the necessary funds (Chandani et al., 2014).

Figure 2. Types of Commercial Banks

Public Commercial Banks	• The Government in the country held the majority of the bank stake.
Local Privet Commercial Banks	• Private individuals owns the majority of share capital of the bank.
Forgein Commercial Banks	• Registered banks which their main headquarters in a foreign country and operate their branches in other countries.

Source: Author's compilation based on literature

Choudhry (2012) summarized the main functions of commercial banks in the following two categories:

A - Primary functions:

1. Accepting deposits of all kinds.
2. Advancing loans: Operating the bank's resources in various loans and investments.

B - Secondary functions:

1. Agency Services: Opening savings accounts, E-banking, Credit Card Services, etc.
2. General Utility Services: Managing workers and properties for clients and providing economic and financial investments.
3. Transfer of funds.

Credit creation: The expansion of money supply, contributing to economic development plans

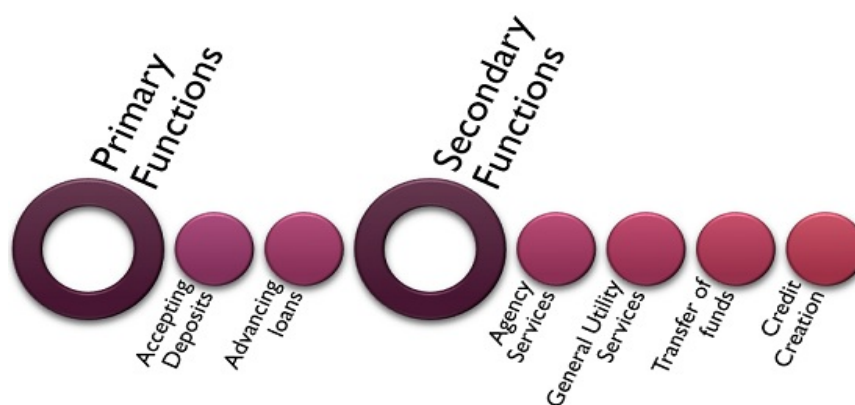


Figure 3. Functions of Commercial Bank

Sources: Choudhry, M. (2012). The principles of banking.

2.2. Banking Risk Management

Risk has been frequently studied over the last decades, and it is one of the concepts with no universal definition. Therefore, the authors use a different risk approach. The word risk originates from the Latin word 'Rescas', which indicates the high rate of unbalance and the occurrence of a change compared with expected and the expected deviation (Covello & Mumpower, 1985). Risk is present in everyday life and is inevitable in every human case and public and private sector organizations.

Raghavan (2003) defines risk as unknowing what will happen in the future. The difference between ideal and actual performance results from unexpected interventions outside the institution's will or person. Raghavan (2003) summarized the loss in two main parts: the possibility of financial loss or reputation/image loss.

Since the early 1970s, the banking sector has undergone significant changes, likely continuing for many years. These developments have significantly impacted the scale and scope of commercial banks' risks (Barlow, 1993). Furthermore, bank rivalry has intensified among domestic and international banks (Boyd & De Nicolo, 2005). As a result, the Bank's exposure to unforeseen and unplanned loss or variation of the projected return on a given investment is referred to as financial risk in banking institutions (Laeven & Valencia, 2018). As a result, the bank risk is the material or moral loss incurred by the bank as a result of it being engaged in a particular activity characterized by irregularity and fluctuating returns because the bank is involved in a specific activity characterized by irregularity and fluctuating returns because the bank is engaged in a particular activity characterized by irregularity and fluctuating returns

because of the uncertainty (Milojević, 2016). Financial market contacts are frequently exposed to a variety of risks.

On the other hand, banks are prudent enough to identify and measure risks to control and avoid them. Many studies have attempted to determine banks' risks, based on analyses by Saunders et al. (2006) and Varotto (2011). Figure 4 summarizes the most important risks.

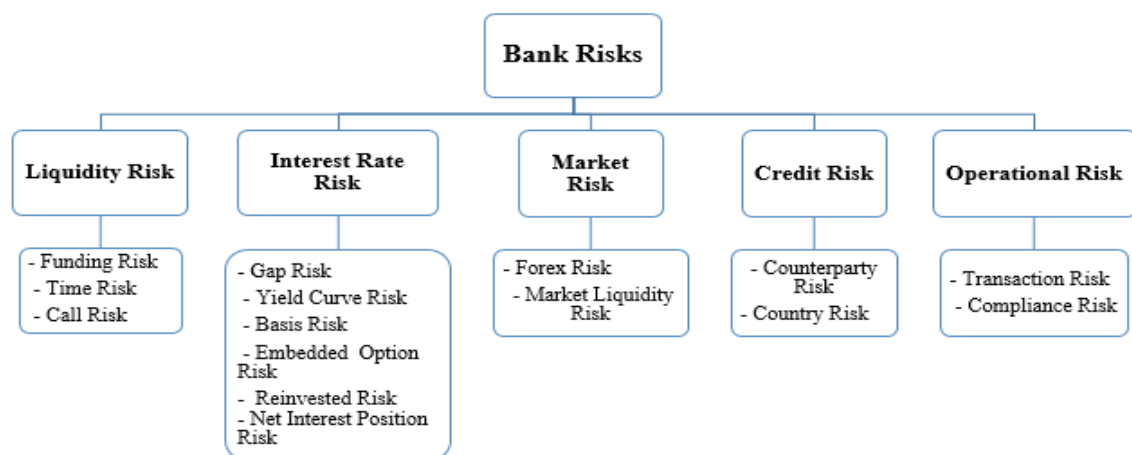


Figure 4. The major type of Banking risks

Source: Author's compilation based on literature

2.2.1. Taxonomy of Risk

Banks can face themselves with a new risk type daily. Moreover, these risks differ regarding their causes and sources. Accordingly, Table 1 presents three risk classifications reflecting the most important bank risks facing the banks over three periods.

Santomero (1997) mentioned that risk before 1999 risk was revolving around five types:

1. Credit risk,
2. Liquidity risk,
3. Interest rate risk,
4. Foreign exchange risk,
5. Market risk.

Power (2003) claims that operational risk as a category is difficult to measure. In 2004, Basel-II added a set of banking regulations to manage; Operational risk and capital adequacy risk. It was later added to the list of risks and published (Chong, 2004). Moreover, these risks increased dramatically (compliance risk, open banking risk, reputation risk, systemic risk, ethical risk, and strategic risk). Economic globalization has led to less intervention and oversight (Knudson,

2018). The rapid development of the banking sector and its services' is one of the main reasons for the high risk. Many new and innovative products have been introduced by banks, such as mobile banking, ATMs, credit cards, internet banking, digital banking, etc. (Danisman & Demirel, 2018).

Table 1. Bank risk classification

Classification before 1999 <i>Santomero (1997)</i>	Classification in 2004 <i>Chong (2004)</i>	Classification in 2018 <i>Knudson (2018)</i>
1. Credit risk	1. Credit risk	1. Credit risk
2. Liquidity risk	2. Liquidity risk	2. Liquidity risk
3. Interest rate risk	3. Interest rate risk	3. Interest rate risk
4. Foreign exchange risk.	4. Foreign exchange risk.	4. Foreign exchange risk.
5. Market risk	5. Market risk	5. Market risk
	6. Operational risk	6. Operational risk
	7. Capital adequacy risk	7. Capital adequacy risk
		8. Compliance risk
		9. Open Banking risks
		10. Reputational risk
		11. Systemic risk
		12. Moral hazard
		13. Strategic risk

Source: Author's compilation based on literature

2.2.2. Risk management

Risk management is a systematic technique to handle potential risks by observing potential losses and then planning and applying measures to reduce such losses (Kaplan & Mikes, 2012). It can be defined as organizational lifestyles anticipating future events that can cause irrelevant effects and losses (Dionne, 2013).

The main feature that runs the bank's activity is how to manage the risk because no one can escape the fact that risk remains as long as the banking activity exists. Managing these risks does not mean removing them permanently but containing them and working to increase the return, which is the ultimate measure of success (Kaplan & Mikes, 2012).

Bank risk management identifies, analyzes, and controls potential risks that could directly or indirectly affect the bank's financial performance. In addition, risk management must also continue to manage and monitor various threats ((Dionne, 2013). Risk management is generally defined as administrative systems intended to protect a bank's assets and profits by reducing the likelihood of predicted losses to the bare minimum, whether due to natural disasters, human error, or regulatory provisions.

It cannot be said that RM is a new phenomenon, but its importance and need for it have increased significantly after the ongoing financial crisis. This has led to looking for innovative ways to establish a well-regulated risk management system with regulatory and top international authorities Hopkin (2018). Although risk management strategies and approaches vary from one financial institution to another, risk management goals are universal.

Hopkin (2018) tried to list the main objectives of risk management on the following points:

1. Maximizing the Bank's Value: The organization's ultimate goal is to maximize value, a suitable criterion for evaluating institutional decisions. As a result, risk management decisions must contribute to the maximization of the Bank's market value.
2. Growth Continuity: Because growth is a core corporate aim, risk management becomes one of the most important factors impeding the bank's growth.
3. Profit and return stability: Risk management decreases income fluctuations caused by risk-related losses to the smallest amount achievable. Reduced income fluctuation can also help optimize tax deductions for losses and lower profits taxes.

The banks must apply a logical scientific process to achieve these objectives.

2.2.3. Risk management process

Risk management is a scientific approach to dealing with problems that the organization can face, and it comprises a series of logical steps. This shows two models discussing and summarizing the actions and RISK MANAGEMENT PROCESS results.

Crouhy et al. (2006) model was presented in their book “The essentials of risk management,” as shown in (Figure 5). The model began the process with knowledge and identification of risks. Then it measures the risk and, at the same time, finds instruments to shift or evaluate risks, identify risk impacts, determine instrument costs, develop a risk mitigation strategy, and finally assesses performance whether continuing with the same strategy if it succeeds in decreasing risk or seeks a new strategy if there is a deviation. Risk-reduction strategies:

- If banks do not have the financial resources to handle these risks, they will choose the first strategy of avoiding risk, which will cost them to lose earnings from the banking process.
- The second strategy, the polar opposite of the first, is to keep or accept risks as long as the expected return is larger than expected and the bank's management's ability to handle the risks effectively.
- Banks have evolved many strategies to decrease credit risk throughout the years, such as bond insurance, market marking, and connecting financial services' costs to their risks.
- The bank's final alternative or plan is to transfer the loss to a third party by bearing the expense, such as buying government guarantees, securing guarantees, or policy.

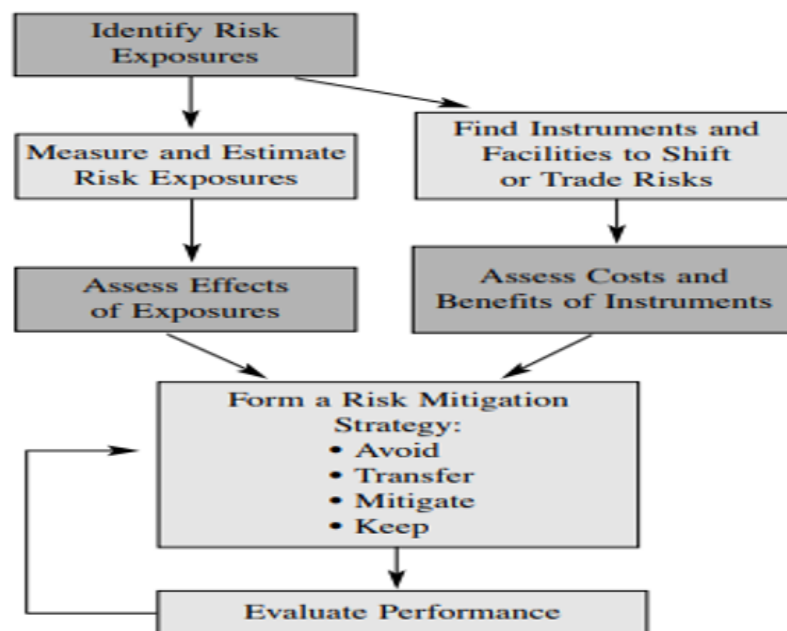


Figure 5. The risk management process 1

Source: from Crouhy, Galai, and Mark (2006)

The second model presented in Figure 6 was developed by Narayana and Mahadeva (2016)

Regarding this risk management model in the banking sector. It is almost identical to the first model, except for adding new actions. For example, they need to control their prices and confront technologies when identifying, evaluating, and measuring risks. It also includes a progress report, compliance with regulations, selection of the optimal alternative, and completion of a risk-return balance assessment.



Figure 6. Risk management process 2

Source: Author's compilation based on literature

2.2.4. BASEL I, II, III - A brief review

Banking risks have two leading causes; Internal factors (bank's management and its activities) or External factors due to the changes in circumstances or the environment (Al-Tamimi and Husen, 2010). This made the need to create new mechanisms to face these risks and entrust their coordination and control to a joint body of world central banks.

In Basel, Switzerland, in 1974, the central bank governors of the Ten Countries Group (G-10) established the Basel Committee on Banking Administration and Supervision under the Bank for International Settlements. Representatives from financial regulators and central banks from France, Germany, Belgium, Canada, Sweden, the United Kingdom, Switzerland, the Netherlands, Italy, Luxembourg, Japan, and the United States of America composed the commission. (Elbannan, 2017). The committee has set many principles covering the conditions necessary to enhance risk management efficiency and control the bank's risks. Over time, and based on the ongoing global financial crisis, several principles and guidance on banking risk management were issued (Basel I, II, and III).

Basel I (1988). The Basel Committee decided in 1988 to adopt standard capital adequacy criteria for banks after the debt crisis in emerging nations in 1982 and the bankruptcy of numerous European and American banks. As a result, the Basel 1 Committee seeks to reduce

the risks faced by banks, particularly those engaged in international banking. Elbannan (2017) These guidelines were based on five fundamental points:

1. The committee concentrated on credit risk, reflected by the debtor's debt repayment, to determine the required minimum capital ratio. As a result, credit risk is prioritized, with nation risk factored in, such as exchange rate risk, liquidity risk, investment risk, and interest rate risk, among the other hazards identified by the Committee.
2. Measuring capital adequacy: In 1988, the Basel Committee created a capital adequacy standard binding on banks in the banking industry as an international standard to identify the bank's financial positions. They established an 8% minimum capital-to-risk-weighted-assets ratio, dubbed "cooke" after Peter Cooke, the Basel Committee's chairman. The regulation minimum capital requirements ratio (MCR) formula is:

$$MCR = \frac{\text{The amount of capital}}{\text{Total risk-weighted assets}} \geq 8\%$$

3. Risk weight categories: The percentage of the asset weighted varies depending on the asset's volatility and the distinction between the obligor and the debtor. The risk weight is assigned to each on-balance-sheet asset under its risk (for example, 0 percent to cash and government bonds; 20 percent to claims on OECD banks; 50 percent to residential mortgages; 100 percent to corporate loans, corporate bonds, and so on). Commercial loans, for example, were given a risk weighting of 100 percent.
4. They divided the world countries into two groups based on credit risk weight:
 - The first is the low-risk countries, including the Organization for Economic Cooperation and Development (OECD) member countries and Saudi Arabia, Portugal, Switzerland, New Zealand, Norway, Turkey, Iceland, Australia, Greece, Denmark, Finland, and Austria.
 - The second group is the high-risk countries, including all other countries not previously mentioned.
5. Development of bank capital adequacy ratio (Core & Supplementary Capital) which is:

$$\text{Capital adequacy ratio} = \text{Core capital} + \text{Supplementary capital}$$

where

$$\text{Core Capital} = \text{Paid Up Capital} + \text{Disclosed Reserves (General and Legal Reserves)}$$

$$\begin{aligned} \text{Supplementary Capital} = & \text{General Loan-loss Provisions} + \text{Undisclosed Reserves} + \\ & \text{Asset Revaluation Reserves} + \text{Subordinated Term Debt (5+ years maturity)} \\ & + \text{Hybrid (debt/equity) instruments.} \end{aligned}$$

Basel II (2004). The world has faced substantial economic developments and growth within the banking sector, creating the need to set and add new instructions in line with these market changes. Accordingly, the Committee agreed that amendments should be made to the 1988 Convention (Basel I). This review is about the factors of controlling the degree of private funds, controlling the adequacy necessary to deal with risks, and analyzing the categories of banking risks.

These amendments started in 1999 and were performed in June 2004 with the Committee's decision containing Basel II standards (Chernobai, Rachev & Fabozzi, 2008).

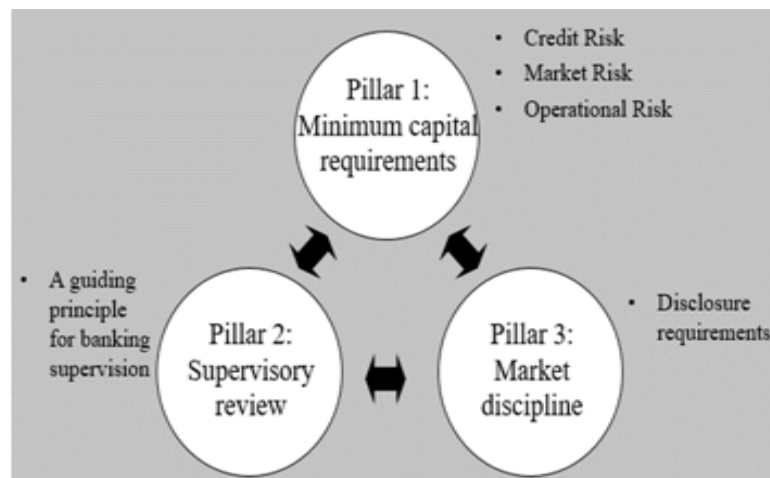


Figure 7. Basel II's three pillars

Source: Author's compilation based on Chernobai, Rachev & Fabozzi, 2008.

Basel II has three pillars (Figure 7):

1. Expanding the 1988 Accord by requiring minimum capital for credit, market, and operational risk.
2. Review an institution's capital adequacy and international evaluation process by a supervisor.
3. Effective application of market discipline as a lever to improve disclosure and encourage safe and sound banking practices.

BASEL II - Minimum Capital Requirement (MCR) Calculation =

$$\frac{\text{Capital}}{\text{Credit risk} + \text{Market risk} + \text{Operatioal risk}} \geq 8\%$$

Basel III (2010). After the bankruptcy of many banks in 2008 and the failure of Basel 1 and 2 standards to protect them and face the new continuing risks. The Basel Committee has made a

great effort to update and amend the principles of Basel I and Basel II, especially in response to the global financial crisis. Basel III includes a set of reforms aimed at strengthening laws, risk management, supervision, and transparency in the banking sector. These principles were clarified in Dermine (2015) as over:

1. Higher requirements of capital and better quality.

The Basel Committee proposes that the minimum common equity tier (CET) of risk-weighted assets (RWAs), the highest form of capital that can absorb losses, be raised from 2% to 4.5%. This ratio is calculated as follows:

$$\frac{CET}{RWAs} \geq 4.5\%$$

Based on strict criteria, Tier 1 capital requirements that include equity and certain other eligible financial instruments will be raised from 4% to 6%. In addition, the reforms have introduced a new sort of capital, known as additional hedge funds, which banks retain at a rate of 2.5% plus the minimum required by present legislation to be made up of shareholders' equity.

As a result, the Tier 1 minimum necessary capital will be 8.5 percent (6 percent for Tier 1 capital and 2.5% for Capital Protection). After adopting the proposed reforms, the percentage of total capital requirements will be 10.5% (security or protection capital) compared to 8% in prior agreements.

2. Add Leverage Ratio

Basel III included a leverage ratio for the first time to ensure that banks have adequate liquidity amid financial stress and safeguard them from excessive borrowing. In addition, the leverage ratio was restricted to a maximum of 3%.

$$\frac{\text{Tier 1 Capital}}{\text{Total exposure}} \geq 3\%$$

3. Improved Liquidity Ratios

The global financial crisis of 2008 demonstrated the critical relevance of liquidity in the operation of the global financial and banking system and the entire market. This is what the Basel Committee has done by indicating its desire to reach a global liquidity norm by proposing two ratios:

- The Liquidity Coverage Ratio (LCR) is determined by dividing the bank's high liquidity assets by its 30-day cash flow. This ratio aims to make the bank self-sufficient in meeting liquidity requirements in a crisis.

$$\frac{\text{High quality liquid assets}}{\text{Total net liquidity outflows over 30 days}} \geq 100\%$$

- The Net Stable Funding Ratio (NSFR) measures how well a company is funded. It assesses structural liquidity throughout the medium and long periods. The goal is to provide the bank with consistent funding for its operations. Total available stable financing (ASF) divided by total required stable funding (RSF)

$$\frac{ASF}{RSF} \geq 100 \%$$

4. “Countercyclical Measures: Basel III introduced new requirements for capital provisions of large banks to reduce their balance sheet cyclical changes. As a result, banks have to allocate additional capital during a credit expansion, while capital requirements can be reduced.

Penikas (2015) Try to outline the Basel Committee's general objectives in the following five primary points:

1. Contributing to the stability of the global banking system, particularly in the aftermath of developing countries' foreign debt crises. During the 1970s, international banks increased their lending to these countries significantly, increasing the volume and proportion of doubtful debts and causing the demise of some institutions, considerably weakening their financial positions.
2. Attempting to create the proper effect in competition and contributing to the achievement of equity and balance in bank competitions, as well as providing equality of regulations and legislation and non-conflict between political and general purposes.
3. Eliminating the source of unfair rivalry between banks caused by national bank capital control regulations disparities.
4. Developing mechanisms to adapt to global banking changes, particularly financial globalization, as a result of financial liberalization and the liberalization of banks' money markets, including regulations, constraints, and legislation that limit the expansion and deepening of banking activity around the world because of the technological revolution.
5. Provide a complete risk management strategy by including multiple unaccounted-for dangers and facilitating the exchange of information about these approaches across the various monetary authorities.

