

THESIS OF THE DOCTORAL (PhD) DISSERTATION

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

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Debrecen

2022

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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 to link 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, 1999Banks 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 that threatens 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 start studying the causes of the bank crises and concentrating on banks 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).

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 is 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 phenomena have become the most commonly used rating and evaluating the model in banking systems, financial institutions, even some Central banks in many countries worldwide (Datta, 2012).

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

Based on the above, in this study, eighteen categories of ratios related to the CAMELS system are applied to analyze the most critical factors affecting the performance of selected local commercial banks in Qatar, Kuwait and Jordan in the years between (2014-2019) in order to identify strengths and weaknesses in performance and to identify banking risks in the financial and operational administrative processes of the bank that require special attention and to determine the necessary evaluation priorities. Furthermore, to compare the financial performance among the selected local commercial banks in the three countries and rank them using the CAMELS ranking system.

Panel Regression, one of the main methods of the thesis, was used since the database contained cross-sectional and time-series data, the panel data analysis was employed. Panel models with fixed or random effects were used, widely applied to evaluate performance in different countries and sectors.

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

Objectives and Hypotheses

1.1. Aims of the research

- The primary purpose of the thesis is to examine the financial performance of local commercial banks in Qatar, Kuwait, and Jordan using the CAMELS evaluation system from 2014 to 2019. Findings are considered to be of great importance to the supervisory authorities of banks because it gives them an understanding of the performance of banks. Also, to recommend appropriate suggestions to improve the bank's efficiency.
- Moreover, this study contributes to the previous related studies for future research.

1.2. Objectives of the research

This study intends to achieve the following objectives:

1. 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.
2. Implementing CAMELS evaluating and ranking model on the selected commercial banks. Determine the strengths and weaknesses of the bank's financial and administrative operations by analyzing the financial statements of the sample of commercial banks.
3. Ranking the selected banks based on the findings of financial indicators.
4. Comparing the financial performance of the selected banks of the three countries.

1.3. Research questions and Research hypotheses

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.

