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The Impact of CAMELS Model on Market Share Prices of Jordanian Commercial Banks

أثر نموذج CAMELS على الأسعار السوقية للأسهم في البنوك التجارية الأردنية

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Dedication

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The Impact of CAMELS Model on Market Share Prices of Jordanian Commercial Banks

Prepared by:

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Abstract

Purpose: The study aimed to evaluate the performance of Jordanian commercial banks using the CAMELS model, also to know the impact of CAMELS model on market prices.

Design/Methodology/Approach: The study used the quantitative research approach to conduct the study where data was collected from published financial Reports of the (13) Jordanian commercial banks listed on the Amman Stock Exchange for the period (2015 to 2020). The study used SPSS statistical program, and multiple regression testing to analysis the research data and test the study hypothesis. The independent variables in the study are the six components of the CAMELS model (capital adequacy, asset quality, management quality, earnings, liquidity, and sensitivity), while the dependent variable was the market price.

Findings: The analysis results concluded that there is a similarity in the performance of Jordanian commercial banks, and the majority obtained a degree (less than satisfactory) according to the CAMELS model. The study also found that there is a statistically significant impact of the CAMELS model on market price. The results of the study also showed that there was a statistically significant impact for each of the (asset quality, liquidity, and sensitivity) on market price, while it was found that there was no impact for each of the (capital adequacy, management quality, and quality earnings) on market price.

Recommendations: The study also reached many recommendations of which, managements of Jordanian commercial banks should adopt the CAMEL model to evaluate their performance periodically and publish its results in the annual report interpretation to enable investors and other stakeholders to make their investment and financing decisions.

Keywords: CAMELS Model, Market Prices, Commercial Banks, Jordan

اثر نموذج CAMELS على الاسعار السوقية للاسهم في البنوك التجارية الاردنية

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الملخص

الهدف: هدفت هذه الدراسة الى تقييم أداء البنوك التجارية الأردنية باستخدام نموذج CAMELS، بالإضافة إلى معرفة تأثير نموذج CAMELS على الأسعار السوقية لأسهم البنوك التجارية الأردنية.

التصميم/ المنهجية/ الطريقة: تستخدم هذه الدراسة منهج البحث الكمي، حيث تم جمع البيانات من التقارير المالية المنشورة للبنوك التجارية الأردنية المدرجة في بورصة عمان وعددها (13) بنك تجاري، وذلك خلال الفترة الممتدة ما بين عام (2015 وحتى عام 2020). استخدمت الدراسة البرنامج الإحصائي SPSS، وذلك بالاعتماد على اختبار الانحدار المتعدد لتحليل بيانات البحث واختبار فرضيات الدراسة. وتمثلت المتغيرات المستقلة في الدراسة بالمكونات الستة لنموذج CAMELS وهي (كفاية رأس المال، وجودة الأصول، وجودة الإدارة، والأرباح، والسيولة، والحساسية)، في حين كان المتغير التابع هو الأسعار السوقية.

النتائج: خلصت نتائج التحليل إلى وجود تشابه في أداء البنوك التجارية الأردنية، حيث حصلت أغلبية البنوك المشمولة في هذه الدراسة على درجة (أقل من مرضية) حسب نموذج CAMELS. كما وجدت الدراسة وجود أثر ذو دلالة إحصائية لنموذج CAMELSعلى الأسعار السوقية لأسهم البنوك التجارية الأردنية، ووجود أثر معنوي ذو دلالة إحصائية لكل من (جودة الأصول والسيولة والحساسية) على الأسعار السوقية، في حين تبين عدم وجود أثر ذو دلالة إحصائية لكل من (كفاية رأس المال، وجودة الإدارة وجودة الأرباح) على الأسعار السوقية.

التوصيات: توصلت الدراسة إلى العديد من التوصيات، منها قيام إدارات البنوك التجارية الأردنية باعتماد نموذج CAMEL لتقييم أدائها بشكل دوري ونشر نتائجه في إيضاحات التقرير السنوي لتمكين المستثمرين وأصحاب المصلحة الآخرين من اتخاذ قراراتهم الاستثمارية والتمويلية.

الكلمات المفتاحية: نموذج CAMELS، الأسعار السوقية، البنوك التجارية الأردنية.

Chapter One

Study Background and Importance

1.1 Background

No one can deny the bank's role in the economic growth of any county. Banks offer several services for clients who are willing to save or invest. In the same meaning, banks collect funds and savings and lend them for the purpose of investing, which will influence the economy in one way or another. As (Ngoboka and Gatauwa,2020), stated that "banking sector is essential in the growth of the economy. As well, it plays a major role in the financial industry by suggesting appropriate use of funds in a certain country"

Moreover, (Ngoboka and Gatauwa, 2020) added that recently banks are functioning and working in a changeable surrounding atmosphere. So, they are finding a suitable environment to meet customers' needs.

(Abu-shkeerah et al. , 2016), stated that the success of banking institutions is in general based on their distribution that is related to several issues including the work nature, the population, and bank characteristics. Also, it was indicated that banks' role is important for development, by which they provide all needed financial resources to finance several functions and operations in the economy. Interestingly, that is attached to directing the economy by applying the right methods.

It is important for a bank to identify and recognize its financial structure and health. Therefore, (Bashatweh and Ahmed,2020) indicated that to guarantee the stability within banking industry, it is useful to apply the framework of CAMELS in order to evaluate a bank and classify its overall conditions. Interestingly, it was stated by (Rostami, 2015) that CAMELS rating for banks is being used by the management of a certain bank to assess its

financial health, where generally performing CAMELS rating is considered a well-known method among banks worldwide.

Also, in relation to this current study, stock market price is an important term that should be taken into consideration since it reflects the evaluation of marketers regarding the offered service or product.

Keeping in mind the changes in the surrounding market generally, (Mitchell, 2020) indicated that market prices are changeable as the changes in offer and bid prices by individuals.

So, that this study will investigate the impact of the independent variable that is CAMELS model with its six dimensions which are: capital adequacy, asset quality, management quality, earnings, liquidity, and sensitivity on the dependent variable that is the stock market price of Jordanian commercial banks.