2.3. Banking performance and the measurement process

Performance is a comprehensive and essential concept for all organizations (Government, banks, corporates, etc.). It has received wide attention from researchers and control authorities, especially in the economics and financial fields.

The idea of performance relates to the outputs and goals a company aspires to achieve through its personnel. It includes both the objectives and the means to attain them. It is a notion that connects the many components of activity with the goals that businesses attempt to achieve via the activities and responsibilities of their employees. It is mainly related to two key management terms: efficiency and effectiveness. (Bikker & Bos, 2008)

Sonnentag and Frese (2002) described it as a broad concept and a constant holistic activity in the company that attempts to efficiently and effectively utilize financial, material, and human resources in line with internal or external environmental circumstances to accomplish strategic goals.

Banking performance is one of the most used aliments to assess the outcome of banking activity. It contributes to directing banks toward the best and safest path. Banking performance is a reflection of the bank's financial, operational and administrative position, which is mainly can be measured by the three financial statements: the list of financial position (The balance sheet), profit and loss account, and the cash flow statement, which depicts the position of the banks for a certain period (Bikker & Bos, 2008).

Most researchers have agreed that banking performance depends as a technical concept on the financial analysis process, defined as a series of financial methods that can determine the strengths or weaknesses of commercial banks. Financial ratios are mainly used in this analysis to compare previous performance with current and expected performance, diagnose the pros and cons of commercial banks' performance, reinforce the positives, and address the negatives (Klaassen & van Eeghen, 2015).

2.3.1. Bank performance evaluation

Performance evaluation is considered more comprehensive and accurate than performance measurement or monitoring. It means showing the results, analyzing them, and ensuring they are going according to the established objectives while developing possible solutions.

The evaluation of the bank's performance aims to ensure that its resources are efficient. So, it is a comprehensive process in which all data, accounting, and others, are used to determine the bank's financial condition and how its resources were managed during a specific period. Therefore, bank performance can be defined as all activities and efforts exerted by banks to carry out their role and implement their functions to provide banking services (Thagunna & Poudel, 2013).

The bank's financial performance is considered an essential pillar of the control process and for identifying weaknesses and strengths in the performance and various activities of the bank, which aims to provide the needed information for planning, control, and decision-making purposes (Bikker & Bos, 2008).

Kumar & Gulati's (2010) study shows that a successful performance evaluation process must take into consideration the following fundamental pillars:

1. Financial performance (effectiveness): the optimal use of available resources through operational processes, reflecting the bank's success in optimizing available resources through operations.
2. Operational performance (efficiency): achieving the largest possible number of goals through the available resources, which is reflected in the extent to which the bank has achieved its main and subsidiary goals, and the extent to which the achieved goals and methods used to achieve them are consistent with the planned goals, as well as to detect deviations and their causes, and ways to correct and avoid them in the future.

On the other hand, Gackowiec et al. (2020) argued in their article that the performance evaluation standards are based on a set of three principles that can be used to measure and compare the level of achieved performance:

1. Historical: this is based on comparing current financial indicators with the bank's historical indicators and determining the extent of improvement or decline in those indicators.
2. Targeted: they compare the bank's performance with the planned benchmarks.
3. Industry: these are based on comparing the bank's performance with other banks.

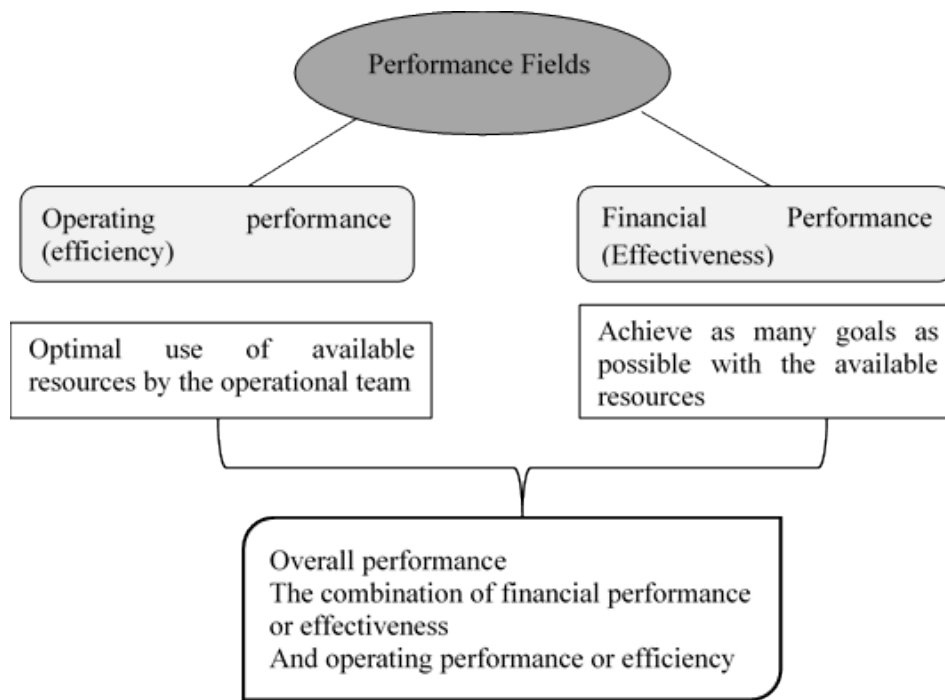


Figure 8. Fields of Performance in banks and financial institutions

Source: Author's compilation based on literature (Kumar & Gulati, 2010)

The importance of measuring bank performance has increased in recent years due to the specificity of this institution's activity and its role in economic development. Kumar & Gulati (2010) discussed in their study The importance of measuring bank performance, and we can summarize it as follows:

- Providing a comprehensive picture of the various administrative levels of the bank's performance and enhancing its role in the national economy and the mechanisms for raising it.
- On the financial level, it ensures the availability of liquidity and measures the level of profitability in light of investment and financing decisions and the associated risks.
- Urging management to plan and take decisions.
- Rapid treatment of any defect in administrative work.
- Justify the need for resources on scientific and objective grounds.
- Promote accountability based on objective evidence.
- Creating a kind of competition between the bank's various departments would help improve its performance level.

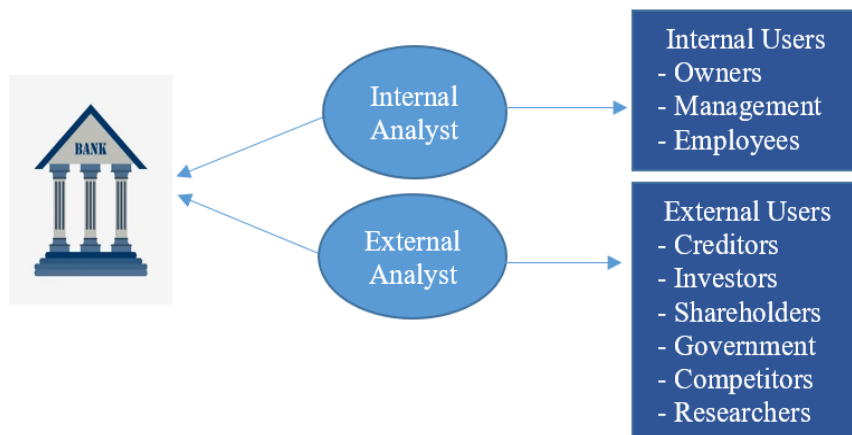


Figure 9. The parties benefiting from the performance analysis

Source: Author's compilation based on literature

2.3.2. Banking performance indicators

In order to identify the reality of banking performance, it is necessary to study and analyze the indicators that express this performance in the various financial statements to evaluate their activities and the services they provide through the results reflected in these indicators. And the extent of progress and development.

Gackowiec et al. (2020) have classified commercial banks' performance indicators into two groups: internal and external.

Internal indicators, which are part of the administrative control of a commercial bank, are divided into two types, financial and non-financial variables. The first relates to decisions related to expenditures and revenues. The second relates to the size of the bank, the number of its branches, its customer base, etc.

As for external indicators that are not related to the internal environment of the bank, such as competition conditions, conditions of the banking industry, laws related to them, stock markets, money supply, and inflation rates.

The indicators of banking performance of all kinds, whether related to capital adequacy, investment risks, liquidity, profitability, or internal and external environment indicators, can be shown in the following Figure 10.

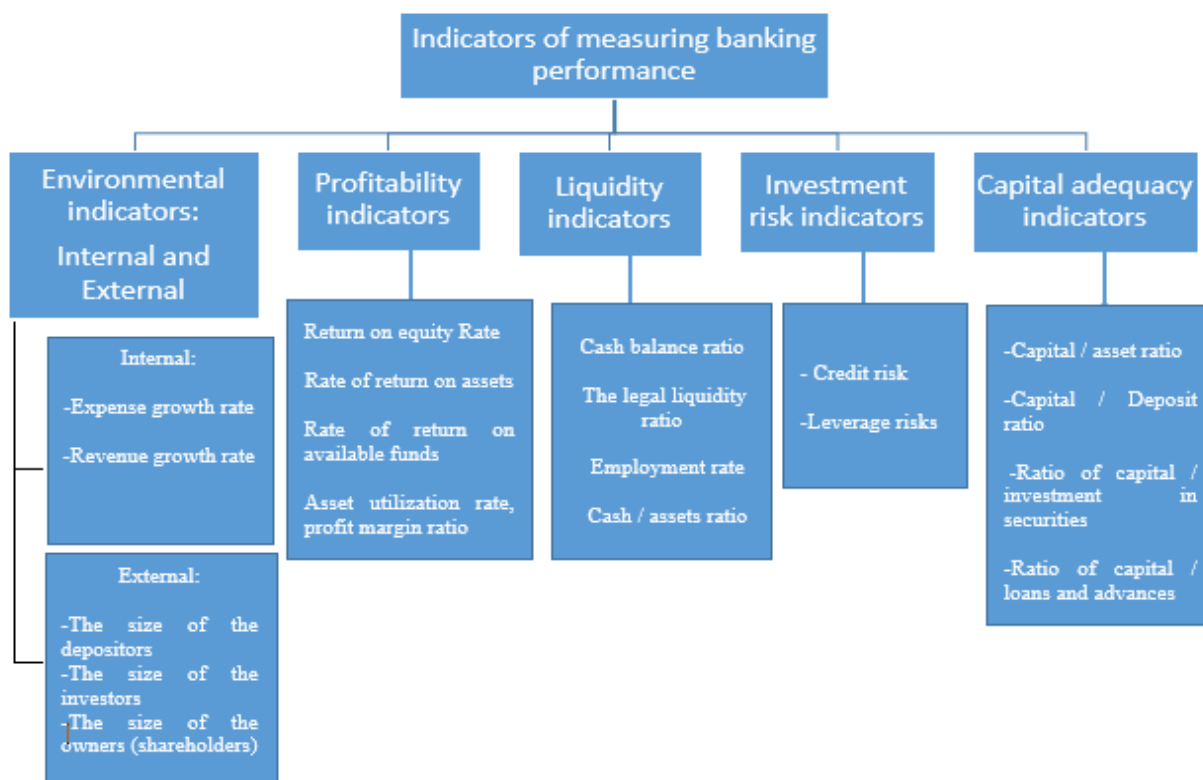


Figure 10. Key Indicators of measuring banking performance

Source: Author's compilation based on literature

After reviewing previous studies related to banks performance evaluation, Gackowiec et al. (2020), Kumar & Gulati (2010), Sonnentag and Frese (2002), and others, it was found that the process of evaluating bank performance is structured around five preliminary stages:

First stage: Collecting data and information, as the performance evaluation process requires the availability of statistical data, information, and reports necessary to calculate ratios for evaluating the performance of the entity's activity. These data can be obtained from the balance sheet, profits and losses, the cash flow statement, and the rest of the reliable annual reports. Usually, all this information serves the evaluation process during the relevant year and information related to previous years and data on the activities of similar institutions in the same sector or some institutions abroad due to their importance in making comparisons.

Second stage: Analyzing the statistical data and studying the collected information to evaluate using ratios or indicators based on available data for the various activities and processes involved in the bank's performance.

Third stage: Analyzing the results and stating the extent of success or failure that accompanied the bank's performance, then explaining the reasons for those deviations.

Fourth stage: Developing the necessary solutions to address those deviations and Defining responsibilities to ensure optimum bank performance.

Fifth stage: Follow up the corrective processes for deviations in the plan by providing planning departments and agencies responsible with the information and data from the evaluation process to be used in their upcoming plans and developing them, and increasing the effectiveness of follow-up and control.

2.3.3. CAMELS model for evaluating banking performance

Evaluating the financial performance of commercial banks is accurate and challenging due to the size of the risks associated with their activities, as the banking system uses multiple models to monitor and measure banking performance. However, these models differ from one country to another according to the characteristics of its economic activity, the type of institutions, and the standards used. However, the essential thing that unifies these models is the capital adequacy standards specified in the decisions of the Basel Committee, which are considered a standard of banking safety. In addition, different countries also set standards for evaluating the financial performance of banks using indicators to measure efficiency, profitability, and accuracy in achieving the set goals.

In the United States of America, federal regulators classify commercial banks according to a standardized classification model for financial institutions that includes six indicators indicated in short by (CAMELS). The purpose of using these indicators is to distinguish unstable commercial banks from those with sound performance.

The camel model is an indicator to measure and evaluate the performance of banks. Therefore, this section will cover its historical background and definition and clarify its six elements.

CAMELS is a ratio-based model used to evaluate the performance of banks with the help of the following criteria: Capital Adequacy, Asset Quality, Management Quality, Earnings, and Liquidity, Ferrouhi (2014). The main reason for creating the CAMEL modeling system was the bank collapse in 1933 in the United States of America, where it declared bankruptcy of more than 4,000 local banks (Dincer et al., 2011). These bankruptcies inspired the bank to

develop a system of early warning standards to detect risks in bank performance. The CAMEL rating model was first adapted in 1979 by US federal banking regulators as part of the Uniform Financial Institutions Rating System. The Federal Reserve Bank only used it. The Fed rated the banks and provided rating results without publishing them publicly. The system was presented and became internationally known in 1980 to classify a bank's overall position. It only reflected five valuation parts C-A-M-E-L: Capital, Asset quality, Management, Earnings, and Liquidity (Aspal & Dhawan, 2016). The Federal Reserve and the Office of the Comptroller of the Currency (OCC) continued modifying and developing the system to improve its ability to assess banks' financial position accurately. In 1997, they added the sixth component, sensitivity *market risk*. So accordingly, the C-A-M-E-L method becomes the C-A-M-E-L-S method (ALKUBAISI, 2018). The system was revised to reflect changes in banking transactions and the procedures and policies of government regulatory agencies.

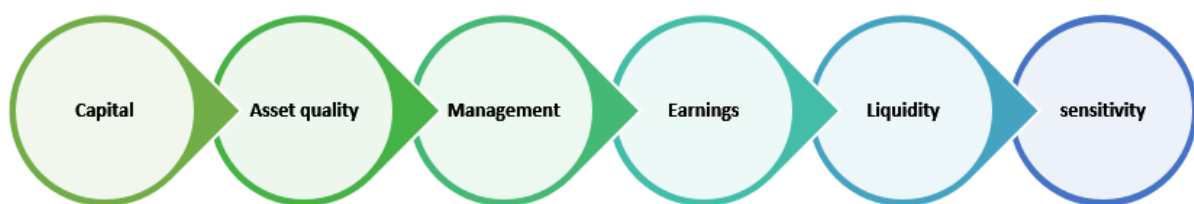


Figure 11. CAMELS Rating System Components.

Source: Author's compilation based on literature

Many researchers tried to define this system. For example, Dang (2011) wrote that The Camels Banking Evaluation System is an effective supervisory tool for uniformly evaluating financial institutions' strengths and identifying institutions that need special attention and control. While Babar and Zeb (2011) believe It is a set of indicators by which the financial position of any bank is analyzed, and it also ranks the banks', as it is considered one of the direct control methods (On_site supervision), which carried out through field supervision, and the control authorities.

CAMELS system was defined by Islam (2018) as an effective unified supervisory system for evaluating bank performance, measuring its effectiveness, and classifying and ranking banks based on six main elements (Capital adequacy, asset quality, management quality, earnings, liquidity, sensitivity to market risks). It enables the supervisory authority to intervene to correct

any condition and protect financial integrity in the banking sector. This is done by using the results of analyzing the banks' annual reports and financial data.

In evaluating the performance position, many studies have applied the CAMELS evaluating and ranking model in different country sectors: government sectors, financial institutions, banking sector, service and production companies, etc. This study will focus on applying the CAMELS approach to the bank sector.

Islam et al. (2018) stated that the CAMELS rating approach is vital to characterizing banks' financial strengths and weaknesses.

Barker and Holdsworth's (1993) CAMELS evaluating main model objective is to assess the financial performance of banks. Still, the results of the analysis of this model can be used as a tool to predict the potential financial risks and banks' failures.

Saikrishna and Varghese (2020) used the CAMELS rating system to analyze the performance of two Indian banks (SBI and HDFC) based on the rating. The study showed that “the SBI has significant liquidity ratios. At the same time, HDFC has higher asset ,quality, capital adequacy management efficiency, and earnings quality performance ratios. The result revealed that the private sector bank occupies first place in the classification. Bodla and Verma conducted a similar study (2006) and used the CAMELS model to evaluate the performance of two Indian banks (SBI and ICIC). The results indicated that “SBI has better capital adequacy, and ICIC bank had higher results in asset quality, earnings quality, and management quality. In comparison, both banks do not have a significant positive relationship to liquidity position.

Yuksel et al. (2015) applied the CAMELS model in their study of Turkish banks for ten years, trying to find the relationship between credit ratings and CAMELS ratios. The study showed that “asset quality, management quality, and sensitivity to market risk positively affect credit ratings. At the same time, the ratios related to earnings and capital adequacy are not significant.

Nanthini and Shanmugam (2020) measured banks' financial performance in India's public and private sectors for five years using the CAMELS method. They have observed that each bank has recorded different performances regarding the CAMELS ratios. They concluded that “Capital adequacy, Asset quality, and Management quality factors were at the top in the private banking sector.

Barr et al. (2002) have noted that banks can measure their financial performances with CAMELS classification by analyzing various information collected from the financial statements, providing an accurate and constitutive tool for regulators and experts.

Shaddady and Moore (2019) This study attempted to measure the performance of 2,210 banks in 47 European countries using the CAMELS-DEA rating system as a stability indicator, which is considered one of the biggest research conducted in this field. They apply financial regulation and measurement systems trying to measure its impact on the financial stability of banks, and the study concluded that capital regulation has a positive effect. On financial stability, the study also found that small banks and emerging banks in European countries are more sensitive on the asset side and vulnerable to failure.

Kumar and Sharma (2014) analyzed the top 8 markets capitalized banks in India and computed many factors using the CAMELS approach for six years. In addition, they collected the financial information from the banks' annual reports. The chosen method provides a simplified way of presenting challenging factors regarding the country's performance of the top banks.

Quoc Trung (2021). The primary goal of this research is to identify the factors that influence the performance of Vietnamese commercial banks from 2009 to 2020. The CAMELS model is used in this study as a framework for analyzing and monitoring bank performance. For the CAMELS model, the author looked at ten statistically significant variables. Additionally, this research used two other methods: The System generalized moments method (SGMM) and the quantitative regression method. By combining the results of the three methods, they highlight the link between bank ownership and performance, implying that state-owned banks must improve and enhance their safety and integrity.

Suresh (2016) This paper considers an Empirical comparative study for the period 2007-2014, and the CAMEL ranking technique was used to assess the performance of conventional and Islamic banks in Bahrain. The findings reveal that Islamic banks are less lucrative and efficient than traditional retail banks due to their intrinsic institutional features.

Echekoba et al. (2014) This study mainly aimed to determine the impact of CAMEL on the profitability of Nigerian banks. Data were obtained from 2001 to 2010. The findings based on the analysis illustrate that liquidity has a significant positive impact on banks' profitability. In contrast, the other four factors do not significantly impact profitability (assets quality, capital adequacy, management efficiency, earning). Therefore, they recommended that the banks

maintain a good liquidity position to meet financial obligations to gain clients' trust and increase profitability.

Aspal and Malhotra's (2013) study evaluated the financial performance of Indian public sector banks based on a sample of 19 public sector banks in India from 2007-2011. The study used 20 financial ratios to calculate the elements of the CAMEL model. The results showed that any economy's strength depends on the financial system's strength and efficiency, which in turn depends on the existence of a sound banking system. The study also showed that the main objective of using the CAMEL model to classify banking institutions is to obtain a comparative analysis of their performance. As a result, the study could classify the banks included in the sample according to the CAMEL rating model from the best-performing bank to the lowest-performing bank.

In Romania, commercial banks have been tested with the CAMELS approach to analyze their financial soundness. As a result, the banks' strengths and weaknesses were analyzed, and guidelines were proposed to increase their safety (Roman & Sargu, 2013).

Rozzani and Rahman (2015) "A comparative study between 19 conventional banks and 16 Islamic banks in Malaysia", data were collected from the annual financial reports of these banks from 2008 until 2011. The main objective was to examine the performance of both Islamic and conventional banks using the CAMELS rating model. After the analysis, it was found that the performance levels of both conventional and Islamic banks in Malaysia were highly similar from an overall view.

Bayraktar and Ghazavi (2018) aim to measure the performance and financial credibility of the top 6 banks in Turkey from 2005 to 2016. CAMELS rating model was used to analyze the performance as it is considered one of the most popular methods for measuring banking performance. The results show that the 2016 ratio values seem to be close to each other. However, some significant differences were noted in the CAMELS ratio categories when the annual analysis was performed. In addition, the results of the ANOVA test indicate that the means of the CAMELS ratios vary significantly over the years.