1.5. Research Methodols and Goals

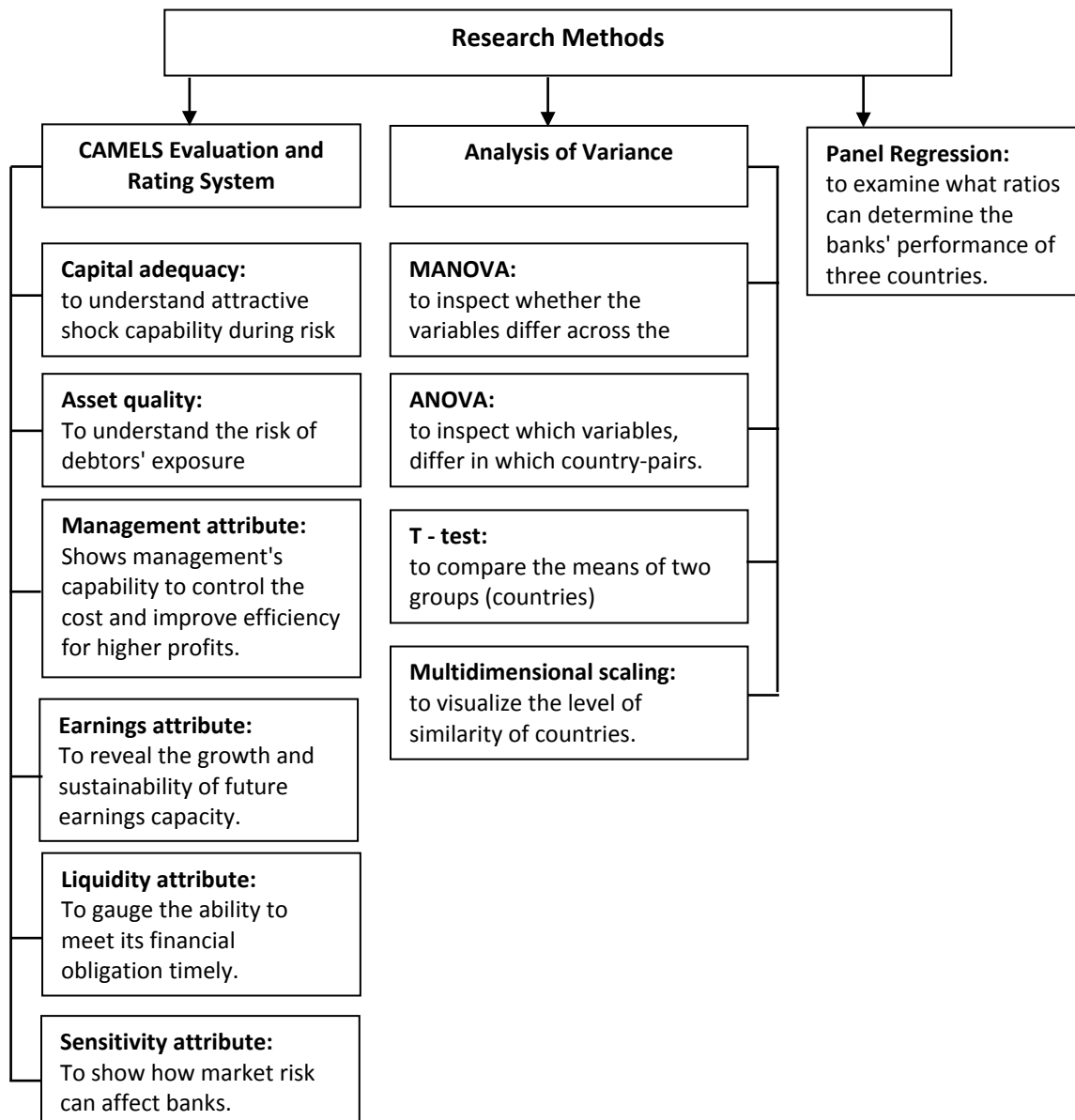


Figure 1. Research methods and goals

Source: Author's compilation

1.5. Structure of the Thesis

The study has been divided into five chapters to understand all aspects and fundamentals of the research and answer its problems and questions, as follows:

Chapter 1: Describe the subject of the thesis, objectives, research questions, and research hypotheses: methodology and the sections of the study.

Chapter 2: Offers a 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 axes: 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 and discusses the theoretical framework for the American ranking and evaluation system (CAMELS analysis). Furthermore, the applied literature by showing the previous studies in different countries that applied CAMELS model to evaluate the performance of their banks.

Chapter 3: The Methodology part here was presented data and the general research methodology used in the thesis. This chapter Define the CAMELS model basic concepts and give a comprehensive review of how it works in evaluating and ranking banks, research variables together with the 18 ratios formulation, research sampling, and population, 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. Multi dimension scale (MDS) method also used to show the bank distances using the results of the analysis ratios of the 6 CAMELS attributes, and the final method was used was panel regression analysis.

Chapter 4: Shows the study results and the evaluations of these results. It is an exhaustive analysis of the effect of the CAMELS variables on the banks' financial performance and a comparison between the results of the three countries and ranks of the banks of each country.

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

2. DATA AND METHODOLOGY

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 main financial statements are used to analyze the ratio; Balance Sheet, Income Statement, Cash Flow Statement, and Statement of shareholders' equity. Moreover, annual central bank reports 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 three countries; Qatar, Kuwait, and Jordan. The three countries are from the Middle East, but they reflect 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.

2.1. The study sample

This study chose to analyse the local commercial banks for Qatar, Kuwait, and Jordan because commercial banks almost have the same policies, strategies, and converging tasks.