1.2 Study Purpose

The Purpose of this study stems mainly from the significant role played by commercial banks as the main source of finance to individuals, as well as business organizations. Additionally, bank stability and stock market prices are considered essential for achieving economic growth.

Based on this, the importance of the study lies in evaluating the financial soundness of Jordanian commercial banks, by calculating some key indicators using the CAMELS model, and identifying their weaknesses and strengths, in order to improve them in the future, maintain their financial soundness, and improve their ability to deal with risks.

Furthermore, the study seeks to investigate the CAMELS model and how does the CAMELS model impact on market prices of Jordanian commercial banks.

Investigating the impact of CAMELS model by its six dimensions on market price in the Jordanian commercial banks, will achieve the following objectives.

There are several objectives of this study, as follows:

1. Investigating the impact of CAMELS model by its dimensions on the market price in the Jordanian commercial banks.
2. Classifying commercial banks in Jordan in a rating scheme.
3. Enhancing the understanding of the concept of CAMELS model and its application.
4. Understanding of market price and its role in the banking sector.
5. Reaching practical outcomes that enable the management in commercial banks to maintain market price.

1.3 Study Significance

By conducting this study, it is going to be useful for different parties, such as: commercial banks, banks regulators, and other researchers. For example, commercial banks will find it useful by determining the level of their provided banking service for the purpose of meeting the banks goals. Secondly, banks regulators will benefit from this study by rating the financial institutions, since applying CAMELS model is considers as a well-known rating system. Finally, this study will be useful for other researchers since it will fill the gap in the literature for the means of enhancing the literature and future development.

1.4 Problem Statement

In accordance to the challenges that banks are facing currently due to the pandemic of covid-19, banks are suffering in general from experiencing low profitability and revenue pressure that was found by experiencing low levels of interest rate. Another problem that is causing challenges to the banking sector is digitalization where some banks were unable to

meet investors and customers' expectations. Also, due to the pandemic of covid-19, banks experienced a great amount of credit losses. It is worth mentioning that markets over the world suffered from volatility, where that led banks to be affected badly from this global economic situation. Therefore, from this point comes the importance of studying CAMELS model in commercial banking sector with the model's dimensions and its impact on market price. By which different researchers suggested that CAMELS model is an essential approach to identify and recognize banks financial strength. So that, this conducted study will be useful to enhance and add to the literature about the effect of CAMELS model in relation to market price.

The study problem can be identified by the following question.

The Main Question: "Is there any significant impact of CAMELS model through its dimensions (capital adequacy, asset quality, management quality, earnings, liquidity, and sensitivity) on market price of Jordanian commercial banks"?

From the above main question 6 sub-questions arise which are:

First sub–Question: "Is there any significant impact of **Capital adequacy** on market price of Jordanian commercial banks"?

Second sub–Question: "Is there any significant impact of **Asset quality** on market price of Jordanian commercial banks"?

Third sub–Question: "Is there any significant impact of **Management quality** on market price of Jordanian commercial banks"?

Fourth sub–Question: "Is there any significant impact of **Earnings** on market price of Jordanian commercial banks"?

Fifth sub–Question: "Is there any significant impact of **Liquidity** on market price of Jordanian commercial banks"?

Sixth sub–Question: “Is there any significant impact of **Sensitivity** on market price of Jordanian commercial banks"?

1.5 Study hypotheses

To answer the study questions, the researcher formulated the following hypotheses: -

H01: The Main hypothesis:–There is no statistically significant impact at the level of significance ($\alpha \leq 0.05$) of CAMELS model through its dimensions (capital adequacy, asset quality, management quality, earnings, liquidity, and sensitivity) on the market price of Jordanian commercial banks.

From the above main hypothesis; six hypotheses are formulated

H01.1: The First Sub Hypothesis: There is no statistically significant impact at the level of significance ($\alpha \leq 0.05$) of capital adequacy on the market price of Jordanian commercial banks.

H01.2: The Second Sub Hypothesis There is no statistically significant impact at the level of significance ($\alpha \leq 0.05$) of asset quality on the market price of Jordanian commercial banks.

H01.3: The Third Sub Hypothesis There is no statistically significant impact at the level of significance ($\alpha \leq 0.05$) of management quality on the market price of Jordanian commercial banks.

H01.4: The Fourth Sub Hypothesis There is no statistically significant impact at the level of significance ($\alpha \leq 0.05$) of earnings on the market price of Jordanian commercial banks.

H01.5: The Fifths Sub Hypothesis There is no statistically significant impact at the level of significance ($\alpha \leq 0.05$) of liquidity on the market price of Jordanian commercial banks.

H01.6: **The Sixth Sub Hypothesis** There is no statistically significant impact at the level of significance ($\alpha \leq 0.05$) of sensitivity on the market price of Jordanian commercial banks.

1.6 Study model

As presented in the following diagram this research has an independent variable that consists from six components that are: capital adequacy, asset quality, management quality, earnings, liquidity, and sensitivity, while the dependent variable is market price.