Table 2: Some ratios used in the evaluation of bank performance using the CAMELS approach

Title & Year	Author	Capital	Asset quality	Management quality	Earnings	Liquidity	Sensitivity to Market Risk
Analyzing the Financial Soundness of the Commercial Banks in Romania: An Approach based on the Camels Framework 2013	Roman, A., & Șargu, A. C.	Total Capital Ratio Total Equity / Total Assets	Impaired Loans / Gross Loans Loan Loss Provisions / Net Interest Revenues Total loans / Total assets	Operating expenses / Total Assets Interest expenses / Deposits	ROA = Net Profit / Total Assets ROE = Net Profit / Total Equity Cost to Income Ratio	Liquid Assets / Deposits and short-term funding Net loans / Deposits and short-term funding	Total Assets / Total sector assets
Comparative Performance Evaluation of Selected Commercial Banks in India using CAMELS Rating Model 2018	Samuel, E. M.	CAR= (Tier 1 Capital + Tier 2 Capital)/ Risk-weighted Assets	Net Nonperforming Asset / Net Advances:	Total advances / Total debts Profit per employee.	Operating profit (by average) / Total Asset, Net profit/ Total asset,	Liquid assets / Total assets Liquid assets / Total deposits	How a bank responds to earnings and capital risk due to changes in interest rates, equity prices, commodity prices, and foreign exchange rates.

Source: Author compilation based on literature

Table 2: Some ratios used in the evaluation of bank performance using the CAMELS approach (continue)

Title & Year	Author	Capital	Asset quality	Management quality	Earnings	Liquidity	Sensitivity to Market Risk
Performance Evaluation of Listed Commercial Banks In Botswana: The Camel Model, 2017	Sathyamoorthi, C.R., Mapharing, M. Ndzingi, S. Tobedza, G. & Wally-Dima, L.	Leverage Ratio (Total Debt /Total Equity) Equity Capital to Assets (Total Equity/Total Assets)	Provision for Loan Loss Ratio (Provision for Loan Loss/Total Loans) Ratio of Total Loans to Total Assets (Total Loans & Advances/ Total Assets)	Ratio of Expenses to Deposits (Total Interest Expense / Total Deposits) Ratio of Loans to Deposits (Total Loans and Advances / Total Deposits)	Return on Equity Net Income / Total Equity Return on Assets Net Income/ Total Assets	Customer Deposits to Total Assets Ratio (Total Customer Deposits / Total Assets) Cash Ratio (Cash and Cash Equivalent / Current Liability)	---
Ranking Iranian Private Banks Based on the CAMELS Model Using the AHP Hybrid Approach and TOPSIS 2016	Ghasempour, S., & Salami, M.	Capital/Total Risk-Weighted Assets Debt/Equity	Non-performing Loans/Total Loans Total loans/Total assets Doubtful receivables costs/Total receivables	Net income/Number of Employees (Total revenue - Interest expenditure)/Total Expenses) Deposit growth rate + Loan growth rate	Interest Earned - Interest expenditure Net Income/Total Assets Net Income/Equity	Liquid asset/Total Deposits Liquid Assets/Demand Deposits and short-term funding Total loans/Total Deposits	(Foreign currency assets - Foreign currency debt)/Equity) Company's beta in Exchange

Table 2: Some ratios used in the evaluation of bank performance using the CAMELS approach (continue)

Title & Year	Author	Capital	Asset quality	Management quality	Earnings	Liquidity	Sensitivity to Market Risk
Determination of Camels model on bank's performance 2015	Rostami, M.	Liabilities/ Equity Deposits/Equity Assets quality CAR Total capital base/ Total complementary capital	Rate base assets /Total assets Deposits/Total assets Fix assets/Equity Fix assets/ Total assets	Net profit/Number of branches Total assets/Number of branches Total liabilities /Number of branches	Loan income/ Loans Deposit cost/Deposit Cost / income	Current liquidity/Deposits Security/Total assets Liquidity/Assets	(Bad debts + Overdue)/Loans Long-term deposits/Deposits Demand deposits/Deposit
Comparative Performance Evaluation of Selected Commercial Banks in the Kingdom of Bahrain Using CAMELS Method 2014	Venkatesh, D., & Suresh, C.	Capital funds / Total assets Equity / net loans Equity / liabilities	Loan loss reserve / gross loans Loan loss provisions / net interest revenue impaired loans/ gross loans	Equities/ Total assets Operating profit / risk-weighted assets Non-operational items / net income	Net interest revenue / average assets Net interest margin Cost / income	Net Loans / Total Assets, Net Loans / Deposit & Short Term Funding, Liquid Assets / Total Deposits & Borrowing.	interest rate risk Currency risk

Source: Author compilation based on literature

Chapter 3: DATA AND METHODOLOGY

3.1. Data

This chapter explains the methodologies used in evaluating banks' performance in the thesis and its data. The thesis data is mainly obtained from the published annual financial reports of the selected 15 local commercial banks from Qatar, Al-Kuwait, and Jordan websites. In particular, four parts of financial statements are used to analyze the ratio; Balance Sheet, Income Statement, Cash Flow Statement, and Statement of shareholders' equity. Moreover, annual central bank and stock exchange market reports are also used.

A comparative study has been conducted between fifteen local commercial banks, five Qatar, five Kuwait, and five banks of Jordan, which cover six years from 2014 to 2019.

The study population consists of Qatar, Kuwait, and Jordan. The three countries are from the Middle East, reflecting three different banking levels: high, medium, and low. This study will try to compose a clear picture of their performance and then detect the main differences.

Table 3: Main characteristics of countries examined

	GDP/ person	World banking ranking using GDP/person	Level of development
Qatar	96.491 US	3	High
Kuwait	51.912 US	19	Medium
Jordan	10.316 US	111	Low

Source: World Bank

Accordingly, there will be a brief overview of the banking sector in the three countries. Then will present the sample banks selected for the study and analyzed in the research.

3.1.1. Qatar Banking Sector

Banking activities began in Qatar more than seven decades ago when Al-Sharq Bank, now known as Standard Chartered Bank, opened a branch in the country in 1950, and many other banks followed suit, including the Arab Bank in 1957. Finally, in the mid-1960s of the last century, the first national bank was established, Qatar National Bank, which is considered one

of the largest Arab banks at present, and other Qatari banks followed suit, such as the Commercial Bank, Doha Bank, Qatar Islamic Bank, and the National Bank of Qatar (El-Kassem, 2017).

Qatar's banking sector has grown horizontally and vertically in tandem with the country's economic revival.

18 banks are operating in Qatar, which consists of (7 Commercial banks, including one specialized bank, 4 Islamic banks, and seven foreign banks) which are the supervisory and regulatory authority for the banking system in the State of Qatar (Qatar Central Bank -Banks Directory, 2020)

The Qatari banking sector is considered the third largest Arab banking sector after the United Arab Emirates and Saudi Arabia. The consolidated financial statements of public banks in the State of Qatar showed an increase in the volume of their assets at the end of December of the last year 2019 by 9.2% to reach 1.55 trillion riyals or the equivalent of 425 billion US dollars. Total public credit in 2019 increased by 10.5% to reach 1.04 trillion riyals, supported by increased financing for the general trade and services sectors. Deposits recorded a growth in 2019 by 4.8% to reach 849 billion riyals, supported by increased non-resident deposits (Qatar Central Bank, Bank Financial Stability Review, 2019).

Al- Bordaini (2019) discusses in his doctoral dissertation that Qatari banks are living in their best conditions due to the high quality and quantity of their assets, high capitalization, strong solvency, and low non-performing loans ratio of only about 2 percent. This is due to the accumulated banking experience in the State of Qatar. On the one hand, the prudent supervision carried out by the Qatar Central Bank and the regulatory standards that it issues periodically align with international standards that achieve high levels of safety for the country's banking system. Thus, the role of the Qatari banking sector is constantly strengthened to be the engine of economic development in Qatar. All that enables Qatar to increase economic growth rates and achieve Qatar Vision 2030. In light of the high GDP per capita, which is one of the highest in the world, exceeding one hundred thousand dollars in 2019, and the fact that Qatar is the third country in terms of natural gas reserves, the state of Qatar has a strong economy based on substantial financial foundations and high-level sovereign reserves. At the same time, it is the world's largest exporter of liquefied natural gas.

The strength and durability of banks operating in the Qatari market have helped attract more Qatari, Arab, and foreign investments, all of which are in the sector's best interests and confirm the strength of the Qatari banking system gained widespread trust among local and international investors. The Qatar Central Bank, on the other hand, has maintained a fixed exchange rate regime between the Qatari riyal and the US dollar at 3.64 riyals per dollar since July 2001. This policy is the foundation of its monetary policy and is pretty reliable (Al- Bordaini, 2019).

Table 4: Qatar banks and date of establishment

Local Qatar Banks		Arab & Foreign Banks
Commercial	Islamic	
1 - International Bank of Qatar (1956)	8 - Qatar Islamic Bank (1982)	12 - Arab Bank (1930)
2 - Qatar National Bank (1964)	9 - Qatar International Islamic Bank (1991)	13 - HSBC Bank Middle East Limited (2005)
3 - Commercial Bank of Qatar (1975)	10 - Masraf Al Rayan (2006)	14 - Bank Saderat Iran (1952)
4 - Doha Bank (1979)	11 - Barwa Bank (2008)	15 - Standard Chartered Bank (1950)
5 - AlAhli Bank of Qatar (1983)		16 - Mashreq Bank (1967)
6 - Al Khaliji Bank (2007)		17 - BNP Paribas (1956)
7 - Qatar Development Bank (1997) (specialized Bank)		18 - United Bank Limited (1959)

Source: Authors computation using data from (Qatar Central Bank-Banks Directory, 2020)

3.1.2. Kuwait Banking Sector

Compared to other nations in the area, Kuwait's banking industry has the most significant usage of financial services, and it is the country's second-largest economic sector after oil. The institutional, government, and private (family) owners own most of Kuwait's domestic banking sector (Al-Saidi and AlShammari, 2013). Kuwait now has 23 banks, including (5 commercial banks, 5 Islamic banks, one specialized (government) bank, and 12 foreign banks) all under the Kuwait Central Bank's supervision. Furthermore, the total number of internal branches of Kuwaiti banks has reached 353. (Kuwait Central Bank Annual Report, 2020).

As previously stated, Kuwait's banking sector is the country's second-largest economic sector after oil. It contributes significantly to the national economy as Kuwaiti banks have provided significant added value to the national economy and contributed significantly to its GDP growth. Kuwaiti banks monitor the national economy and the country's external contact through their branches in many nations worldwide. More than half of the workforce works in Kuwaiti banks in the private sector. In addition, Kuwait's banking industry is one of the best-trained in terms of human resources and technology (Union of Arab Banks, 2020).

For financial inclusion, compared to other nations in the area, Kuwait has a high rate of financial service use, with 86.8% of the population (over 15 years) having an account with an official financial institution. Furthermore, 92.7 percent of males and 72.8 percent of females hold a bank account, respectively (Union of Arab Banks, 2020). The high rate of financial services in Kuwait is due to the Central Bank of Kuwait's and banks' ongoing efforts to improve and facilitate access to official services for all sectors and social affairs. For example, encourage banks to expand their branch network, display innovative savings products, make credit easier to obtain, and publish modern payment methods.

Kuwait Central Bank Annual Report (2019) shows the distribution of credit facilities provided by Kuwaiti banks in the sectors of the economy.

The development of credit activity in Kuwait until October 2019 shows that the total credit granted by the Kuwaiti banking sector increased in October 2019 by 4.7%, according to the latest data issued by the Central Bank of Kuwait, as the given credit exceeded 38.3 barriers. One billion dinars, compared to 36.6 billion dinars in October 2018. At the time, deposits were still growing at limited rates, reaching 1.2% annually.

Total credit granted increased by 0.7% monthly, compared to 38.1 billion dinars in September 2019.

The share of private credit facilities in October 2019 constituted 42.5% of the total credit granted, without noticeable change from its share of about 42.4% to the total credit in October 2018, while the share of credit given to the real estate and construction sectors increased to 28% of the total credit, compared to 27.3% For the same month of 2018, the share of the three industries increased to 70.6% of the total credit granted, compared to 69.7% for the same month of 2018.

In Kuwaiti banks, the big challenges are described in the real estate market because this market is unstable. The banking industry in Kuwait is challenging and is characterized by high competition among domestic banks.

Table 5: Kuwait banks and date of establishment

Local Kuwait Banks		Arab & Foreign Banks
Commercial	Islamic	
1-National Bank of Kuwait (1952)	7- Ahli United Bank (1971)	12- Citi Bank (1812)
2- Gulf Bank of Kuwait (1960)	8- Kuwait International Bank (1973)	13- HSBC Bank Middle East Limited (1889)
3- Commercial Bank Of Kuwait (1960)	9- Kuwait Finance House (1977)	14- BNP Paribas (1956)
4- AlAhli Bank of Kuwait (1967)	10- BoubayanBank (2004)	15- Al-Rajhi Banking & Investment Corporation (Al-Rajhi Bank) (1957)
5- Burgan Bank (1977)	11- WarbaBank (2010)	16- Qatar National Bank-QNB(1964)
6- Industrial Bank of Kuwait, (Specialized government bank,1973)		17- Mashreq Bank (1967)
		18- National Bank of Abu Dhabi (1968)
		19- Bank of Bahrain and Kuwait (1977)
		20- Doha Bank (1979)
		21- Bank Muscat (1982)
		22- Union National Bank (1982)
		23- Industrial and Commercial Bank of China Limited (1984)

Source: Authors computation using data from (Kuwait Central Bank Annual Report, 2020)

2.1.3. Jordan Banking Sector

The Jordanian banking sector began its major work improvement over half a century in 1948 when Arab Bank relocated its headquarters from Jerusalem to Amman. Moreover, it shows steady expansion (Wadi & Saqfalthait, 2016).

The number of banks operating in Jordan is 24, including 13 local commercial banks, 3 Islamic banks, and eight foreign banks. According to the Association of Banks in Jordan, the number of bank branches and offices inside Jordan is 927 branches and offices, in addition to 1872 ATMs, and the number of employees in banks reached 21,262 employees as of the end of 2019 (Jordan Central Bank Annual Report, 2019)

Unlike Qatar and Kuwait, Jordan is not classified as an oil-producing country. Instead, it relies on subsidies from surrounding countries, showing that the region's socioeconomic and political conditions are essential in deciding how the government can solve the issues. Despite its obstacles, Jordan has had considerable development, and the Jordanian banking industry is one of the economy's primary foundations. However, the Jordanian Central Bank stated in its Financial Stability Report for 2019 that this industry is one of the growing industries.

The continued high level of financial stability in the Kingdom, as Jordan enjoys a sound and solid banking sector capable of withstanding shocks and high economic and monetary risks. The report shows that the average capital adequacy ratio for banks operating in the Kingdom was 17 %, compared with 12% according to the requirements of the Central Bank and 10.5% according to the requirements of the Basel Committee.

The assets of banks operating in Jordan at the end of the first eleven months of 2019 increased by 4.7% to reach 53.3 billion JOD, while credit facilities grew by 3.9% to reach 27.1 billion JOD, and deposits with banks increased by 3.8% to reach 35.1 billion dinars. This means that the Jordanian economy is based on banks, the largest sector in size, and the leading financier of the development process in the Kingdom, as banks constitute more than 95% of the sources of financing in Jordan.

Jordan's banking assets represent 171% of GDP, while deposits constitute 113%, and credit facilities account for 87%, reflecting banks' financial depth and great relative importance.

The Jordanian banking sector is based on a strong infrastructure, starting from the strong supervisory of the Central Bank of Jordan, which is considered one of the most important regulatory institutions operating in the Kingdom and is in full compliance with the supervisory requirements issued by international organizations such as BASEL and FATF, in addition to full compliance with IFRS (Bawaneh, 2011).

Table 6: Jordanian banks and date of establishment

Local Jordan Banks		Arab & Foreign Banks
Commercial	Islamic	
1- Arab Bank (1934)	14- Jordan Islamic Bank (1978)	17- Egyptian Arab Land Bank (1951)
2- Jordan Ahli Bank (1956)	15- International Islamic Arab Bank (1997)	18- Rafidain Bank (1957)(
3- Cairo Amman Bank (1960)	16- Safwa Islamic bank (2009)	19- Citi Bank (1974(
4- Bank of Jordan (1960)		20- Standard Chartered Bank (2002)
5- The Housing Bank for Trade and Finance (1974)		21- Bank Audi (2004)
6- Jordan Kuwait Bank (1977)		22- National Bank of Kuwait (2004)
7- Arab Jordan Investment Bank (1978)		23- Blom Bank (2004)
8- Jordan Commercial Bank (1978)		24- Al-Rajhi Bank (2011)
9- Arab Banking Corporation B.S.C (ABC) (1989)		
10- Invest Bank (1989)		
11- Bank El-Etihad (1990)		
12- Societe General Bank / Jordan (1993)		
13- Capital Bank (1996)		

Source: Author's computation using data from (Central Bank of Jordan Annual report,2019).

3.1.4. The study sample

This study analyzed Qatar, Kuwait, and Jordan's local commercial banks because commercial banks almost have the same policies, strategies, and converging tasks.

Islamic, specialized, investment and foreign banks were excluded because of major differences in their financial data due to their different targets and objectives. This leads to an apparent discrepancy in the results from the rest of the selected sample banks, which increases the standard error of the study result, which is why they were excluded.

The definition of each type of bank clearly shows the differences between them.

Commercial banks are considered one of the most important and oldest intermediary financial institutions whose primary function is to accept current and time deposits and savings deposits for individuals, institutions, and the government and then reuse them for their accounts, mainly; loans and other financial operations of economic units (Berger & Bouwman, 2017).

Specialized banks: Shiba and Issa (2015) find that Specialized banks' activities are directed at serving a specific economic activity, such as (Agricultural banks, Industrial banks, Real Estate banks, Investment banks, and Development banks). In most cases, due to the nature of these banks, they do not deal a lot with current-call deposits. This may be due to these specialized banks' lending policy, which is characterized by relatively long-term financing. Thus, current deposits are not suitable to provide adequate funding for this type of credit.

Islamic banks: An Islamic bank is a financing bank in the general sense of the investment concept but is committed to Sharia (Islamic law). Islamic banks directly invest in the economic field through direct participation in capital, speculation, or share ownership.

Mainly two basic principles differ between Islamic banks and other banks; Islamic banking is profit and loss sharing and the prohibition of collecting and paying interest by lenders and investors (Abduh & Omar., 2012).

A foreign bank is a bank that is obligated to follow the regulations of two countries, the headquarters, and the host country. Also, the foreign bank branch has loan limits based on the bank's total capital and the rules and regulations, especially those set by the host country's central bank (Berger et al., 2020).

Accordingly, this study covers five Qatar banks: Qatar National Bank, Doha Bank, Alkhaliji Bank, Commercial Bank of Qatar, and Al-Ahli Bank of Qatar.

Qatar Development Bank was excluded according to its formal website vision (To develop and empower Qatari entrepreneurs and innovators to contribute to the diversification of the Qatari economy through successful small and medium enterprises).

IBQ has been excluded for not complying with the control list and violating the Disclosure and Transparency Act. It has not published any financial statements or reports since 2018.

Five banks from Kuwait were chosen: National Bank of Kuwait, Gulf Bank, Commercial Bank of Kuwait, Al-Ahli Bank of Kuwait, and Burgan Bank.

Industrial Bank of Kuwait is the first specialized government bank. It was excluded because it is dedicated to supporting industry in Kuwait (provides medium and long-term financing for the establishment, expansion, and modernization of the industrial sectors in the country).

Five banks from Jordan were also selected: Arab Bank Group, Housing Bank for Trade and Finance, Jordan Ahli Bank, Jordan Kuwait Bank, and Bank of Jordan.

The five Jordanian local commercial banks were selected based on a report (Marcopolis.net) that compiled the ranking of the Top Jordanian banks according to their market share, where the market share percentage for Arab Bank in Jordan reached 51.79%, and for Housing Bank for Trade and Finance 15.04%, Jordan Ahli Bank 5.57%, Jordan Kuwait Bank 5.15%, and Bank of Jordan 4.27%, so these five banks represent 81.82% of the bank market share in Jordan.

Table 7: The selected bank's sample

Qatar		Kuwait		Jordan	
Bank Name	Code	Bank Name	Code	Bank Name	Code
1. Qatar National Bank	QNB	1. National Bank of Kuwait	NBK	1. Arab Bank Jordan	ARABJO
2. Doha Bank	DOHB	3. Commercial Bank of Kuwait	CBK	2. Housing Bank for Trade and Finance	HBTF
3. Alkhaliji Bank	KHLIJIB	3. Gulf Bank	GULB	3. Jordan Ahli Bank	AHLIJO
4. Commercial Bank of Qatar	CBQ	4. Al-Ahli Bank of Kuwait	AHLIBK	4. Jordan Kuwait Bank	JKB
5. Al-Ahli Bank of Qatar.	AHLIBQ	5. Burgan Bank	BURGB	5. Bank of Jordan	BOJ

Source: Author's computation

3.2. Methodology

3.2.1. CAMELS Evaluation and Rating system

Over the years, many researchers such as (Cole & Gunther, 1995; Roman & Sargu, 2013; Ghosh, 2017; Singhal, 2020, etc.) have used the CAMELS evaluation and rating system to make the ranking of the banks and to stand on the level of their financial performance.

CAMELS six factors:

1 - Capital Adequacy

The concept of capital adequacy illustrates the relationship between the bank's capital sources and the risks surrounding the bank's assets. Capital Adequacy Ratios (CAR) refers to measuring a bank's financial strength, assessing the health of the financial performance and the stability of banks and financial institutions. Accordingly, Banks must have a sufficient capital ratio to cover the risks of their activities (Trautmann, 2006).