Islamic, specialized, or investment and foreign banks were excluded because there are major differences in their financial data in many places due to their different targets and objectives. This leads to a clear discrepancy in the results from the rest of the selected sample banks, which increases the standard error of the study result, and for this reason, they were excluded.

Table 1: 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: Authors computation

2.2. Methodology

2.2.1. CAMELS Evaluation and Rating system

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

CAMELS is a ratio-based model used to evaluate the performance of banks with the help of the following different criteria: Capital Adequacy, Asset Quality, Management Quality, Earnings and Liquidity, Ferrouhi (2014). 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.

Table 2: 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: Nimalathan (2008), Babar and Zeb (2011)

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 contribute to giving 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, and therefore it gave equal proportions for all items. So financial ratios are the variables, which can be an output of the six factors.

2.2.2. Ratio analysis

Ratio analysis is the most popular tool of financial analysis that shows the relationship between the numerator and denominator, and 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 linked in a way that expresses and explains 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 evaluated. (Dincer et al., 2011).

Table 3: 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: Authors computation

2.2.3. MANOVA & ANOVA Test

The multivariate analysis of variance (MANOVA) was used to test the multiple response variables simultaneously. MANOVA is used when one or more categorical independent variables (the fifteen banks) have two or more treatment levels. Moreover, more than one continuous response (variable) the 18 financial ratios during six years makes it "multivariate" to see if there is a difference in banks' financial performance related to the 18 variables ratios calculated. If the MANOVA shows a significant difference (less than 5%) among variables, then one-way ANOVA should be used to determine statistically significant differences among the sectors' efficiency results (French et al., 2008).

2.2.4. Panel data analysis

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

2.2.5. Multidimensional Scaling ((MDS

Multidimensional scaling was applied to determine the differences in the comparable banks to 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, ideologies (Kruskal and Wish, 1978). MDS is being seen in several different fields, or any kind of relational data as in this research reflects the Banks. The different techniques 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, 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).

3. MAIN CONCLUSIONS AND NOVEL FINDINGS OF THE RESEARCH

3.1. Conclusion of CAMELS rating system

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*).

3.2. 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*).

3.3. 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

3.4. NOVEL FINDINGS OF THE RESEARCH

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.

3.5. 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.

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1. Abuzarqa, R. (2019). The relationship between organizational culture, risk management and organizational performance. *Cross-cultural management journal*, 21(1), 13-20.
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Registry number: DEENK/397/2022.PL
Subject: PhD Publication List

Candidate: Rawan Abuzarqa

Doctoral School: Károly Ihrig Doctoral School of Management and Business

MTMT ID: 10067221

List of publications related to the dissertation

Articles, studies (4)

1. AlAli, M. S., AlKulaib, H. A., **Abuzarqa, R.**, AlSalem, A. S.: Marketing expenditure impact on bank's financial performance: a case study on Kuwaiti banks.
European Journal of Economic and Financial Research. 5 (1), 23-28, 2021. ISSN: 2501-9430.
DOI: <http://dx.doi.org/10.46827/ejefr.v5i1.1051>
2. **Abuzarqa, R.**, Tarnóczy, T.: Performance evaluation using the CAMELS model: A comparative study of local commercial banks in Qatar and Kuwait.
Banks and Bank Systems. 16 (3), 152-165, 2021. ISSN: 1816-7403.
DOI: [http://dx.doi.org/10.21511/bbs.16\(3\).2021.14](http://dx.doi.org/10.21511/bbs.16(3).2021.14)
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4. **Abuzarqa, R.**: The Relationship Between Organizational Culture, Risk Management and Organizational Performance.
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Oradea Journal of Business and Economics. 4 (2), 56-68, 2019. ISSN: 2501-1596.
DOI: <http://dx.doi.org/10.47535/1991ojbe078>

The Candidate's publication data submitted to the iDEa Tudóstér have been validated by DEENK on the basis of the Journal Citation Report (Impact Factor) database.

26 August, 2022