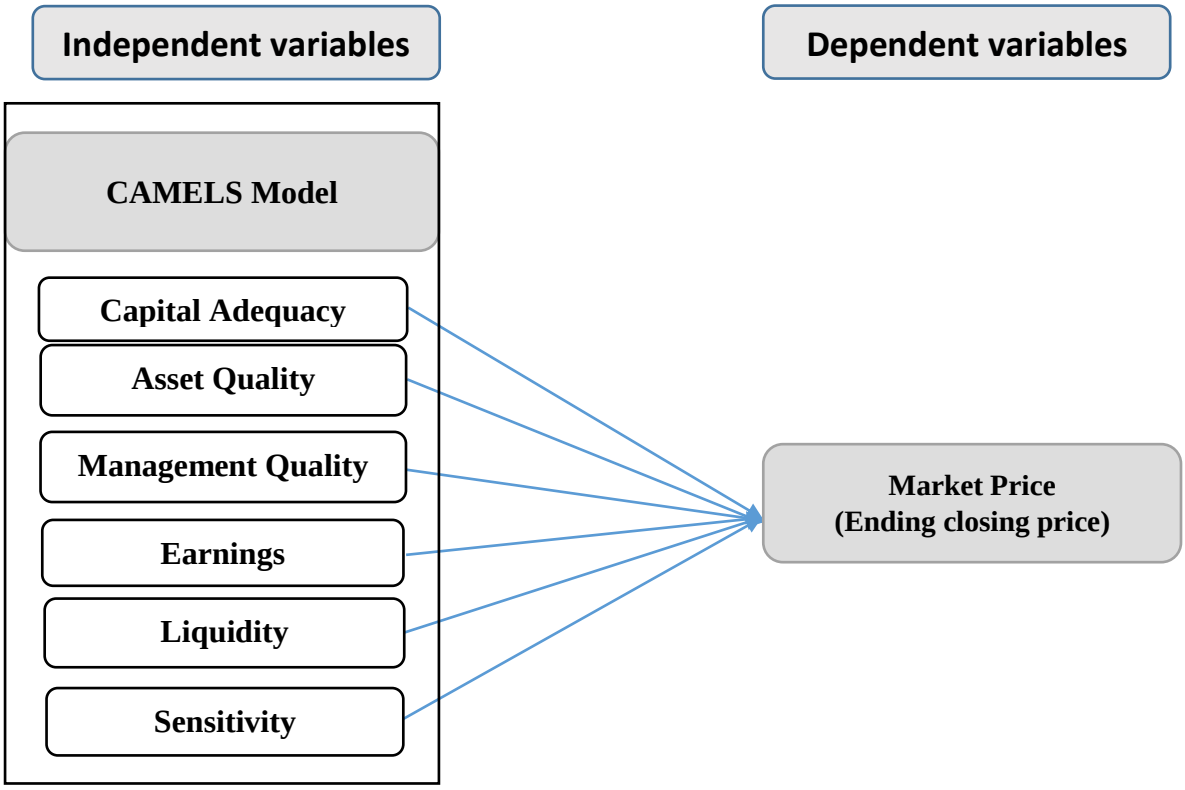

Figure (1): Research Model

Interestingly, this model is being developed based on the studies conducted by (Bawal, 2017) and (Naser, 2019).

1.7 Conceptual Definitions

The following are the definitions of the main used terminology in this study:

- **CAMELS model**: According to (Bashatweh and Ahmed et al, 2020), it is considered a well-known financial indicator for the performance of banks. Moreover, it stands

for: Capital adequacy, asset quality, management efficiency, earnings, liquidity, and sensitivity. The following are the definitions of each of these parameters:

- Capital Adequacy (C) it is defined by (Banu and Vepa, 2021) as bank's capability to be sustained whenever unexpected losses occur.
- Asset Quality (A) it is defined by (Banu and Vepa, 2021) as the credit risk evaluation that contributed to a certain bank's assets.
- Management Quality (M) it is defined by (Banu and Vepa, 2021) that it relates to the effectiveness and efficiency in managing banks, by which management capital ratios are useful to recognize banks that are being managed poorly.
- Earnings Quality (E) it is defined by (Banu and Vepa, 2021) that this parameter is being used for the purpose of protecting and recognizing banks' market share to maintain their existence.
- Liquidity (L) it is defined by (Jothr et al., 2021) that this parameter indicates the capability of a bank to obtain its expected, current, and future obligations
- Sensitivity to market risk (S) it is defined by (Islatince, 2015) that this parameter reflects the level of changes in foreign exchange rates, interest rates, and equity and commodity prices that have a negative impact on capital and earnings.

- **Market price**: it was defined by (Mitchell, 2020) as the current price when a service or an asset is being sold or bought. In the same meaning, it is the price where both quantity demand and quantity supplied are equal.

1.8 Study Limitations

The results of this study cannot be generalized due to the following limitations:

There are three limitations that were faced by the researcher while conducting this study, that are: lack of studies related to the topic. Also, time limitations which caused the

researcher not to include more studies. Finally, the researcher was unable to take into consideration all commercial banks due to the inability to get banks' financial reports, so the researcher included only listed banks on Amman Stock Exchange.

1.9 Study Delimitations

- **Place Limitation**

  The study was conducted among Jordanian commercial banks that are listed on Amman Stock Exchange.

- **Time Limitation**

  The study was covering five years from (2015) to (2020).

- **Scientific Delimitation**

  The study sought to find the impact of CAMELS model on market price.

Chapter Two
Conceptual and Theoretical Framework and Previous Studies

2.1 Conceptual and Theoretical Framework

2.1.1 Introduction

This section will include a presentation of related information to the topic, such as: the concept of CAMELS model, about CAMELS model, CAMELS as a rating system, CAMELS parameters, banking system, banking soundness, market price, banks in Jordan, and finally banks' in Jordan.

2.1.2 The concept of CAMELS model

It was stated by (Nguyen et al., 2020) that CAMLE rating method is an efficient monitoring tool that was introduced in 1979 in the United States by the Federal Financial Institution Examination Board. It was added that in recent time it is being followed by the Federal Deposit Insurance Corporation, the Office of Monetary, and the Federal Reserve System. As well as stated in the study conducted by (Jothr et al., 2021), where researchers also indicated that CAMELS history is related to November in 1979 since it was first applied by the American Federal Council for financial organizations examination after the approval of the Federal National Council for banks' credit management in 1987 in the USA.

(Nguyen et al., 2020) added that CAMEL is considered as a ratio-based model that is applied for the purpose of evaluating and ranking banks. Moreover, (Naushad, 2021) mentioned that the framework of CAMEL is followed to give a comprehensive statement about the entire health of the banking sector. This related framework includes financial indicators and parameters in order to rate the financial soundness of a certain bank. It was added by (Rizvi et al., 2018) that the CAMEL framework is considered as a supervisory method to measure the performance of banks objectively. Furthermore, (Indriastuti & Ifada,

2016) took into account the CAMEL model as a helpful method that is used to determine the failure of banks and also it is an indicator of the entire financial health. In addition, (Nhan et al., 2021) mentioned that CAMEL is an approach that is used to supervise banking in the US and it is applicable as a standard within most financial institutions worldwide in order to evaluate banks' risk and effectiveness.