2 - Asset quality

Asset quality is a significant element of the assessment system since it is a critical aspect of the bank's activity that drives operations toward revenue generation and impacts its profitability. A robust asset classification reflects management's capacity to identify, assess, oversee, and control risks. Also, the appropriateness of debt provisions must be considered to influence the Bank's investments, such as operational risk, market risk, reputation risk, regulatory compliance, etc. (Christopoulos et al., 2011).

Loans constitute the highest percentage of the bank's total assets. Loans are related to higher risks compared to the other asset types. The main goal of measuring asset quality is to decrease the percentage of bad loans (non-performing loans) to total loans because their increase affects the bank's profitability (Trautmann, 2006).

3 - Management quality

Management quality is the main requirement for any financial institution's growth and success, and it plays a significant part in defining the bank's performance. Integrity, professionalism, and service quality must be evident in management processes. As a result, management is the foundation and most critical aspect of improving banking performance. (Trautmann, 2006).

According to Sundararajan and Errico (2002), the CAMELS framework can emphasize the efficiency of the various managerial levels, the extent of compliance with laws and regulatory instructions, the extent of the integrity of the internal control systems and the commitment of the employees. In addition, it ensures that the bank can plan and adapt to urgent changes in the surrounding conditions to maintain its stability and increase its ability to grow.

4 - Earnings

Earnings are the difference between revenues and costs. It also refers to the bank's ability to achieve revenues and profits continuously and increase them in a balanced manner. In addition, implement policies that reduce public expenditures and doubtful follow-up debts, so they do not default.

The earnings classification (profitability) not only reflects the size of revenues but also there are several factors affecting profitability:

- The lending risk forces the bank to form reserves.
- Financial market risks cause changes in the bank's earnings due to being affected by interest rates.
- The inability to control expenses and weak strategies also affect the bank's profits. (Trautmann, 2006).

5 - Liquidity

Liquidity expresses the bank's ability to meet its short-term obligations toward depositors and borrowers. This factor measures the adequacy of liquidity sources vis-à-vis current and future emergency or planned needs, the levels of diversification of cash sources, and adherence to the liquidity ratios decided by the monetary authorities (Christopoulos et al., 2011).

According to Berger & Bouwman (2017), Liquidity management in banks aims to achieve the following:

- Making the right decisions regarding the size of deposits must reach a specified level, as the volume of deposits increases in light of not employing them.
- Monitoring the extent of the bank's dependence on fluctuating deposits or reliance on public sector deposits (the extent of the stability of deposits).
- Maintaining adequate levels of liquidity for emergency needs and the bank's ability to enter the money market to ensure liquidity, such as re-securitizing and selling part of its assets, and the extent of diversification in the investments of funds.
- Respecting the liquidity ratios set by the Monetary Authority.

6 - Sensitivity to Market Risk

The Sensitivity to Market Risk (S) factor is relatively recent compared to the previous components of this model (CAMEL), as this component was added in 1997.

Sensitivity to Market Risk relates primarily to banks' investment portfolios, as they contain many financial instruments such as stocks, foreign governmental bonds, corporate bonds, and

financial derivatives. These instruments are subject to different risks, such as stock price risk, currencies exchange rates, interest rates, and real estate prices risks, and each of them has various ratios to be measured (Christopoulos et al., 2011).

- The rating scale of 1, which is the highest, to 5, which is the lowest, is as follows:

Table 8: CAMELS classification system according to international standards

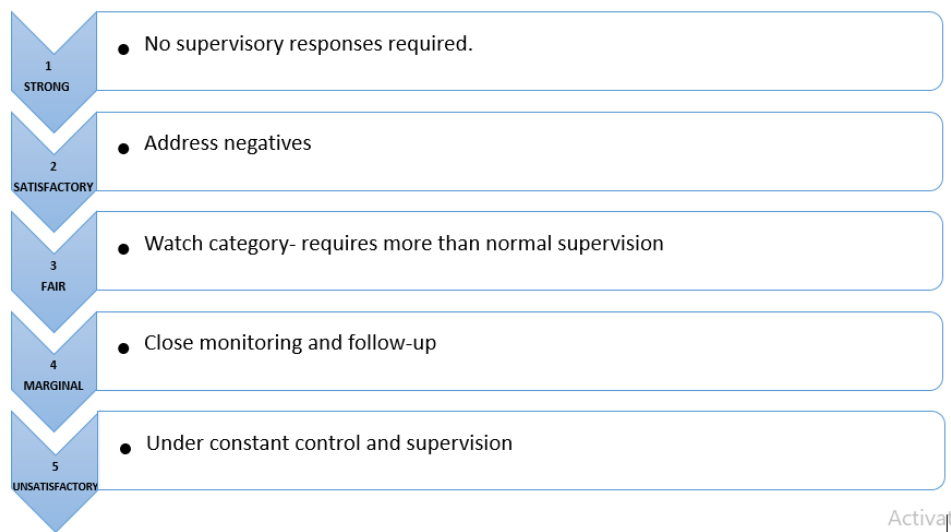
Bank Rating	RANGE	DESCRIPTION
1	1.0 – 1.4	STRONG: The position is sound in all respects
2	1.6 – 2.4	SATISFACTORY: Relatively sound, with some deficiencies
3	2.6 – 3.4	FAIR: shows elements of weakness and strength
4	3.6 – 4.4	MARGINAL: Danger of failure
5	4.6– 5.0	UNSATISFACTORY: (High degree of failure evident): High risk of failure in the near term.

Source: Nimalathanasan (2008), Babar and Zeb (2011)

According to the above classification scale of banks, the central bank can determine the nature of financial conditions, supervisory follow-up, and the appropriate control mechanism for each category.

The CAMELS model only identified the six factors that must be considered to measure financial and managerial competence and stability. However, it did not specify the financial ratios to be used, which opened the door for banks to use the ratios that give a better view of the bank's financial and administrative situation. For this reason, in this research, eighteen ratios were used (3 ratios for each component) to measure neutrality. However, many types of research used a financial ratio per factor, raising doubts about the research results. Additionally, other research places different ratios for the six factors, and in my opinion, all aspects are important, giving equal proportions for all items. So financial ratios are the variables that can be an output of the six factors.

Figure 12. Control measures based on the degree of classification.



Source: Authors computation based on Dang, 2011 & Babar and Zeb (2011)

3.2.2. Ratio analysis

The most common method of financial analysis is ratio analysis, which expresses a mathematical relationship between two values. The goal of ratio analysis is to estimate the institution's financial performance and policies. The calculated ratio is not the "solution" but rather an indicator of some facet of an institution's performance, indicating what occurred but not why (Robinson et al., 2009).

The values are the accounting data and numbers presented on the balance sheet, income statement, or cash flow statement under one condition; The relationship between these numbers is linked to expressing and explaining performance. On the other hand, the results of each ratio can only be understood by its importance or how performance is evaluated by comparing it to some standard models, so by comparing the percentage score with the value of the criterion used, the performance can be assessed (Dincer et al., 2011).

Regarding the ratio analysis, it is important to remember that a single ratio cannot accurately evaluate a firm. As a result, ratios are grouped to achieve a meaningful entity analysis. Accordingly:

- The horizontal analysis must compare financial statements in the same accounting period.
- Financial statements that are being compared must be prepared using the same accounting principles and methodology.
- The impact of inflation on financial statements must take into consideration.

The calculated ratio isn't crucial in and of itself, but the meaning of the ratio matters the most. Therefore, ratios are compared to other firms or the preceding period to achieve a relevant conclusion and suggestion. The following comparisons can be used to understand ratio analysis:

- Cross-sectional comparison (comparison to a subset of organizations in the same sector to identify weaknesses in the company's operations).
- Comparison of Time-series (to reveal the prospect of the company).
- The company's objectives and strategy. Actual ratios can be compared to the company's objectives to see if the goals are being met and if the outcomes are compatible with the company's plans (Robinson et al., 2009).
- Ratio comparison to the absolute standard.

After examining several financial ratios approved and analyzed in previous studies in the literature and Table 2, the set of ratios examined in this research was selected in Table 9.

3.2.3. MANOVA & ANOVA Test

The variables were tested concurrently using the multivariate analysis of variance (MANOVA). When two or more categorical independent variables (the fifteen banks) have two or more treatment levels, MANOVA is utilized. Furthermore, using more than one continuous response variable (the 18 financial ratios over six years) makes it "multivariate" to examine if there is a difference in bank financial performance connected to the 18 computed variables ratios. One-way ANOVA should be utilized to assess statistically significant differences among the sectors' efficiency results if the MANOVA demonstrates a significant difference (less than 5%) among variables (French et al., 2008).

Table 9: CAMELS Parameters & Selected ratios for measurement

CAMELS Parameters	Symbols	Selected ratios for measurement (Sub-Parameters)
Capital adequacy (C)	C1	Total Equity / Total Assets (TE/TA)
	C2	Total Liabilities / Total Equity (TL/TE)
	C3	Total equity / Total loans (TE/NL)
Asset quality (A)	A1	Total deposit / Total Assets
	A2	Fixed assets / Total Assets (FA/TA)
	A3	Total loans / Total assets (TL/TA)
Management (M)	M1	Net profit / Staff cost (NP/SC)
	M2	Net profit / Net interest income (NII/NP)
	M3	Net profit/ Total loans.
Earnings (E)	E1	Net Profit / Total Assets (ROA)
	E2	Net Profit / Total Equity (ROE)
	E3	Net profit / Interest income (NP/II)
Liquidity (L)	L1	liquid assets / customer deposits
	L2	Cash & cash equivalents / Total Assets (C.Cash/TA)
	L3	Customer deposit / Total assets (CD/TA)
Sensitivity (S)	S1	Net interest income / Total Assets (NII/TA)
	S2	Total Reserves / Total Assets (TR/TA)
	S3	Total Investment / Total Assets (TINV/TA)

Source: Author's computation

3.2.4. Panel data analysis

In addition to the previous methods, the Panel data analysis (longitudinal or cross-sectional time-series data) was used to reach the optimal model, which expresses the relationship between the study variables. Panel regression combines the advantages of the Cross-section and Time-Series data methods. The use of the Panel Data method allows us to use the data as it is without resorting to Mean. Mean would reduce the data discrepancy, affecting the study results (El-Kassem, 2017).

Panel data analysis is appropriate when the database contains cross-sectional and time-series data. In principle, panel data can be as a data cube with three dimensions: units = 1,..., n, time

points $t = 1, \dots, T$, and variables $v = 1, \dots, V$. To analyze panel data with statistical computer software, we need to rearrange the three-dimensional data cube into a two-dimensional working dataset (Andreß et al., 2013). Thus, panel data models provide information about a two-dimensional sample: across individuals N (cross-sectional dimensions) and overtime T (time-series dimensions). Furthermore, panel data is called balanced when each unit is observed in each wave, while in unbalanced panel data, the number of observations per unit differs (Andreß et al., 2013).

There are two types of panel regression; Fixed and Random. Fixed effects assume that a particular group/time has a different intercept in the regression equation, while random effects hypothesis individual group/time has a different disturbance (Croissant & Millo, 2018).

This research aims to explore the use of both panel techniques (fixed and random) as a result of the presence of several variables (18 ratios) for several banks (15 banks) and several periods (6 years from 2014 to 2019) to identify the most important financial ratios that can be considered as indicators of the bank's financial position.

Three ratios were used as dependent variables (ROE, ROA, NP/II) separately and determined the financial performance impacts for the banking sectors of the three countries. R-Excel and SPSS software were used for the calculations throughout the thesis.

3.2.5. Multidimensional (Scaling)MDS

Multidimensional scaling was applied to determine the differences in the comparable banks in the three countries. Multidimensional scaling is the visual display of distances or differences between object sets. Objects or attitudes could be related to many things. Examples C countries, colors, and ideologies (Kruskal and Wish, 1978). MDS is being seen in several fields, or any relational data in this research reflects the Banks. The various techniques of MDS can be used to reduce and transform high-dimensional data. Data may be seen as being represented in two or three dimensions. When you are constructing lower-dimensional data, the term scaling is applicable. As data is reduced in size, it seems to have identical properties. Another way to think about it is that two points in high-dimensional space would be near each other, so you can look at something in more than two dimensions rather than being forced to only on two-dimensional details. It is possible to provide three- and four-dimensional plots (Buja et al., 2008).

Chapter 4: RESULTS AND DISCUSSION

This chapter includes empirical analysis and discussions about the results of the research. There are four subchapters in this section. At first, descriptive analysis is executed for the main financial parameters, i.e., Total Assets, Total Equity, Total Liabilities, Total Loans, Total Deposits, and Net Profit. Secondly, analysis of variance (MANOVA, ANOVA) is investigated by year and by country. Afterward, CAMELS parameters are used to determine the financial performance of 15 commercial banks across three countries, i.e., Qatar, Kuwait, and Jordan, from 2014 to 2019. Finally, ANOVA, MANOVA, and MDS (Multidimensional scaling) are investigated following each parameter. Each parameter is analyzed and explained separately. Descriptive analysis was computed by SPSS, while ANOVA, MANOVA, and MDS methods were calculated by RExcel (an add-in for Microsoft Excel).

4.1. Descriptive analysis of the variables

Corresponding macroeconomic data - covering six years from 2014 to 2019 - are obtained from annual financial statements; Balance Sheet, Income Statement, Cash Flow Statement, and Statement of shareholders' equity. Table 10 shows the chosen variables for each parameter.

Table 10 Variables used in CAMELS model

<i>Parameters</i>	<i>Name of the variable</i>	<i>Ratio</i>
<i>Capital adequacy</i>	Total Equity to Total Assets	Total Equity / Total Assets
	Total Liabilities to Total Equity	Total Liabilities / Total Equity
	Total Equity to Total Loans	Total Equity / Total Loans
<i>Asset quality</i>	Total Deposit to Total Assets	Total Deposit / Total Assets
	Fixed Assets to Total Assets	Fixed Assets / Total Assets
	Total Loans to Total Assets	Total Loans / Total Assets
<i>Management</i>	Net Profit to Staff Cost	Net Profit / Staff Cost
	Net Profit to Net Interest Income	Net Profit / Net Interest Income
	Net Profit to Total Loans	Net Profit / Total Loans
<i>Earnings</i>	ROA	Net Profit / Total Assets
	ROE	Net Profit / Total Equity
	Net Profit to Interest Income	Net Profit / Interest Income

Source: Author's compilation

Table 20 Variables used in CAMELS model (continued)

<i>Parameters</i>	<i>Name of the variable</i>	<i>Ratio</i>
<i>Liquidity</i>	Liquid Assets to Customer Deposits	Liquid Assets / Customer Deposits
	Cash, Cash equivalents to Total Assets	(Cash+Cash equivalents)/ Total Assets
	Customer Deposits to Total Assets	Customer Deposits / Total Assets
<i>Sensitivity</i>	Net Interest Income to Total Assets	Net Interest Income / Total Assets
	Total Reserves to Total Assets	Total Reserves / Total Assets
	Total Investments to Total Assets	Total Investments / Total Assets

Source: Author's compilation

The main characteristics of the selected ratios are presented in Figure 13. The figure shows the average ratios and confidence interval at a 95% probability level in the banks of the countries investigated. The ratios presented were chosen from the CAMELS and panel regression analysis.

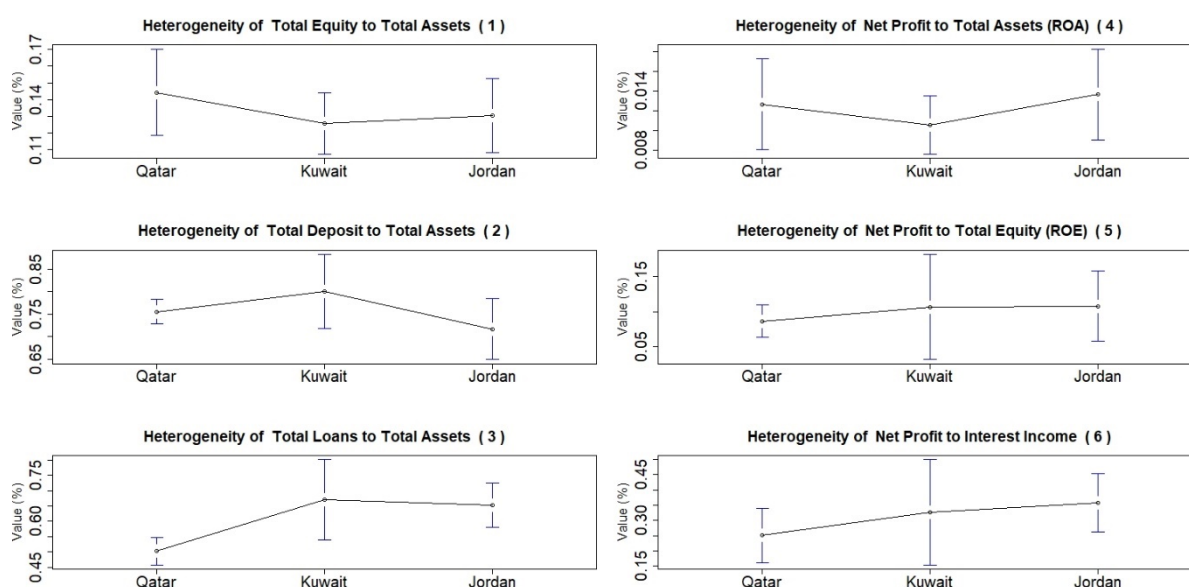


Figure 13 Heterogeneity of selected bank ratios by countries

Source: Author's calculation

In the first graph of the figure (Total Equity to Total Assets), Qatar bank's proportion of equity is the highest, showing that Kuwait and Jordan banks are almost similar. Furthermore, it means the risk exposure of Qatar banks is lower than in other countries.

In the second graph (Total Deposit to Total Assets), Jordan banks got the lowest ratio, showing that the Jordan banks use fewer deposits to finance their assets. They should requisite on more other resources. While Kuwait banks are the highest, they should depend less on outside financial resources. The ratio distribution is small in the case of Qatar banks, so they have a very similar deposit proportion.

In the third graph (Total Loans to Total Assets), Kuwait and Jordan have very similar average ratios, but Kuwait banks' deviation is higher. Moreover, Qatar banks have lower ratios than other countries, which can mean Qatar banks do not mainly invest their resources in loans but other assets.

The fourth (Net Profit to Total Assets) is essential for measuring bank performance. There is an unexpected result because the Jordan banks had the highest ratios. However, Qatar bank's average ratios are almost the same as Jordan's, and the ratios' distribution is also very similar for both banks. Kuwait banks have the lowest ratios.

The fifth (Net Profit to Total Equity) shows no significant differences between the analyzed countries' banks, but Qatar banks' average ratios are slightly lower. Furthermore, the dispersion of Kuwait banks' ratios is higher than the other two country banks.

The sixth graph (Net profit to Interest income) shows definite ordering between banks because Qatar banks' average ratios are the minimum; the Kuwait banks follow them. The highest average ratios have the Jordan banks, which means the interest rate in Jordan banks contributes highly to their profit.

4.2. Analysis of Variance

MANOVA (Multivariate Analysis of Variance) tests whether the variables differ across the countries. MANOVA results proved a statistically significant difference among the countries in all the independent variables, and the p-value showed a significant difference at the 0.05 significance level.

Since the MANOVA showed a statistically significant difference, ANOVA is used to identify statistically significant differences within the countries during the analysis period, Table 12.

Table 11. MANOVA test results

Name of CAMELS attribute	Qatar	Kuwait	Jordan
Capital adequacy	0.00%	0.00%	0.00%
Asset quality	0.00%	0.00%	0.00%
Management	0.00%	0.00%	0.00%
Earnings	0.00%	0.00%	0.00%
Liquidity	0.01%	0.01%	0.00%
Sensitivity	0.00%	0.00%	0.00%

Source: Author's calculation

ANOVA suggests insignificant differences exist between the banks' overall annual performances concerning Cash and Cash Equivalents to Total Assets, Net Interest Income to Total Assets, and Net Profit to Interest Income ratios. However, ANOVA indicates that the differences in countries were statistically significant during the analysis period regarding other variables. CAMELS explains all the results following each parameter. Like ANOVA results by countries, ANOVA is tested by years; see Table .

Table 12. ANOVA results by country (using one variable)

Ratio name	Qatar	Kuwait	Jordan
Total Equity to Total Assets	0.00%	0.02%	0.00%
Total Liabilities to Total Equity	0.00%	0.00%	0.00%
Total Equity to Total Loans	0.00%	0.13%	0.02%
Total Deposit to Total Assets	0.24%	0.00%	0.00%
Fixed Assets to Total Assets	0.00%	0.01%	0.00%
Total Loans to Total Assets	0.00%	0.14%	0.04%
Net Profit to Staff Cost	0.00%	0.00%	0.04%
Net Interest Income to Net Profit	0.00%	1.45%	2.97%
Net Profit to Total Loans	1.27%	0.01%	0.59%
Net Profit to Total Assets ROA	0.13%	0.00%	0.05%
Net Profit to Total Equity ROE	0.00%	0.00%	1.49%
Net Profit to Interest Income	8.37%	0.00%	0.09%
Liquid Assets to Customer Deposits	0.03%	0.00%	0.00%
Cash&Cash equivalents to Total Assets	51.70%	18.48%	0.00%
Customer Deposits to Total Assets	0.00%	0.00%	0.00%
Net Interest Income to Total Assets	0.00%	18.69%	0.00%
Total Reserves to Total Assets	0.00%	0.00%	0.00%
Total Investments to Total Assets	0.02%	0.00%	0.00%

Source: Author's calculation

Table 13. ANOVA results by year

Ratio name	Qatar	Kuwait	Jordan
Total Equity to Total Assets	99.17%	36.99%	99.73%
Total Liabilities to Total Equity	99.46%	40.07%	99.72%
Total Equity to Total Loans	99.32%	33.59%	30.27%
Total Deposit to Total Assets	36.36%	60.01%	78.32%
Fixed Assets to Total Assets	97.34%	98.88%	98.69%
Total Loans to Total Assets	93.79%	67.32%	7.59%
Net Profit to Staff Cost	62.19%	97.20%	83.61%
Net Interest Income to Net Profit	27.39%	70.80%	60.62%
Net Profit to Total Loans	4.19%	55.49%	35.02%
Net Profit to Total Assets ROA	21.65%	89.14%	71.42%
Net Profit to Total Equity ROE	67.40%	45.81%	49.30%
Net Profit to Interest Income	0.07%	74.84%	77.08%
Liquid Assets to Customer Deposits	77.63%	59.70%	93.81%
Cash and Cash equivalents to Total Assets	25.76%	17.11%	97.07%
Customer Deposits to Total Assets	94.00%	91.18%	96.12%
Net Interest Income to Total Assets	66.47%	47.37%	99.71%
Total Reserves to Total Assets	86.74%	99.99%	100.00%
Total Investments to Total Assets	97.62%	94.69%	72.91%

Source: Author's calculation

Only Net Profit to Total Loans and Net Profit to Interest Income ratios are significantly different among the years at the 0.05 significance level; however, the other ratios are statistically insignificant.