2.1.3 About CAMELS model

In regards to (Naushad, 2021), the researcher stated that although researchers began to notice the effectiveness of CAMELS rating system within the period of late 1990 till the early 2000. But it became well known after the financial crisis in 2008. It was also stated that banking regulators and policymakers gave their praises about CAMELS tool. (Naushad, 2021) added that there are some critics of the model, such as the one by (Parsons, 2013) and (Gilber et al., 2002). Where (Parsons, 2013) considered CAMELS model as a backward-looking framework. (While Gilber et al., 2002) stated that the framework of CAMEL based on its nature is considered costly. Interestingly, there were others who presented its usefulness. For example, (Indriastuti and Ifada, 2016) stated that CAMEL is being considered a helpful tool that is applied for the purpose of predicting the failure of a certain bank, and it is used as an indicator of financial health generally. While (Handorf, 2016) discussed the application of the rating model as a rapid and explicit measure that includes information about the financial health of a particular bank. Also, (Dang, 2011) confirmed that CAMEL is a reliable system in order to investigate the health and safety of a bank which will lead to eliminating the bank's failure risk. Moreover, (Woo, 2011) ensured that the CAMELS system might be counted better among other models based on terms of timeliness. In addition, (Gavurova et al., 2017) stated that the CAMELS rating system is a useful tool for predicting the health of banks financially and identifying banks'

competitiveness. Finally, (Ledhem and Mekidiche, 2020) concluded that the CAMELS model is sufficient and beneficial in arbitrating the efficiency of finance.

2.1.4 CAMELS as a rating model

(Kengatharan, 2018) stated that by CAMEL rating it ensures the powerful condition of a bank by taking into consideration several banks' characteristics due to a large base of information sources such as funding sources, cash flow and budget, bank's financial statement, and macroeconomic data. In accordance to (Guan et al., 2019) indicated that among other rating methods, CAMELS is acceptable among countries worldwide due to several reasons, such as comprehensive perspective, Federal Bank preference, high concern about risk and safety, and indicator data is available.

Talking about CAMELS as a rating system, (Handorf, 2016) stated that CAMEL rating system is followed as a direct and quick tool that includes information about a certain bank's financial health and soundness. Also, (Naushad, 2021) indicated that the CAMELS rating system is counted as better than other different ratings due to its timeliness.

(Das and Nayak, 2020) stated that banks based on the CAMLE model were rated by the following abbreviations of the five components C-A-M-E-L. Where these components are: C- Capital Adequacy, A-Asset Quality, M-Management Efficiency, E-Earnings Capacity, and L-Liquidity. It was added that for those abbreviations, a bank will be rated between (1) and (5) then a final score will be calculated for the purpose of presenting a score that reflects a bank's overall condition. It was also added by (Das and Nayak, 2020) that in the year 1996 there was a revision of CAMEL approach by adding the parameter "S" then the model was known as CAMELS. According to (Gangrade and Telang, 2019), they stated that the rating scale ranges from (1) to (5) where (1) is the highest rating and (5) is the lowest rating. (Guan et al., 2019) mentioned that in the institutions where institutions rated

with low score that is an indication of having a severe crisis. Where that refers to have less competitive and less sustainable institutions. On the other hand, gaining a high rating score is an indication of having more competitive and sustainable institutions.

In accordance with the meaning of each CAMELS rating, there were some studies that clarify them. At first let's take into consideration the study conducted by (Islatince, 2015) where the researcher indicated the following meanings as follow:

Rating 1: **It is the best rating that presents having a strong performance.**

Rating 2: It presents having a satisfactory performance.

Rating 3: It presents having inaccurate performance.

Rating 4: It presents having marginal performance.

Rating 5: It is the worst rating and it is being rated as accepted insufficient.

Secondly, in relation to the study conducted by (Masood et al., 2016), below is a brief meaning for each of the five ratings:

Rating 1: **-It means that it is basically sound**

- Findings can be treated routinely

- There is a resistance regarding financial and external economic disturbances

Rating 2:
- It is fundamentally sound
- Stable and it is able to handle business fluctuations well

Rating 3:
- Operational and financial weaknesses are considered from moderately intense to unsatisfactory.
- Breakdown easily whenever the taken actions are not considered effective in solving weaknesses related issues.

Rating 4:
- Excessive in having sever financial weaknesses.
- The existence of unsafe conditions that are not solved satisfactory.
- High possibility to fail

Rating 5:
- High immediate potential to fail
- There is a necessary need to the help of stockholders and other different financial sources.

2.1.5 CAMELS paramètres

As follow is a brief description of CAMELS parameters, which are: Capital Adequacy (C), Asset Quality (A), Management Quality (M), Earnings Quality (E), Liquidity (L), and Sensitivity to Market Risk (S).

2.1.5.1 Capital Adequacy (C)

According to was mentioned by (Banu and Vepa, 2021), the capital adequacy ratio refers to a bank's capability to be sustained whenever unexpected losses occur. Also, it was added that regulators are responsible to monitor this ratio by checking if the maintained money by depositors is safe besides the capability of a bank to overcome any lose. In addition, it is stated by (Islatince, 2015) that capital adequacy is considered one of the major indicators of banks' solidity. Where it is essential for any financial institution for the purpose of protecting fund secrecy for holders as well as preventing the occurrence of banks' bankruptcy. (Islatince, 2015) mentioned that this ratio indicates if a bank has sufficient capital for the emerging unexpected losses in the future.

Moreover, it was stated in the study conducted by (Jothr et al., 2021), that capital adequacy refers to the capital amount where there is a balance attained between capital size and expected bank risks. In the same meaning, the researchers clarified that capital adequacy represents the capital level for facing risks, by which the profitability begins. Also, (Nguyen et al., 2020) indicated that the capital adequacy ratio presents banks internal wealth where a bank is going to resist losses whenever having an economic crisis. (Nguyen et al., 2020) added that the higher this value the better banks' flexibility within the crisis.

In conclusion, (Islatince, 2015) indicated that capital adequacy presents a group of issues, such as:

- Capital's quality and level
- The financial situations and conditions as a whole image

- Management capability to address the requirements that emerge due to additional capital
- The Composition of the balance sheet
- Growth plan

2.1.5.2 Asset Quality (A)

In accordance with (Banu and Vepa, 2021) that asset quality refers to credit risk evaluation that contributed to a certain bank's assets. Also, (Islatince, 2015) added that this parameter presents the quality of possible credit risks that are attached to investment and loan portfolios. Moreover, (Jothr et al., 2021), mentioned that asset quality is investigated by stock portfolio quality and the evaluation of assets quality is performed by banks' capability to control, measure, and define risks. In addition, (Nguyen et al., 2019) stated that asset quality refers to loan portfolio quality that has a direct impact on the profitability of banks. Where the researchers indicated the highest risk faced by commercial banks is considered a loss from delayed debts. Therefore, the lower the value the better banks perform.

(Islatince, 2015) mentioned that asset quality is evaluated by considering asset quality of a bank where this parameter will identify the financial strength. In the same study, it was stated that asset quality rating depends on:

- The health of credit administration practices and sufficient underwriting standards.
- Credit risk that is gained by eliminated transactions within off-balance-sheet
- The quality and variety of investment and loan portfolios
- The availability of asset concentrations
- The sufficient of both management information and internal control systems

Back to (Jorth et al., 2021), the researchers indicated that there are several issues to be considered whenever classifying asset quality, such as the time duration to repay loans that their due is in the past with the consideration of rescheduling them, the management and

the amount of loans by employees, the amount of assets that are not performed in accordance to total capital, and considering provisions level in order to overcome loan losses.

2.1.5.3 Management Quality (M)

Regarding what (Banu and Vepa, 2021) mentioned that management quality parameter is related to the effectiveness and efficiency in managing banks, by which management capital ratios are useful to recognize banks that are being managed poorly. In accordance with the study conducted by (Islatince, 2015), it was indicated that this parameter is considered important and significant for the growth, profitability, and solidity of the financial institutions where it is important for these institutions' success. In addition, (Islatince, 2015) added that management quality presents both the capability of management and board of directors in controlling, monitoring and identifying risks based on activities of the credit union. Moreover, it was stated that management quality guarantees its functions and safety as well the compliance associated with the followed regulations.

Based on the study conducted by (Jorth et al., 2021) management quality it refers to the reflection of management and board of directors' capability in a bank in order to control, recognize, and measure risks. Where that will guarantee that the bank is managing its operations safely, following supervisory laws and internal policies. Moreover, (Nguyen et al., 2020) added that the management quality parameter includes an institution's general management that relates to policies, control regimes, and both budgetary and strategic plans. The researcher indicated that the higher the value of this parameter, the managers will be more efficient in performing banking activities and generating income.

Furthermore, it was concluded by (Islatince, 2015), that management quality is being evaluated depending on:

- Management and board of directors' capability to react to and plan for risks

- Having an effective, timeline, and accurate risk monitoring and management information systems.
- Sufficient internal control and audit
- Realizing the recommendations that are either made by supervisory authority or auditors
- The performance of an institution as a whole and its related risk profile

2.1.5.4 Earnings Quality (E)

According to (Banu and Vepa, 2021) earning quality, the parameter is being used for the purpose of protecting and recognizing banks' market share to maintain their existence. Where (Islatince, 2015) added that this parameter represents the importance of financial institutions when gaining their profits. Also, it was added that it is used for evaluating earnings. Moreover, (Jorth et al., 2021) indicated that a low value of this parameter indicates to problems occur based on banks' and financial institutions' earnings. On the other hand, a higher value of this parameter; presents investment regulations within risky financial portfolios. In the end, (Islatince, 2015) indicated that earnings will be evaluated by several factors, such as sufficient earnings that are needed to pay a dividend, ample capital, and overcome losses, also based on operational sources, high risk of business activities, enough provision, enough budget, and earing risks that includes price risk, interest rate, and variation in the foreign exchange rate.

2.1.5.5 Liquidity (L)

(Nguyen et al., 2020) stated that liquidity adequacy for a bank is positively connected to its profit. Also, (Islatince, 2015) indicated that liquidity is evaluated based on reliance on interest-sensitive funds, assets available to be converted into cash, deposits fluctuations, technical competence that is related to liabilities structure and having access to cash sources such as inter-bank markets. Moreover, the researcher added that liquidity is

considered among the most important standards regarding the health of banking operations, by which a bank that suffers from problems in liquidity; will lead to the existence of bank operational risks.

According to (Jothr et al., 2021), liquidity is a parameter that indicates the capability of a bank to obtain its expected, current, and future obligations. Also, it was stated that when evaluating the liquidity of a bank; the current level of liquidity must be considered in addition to its future requirement. (Jothr et al., 2021) added that managing liquidity will guarantee having enough liquidity level to obtain obligations based on a timely basis. In conclusion, (Islatince, 2015) indicated that liquidity as a component is being evaluated due to: the existence of assets that can be converted to cash easily without having too much loss, sufficient sources of liquidity in comparison to current and future requirements, the access to funding sources as money markets, the variation level of funding sources, deposits stability and trend, and management ability to measure, control, recognize, and monitor the liquidity position in an institute.

2.1.5.6 Sensitivity to market risk (S)

As was mentioned by (Islatince, 2015) that the parameter of sensitivity to market risk it reflects the level of changes in foreign exchange rates, interest rates, and equity and commodity prices that have a negative impact on capital and earnings. (Islatince, 2015) added that the parameter (S) ensured the ability of a financial institute to check and manage, observe, and discover market risk. Moreover, by this parameter, it alerts the supervision management about having a problematic and weak point ahead.