4.3. CAMELS analysis

Bank's performance has been evaluated by financial ratios., namely by CAMELS, for a long time (Rostami, 2015). Although many other ratios can be used in CAMELS evaluation, only publicly available financial parameters are used in this thesis due to confidentiality concerns. CAMELS is the acronym for the followings:

4.3.1. C – Capital adequacy attribute

Capital adequacy helps to understand attractive shock capability during risk (Ahsan, 2016). In this component, three ratios are used to determine capital adequacy, i.e., Total Equity to Total Assets, Total Liabilities to Total Equity, and Total Equity to Total Loans. Those ratios evaluate the bank's financial stability. The higher the capital adequacy, the better it shows, and the lesser

risk of bankruptcy (Kumar & Sayani, 2015). Five banks from each country's last six years' financial statements are used to analyze. Financial ratios are calculated for each year and averaged by the main data input. For simplicity, each bank's average ratios are ranked and highlighted from green (the best results) to red (the worst results). Table 14 illustrates the Capital adequacy attribute of the banks.

As indicated in Table , Kuwait banks showed worse Capital Adequacy results, while Jordan banks have better results on average, especially in the Total Equity to Total Loans ratio. However, all the banks are determined as vital (1st rank) according to (Rozzani & Rahman, 2015) except GULB and QNB banks which are satisfactory (2nd rank). Although financial ratios are easy to calculate, it also has its limitation, i.e., multicollinearity. For example, Total Liabilities to Total Equity and Total Equity to Total Loans are mirror ratios, and if one of them is higher, the other ratio will be lower.

The ANOVA test is used for every variable to determine whether a significant difference exists among the countries (Table 15).

Table 14: Capital adequacy attribute by ratio and rank

Country	Bank	Capital adequacy							
		Total Equity to Total Assets		Total Liabilities to Total Equity		Total Equity to Total Loans		Average of ranks	Rank of attribute
		Ratio value	Rank	Ratio value	Rank	Ratio value	Rank		
Qatar	QNB	0.1054	14	8.5448	13	0.1475	15	14.00	14
	DOHB	0.1450	4	5.9563	4	0.2265	8	5.33	5
	KHLIJIB	0.1195	12	7.4126	11	0.2062	10	11.00	12
	CBQ	0.1481	3	5.7577	3	0.2395	6	4.00	4
	AHLIBQ	0.1342	8	6.4564	8	0.1895	12	9.33	9
	Mean of the country	0.1305	8.20	6.8256	7.80	0.2018	10.20	8.73	8.80
Kuwait	NBK	0.1375	7	6.2827	7	0.2447	5	6.33	6
	CBK	0.1249	10	14.3882	15	0.1804	13	12.67	13
	GULB	0.1027	15	8.7472	14	0.1498	14	14.33	15
	AHLIBK	0.1397	6	6.2056	6	0.2035	11	7.67	8
	BURGB	0.1239	11	7.1693	10	0.2113	9	10.00	10
	Mean of the country	0.1257	9.80	8.5586	10.40	0.1979	10.40	10.20	10.40
Jordan	ARABJO	0.1419	5	6.0510	5	0.3107	1	3.67	3
	HBTF	0.1340	9	6.4672	9	0.2885	4	7.33	7
	AHLIJO	0.1163	13	7.6524	12	0.2274	7	10.67	11
	JKB	0.1655	1	5.0461	1	0.3086	3	1.67	1
	BOJ	0.1639	2	5.1148	2	0.3087	2	2.00	2
	Mean of the country	0.1443	6.00	6.0663	5.80	0.2888	3.40	5.07	4.80

Source: Author's calculation

Table 15: ANOVA results of variables (Capital Adequacy)

Ratio name	Qatar	Kuwait	Jordan
Total Equity to Total Assets	0,00%	0,02%	0,00%
Total Liabilities to Total Equity	0,00%	0,00%	0,00%
Total Equity to Total Loans	0,00%	0,13%	0,02%
Capital adequacy	0,00%	0,00%	0,00%

Source: Author's calculation

Regarding Capital Adequacy, all three variables differ significantly among the countries at a significance level of 5%. Therefore, the R statistics system computed a pairwise T-test between countries (Table T-test calculates the difference in group means divided by the pooled standard error of the two group means).

Table , pairwise comparison t-test, shows Capital Adequacy is statistically significantly different between Qatar and Jordan banks and Kuwait and Jordan banks concerning Total Equity to Total Loans ratios at a significance level of 5%. On the other hand, other Capital Adequacy ratios indicate an insignificant difference between the country pairs.

Table 16: Capital Adequacy T-test comparison between the countries

Ratio name	Mean value of Qatar banks	Mean value of Kuwait banks	Mean value of Jordan banks	T-test significant level comparing Qatar and Kuwait banks	T-test significant level comparing Qatar and Jordan banks	T-test significant level comparing Kuwait and Jordan banks
Total Equity to Total Assets	0.1305	0.1257	0.1443	66.05%	29.23%	14.54%
Total Equity to Total Liabilities	6.8256	8.5586	6.0663	33.25%	31.34%	18.30%
Total Equity to Total Loans	0.2018	0.1979	0.2888	86.75%	0.49%	0.37%

Source: Author's calculation

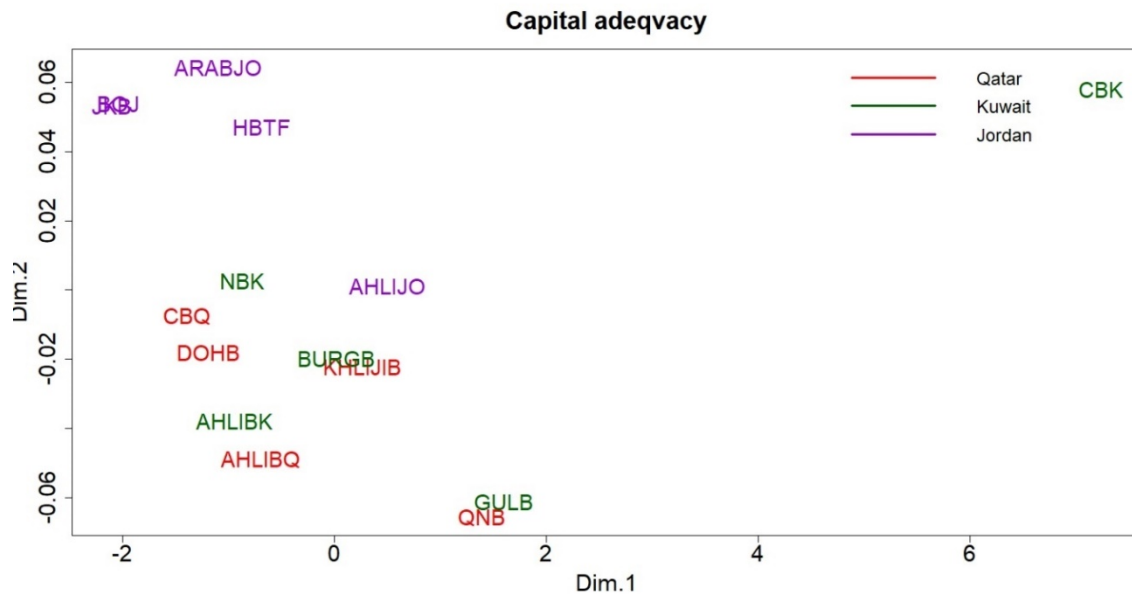
Regarding Capital Adequacy, Multidimensional scaling was applied to determine the analyzed countries' differences (Figure). If all three countries are compared, the Jordanian banks differ slightly from other banks.

4.3.2. A – Asset quality attribute

Asset quality is essential in helping the bank understand the risk of debtors' exposure (Ahsan, 2016). In this parameter, three ratios are used to determine Asset Quality, i.e., Total Deposit to Total Assets, Fixed Assets to Total Assets, and Total Loans to Total Assets. Fifteen banks' financial statements for the last six years are used for the analysis. Financial ratios are calculated each year, and average ratios are used as the main data input. Each bank's average

ratios are ranked and highlighted from green (the best results) to red (the worst results) to make the comparison easier. Table 17 illustrates the Asset Quality attribute of the banks.

Figure 14: Multidimensional scaling of Capital Adequacy



Source: author's calculation

Table 17: Asset quality attribute by ratio and rank

Country	Bank	Asset quality							
		Total Deposit to Total Assets		Fixed Assets to Total Assets		Total Loans to Total Assets		Average of ranks	Rank of attribute
		Ratio value	Rank	Ratio value	Rank	Ratio value	Rank		
Qatar	QNB	0.6681	14	0.0202	5	0.7156	2	7.00	7
	DOHB	0.7615	8	0.0191	3	0.6393	6	5.67	6
	KHLIJIB	0.7724	6	0.0125	1	0.5804	9	5.33	3
	CBQ	0.6529	15	0.0500	13	0.6187	7	11.67	13
	AHLIBQ	0.7292	11	0.0156	2	0.7089	3	5.33	3
	Mean of the country	0.7168	10.80	0.0235	4.80	0.6526	5.40	7.00	6.40
Kuwait	NBK	0.8396	2	0.0202	4	0.5617	10	5.33	3
	CBK	0.8092	3	0.0231	8	0.8282	1	4.00	1
	GULB	0.8669	1	0.0270	9	0.6864	5	5.00	2
	AHLIBK	0.6932	13	0.0227	7	0.6879	4	8.00	9
	BURGB	0.7910	4	0.0419	11	0.5862	8	7.67	8
	Mean of the country	0.8000	4.60	0.0270	7.80	0.6701	5.60	6.00	4.60
Jordan	ARABJO	0.7440	10	0.0203	6	0.4574	15	10.33	11
	HBTF	0.7872	5	0.0349	10	0.4730	14	9.67	10
	AHLIJO	0.7292	12	0.0692	14	0.5123	13	13.00	15
	JKB	0.7541	9	0.0717	15	0.5390	11	11.67	13
	BOJ	0.7617	7	0.0429	12	0.5317	12	10.33	11
	Mean of the country	0.7552	8.60	0.0478	11.40	0.5027	13.00	11.00	12.00

Source: author's calculation

Firstly, asset quality is measured using the Total Deposits to Total Assets Ratio. As deposits are considered cost-efficient, Kuwait banks are led by other countries by Total Deposit to Total Assets (mean of 80%), while Qatar banks have the lowest mean, 71.68%. Secondly, asset quality is measured using the Fixed Assets to Total Assets Ratio. Bank does not generate profit from fixed assets; therefore, they compose only a small fraction of total assets. For example, Jordan banks mostly have more fixed assets, 2.03%-7.17%, while Qatar banks have the least amounts, 1.25%-5.00%.

Thirdly, a Loan composes most of the bank's assets. Total Loans to Total Assets ratio is the highest in Kuwait banks at 67.01%, although Qatar banks show similar results at 65.26%, while the ratio is lowest in Jordanian banks at 50.27%. As banks earn higher interest on loans, a higher ratio is assumed as a better result. However, there is no exact or ideal number it should abide by regarding ratio analysis. Even if a higher loan is beneficial, it also comes with risk.

In the Asset Quality attribute, all three variables vary statistically significantly among the countries at a significance level of 5%. Pairwise T-test is computed in R between countries Table .

Table 18: ANOVA results of variables (Asset Quality)

Ratio name	Qatar	Kuwait	Jordan
Total Deposit to Total Assets	0,24%	0,00%	0,00%
Fixed Assets to Total Assets	0,00%	0,01%	0,00%
Total Loans to Total Assets	0,00%	0,14%	0,04%
Asset quality	0,00%	0,00%	0,00%

Source: author's calculation

Table 19: Asset Quality T-test comparison between the countries

Ratio name	Mean value of Qatar banks	Mean value of Kuwait banks	Mean value of Jordan banks	T-test significant level comparing Qatar and Kuwait banks	T-test significant level comparing Qatar and Jordan banks	T-test significant level comparing Kuwait and Jordan banks
Total Deposit to Total Assets	0.7168	0.8000	0.7552	6.30%	19.78%	21.29%
Fixed Assets to Total Assets	0.0235	0.0270	0.0478	66.78%	8.25%	10.65%
Total Loans to Total Assets	0.6526	0.6701	0.5027	75.58%	0.21%	2.05%

Source: author's calculation

Table , pairwise comparison t-test, demonstrates that Asset Quality is statistically significantly different between Qatar and Jordan banks and Kuwait and Jordan banks in the case of Total Loans to Total Asset ratio at a significance level of 5%.

The total Deposit to Total Assets ratio is significantly different between Qatar and Kuwait banks. In contrast, the Fixed Assets to Total Assets ratio is significantly different between Qatar and Jordan banks at a significance level of 10%.

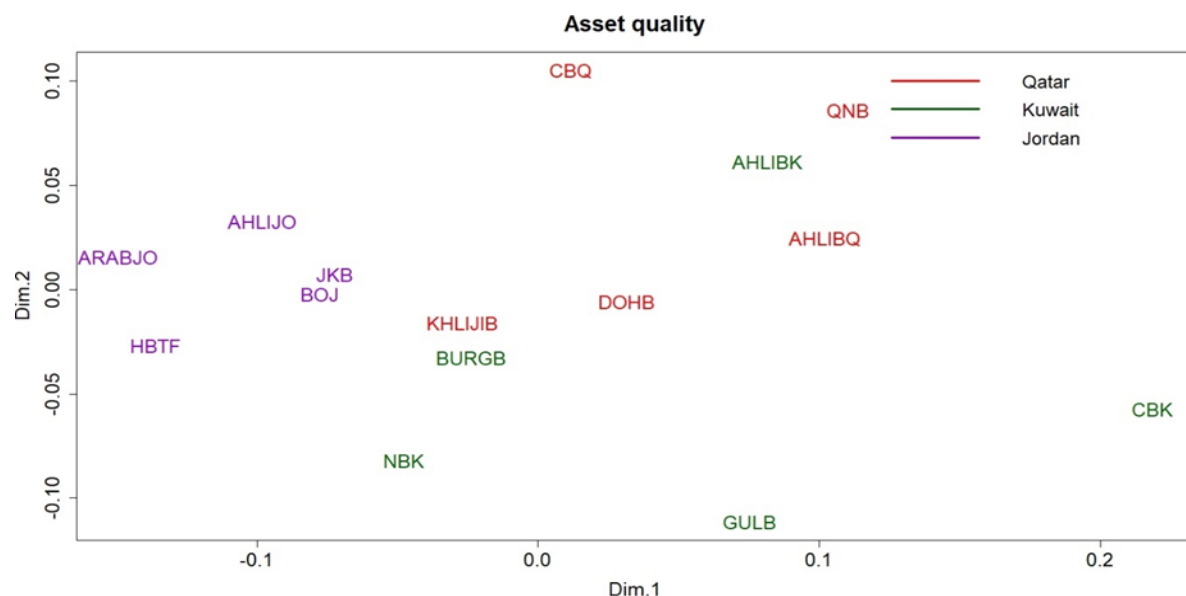


Figure 15: Multidimensional scaling of Asset quality attribute

Source: author's calculation

The multidimensional scaling was applied to compare the selected countries' banks (Figure).

If all three countries' banks are compared, the Jordanian banks are similar to each other. However, Kuwait and Qatar banks vary greatly among the country.

4.3.3. M – Management attribute

This parameter clarifies management superiority, which is often judged by the management's capability to control costs and improve profits efficiency. Management quality reflects the bank management soundness (Ahsan, 2016). In this parameter, three ratios are used to determine asset quality, i.e., Net Profit to Staff Cost, Net Profit to Net Interest Income, and Net Profit to Total Loans. Financial ratios are calculated for each year and averaged by the main data input. Each bank's average ratios are ranked and highlighted from green (the best results) to red (the worst results). Table illustrates the Management attribute of the banks.

Table 20: Management attribute by ratio and rank

Country	Bank	Management							
		Net Profit to Staff Cost		Net Profit to Net Interest Income		Net Profit to Total Loans		Average of ranks	Rank of attribute
		Ratio value	Rank	Ratio value	Rank	Ratio value	Rank		
Qatar	QNB	4.4450	1	0.7700	5	0.0251	3	3.00	1
	DOHB	2.0945	6	0.5257	9	0.0191	8	7.67	7
	KHLIJIB	2.9182	2	0.6298	7	0.0179	10	6.33	4
	CBQ	1.7371	7	0.5213	10	0.0169	12	9.67	11
	AHLIBQ	2.4213	3	0.8160	4	0.0244	5	4.00	2
	Mean of the country	2.7232	3.80	0.6526	7.00	0.0207	7.60	6.13	5.00
Kuwait	NBK	2.2782	5	0.6342	6	0.0238	6	5.67	3
	CBK	2.3675	4	0.6032	8	0.0171	11	7.67	7
	GULB	1.1056	14	0.9048	3	0.0121	14	10.33	13
	AHLIBK	1.1410	13	0.9942	2	0.0118	15	10.00	12
	BURGB	1.5132	9	1.0809	1	0.0182	9	6.33	4
	Mean of the country	1.6811	9.00	0.8435	4.00	0.0166	11.00	8.00	7.80
Jordan	ARABJO	1.2023	12	0.3951	14	0.0233	7	11.00	14
	HBTF	1.5205	8	0.4175	12	0.0310	2	7.33	6
	AHLJO	0.4986	15	0.2390	15	0.0153	13	14.33	15
	JKB	1.4500	10	0.3968	13	0.0246	4	9.00	10
	BOJ	1.3468	11	0.4237	11	0.0331	1	7.67	7
	Mean of the country	1.2036	11.20	0.3744	13.00	0.0254	5.40	9.87	10.40

Source: author's calculation

Qatar banks are the most efficient by Net Profit to Staff Cost, meaning that per dollar spent on staff generated more profit than other countries' banks. It can be assumed that spending more on staff encouraged human capital efficiency, leading to higher efficiency in Qatar's banks. As for the Net Profit to Net Interest Income ratio, Kuwait banks are leading other countries, followed by Qatar banks. In contrast, Jordanian banks showed similar bad results, ranking 11 to 15. As a result, Jordanian banks show the worst results: Net Profit to Staff Cost and Net Interest Income to Net Profit. On the other hand, Jordanian banks lead Kuwait and Qatar banks by Net Profit to Total Loans ratio, which means they earn a 2.54% profit from their loans. Table shows the Management Attribute ANOVA results.

Table 21: ANOVA results of variables (Management Attribute)

Ratio name	Qatar	Kuwait	Jordan
Net Profit to Staff Cost	0,00%	0,00%	0,04%
Net Interest Income to Net Profit	0,00%	1,45%	2,97%
Net Profit to Total Loans	1,27%	0,01%	0,59%
Management	0,00%	0,00%	0,00%

Source: author's calculation

In the case of Management Attribute, all three variables are significantly different among the countries at a significance level of 5%. Therefore, as shown in Table 21, all variables differ significantly, and the T-test is calculated to determine which country pairs differ significantly Table .

Table 22: Management Attribute T-test comparison between the countries

Ratio name	Mean value of Qatar banks	Mean value of Kuwait banks	Mean value of Jordan banks	T-test significant level comparing Qatar and Kuwait banks	T-test significant level comparing Qatar and Jordan banks	T-test significant level comparing Kuwait and Jordan banks
Net Profit to Staff Cost	2.7232	1.6811	1.2036	10.14%	2.88%	18.92%
Net Interest Income to Net Profit	0.6526	0.8435	0.3744	13.86%	0.66%	0.58%
Net Profit to Total Loans	0.0207	0.0166	0.0254	18.38%	23.03%	5.43%

Source: author's calculation

Table , pairwise comparison t-test, shows Management attribute is statistically significantly different between Qatar and Jordan banks in the case of Net Profit to Staff Cost and Net Interest Income to Net Profit ratios at a significance level of 5%. On the contrary, Kuwait and Jordan banks differ significantly by Net Interest Income to Net Profit at a significance level of 5% and Net Profit to Total Loans at a significance level of 10%. However, Qatar and Kuwait banks do not have a significant difference in the case of Management attributes. Therefore, the multidimensional scaling was executed to compare the selected countries' banks (Figure).