In addition, (Jorth et al., 2021) indicated that sensitivity to market risk is connected to banks' sensitivity that is associated with commodity price and interest risks. Back to the study by (Islatince, 2015), the researcher concluded that this parameter depends on:

- The sensitivity of earnings within financial institutions in order to contrast with changes in foreign exchange rates, interest rates, and both equity and commodity prices
- Management capability to control market risk exposure, monitor, and measure
- The exposure of interest rate risk nature that is due to non-trading positions
- The exposure of market risk nature that is due to foreign and trading operations

2.1.6 Banking system

As what was mentioned by (Nguyen et al., 2020) the banking system is considered one of the elements of the financial system that plays a major role in the development of the economy worldwide. Also, it was indicated that the development of the economy relies deeply on the use and the distribution of resources and essentially depends on the performance of several industries within the economy. For example, banks are useful for making money, forming capital, and simplifying monetary regulations. In the study conducted by (Naushad, 2021), where the researcher indicated that the banking sector is important in the growth of a country's economy. In addition, it was added that the well-being of an economy is a reflection of having a healthy banking sector. Naushad also indicated that the government was concerned about the bank's health, particularly after the crisis for the period from 2008 to 2009.

In accordance to (Kengatharan, 2018), it was stated that banks use different approaches for the purpose of evaluating and measuring their performance, such as efficiency ratio, liquidity ratio, solvency ratio, and others. In the same study, it was indicated that there are several uncertainties and risks that banks face in the modern world of business. Therefore, it was added that banks use and follow different methods for reducing these uncertainties and risks such as the CAMEL rating system. In addition, it was mentioned by

(Naushad, 2021) that there are some predefined standards in order to predict banks' performance. The researcher stated that the framework of CAMEL among other frameworks is being applied widely since it gives an entire view of the overall soundness of any banking system. Regarding ~~to~~ the study by (Nguyen et al., 2020), when evaluating banks' performance, it is important to consider efficient indicators for the means of checking the activities' health in a certain economy. Nguyen et al. added that it is essential when evaluating banks' effectiveness to take into consideration the prescribed framework of supervision. Therefore, it was indicated that CAMEL rating system is an efficient supervising tool. In conclusion, (Islatince, 2015) stated that having a weak banking financial structure in a country is considered ~~as~~ a threat to its financial system. Therefore, it was indicated that it should be guaranteed to have a reliable banking system in order to prevent banks from decreasing costs related to public finance and again not facing the challenges that occurred based on the economic crisis in the past days.

2.1.7 Banking soundness

Based on the study conducted by (Salina et al., 2020), it was stated that depending on a bank's financial soundness, is a situation where financial factors identify its asset quality, effectiveness, capital adequacy, and liquidity among certain circumstances to assure the survival of a bank within negative conditions in the surrounding market. By which bank's failure to survive will cause a transformation of bank's situation from a sound condition to an unsound condition. In addition, it was mentioned by (Salami et al., 2021) that banking system soundness play a vital role in nation development. In the same meaning, the researchers added that the sound of the banking system is not only ensuring depositors' fund's safe custody, in fact, it is also essential to investors including shareholders,

employees, and the entire economy. Where having a healthy banking system is correlative with having a strong economy.

Back to (Salina et al., 2020), taking into consideration conditions identifications is counted as essential in the evaluation of banking soundness financially. Where the mentioned financial factors identification differs for the purpose of presenting the impact of economic, financial, political, and social status within any country. It was mentioned by (Van-Thep and Day-Yang, 2019) that studying the identifications of financial soundness has become an attractive topic to search worldwide. Where a bank's financial soundness includes its productivity, stability, efficiency, and profitability. The researchers added that studying banking system financial soundness is well-known, however, it varies due to variations in the financial market features across countries besides variation in the methods and empirical outcomes.

It was stated by (Mohammed et al., 2019) that financial soundness is a major factor regarding financial institutions' efficiency. Also, (Salina et al., 2020) added that based on previous studies within countries, led to international standards of banks' financial soundness. In the end, (Almahadin et al., 2020) the researchers concluded that when studying banking system soundness, it can be examined by considering competition within the industry itself.

2.1.8 Market prices

(Sanders, 2018) defined market price is the amount of money that is being paid actually or going to be paid for a product through a certain transaction. Even though there is a lack of regular definition for the term, researchers were flexible in their explanation of the concept of the market price.

Regarding (Mitchell, 2020) market price is being used for finding and calculating economic surplus and consumer surplus. It was indicated that an asset's market price is being identified by the consideration of demand and supply forces. Where the prices quantity demand and quantity supplied are equal and then it is being recognized as a market price. Interestingly, the researcher added that market prices can be changed rapidly due to the changes in the bid and offer prices by people.

In accordance to (Majumder et al., 2021) that market price refers to how much a certain company has a stock exchange value, it is being used by both analysts and investors for the purpose of identifying the company's financial position as well its value in the market. Also, it was stated by the International Valuation Standards (Council, 2020), it is assumed by the market price concept has a negotiated price within a competitive and open related market, by which contributors act freely. It was added that the asset's market may be either local or international market. Where the market includes a large number of sellers and buyers or even it might be one that is distinguished by having a particular number of participants in the market.

In addition, it was stated by (Miranda et al., 2020) that market price refers to the amount of asset or liability that is estimated in order to be exchanged on the date of valuation among willing seller and buyer through an arm's length transaction. Where that is being attained after having a suitable marketing and whenever all involved parties perform knowledgeably and without any compulsion. In addition, (Lind and Nordlund, 2019) indicated that in evaluating the market price, the valuer role is to consider modeling the thinking of the likely market and to estimate where the sale might occur. It was added that by market price estimation, it is related to consider getting the best bid. (Szutowski, 2016) indicated that market price refers to the gotten price of an asset in the market. In conclusion, by (the International Valuation Standards Council, 2020) it was concluded that an asset's

market price presents its highest value and its best use where these values refer to the use of an asset by the maximization of its potential that is allowed legally and is considered financially practical. As a researcher, in my opinion that market prices within banks may undergo and experience fluctuations due to the change in stock prices that occur and exist because of market forces. Keeping in mind that share prices vary due to demand and supply which will lead to cause fluctuations within banks' market prices.

2.1.9 Banks in Jordan

As stated in the study conducted by (Almahadin et al., 2020) that the financial system in Jordan is considered a bank-based system where it relies on the banking sector greatly. Therefore, that can be presented by the economic activities of the commercial banks which are participating heavily in the economy in Jordan. In addition, it was indicated by (CBJ, 2018) that there were 27 banks that are operating in Jordan including 11 foreign banks' branches and 16 banks are listed ones with having Islamic banks among them. It was mentioned by (Abu-Shkeerah et al., 2016) that commercial banks in Jordan were established before 2002, by which some investment banks were founded. These commercial banks had a role in coping with globalization. That led to the integration between local and global banks. In relation to the study conducted by (Al-Dmour, 2018), it was mentioned that the banking sector in Jordan is considered fundamental to its economy where it made 18.8% of the gross domestic product due to market price during the second quarter of the year 2018. Also, it was added that the banking sector is enhanced by information systems and technology development. Which information system development improved profitability by grabbing the attention of new customers and maintaining the old ones by reaching their expectations and offering them a service with high quality.

Based on (Bawaneh and Dahiyat, 2019), the researchers stated that the banking system in Jordan is essential to the economy depending on related indicators to the banking sector. Which it was indicated that licensed banks' assets reached up to 71.82 billion USD in 2018. On the other hand, the credit facilities reached up to 36.82 billion USD in the same year. Also, it was mentioned that the GDP in 2018 made 42.2 billion USD which indicated that banks' assets made up 170% of the GDP. It was added by (Almahadin et al., 2020) that the banking sector in Jordan is counted as the strongest part of its financial sector wherein 2018 it made up around 20% of the GDP then it was considered among the largest sector in the country economically. As well the total assets in 2016 made up 176% of the GDP. Moreover, (Bashatweh and Ahmed, 2020) indicated that based on the Central Bank of Jordan report in 2018, the licensed banks' assets made about 161.9%.

In accordance to (Al-abedallat, 2019), the economy in Jordan faces some problems economically that are reflected through macroeconomic indicators including having a high unemployment rate and low GDP growth. Also, (Almahadin et al., 2020) added that although having a sound financial situation of the banking system in Jordan, but there are regional and local challenges in the operational surrounding atmosphere including high unemployment, the volatile economic atmosphere within surrounding countries, low GDP growth, and high competition. Where it was added that such challenges might be harmful to the financial system's health and the banking system as well. It was mentioned in the study conducted by (Altarawneh and Shafie, 2018) that there are serious economic challenges in Jordan, such as an increment generally in the general budget and public debt deficits and unemployment where these challenges led to increment in banks' risk and affect their performance.

In addition, it was added by (Altarawneh and Shafie, 2018) that the banking system in Jordan is considered unique since it follows two kinds of banking systems that are

commercial or conventional and Islamic banking systems. Furthermore, it was indicated by (Abu-Shkeerah et al., 2016) that the banking system in Jordan is among the essential sectors in the country based on the banking system's effectiveness and its involvement in the national economy. Back to (Altarawneh and Shafie, 2018), indicated that the central bank of Jordan is controlling the banking system in Jordan by handling both commercial and Islamic banks. Where it was added that the central bank of Jordan was founded in 1964 and it is considered an independent organization that is operating on behalf of the government for the purpose of handling fiscal responsibilities.

2.2 Previous Studies

Below is a group of selected previous studies within the literature that are related to the topic of this current conducted study.

1. **(Banu and Vepa, 2021), "A Financial Performance of Indian Banks Using CAMELS Rating System"**

The study–aimed to study both the operating and financial performance of the banking sector in India. The study was conducted within four banks that are two private banks and two public banks over the period from 2010 to 2019. Where the public banks include: Syndicate bank and State bank of India, and the private banks are HDFC Bank and ICICI bank. Secondary data was collected from related published annual reports. Evaluating the selected banks was done by the application of the CAMELS model. CAMELS parameters are capital adequacy, asset quality, management capability, earning quality, liquidity, and sensitivity to market price. The study resulted in that public banks are experiencing solvency positions over the long term. The study recommended that hiring well-qualified people are considered important to improve the public banks' sector performance. Interestingly, this study was useful for model development.

2. **(Gokul, 2020), "A Relative Study of SBI and ICICI: CAMEL Framework"**

The study aimed to assess the largest public bank and the largest private bank in India over the period from 2013 to 2017. CAMEL model was used for examining the performance of banks. The study depended on only secondary data, where data was collected from the published annual reports for two banks. After that data was analyzed by following the parameters of CAMELS that are: capital adequacy, assets quality, management efficiency, earning quality, and liquidity. The study resulted in that the private bank is performing better based on management efficiency and profitability than the public

bank. The study recommended encouraging other researchers to conduct more studies with a larger sample size. Interestingly, this study was useful to develop the research model.

3. **(Chhetr and Das, 2020), "Performance Analysis of Sikkim State Co-operative Bank Ltd"**

The study aimed to examine State Level Cooperative Bank of Sikkim State Cooperative (SISCO) Bank Limited Performance that is located in Sikkim. CAMEL approach was applied in this study for the period from 2011 to 2015 to determine the performance of SISCO Bank Ltd financially. Data were collected from published financial statements and then analyzed in both analytical and descriptive types. The variables of the study were based on the CAMEL model are: capital adequacy, asset quality, management efficiency, earning capacity, and liquidity. The study resulted in that CAMEL model indicators are important for assessing the performance of the bank. Also, it was presented that the bank is performing well and interestingly holders are pleased about the provided service. The study recommended encouraging other researchers to conduct further studies by including a larger sample size. This study was useful for developing the model of the study.

4. **(Tibebe, 2020), "Determinants of Financial Performance of Private Commercial Banks in Ethiopia: CAMEL Approach"**

The study aimed to recognize CAMEL determinants of bank-specific performance of private commercial banks in Ethiopia. The study included 16 banks over the period from 2016 to 2020. Data were collected from published annual reports of the banks, and the researcher used panel data in the research methodology. The dependent variables are ROA, ROE, and EPS. While CAMELS variables are: capital adequacy, asset quality, management quality, earnings quality, and liquidity. The study resulted in a bank's financial performance being affected significantly by liquidity, management efficiency, and capital adequacy while earnings and asset quality have an insignificant effect. Researcher recommended that bank

management should have effective and efficient management for the purpose of guaranteeing that banks are not becoming insolvent. Moreover, this study was useful for developing the model of the study.