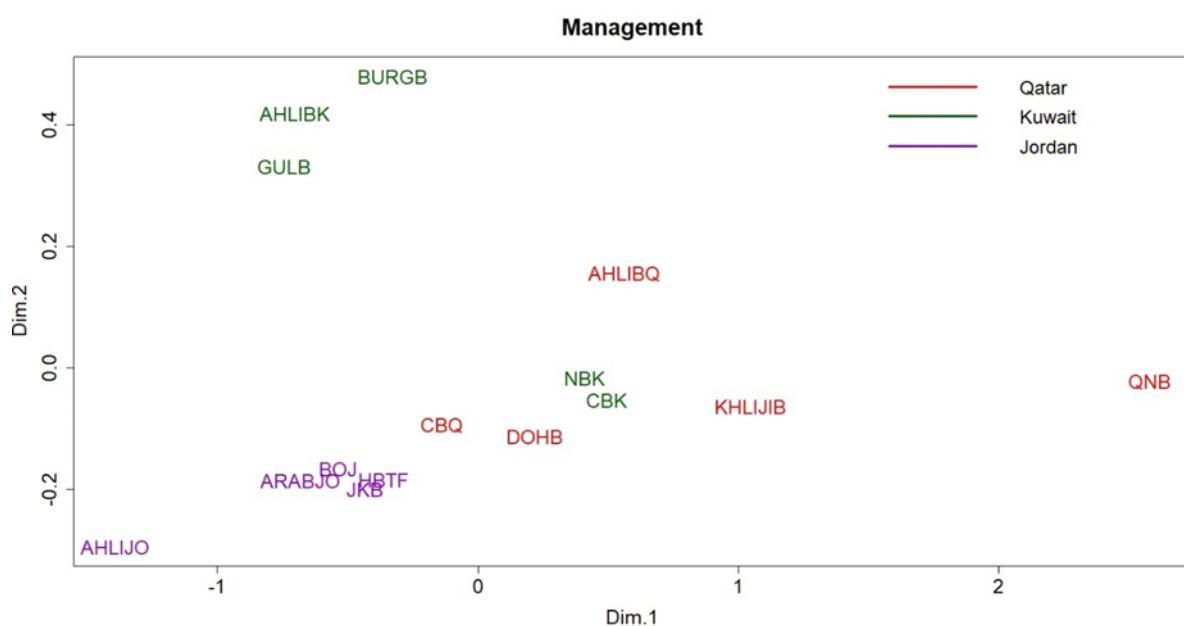


Figure 16: Multidimensional scaling of Management Attribute.

Source: author's calculation

Like the Asset Quality attribute, Jordanian banks are similar, while Kuwait and Qatar banks differ significantly. Figure shows that Qatar and Kuwait banks are not substantially different; however, banks vary drastically within the country, i.e., QNB.

4.3.4. E – Earnings attribute

Earning quality mainly measures the bank's profitability and productivity and explains the growth and sustainability of future earnings capacity (Ahsan, 2016). The earning ability ratio is measured by ROA, ROE, and Net Profit to Interest Income. Each bank's average ratios are ranked and highlighted from green (the best results) to red (the worst results) to ease the reference. Table demonstrates the Earnings attribute of the banks.

Table 23: Earnings attribute by ratio and rank

Country	Bank	Earnings							
		Net Profit to Total Assets (ROA)		Net Profit to Total Equity (ROE)		Net Profit to Interest Income		Average of ranks	Rank of attribute
		Ratio value	Rank	Ratio value	Rank	Ratio value	Rank		
Qatar	QNB	0.0179	1	0.1693	2	0.3874	4	2.33	1
	DOHB	0.0123	8	0.0833	9	0.3423	5	7.33	7
	KHLIJIB	0.0104	12	0.0871	7	0.3296	7	8.67	8
	CBQ	0.0105	11	0.0706	13	0.2587	10	11.33	12
	AHLIBQ	0.0173	3	0.1287	3	0.4682	2	2.67	2
	Mean of the country	0.0137	7.00	0.1078	6.80	0.3573	5.60	6.47	6.00
Kuwait	NBK	0.0133	5	0.0971	6	0.5252	1	4.00	4
	CBK	0.0124	7	0.2115	1	0.4191	3	3.67	3
	GULB	0.0083	13	0.0804	10	0.2305	13	12.00	13
	AHLIBK	0.0081	14	0.0578	15	0.2088	14	14.33	14
	BURGB	0.0107	10	0.0862	8	0.2514	11	9.67	10
	Mean of the country	0.0106	9.80	0.1066	8.00	0.3270	8.40	8.73	8.80
Jordan	ARABJO	0.0107	9	0.0751	12	0.2307	12	11.00	11
	HBTF	0.0142	4	0.1062	5	0.2926	8	5.67	6
	AHLJO	0.0078	15	0.0651	14	0.1413	15	14.67	15
	JKB	0.0131	6	0.0793	11	0.2610	9	8.67	8
	BOJ	0.0175	2	0.1070	4	0.3318	6	4.00	4
	Mean of the country	0.0127	7.20	0.0865	9.20	0.2515	10.00	8.80	8.80

Source: author's calculation

As reflected in Table , Qatar's banks work more efficiently than others, especially the QNB bank, which leads the other banks. According to (Rozzani & Rahman, 2015), the three banks highlighted in green are decisive regarding ROA, while the three banks highlighted in red are marginal with some failure risk. Generally, Kuwait banks are fair with some categories to be watched, while Qatar and Jordan banks are usually satisfactory. In contrast to this ratio, ROE results showed slightly different results. Jordan banks are overall fourth rank which is marginal

with some risk of failure, while Kuwait and Qatar banks are in the third rank (fair with some categories to be watched). The average ROA bank-wise (Table) shows that AHLIJO (0.78%), AHLIBK (0.81%), and GULB (0.83%) have the low earning ability, whereas QNB (1.79%) have a powerful earning ability. Table indicates Earnings Attribute ANOVA results.

Table 24: ANOVA results of variables (Earnings Attribute)

Ratio name	Qatar	Kuwait	Jordan
Net Profit to Total Assets ROA	0,13%	0,00%	0,05%
Net Profit to Total Equity ROE	0,00%	0,00%	1,49%
Net Profit to Interest Income	8,37%	0,00%	0,09%
Earnings	0,00%	0,00%	0,00%

Source: author's calculation

Like previous parameters, all three variables differ significantly among the countries at a significance level of 5%. Although ANOVA results show a significant difference, it does not indicate which country pairs differ significantly and which ones do not differ significantly. Therefore, the pairwise t-test is computed in R between countries Table 3.

Table 3, pairwise comparison t-test, shows Earnings attribute is statistically significantly different between Qatar and Jordan banks regarding Net Profit to Interest Income ratio at significance level 10%. However, other Earnings Attribute ratios indicate an insignificant difference between the country pairs.

Table 3: Earnings Attribute T-test comparison between the countries

Ratio name	Mean value of Qatar banks	Mean value of Kuwait banks	Mean value of Jordan banks	T-test significant level comparing Qatar and Kuwait banks	T-test significant level comparing Qatar and Jordan banks	T-test significant level comparing Kuwait and Jordan banks
Net Profit to Total Assets ROA	0.0137	0.0106	0.0127	16.01%	68.14%	32.04%
Net Profit to Total Equity ROE	0.1078	0.1066	0.0865	97.16%	33.25%	51.10%
Net Profit to Interest Income	0.3573	0.3270	0.2515	68.40%	5.58%	32.09%

Source: author's calculation

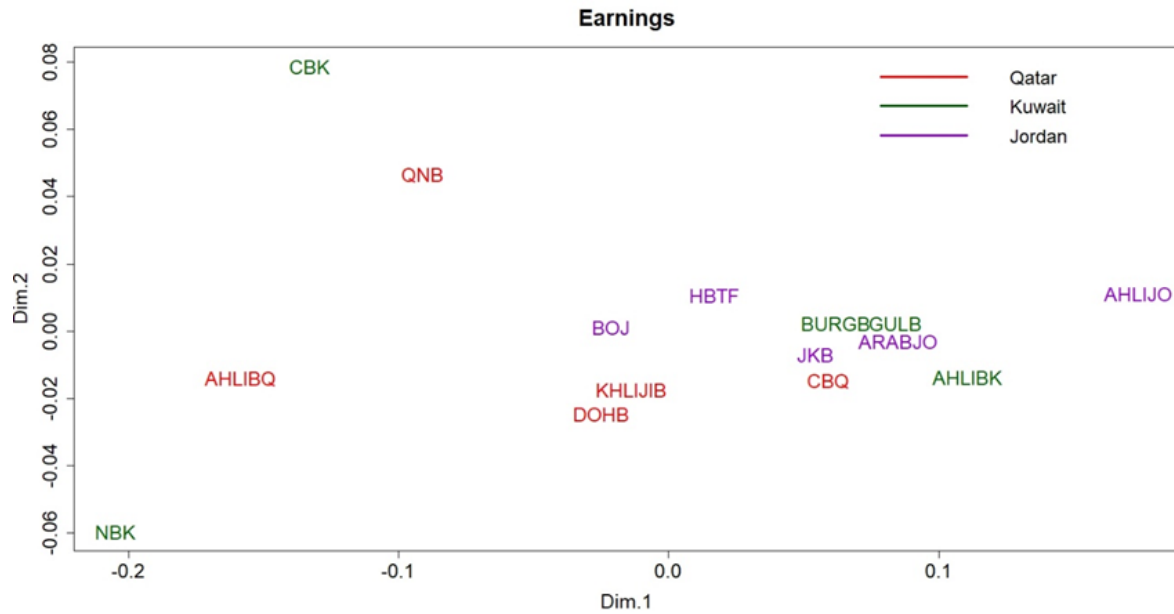


Figure 17: Multidimensional scaling of Earnings

Source: author's calculation

The multidimensional scaling was applied to compare the selected countries' banks (Figure 17). Jordanian banks are relatively similar to each other, while Kuwait and Qatar banks are diverse a little. However, as shown in Table 3, the difference is insignificant.

4.3.5. L – Liquidity attribute

Meeting its financial obligation timely is considered liquidity. Kumar and Sayani (2015) stated that a bank's liquidity minimizes the bank's failure chances. Liquid Assets to Total Assets, similar to (Rostami M., 2015), Cash and Cash Equivalents to Total Assets, and, Customer Deposit to Total Assets, similar to (Kumar & Sayani, 2015), are used to evaluate the liquidity of the banks. Each bank's average ratios are ranked and highlighted from green (the best results) to red (the worst results). Table 4 reveals the liquidity attribute of the banks.

Table 26 shows that the amount of liquid assets is equal to 95.9% of customer deposits regarding Kuwait banks, as liquidity shows the ability to meet its financial obligations as due comes. Therefore, Kuwait banks are considered the most liquid by liquid assets by customer deposits ratio, while Qatar banks are the least liquid (23.99%). However, it is worth mentioning that there is no exact amount in ratio analysis. Being the most liquid brings a question regarding asset management or profitability. Therefore, it is the data users' preference that is more important. As for the Cash and Cash Equivalents to Total Assets ratio, Qatar's QNB bank (8.41%), CBQ bank (8.76%), and Kuwait AHLIBK bank (9.3%) have a mean liquidity ratio.

Table 4: Liquidity attribute by ratio and rank

Country	Bank	Liquidity							
		Liquid Assets to Customer Deposits		Cash & Cash equivalents to Total Assets		Customer Deposits to Total Assets		Average of ranks	Rank of attribute
		Ratio value	Rank	Ratio value	Rank	Ratio value	Rank		
Qatar	QNB	0.1739	15	0.0841	15	0.7232	1	10.33	11
	DOHB	0.2532	12	0.0994	10	0.6025	10	10.67	12
	KHLJIB	0.2811	11	0.1095	9	0.5457	13	11.00	13
	CBQ	0.2885	10	0.0876	14	0.5414	14	12.67	15
	AHLIBQ	0.2026	14	0.0947	12	0.6051	9	11.67	14
	Mean of the country	0.2399	12.40	0.0951	12.00	0.6036	9.40	11.27	13.00
Kuwait	NBK	2.8868	1	0.1242	7	0.3647	15	7.67	7
	CBK	0.6569	2	0.1521	4	0.5489	12	6.00	4
	GULB	0.4083	5	0.1221	8	0.6468	7	6.67	6
	AHLIBK	0.3341	7	0.0930	13	0.6403	8	9.33	10
	BURGB	0.5090	3	0.1305	5	0.5547	11	6.33	5
	Mean of the country	0.9590	3.60	0.1244	7.40	0.5511	10.60	7.20	6.40
Jordan	ARABJO	0.4156	4	0.1926	1	0.6654	5	3.33	1
	HBTF	0.3109	8	0.1557	3	0.7144	2	4.33	3
	AHLIJO	0.2424	13	0.1290	6	0.6947	4	7.67	7
	JKB	0.2994	9	0.0981	11	0.6502	6	8.67	9
	BOJ	0.3905	6	0.1926	2	0.7135	3	3.67	2
	Mean of the country	0.3318	8.00	0.1536	4.60	0.6877	4.00	5.53	4.40

Source: author's calculation

The customer deposits to total assets should be greater than or equal to 75% as per the AIA standards (American International Assurance) (Kumar & Sayani, 2015). However, none of the banks reached that satisfactory level. The Customer Deposits to Total Assets ratio ranged between 65.02% to 71.44% in Jordanian banks, which is the highest on average, while this ranged between 36.47% to 64.68% in Kuwait banks is the lowest. Jordanian banks are led by liquidity on average, suggesting that these banks will not be undesirably affected in the short term by the lack of liquidity.

Table 27: ANOVA results of variables (Liquidity Attribute)

Ratio name	Qatar	Kuwait	Jordan
Liquid Assets to Customer Deposits	0,03%	0,00%	0,00%
Cash & Cash equivalents to Total Assets	51,70%	18,48%	0,00%
Customer Deposits to Total Assets	0,00%	0,00%	0,00%
Liquidity	0,01%	0,01%	0,00%

Source: author's calculation

In Liquidity Attribute, two variables (Liquid Assets to Customer Deposits and Customer Deposits to Total Assets) differ significantly among the countries at 5%. On the other hand, the Cash & Cash equivalents to Total Assets ratio is only significant for Jordanian banks. A pairwise t-test was calculated to detect which country pairs vary statistically significantly (Table).

Table 28: Liquidity Attribute T-test comparison between the countries

Ratio name	Mean value of Qatar banks	Mean value of Kuwait banks	Mean value of Jordan banks	T-test significant level comparing Qatar and Kuwait banks	T-test significant level comparing Qatar and Jordan banks	T-test significant level comparing Kuwait and Jordan banks
Liquid Assets to Customer Deposits	0.2399	0.9590	0.3318	21.24%	4.82%	26.58%
Cash Cash equivalents to Total Assets	0.0951	0.1244	0.1536	3.31%	3.12%	20.70%
Customer Deposits to Total Assets	0.6036	0.5511	0.6877	41.57%	6.08%	5.34%

Source: author's calculation

Table , pairwise comparison t-test, shows Liquidity Attribute is statistically significantly different between Qatar and Jordan banks (Liquid Assets to Customer Deposits and Cash and Cash Equivalents to Total Assets significance level 5%; Customer Deposits to Total Assets at significance level 10%). However, Qatar and Kuwait banks differ only in Cash and Cash Equivalents to Total Assets at a significance level of 5%, while Customer Deposits to Total Assets at a significance level of 10%.

The multidimensional scaling was applied to compare the selected countries' banks (Figure).

Unlike previous parameters' multidimensional scaling results, all three countries' banks showed similar results; however, Jordanian banks are slightly more secure in case of liquidity than others.

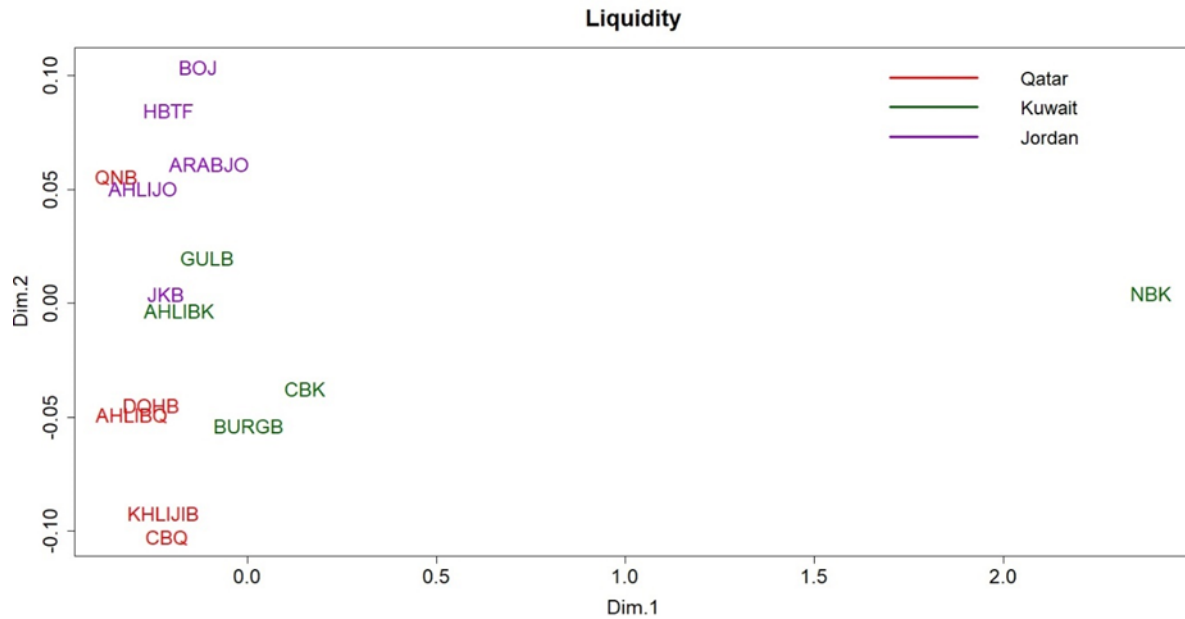


Figure 18: Multidimensional scaling of Liquidity attribute

Source: author's calculation

4.3.6. S – Sensitivity attribute

The sensitivity parameter aims to show how market risk can affect banks. Sensitivity is the last parameter added and started to be used in bank performance in 1997 (Bayraktar & Ghazai, 2018). Three ratios are chosen for this parameter, as follows in Table .

The first ratio of the parameter is Net Interest Income to Total Assets, which is positively related to performance. Jordan banks lead this parameter with the highest interest ratio (2.65% - 4.14%), while Kuwait banks have the lowest results (1.91% - 2.14). Total Investments to Total Assets ratio showed similar results to the Net Interest Income to Total Assets ratio by Jordanian banks, led by an average of 21.42%. Kuwait's banks ranked as the worst (average of 7.54%). However, unlike Net Interest Income to Total Assets and Total Investments to Total Assets ratios, all countries showed similar results in Total Reserves to Total Assets Ratio. Bank reserves are the minimum amounts of cash a bank must keep meeting central bank requirements. As all the banks fulfilled the minimum amount, there was no big difference among the countries. In a nutshell, Jordanian banks are more robust in market risk, while Kuwait banks are the weakest.

Table 29: Sensitivity attribute by ratio and rank

Country	Bank	Sensitivity							
		Net Interest Income to Total Assets		Total Reserves to Total Assets		Total Investments to Total Assets		Average of ranks	Rank of attribute
		Ratio value	Rank	Ratio value	Rank	Ratio value	Rank		
Qatar	QNB	0.0232	6	0.0330	12	0.1318	10	9.33	11
	DOHB	0.0229	7	0.0620	6	0.1815	6	6.33	5
	KHLIJIB	0.0165	15	0.0342	11	0.2508	2	9.33	11
	CBQ	0.0196	13	0.0881	2	0.1666	7	7.33	7
	AHLIBQ	0.0212	10	0.0580	8	0.1540	8	8.67	10
	Mean of the country	0.0207	10.20	0.0551	7.80	0.1769	6.60	8.20	8.80
Kuwait	NBK	0.0213	9	0.0667	4	0.1315	11	8.00	8
	CBK	0.0206	11	0.0657	5	0.0779	12	9.33	11
	GULB	0.0202	12	0.0129	15	0.0201	15	14.00	15
	AHLIBK	0.0214	8	0.0709	3	0.0712	14	8.33	9
	BURGB	0.0191	14	0.0145	14	0.0761	13	13.67	14
	Mean of the country	0.0205	10.80	0.0461	8.20	0.0754	13.00	10.67	11.40
Jordan	ARABJO	0.0265	5	0.0601	7	0.2430	4	5.33	2
	HBTF	0.0342	2	0.0184	13	0.2601	1	5.33	2
	AHLIJO	0.0319	4	0.0343	10	0.2437	3	5.67	4
	JKB	0.0330	3	0.0928	1	0.1854	5	3.00	1
	BOJ	0.0414	1	0.0565	9	0.1390	9	6.33	5
	Mean of the country	0.0334	3.00	0.0524	8.00	0.2142	4.40	5.13	2.80

Source: author's calculation

Table 5: ANOVA results of variables (Sensitivity Attribute)

Ratio name	Qatar	Kuwait	Jordan
Net Interest Income to Total Assets	0,00%	18,69%	0,00%
Total Reserves to Total Assets	0,00%	0,00%	0,00%
Total Investments to Total Assets	0,02%	0,00%	0,00%
Sensitivity	0,00%	0,00%	0,00%

Source: author's calculation

Regarding Sensitivity, all three variables differ significantly among the countries at a significance level of 5%, except Net Interest Income to Total Assets in Kuwait banks. Pairwise T-test is computed in R between countries Table.

Table, pairwise comparison t-test, shows Sensitivity Attribute is statistically significantly different between Qatar and Jordan banks and Kuwait and Jordan's banks regarding Total Reserves to Total Assets ratios at significance level 5%, Net Interest Income to Total Assets at

significance level 10%. However, Sensitivity Attribute ratios indicate an insignificant difference between Qatar and Kuwait banks.

Table 31: Sensitivity Attribute T-test comparison between the countries

Ratio name	Mean value of Qatar banks	Mean value of Kuwait banks	Mean value of Jordan banks	T-test significant level comparing Qatar and Kuwait banks	T-test significant level comparing Qatar and Jordan banks	T-test significant level comparing Kuwait and Jordan banks
Net Interest Income to Total Assets	0.0207	0.0205	0.0334	41.57%	6.08%	5.34%
Total Reserves to Total Assets	0.0551	0.0461	0.0524	91.18%	0.33%	0.52%
Total Investments to Total Assets	0.1769	0.0754	0.2142	60.89%	87.56%	73.95%

Source: author's calculation

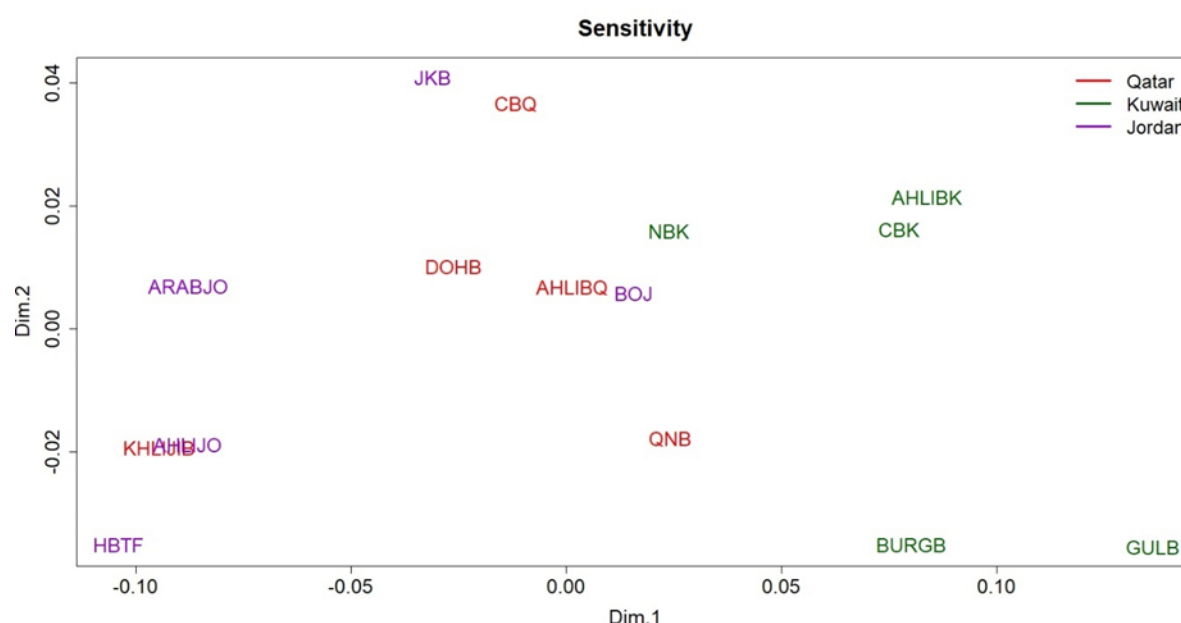


Figure 19: Multidimensional scaling of Sensitivity attribute

Source: author's calculation

The multidimensional scaling was applied to compare the selected countries' banks (Figure).

The figure shows no country-specific difference except Kuwait banks look slightly different from Jordanian and Qatar banks.

4.3.7. Summarizing CAMELS analysis

Like each parameter, a rating is used to make the comparison easier to follow. All banks are ranked from the best (1st- highlighted in green) to the worst (15th-highlighted in red). Table shows the comparison of each parameter.

Table 32: Comparison of countries ranking by all parameters.

Country	Bank	Capital adequacy	Asset quality	Management	Earnings	Liquidity	Sensitivity	Average of ranks	Final rank
Qatar	QNB	14	7	1	1	11	11	7.50	9
	DOHB	5	6	7	7	12	5	7.00	6
	KHLJIB	12	3	4	8	13	11	8.50	8
	CBQ	4	13	11	12	15	7	10.33	9
	AHLIBQ	9	3	2	2	14	10	6.67	5
	Mean of the country	8.80	6.40	5.00	6.00	13.00	8.80	8.00	7.40
Kuwait	NBK	6	3	3	4	7	8	5.17	1
	CBK	13	1	7	3	4	11	6.50	3
	GULB	15	2	13	13	6	15	10.67	7
	AHLIBK	8	9	12	14	10	9	10.33	6
	BURGB	10	8	4	10	5	14	8.50	5
	Mean of the country	10.40	4.60	7.80	8.80	6.40	11.40	8.23	4.40
Jordan	ARABJO	3	11	14	11	1	2	7.00	3
	HBTF	7	10	6	6	3	2	5.67	2
	AHLJO	11	15	15	15	7	4	11.17	3
	JKB	1	13	10	8	9	1	7.00	2
	BOJ	2	11	7	4	2	5	5.17	1
	Mean of the country	4.80	12.00	10.40	8.80	4.40	2.80	7.20	2.20

Source: author's calculation

The findings suggest that Qatar banks excelled in the management and earnings side; however, it comes with the price and deteriorates their liquidity. As mentioned earlier, the financial ratio has no ultimate amount. The higher the profitability, the higher the risk, which is the liquidity. Jordanian banks excelled in capital adequacy, liquidity, and sensitivity, while asset quality and management are weak. Regardless of their bad asset quality and management results, Jordanian banks are the most preferable based on CAMELS performance measurement. In the case of Kuwait banks, they showed the best results regarding asset quality; however, the other parameters were neither good nor bad, which can also be good. Although financial analysis and results are crucial, it is always someone's judgment which side to pick or which one is more important. If someone is more interested in safety, it can be stated that Jordanian banks are the best. If someone is more concerned about profitability, it can be concluded that Qatar banks are excellent. Nevertheless, it can also be true that Kuwait banks are concerned in all aspects; therefore, Kuwait banks are sound in all aspects.

4.4. Panel Regression for CAMELS ratios

The CAMELS system enables the examined organizations to be ranked according to different aspects, and then the sub-rankings can create a complex ranking. In this part of the thesis, I examined how the ratios used in the CAMELS analysis are affected the profitability indicators

and how they influence them. The two analyses have one point in common: the same indicators (variables) were used in the panel model as in the CAMELS analysis. I consider the analysis with the panel model important because the ultimate measure of every economic organization is the profit it achieves.

Panel regression is computed as data containing constant variables in the time dimension across countries. Each dependent variable-dependent variable pair is compared separately to inform a wide range of users with different goals about the aspects they need to concern with according to their goals. Moreover, it shows whether the dependent variables could significantly represent the outcome.

Table 33: Variables used in the Panel model

Variables		Measured by
Dependent variables:		
Y1	ROA	Net Profit / Total Assets
Y2	ROE	Net Profit / Total Equity
Y3	NPTE	Net Profit / Interest Income
Independent variables:		
X1	Total Equity to Total Assets	Total Equity / Total Assets
X2	Total Liabilities to Total Equity	Total Liabilities / Total Equity
X3	Total Equity to Total Loans	Total Equity / Total Loans
X4	Total Deposit to Total Assets	Total Deposit / Total Assets
X5	Fixed Assets to Total Assets	Fixed Assets / Total Assets
X6	Total Loans to Total Assets	Total Loans / Total Assets
X7	Net Profit to Staff Cost	Net Profit / Staff Cost
X8	Net Profit to Net Interest Income	Net Profit / Net Interest Income
X9	Net Profit to Total Loans	Net Profit / Total Loans
X10	Liquid Assets to Customer Deposits	Liquid Assets / Customer Deposits
X11	Cash,Cash equivalents to Total Assets	(Cash+Cash equivalents)/ Total Assets
X12	Customer Deposits to Total Assets	Customer Deposits / Total Assets
X13	Net Interest Income to Total Assets	Net Interest Income / Total Assets
X14	Total Reserves to Total Assets	Total Reserves / Total Assets
X15	Total Investments to Total Assets	Total Investments / Total Assets

Source: Author's compilation

In business, profitability is the outcome that attracts the interest of most financial analysis users. Therefore, ratios that indicate the desired outcome (profitability) represent the dependent variable. Although there are many profitability ratios, the most common ones are ROA, ROE, and NP/II. If the user is interested in the return coming from the total assets, ROA would be

more appropriate. While the interest is in return from their investment, ROE would be used. NP/II is a prevalent ratio used to measure overall profitability, especially in banking analysis. By choosing all those three variables as the dependent variable, the research can be used for a wide range of users with different interests.

This subchapter examines what ratios can determine the banks' performance in three countries, i.e., Qatar, Kuwait, and Jordan. Financial ratios are evaluated by panel regression covering the period of 2014 to 2019. As the data contains banks with corresponding years, panel regression was employed. As the true effect size for studies is identical, a fixed-effect model is used in this thesis. Three ratios are used as dependent variables (ROE, ROA, and NP/II) separately for 15 independent variables, and their results were examined to determine the CAMELS ratios' impact on each country.

Table shows that the ROE variable has unique determinants that are not significant for the other two dependent variables such as Total Equity to Total Assets, Fixed Assets to Total Assets, Net Interest Income to Net Profit Cash and Cash Equivalents to Total Assets, Net Interest Income to Total Assets and, Total Investments to Total Assets.

Unlike ROE, ROA has only three significant positive determinants: Total Loans to Total Assets, Net Profit to Total Loans, and Total Reserves to Total Assets.

Like ROA, NP/II has not had many determinants (Total Equity to Total Liabilities, Net Profit to Total Loans, Customer Deposits to Total Assets, and Total Reserves to Total Assets). However, total Reserves to Total Assets significantly positively impact all dependent variables (ROE, ROA, NP/II). Table indicates the Panel Regression results of Kuwait banks.

Table 34: Panel-regression results of Qatar banks

Name of independent variables	Dependent variable - ROA		Dependent variable - ROE		Dependent variable - NP / II	
	Regression coefficients	Significance level	Regression coefficients	Significance level	Regression coefficients	Significance level
Total Equity to Total Assets			-0.3870	*		
Total Equity to Total Liabilities			0.0057	*	0.06660	***
Total Equity to Total Loans						
Total Deposit to Total Assets						
Fixed Assets to Total Assets			0.1434	*		
Total Loans to Total Assets	0.0200	***	-0.0936	*		
Net Profit to Staff Cost						
Net Interest Income to Net Profit			0.1250	***		
Net Profit to Total Loans	0.6190	***			16.9003	***
Liquid Assets to Customer Deposits						
Cash Cash equivalents to Total Assets			-0.0976	*		
Customer Deposits to Total Assets					0.9940	***
Net Interest Income to Total Assets			4.9044	***		
Total Reserves to Total Assets	0.0175	**	0.2830	***	6.2090	***
Total Investments to Total Assets			-0.1017	**		
R-squared	0.9976		0.9974		0.9456	
Adjusted R-squared	0.9968		0.9952		0.9249	
Significance level of F-test	***		***		***	

Significance. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Source: author's calculation

Table shows that Total Investments to Total Assets is a unique determinant for ROA and Total Loans to Total Assets is significant only for NP/II. ROA and ROE variables are determined by similar variables such as Total Equity to Total Assets, Total Equity to Total Liabilities, Total Equity to Total Loans, and Net Profit to Total Loans. Net Profit to Total Loans significantly positively impacts all dependent variables (ROE, ROA, NP/II).

Table 35: Panel-regression results of Kuwait banks

Name of independent variables	Dependent variable - ROA		Dependent variable - ROE		Dependent variable - NP / II	
	Regression coefficients	Significance level	Regression coefficients	Significance level	Regression coefficients	Significance level
Total Equity to Total Assets	0.0953	***	0.9157	***		
Total Equity to Total Liabilities	0.0001	***	0.0161	***		
Total Equity to Total Loans	-0.0531	***	-0.4184	***		
Total Deposit to Total Assets						
Fixed Assets to Total Assets						
Total Loans to Total Assets					0.7326	***
Net Profit to Staff Cost						
Net Interest Income to Net Profit			0.0051	*	-0.1128	***
Net Profit to Total Loans	0.6235	***	4.7449	***	22.6323	***
Liquid Assets to Customer Deposits					0.0474	***
Cash Cash equivalents to Total Assets						
Customer Deposits to Total Assets						
Net Interest Income to Total Assets			0.8782	*	-20.8407	***
Total Reserves to Total Assets						
Total Investments to Total Assets	-0.0030	*				
R-squared	0.9945		0.9996		0.8871	
Adjusted R-squared	0.9927		0.9995		0.8363	
Significance level of F-test	***		***		***	

*Significance. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*

Source: author's calculation

Table shows the Panel Regression results of Jordanian banks.

Table illustrates that the ROE variable is determined by most of the independent variables (9 out of 15). Variable specific determinants are Total Loans to Total Assets and Net Interest Income to Net Profit for NP/II; Fixed Assets to Total Assets for ROE. There is no independent variable that significantly impacts all dependent variables. In addition, some variables have no significant effect, i.e., Total Equity to Total Assets, Total Deposit to Total Assets, Cash and Cash Equivalents to Total Assets, and Total Reserves to Total Assets.

Table 36: Panel-regression results of Jordan banks

Name of independent variables	Dependent variable - ROA		Dependent variable - ROE		Dependent variable - NP / II	
	Regression coefficients	Significance level	Regression coefficients	Significance level	Regression coefficients	Significance level
Total Equity to Total Assets						
Total Equity to Total Liabilities	-0.0022	***	-0.0179	***		
Total Equity to Total Loans	-0.04925	***	-0.7075	***		
Total Deposit to Total Assets						
Fixed Assets to Total Assets			0.6268	***		
Total Loans to Total Assets					2.1572	***
Net Profit to Staff Cost	0.0014	*	-0.0104	*		
Net Interest Income to Net Profit					0.6543	***
Net Profit to Total Loans	0.4377	***	3.9670	***		
Liquid Assets to Customer Deposits			0.1468	***	1.4679	***
Cash Cash equivalents to Total Assets						
Customer Deposits to Total Assets			0.0715	**	0.4518	**
Net Interest Income to Total Assets	-0.1604	***	-1.4607	***		
Total Reserves to Total Assets						
Total Investments to Total Assets			0.1842	***	2.1487	***
R-squared	0.9963		0.9974		0.9840	
Adjusted R-squared	0.9946		0.9953		0.9767	
Significance level of F-test	***		***		***	

Significance. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Source: author's calculation

Chapter 5: MAIN CONCLUSIONS AND NOVEL FINDINGS OF THE RESEARCH

The thesis was intended to analyze fifteen commercial banks in three countries, i.e., Qatar, Jordan, and Kuwait, by the CAMELS rating system and compare the results to make possible improvements. The CAMELS rating system was based on ratio analysis of the financial statements from 2014 to 2019. Therefore, this thesis aims to shed light on the current situation of commercial banks in Qatar, Kuwait, and Jordan and learn about the sector's unique features.

In any research, it is important to study the true nature of the data. Therefore, heterogeneity of the financial ratios was examined among countries using R excel fBasics and gplots packages. According to Total Equity to Total Assets, Qatar banks have lower risk than banks in other countries. Jordan banks have the lowest Deposit to Total Assets ratio, suggesting that they use more deposits to fund their assets and rely more on deposits as they are considered cost-efficient. Kuwait banks have the highest deposits ratio, indicating that they should be less dependent on outside resources. As heterogeneity of the Total Loans to Total Assets ratio in Qatar banks is low, while Kuwait and Jordan banks have very close average ratios. Qatar banks have lower Total Loans to Total Assets ratios than other countries, indicating that Qatar banks invest their money in other assets rather than loans. ROA is a crucial indicator of a bank's success. The Jordanian banks had the highest ROA ratios. However, the average ratios of Qatar Bank are nearly identical to those of Jordan Bank. Although Qatar banks' average ratio was significantly lower, there was no significant disparity in ROE among the countries. There was a clear ranking among the countries in the case of the Net Profit to Interest Income ratio. Qatar banks' average ratio was the lowest, and Kuwait banks followed them, while Jordanian banks had the highest ratio. Jordanian banks had the highest average ratio, implying that the interest rate in Jordan banks contributes significantly to their profit.

MANOVA was used to see how the variables differ across countries. The MANOVA results revealed a statistically significant difference between the countries in all independent variables, with the p-value at the 0.05 significance level. Therefore, ANOVA was used to see any statistically significant differences between the countries during the study period. According to ANOVA, Cash and Cash Equivalents to Total Assets, Net Interest Income to Total Assets, and Net Profit to Interest Income ratios are statistically insignificant. Countries and years were used to measure ANOVA. Only the Net Profit to Total Loans and Net Profit to Interest Income ratios vary between years; the other ratios are statistically insignificant.

Conclusions to Capital Adequacy Attribute

The Capital adequacy component: Total Equity to Total Assets, Total Liabilities to Total Equity, and Total Equity to Total Loans, were used to determine a bank's financial strength. The more robust capital adequacy indicates, the lower the probability of bankruptcy. The thesis used five banks from three countries' financial statements from 2014 to 2019. Financial ratios were measured and averaged for each year and ranked. Kuwait banks performed slightly worse in Capital Adequacy, while Jordanian banks performed marginally higher, especially in the Total Equity to Total Loans ratio. According to (Rozzani & Rahman, 2015), all banks were deemed in the first rank, except for GULB (Kuwait) and QNB (Qatar) banks, which are satisfactory (2nd rank). Although financial ratios are simple to measure, they have one drawback: multicollinearity. For example, total Liabilities to Total Equity and Total Equity to Total Loans are reverse ratios; if one is higher, the other would be lower.

ANOVA revealed that all three variables varied significantly between countries at a 5% significance level in terms of capital adequacy. Therefore, a pairwise T-test between countries was computed by R excel. T-test results revealed that Capital Adequacy was statistically significantly different between Qatar and Jordan banks and Kuwait and Jordan banks in terms of Total Equity to Total Loans ratios. On the other hand, other Capital Adequacy Ratios show an insignificant difference between the countries. Multidimensional scaling was computed to see the analyzed countries' differences. The results showed that Jordanian banks varied greatly from banks in other countries.

Qatar banks have a considerable amount of money; therefore, it was assumed that they had less liability and more owners' equity, leading them to have better Capital Adequacy. However, Qatar banks were not as good as Jordanian banks regarding the Capital Adequacy attribute.

Hypothesis 1 is Rejected (*H1: Qatar leads Kuwait and Jordan in case of Capital Adequacy attribute*).

Conclusions to Asset quality attribute

Asset quality was measured using three ratios, from Total Deposit to Total Asset. Deposits are a cost-efficient source; therefore, Kuwait's banks led other countries by having an average ratio of 80%, while the lowest mean of the ratio was 71.68% in the case of Qatar banks. According to the Fixed Assets to Total Assets ratio, Jordan banks have the most fixed assets (2.03% - 7.17%), while Qatar banks have the least (1.25% - 5.00%). The bank does not make a profit from fixed assets. Therefore, profitability-wise, investing in other assets can be more

beneficial. Qatar banks had the least proportion of Fixed Assets. Therefore, Qatar banks are assumed to be the best. Banks earn higher interest on loans; a higher ratio is assumed to be better. Total Loans to Total Assets ratio is highest in Kuwait banks at 67.01 percent, followed by Qatar banks at 65.26 percent, and Jordanian banks at 50.27 percent. However, it should adhere to no exact or ideal ratio amount. Even if a huge loan is advantageous, it brings its risk. By ANOVA, all three variables in the Asset Quality attribute vary statistically significantly across countries. A pairwise comparison t-test was computed and showed a statistically significant difference between Qatar and Jordan banks and Kuwait and Jordan banks in the case of Total Loans to Total Asset ratio. Total Deposits to Total Assets ratio differs significantly between Qatar and Kuwait banks, at a significance level of 5%.

In contrast, the Fixed Assets to Total Assets ratio differs significantly between Qatar and Jordan banks, at a significance level of 10%. However, the Jordanian banks are similar when all the countries are compared by the multidimensional scaling method. Kuwait and Qatar banks, on the other hand, vary significantly within the country.

Qatar banks have a massive amount of money; however, they do not invest as efficiently as they should, while Kuwait banks lead by their efficient management. Therefore, it was assumed that Kuwait banks perform the most efficiently in the case of Asset attributes. Thus, **Hypothesis 2 is Rejected** (*H2: Banks in Qatar perform better than banks in Jordan and Kuwait in terms of Asset Quality attributes, considering the indicators of the CAMELS model*).

Conclusions to Management attribute

The management's ability to control costs and improve efficiency to increase profits is analyzed by three ratios: Net Profit to Staff Cost, Net Profit to Net Interest Income, and Net Profit to Total Loans. Qatar banks are the most efficient in terms of Net Profit to Staff Cost, which means that every dollar spent on staff generates more profit than banks in other countries. Spending more on employees is likely to have increased human capital efficiency, resulting in higher efficiency in Qatar's banks. In terms of the Net Profit to Net Interest Income ratio, Kuwait banks led the way, followed by Qatar banks, while all Jordanian banks underperformed, ranking from 11th to 15th. Jordanian banks had the worst Net Profit-to-Staff-Cost ratios and Net Profit to Net Interest Income ratios. However, Jordanian banks outperform Kuwait and Qatar banks in the Net Profit to Total Loans ratio by earning a 2.54% profit on their loans. The findings of the pairwise comparison showed that the Net Profit to Staff Cost and Net Profit to Net Income ratio was significantly different between the Kuwait and Jordan banks.

On the other hand, Kuwait and Jordan banks differed significantly in terms of Net Profit to Net Interest Income (at a significance level of 5%) and Net Profit to Total Loans (at a significance level of 10%). However, there was no significant difference between Qatar and Kuwait banks in the case of Management attributes. Moreover, the multidimensional scaling showed that Jordanian banks were similar within a country, whereas Kuwait and Qatar banks differed significantly inside the country, i.e., QNB.

Considering Qatar banks' less efficient investment decisions, Qatar banks were assumed to have lower results than Kuwait in the case of Management attributes. However, a twist in the study showed that Qatar banks' management system was more efficient than the other two countries. **Hypothesis 3 is Accepted** (*H3: Qatar banks have the most efficient management system*).

Conclusions to Earnings attribute

ROA, ROE, and Net Profit to Interest Income were used to calculate the earning ability ratio. Qatar's banks were more efficient than others, with the QNB bank leading its peers. Regarding ROA, Kuwait banks were generally acceptable, with some categories to be monitored, whereas Qatar and Jordan banks were generally satisfactory. In contrast to ROA, the ROE results were slightly different. According to (Rozzani & Rahman, 2015), Jordan banks were ranked fourth overall, which had some risk of failure, while Kuwait and Qatar banks were ranked third (fair with some categories to be watched). The average ROA by bank reveals that AHLIJO (0.78 percent), AHLIBK (0.81 percent), and GULB (0.83 percent) had a low earning ability, whereas QNB (1.79 percent) had a higher earning ability. All three variables differed significantly among countries, at a significance level of 5 percent. As ANOVA results showed a substantial difference, a pairwise t-test was executed. It indicated that the Earnings attribute differed statistically significantly between Qatar and Jordan banks in terms of the Net Profit to Interest Income ratio, at a significance level of 10%. On the other hand, other Earnings Attribute ratios showed a negligible difference between the country pairs. The multidimensional scaling method showed Jordanian banks were relatively similar to one another, whereas Kuwait and Qatar banks differed slightly, where the difference was negligible.

Qatar banks had the highest and the most desirable ratios in Earnings attributes, i.e., ROA, ROE, and NP/II. **Hypothesis 4 is Accepted** (*H4: Qatar banks have the highest profits, which leads to the highest Earnings Attribute*).

Conclusions to Liquidity attribute

Liquidity is defined as the ability to meet financial obligations on time. Liquid Assets to Customer Deposits, Cash and Cash Equivalents to Total Assets, and Customer Deposit to Total Assets were used to assess a bank's liquidity. The liquid asset amounts in Kuwait banks were equivalent to 95.9% of customer deposits, demonstrating the ability to fulfill financial commitments when they are due. As a result, Kuwait banks were the most liquid in terms of liquid assets to customer deposits, while Qatar banks were the least liquid (23.99 percent). However, it should be mentioned that there is no exact ideal number in ratio analysis that it should follow. Being the most liquid raises concerns about asset management and profitability. Therefore, the data users choose which parameter is more important. Qatar's QNB bank (8.41 percent), CBQ bank (8.76 percent), and Kuwait's AHLIBK bank (9.3 percent) all had low Cash and Cash Equivalents to Total Assets ratios.

According to AIA guidelines, customer deposits should be greater or equal to 75% of total assets. However, none of the banks achieved that degree of satisfaction. Jordanian banks had the highest Customer Deposits to Total Assets ratio, ranging from 65.02 percent to 71.44 percent. In contrast, Kuwait banks had the lowest, ranging from 36.47 percent to 64.68 percent. On average, Jordanian banks were the most liquid. By ANOVA, two variables (Liquid Assets to Customer Deposits and Customer Deposits to Total Assets) differ significantly among the countries at a significance level of 5%. Cash & Cash equivalents to Total Assets ratio is only significant for Jordanian banks. A pairwise t-test revealed that Liquidity Attribute differs statistically significantly between Qatar and Jordanian banks (Liquid Assets to Customer Deposits and Cash and Cash Equivalents to Total Assets), at a significance level of 5 percent; Customer Deposits to Total Assets, at a significance level of 10 percent. Multidimensional scaling results showed that Jordanian banks were slightly more secure in liquidity than others.

Although Kuwait banks showed a better result in Liquid Assets to Customer Deposits ratio, Jordanian banks indicated better results in the other two ratios. Therefore, on average Jordanian banks have more potential in their financial obligations when their' due comes. From these results, the first part of Hypothesis 5 is Rejected (*H5: Jordanian banks have the lowest leverage and less liquid than Qatar and Kuwait banks, Accordingly, Jordanian banks are exposed to higher risks than other countries*).

Conclusions to Sensitivity attribute:

The sensitivity parameter is intended to demonstrate how market risk can impact banks. Three ratios were used to analyze this part: Net Interest Income to Total Assets, Total Reserves to Total Assets, and Total Investments to Total Assets.

In the case of Net Interest Income to Total Assets Ratio, which is positively related to performance, Jordanian banks have the highest (2.65 percent - 4.14 percent), while Kuwait banks have the lowest results (1.91 percent - 2.14). In the Total Investments to Total Assets ratio, Jordanian banks led by an average of 21.42%. On the other hand, Kuwait's banks were ranked the worst (average of 7.54 percent). In contrast to the Net Interest Income to Total Assets and Total Investments to Total Assets ratios, all countries showed similar results in the Total Reserves to Total Assets Ratio. Bank reserves are the minimum amount of cash a bank must preserve to meet central bank requirements. There was no significant difference between countries because all banks met the minimum amount. Jordanian banks are more resilient to market risk, while Kuwait banks are vulnerable. Except for Net Interest Income to Total Assets in Kuwait banks, all three variables differ significantly across countries by ANOVA, at a significance level of 5%. Pairwise comparison t-test revealed that Sensitivity Attribute was statistically significantly different between Qatar and Jordan banks and Kuwait and Jordan banks in terms of Total Reserves to Total Assets ratios (at significance level 5%) and Net Interest Income to Total Assets ratios (at significance level 10%). On the other hand, Sensitivity Attribute ratios showed a slight difference between Qatar and Kuwait banks. Multidimensional scaling showed no differences inside the country, except for Kuwait banks, which appeared slightly different from Jordanian and Qatar banks.

In the Sensitivity Attribute parameter, Jordanian banks demonstrated way better results than the other two countries, which means Jordanian banks have the least market risk. Therefore, the second part of Hypothesis 5 is Rejected (*H5: Jordanian banks have the lowest leverage and less liquid than Qatar and Kuwait banks, Accordingly, Jordanian banks are exposed to higher risks than other countries*)

Accordingly, from the Liquidity attribute and Sensitivity attribute results, **Hypothesis 5 is Rejected** (*H5: Jordanian banks have the lowest leverage and less liquid than Qatar and Kuwait banks, Accordingly, Jordanian banks are exposed to higher risks than other countries*).

Conclusions to Panel Regression for CAMELS ratios

Panel regression was used to decide the performance determinant ratios of three countries' banks: Qatar, Kuwait, and Jordan. A fixed-effect model was chosen as the true effect size for all experiments is the same. Three ratios (ROE, ROA, and NP/II) were used as dependent variables for 15 independent variables. The results were analyzed to determine the influence of the CAMELS ratios for each parameter.

In Qatar banks: Panel Regression showed that the ROE variable had special determinants which were insignificant for the other two dependent variables, such as Total Equity to Total Assets, Fixed Assets to Total Assets, Net Profit to Net Interest Income, Cash and Cash Equivalents to Total Assets, Net Interest Income to Total Assets, and Total Investments to Total Assets. ROA was determined by three significant positive factors: Total Loans to Total Assets, Net Profit to Total Loans, and Total Reserves to Total Assets. NP/II did not have many factors (Total Equity to Total Liabilities, Net Profit to Total Loans, Customer Deposits to Total Assets, and Total Reserves to Total Assets). Total Asset Reserves significantly positively affected all dependent variables (ROE, ROA, NP/II).

In Kuwait banks: Total Investments to Total Assets was a unique determinant of ROA, and Total Loans to Total Assets were significant only for NP/II. Similar variables, such as Total Equity to Total Assets, Total Equity to Total Liabilities, Total Equity to Total Loans, and Net Profit to Total Loans, determined ROA and ROE. Net Profit to Total Loans greatly affected all dependent variables (ROE, ROA, NP/II).

In Jordanian banks: most of the independent variables impacted the ROE variable (9 out of 15). Total Loans to Total Assets and Net Profit to Net Interest Income for NP/II; Fixed Assets to Total Assets for ROE were variable-specific determinants. There was no independent variable that had an impact on all dependent variables. Some variables, such as Total Equity to Total Assets, Total Deposit to Total Assets, Cash and Cash Equivalents to Total Assets, and Total Reserves to Total Assets, had no significant impact. Considering the panel analysis results, **Hypothesis 6 is Accepted** (*H6: The indicators of the CAMELS model have a significant effect on the indicators determining the performance of banks in each country*).

Main Conclusions and Novelty of thesis

The banking sector can be assumed as the true reflection of the economy's status quo. CAMELS model is one of the most important tools widely and internationally used by numerous central banks to evaluate their performance. Therefore, CAMELS findings are crucial for bank authorities as they shed light on their performance instead of relying solely on other analytical tools that may provide inaccurate or conflicting results. The thesis aimed to identify the strengths and vulnerabilities of banks' performance alongside detecting their financial and operational management risks. Different categories of financial ratios were used in CAMELS to analyze the most critical factors which impact the performance of selected local commercial banks in Qatar, Kuwait, and Jordan using financial statements from 2014 to 2019.

Based on the CAMELS model, the following can be concluded. Firstly, Qatar banks excelled in management and earnings; however, this came at a cost, as their liquidity suffered. As previously stated, the financial ratio has no optimal value. For example, the higher the profitability, the greater the risk, and the higher likelihood of default. Jordanian banks performed well in capital adequacy, liquidity, and sensitivity but struggled in asset quality and management. Therefore, Jordanian banks were the most preferable based on CAMELS performance measurement despite poor asset quality and management results. Kuwait banks had the best asset quality results; however, the other metrics mainly were neither strong nor weak, which can be a good result depending on our aim.

Accordingly, we want now to answer the question that was asked at the beginning of the study (Which areas in the CAMELS analyses should be a concern (red flag) in Qatar, Kuwait, and Jordan banking systems? (.

Many users can use the CAMELS analysis results with different goals and priorities. Therefore, choosing only one banking system cannot be very objective. For example, profitability can be the most important for some users. However, it implies that the higher the profitability, the greater the risk and the likelihood of default. For example, suppose one of the countries' banking systems has better liquidity and profitability sacrifices. Therefore, the final decision is up to the end-users (investors, debtors, managers, etc) according to their priority.

Even though financial analysis and results are critical, it is often a matter of opinion on which side to choose or which is more relevant for the users. For example, if security is the priority, Jordanian banks are the best. On the other hand, if one is more concerned with profitability,

Qatar banks can be concluded to be excellent. However, it is also probable that Kuwait banks were concerned in all areas; therefore, Kuwait banks were sound in all areas.

Summary of the Results

Abb	Hypotheses	Acceptance
H1	<i>Qatar leads Kuwait and Jordan in case of Capital Adequacy attribute.</i>	Rejected
H2	<i>Banks in Qatar perform better than banks in Jordan and Kuwait in terms of Asset Quality attributes, considering the indicators of the CAMELS model.</i>	Rejected
H3	<i>Qatar banks have the most efficient management system.</i>	Accepted
H4	<i>Qatar banks have the highest profits, which leads to the highest Earnings Attribute.</i>	Accepted
H5	<i>Jordanian banks have lower leverage and less liquidity than Qatar and Kuwait. Accordingly, Jordanian banks are exposed to higher risks than other countries.</i>	Rejected
H6	<i>The indicators of the CAMELS model have a significant effect on the indicators determining the performance of banks in each country.</i>	Accepted

Recommendations

Based on the results of the study, some key recommendations were proposed aiming to improve the financial performance of *Qatar leads Kuwait and Jordan* commercial banks.

- We recommend banks to evaluate their performance using CAMELS model as a benchmarking tool which can determine their regional position.
- Based on the result of CAMELS, we recommend the banks managers of each country the following in order to achieve more effective and better performance in the commercial banks:
 - a. In Jordan, when evaluating the performance of banks, give greater weight to the elements that influence them the most from the CAMELS model, which are (Assets quality, Management, and Earnings). Jordanian banks show strength indicators in capital adequacy and liquidity management. In addition, they have the best risk management policies. However, they were weak in areas that concerned asset quality. Nevertheless, regardless of whether the asset quality and management outcomes are good or bad, all would agree that Jordan's banks are the most suitable for the customers to invest in.
 - b. We recommend Kuwait bank managers when evaluating the performance of banks, give greater weight and attention to the following elements (Capital Adequacy, Earnings, Sensitivity). Kuwaiti banks should increase labor efficiency and improve return on assets. Considering all the factors of CAMELS, Kuwaiti banks would have to think through how they could achieve the performance of Qatari banks. It would be advisable for Qatari banks to increase their return on assets and improve the efficiency of bank management. In the future, it would be useful to perform an analysis to identify the factors that significantly impact the development of bank profitability and performance in the two countries.
 - c. Qatar banks managers should concentrate in their evaluation on the following elements (Capital Adequacy, Liquidity, Sensitivity). Since the results indicate that Qatar banks excelled in management and earnings; however, this came at a cost, as their liquidity low. The more profitable the business becomes, the greater the risk of it going broke, and thus the higher the risk of being forced to sell assets and the lower the liquidity.
 - d. Qatar and Kuwait banks should give more attention to Risk Management because they have a bad rating in sensitivity.

SUMMARY

This thesis includes five major chapters.

The first chapter starts with the Introduction part discussing the objectives, research questions, and research hypotheses: methodology and the sections of the study.

The second chapter: Technical Literature Review

This part demonstrates the literature review of literature related to the thesis topic. It deals with the theoretical and applied literature of the study to provide a comprehensive theoretical understanding of the topic.

Accordingly, it is divided into three main parts:

Commercial banks, banking risk management, and a brief review of BASEL agreements and requirements I, II, III. Clarifies the concept of financial performance, banking financial performance, and the process of measuring banking financial performance, Discussing the theoretical framework for the American ranking and evaluation system (CAMELS analysis). Moreover, the applied literature shows the previous studies in different countries that applied the CAMELS model to evaluate the performance of their banks.

The third chapter: Data and Methodology

Chapter 3 presented data and the general research methodology used in the thesis. The Methodology part presented the data and the general research methodology used in the thesis. This chapter defines the CAMELS model's basic concepts and gives a comprehensive review of how it works in evaluating and ranking banks and research variables together with the 18 ratios formulation, research sampling, and population; it includes a brief introduction of the main features of Kuwait, Qatar, Jordan banking sectors and its current economic situation. This chapter also presents the data collection and analysis techniques to get the results. ANOVA and MANOVA to compare banks based on ratios and attribute in the countries examined. The multidimensional scaling (MDS) method was also used to show the Bank distances using the results of the analysis ratios of the 6 CAMELS attributes. The final method used is Panel-regression analysis.

The fourth chapter: Results and Discussion

This part briefly summarized each chapter's key aspects and findings of the entire research and provided the main conclusion of the thesis with the novelty of this thesis. Then, it shows the study results and the evaluations of these results. It is an exhaustive analysis of the effect of the CAMELS variables on the bank's financial performance and a comparison between the results of the three countries and the ranks of the banks of each country.

The fifth chapter: Main Conclusions and Novel Findings of the Thesis

Depending on the research findings here, it will answer the research questions, prove the hypotheses, provide the main conclusion and the summary of the thesis, the recommendations, and the study's limitations. The appendix, a list of figures, tables, publications, and references related to the study are available at the end of this thesis.

Limitation of the Study

This study analyzed local commercial banks in Qatar, Kuwait, and Jordan, where commercial banks generally have the same policies, strategies, and converging tasks. However, other banks such as Islamic or specialized investments and foreign banks have been excluded due to differences in their financial data in many places because they have different goals and objectives, which leads to an apparent discrepancy in results from the rest of the selected banks' sample.

There could be other factors besides the financial factor discussed in this research affecting the overall positions of the bank. However, this research does not consider all factors due to the limited time.

The data in the study will be based on secondary data collected only from the bank's annual reports and the Stock Exchange websites, which normally published financial statements do not give a complete picture of the commercial banks' performance.

The study is based on ratios ascertained from the financial records.

It was impractical to get an individual meeting or contact the top administration representatives of all banks under study. There was no cooperation from the banks in which some emails and questions were sent to the banks, but there was no answer.

Finally, this study was constrained by the lack of relevant research and literature about the Kuwait, Qatar, and Jordan bank sectors. However, these limitations did not impair the study's academic content in my judgment.

Abbreviation List

CAMELS	Capital, Asset quality, Management quality, Earnings, Liquidity, Sensitivity to Market Risk
CAR	Capital Adequacy Ratios
MCR	Minimum Capital Requirements
OECD	Organization for Economic Co-operation and Development
CET	Common Equity Tier
RWAs	Risk-Weighted Assets
LCR	Liquidity Coverage Ratio
OCC	Office of the Comptroller of the Currency
GDP	Gross Domestic Product
FATF	Financial Action Task Force
IFRS	The International Financial Reporting Standards
QNB	Qatar National Bank
DOHB	Doha Bank
KHLIJIB	Alkhaliji Bank
CBQ	Commercial Bank of Qatar
AHLIBQ	Al-Ahli Bank of Qatar.
NBK	National Bank of Kuwait
CBK	Commercial Bank of Kuwait
GULB	Gulf Bank
AHLIBK	Al-Ahli Bank of Kuwait
BURGB	Burgan Bank
ARABJO	Arab Bank Jordan
HBTF	Housing Bank for Trade and Finance
AHLIJO	Jordan Ahli Bank
JKB	Jordan Kuwait Bank
BOJ	Bank of Jordan
SPSS	Statistical Package for Social Sciences
MANOVA	Multivariate Analysis of Variance
ANOVA	Analysis of Variance
MDS	Multi Dimension Scale

AIA	American International Assurance
ROA	Return on Assets
ROE	Return on Equity
NP/II	Net Profit to Interest Income

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Tables

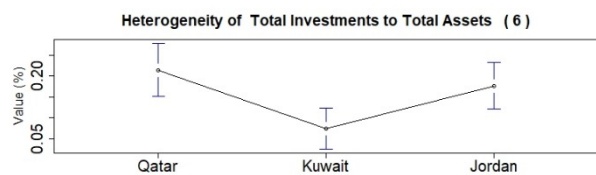
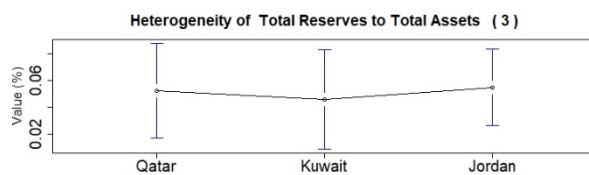
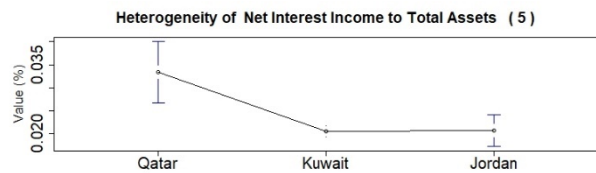
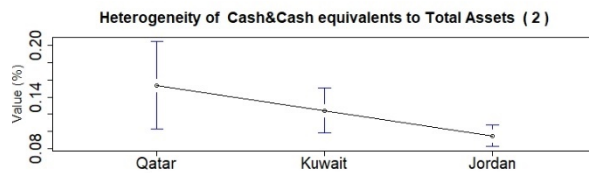
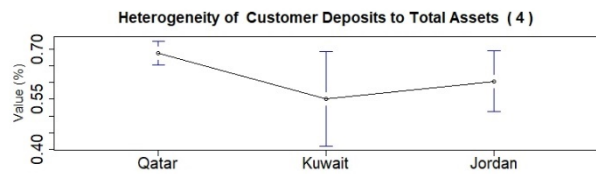
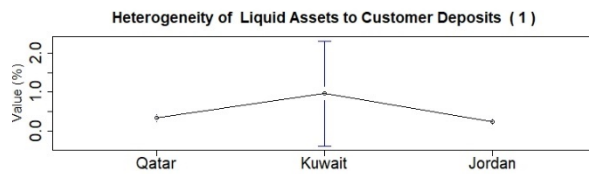
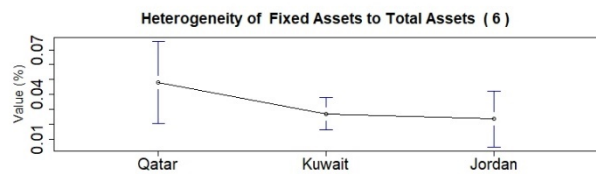
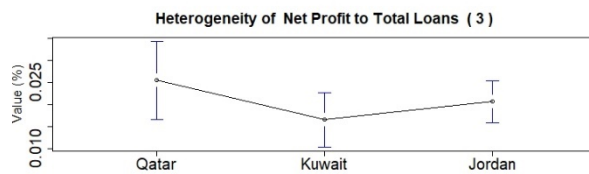
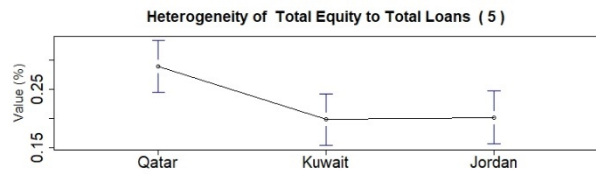
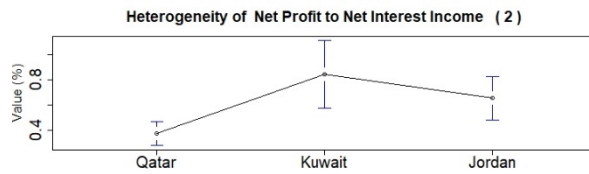
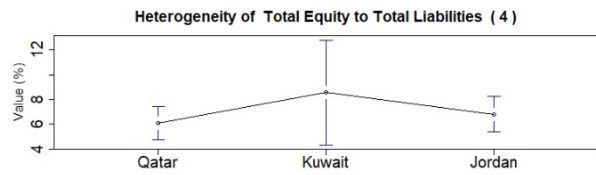
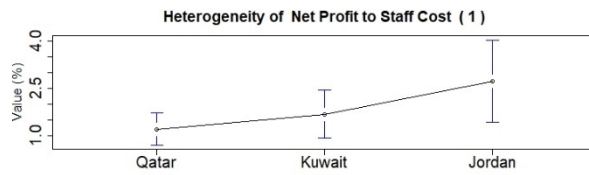
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APPENDIXES



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