5. **(Nguyen et al., 2020a), "Applying the CAMEL Model to Asses Performance of Commercial Banks: Empirical Evidence from Vietnam"**

The study aimed to find the effect of CAMEL indicators that are capital adequacy, asset quality, management efficiency, earning quality, and liquidity, and they were considered the independent variable on the financial performance for commercial banks. While the dependent variables are ROE, ROA, and NIM. Data was collected from the financial statements of 31 commercial banks over the period ~~of~~ 2013 to 2018. The study resulted in the financial performance of commercial banks being affected by management efficiency, asset quality, capital adequacy, and liquidity. The study recommended having a quality managing increment by administrators' management processes.

6. **(Nguyen and Dang, 2020b), "Bank-Specific Determinants of Loan Growth in Vietnam: Evidence from the CAMELS Approach"**

The study aimed to investigate the determinants specific to banks for long growth in the banking sector in Vietnam over the period of 2007 to 2019. The researchers used a dynamic panel approach to indicate the effect of each CAMELS variable on loan growth. CAMELS variables ~~that~~ are capital, assets quality, management, earnings, liquidity, and sensitivity, while the dependent variable is loan growth. CAMELS model was applied to this study and data was collected by financial reports of the selected banks which were 13 commercial banks. The study resulted in that important factors such as asset quality, market risk resiliency, bank capital, and liquidity are participating to the capacity of banks to maintain lending operations. Also, banks that have poorer management effectiveness are expanding. The study recommended that ~~by~~ applying this study will be useful for

commercial banks for the purpose of enhancing their soundness under CAMELS supervision. Interestingly, this study was useful for model development.

7. **(Das and Nayak, 2020), "A CAMEL Model Study for Financial Performance of Public and Private Sector Banks in Odisha"**

The study aimed to assess the banks sector including both private and public bank's financial performance. The selected banks included 20 public banks and 15 private banks over the period from 2005 to 2019; their financial strength was analyzed by CAMEL model that are: capital adequacy, asset quality, management performance, earnings, and liquidity. Data was collected from annual reports published by the selected banks, and the researchers used and applied average, composite position, and ANOVA tests. The study resulted in that based on the rating by the CAMEL model public banks ranked at the top over the mentioned period.

8. **(Mayakkannan and Jayasnkar, 2020), "A Study on Performance Evaluation of Selected Public and Private Sector Banks Through Camel Model in India"**

The study aimed to find the financial performance and position of private and public banks by CAMEL parameters, that are: capital adequacy, assets quality, management efficiency, earning quality, and liquidity. Banks were selected based on their market position and total assets. Data were collected from published financial statements by the selected banks. Then data were analyzed with different statistical tools and financial ratios. The study resulted in that banks vary in their performance due to the CAMEL ratio. Also, based on the overall performance of banks, it was concluded that public banks are being ranked ~~at~~ firsts, and then came private banks.

9. **(Gutierrez-Lopez and Abad-Gonzalez, 2020), "Sustainability in the banking sector: A predictive model for the European banking union in the aftermath of the financial crisis"**

The study aimed to study bank's solvency determinants based on different financial variables. 45 banks were selected over the years 2014, 2016, and 2018. The CAMELS model was used as a presenter for financial indicators with its parameters, that are: capital, assets quality, management, earnings, liquidity, and sensitivity to market risk. The study resulted in that there is a positive relationship between financial sustainability and liquid assets, earnings, and capitalization. On the other hand, there is a poor relationship between quality assets and financial sustainability. Finally, corporate social responsibility has a positive relationship with the solvency of a bank. The study recommended that future research can find if the results of this study within other different regions geographically.

10. **(Bawaneh and Dahiyat, 2019), "Performance measurement of commercial banks in Jordan using the CAMELS rating system"**

The study aimed to find the impact of CAMELS model on banks' performance. Where the independent variables are CAMELS parameters, that are: capital adequacy, asset quality, management efficiency, earning quality, liquidity, and sensitivity. While the dependent variable is the performance that is presented by the ratio of Tobin's Q. Data was collected by published annual reports for listed commercial banks by the Amman Stock Exchange across the year of 2012 till 2018. The study resulted in that there is a significant impact of management efficiency, earning quality, liquidity, and risk sensitivity on commercial banks' financial performance. On the other hand, there is no statistically significant impact of capital adequacy and asset quality on commercial banks' performance. The study recommended to apply CAMELS within other different fields such as: insurance corporates.

11. **(Al-abedallat, 2019), "The Factors Affecting the Performance of the Jordanian Banks using Camels Model"**

The study aimed to evaluate the Jordanian banks' performance by the use of CAMELS within the time from 2003 to 2017. The independent variables are the parameters of CAMELS, which are: capital adequacy, asset quality, management efficiency, earnings liquidity, and sensitivity to market risk. While the dependent variable is the performance that is being measured by ROE, ROA, and net income. The study resulted in that in general the Jordanian banks are experiencing low ROA and ROE due to high liquidity. Moreover, based on CAMELS and the measurements of performance, it led to the conclusion that commercial banks were experiencing an advantage in comparison to Islamic banks. The study recommended that the central bank is suggested to apply the CAMELS rating system for evaluating banks' performance in Jordan.

12. **(Naser, 2019), "A Comprehensive Analysis of European Banking Soundness – Theoretical Study"**

The study aimed to study the soundness of banks based on quantitative and qualitative analyses approach including Z-score, Moody's rating system, CAMELS model, and profitability. The collected data was evaluated by using a quantitative method besides studying the determinants of macroeconomics for the purpose of avoiding any financial instability. Through CAMELS approach, there was an enhancement in predicting the soundness of banks although the changes based on several studies were considered insignificant. The study recommended further investigation is required since the diagram of bank's soundness did not use all the variables among the followed methodologies.

13. **(Gangrade and Telang, 2019), "CAMEL'S Model as An Effective Measure of Financial Performance-Analysis of Selected Nationalised Banks in India"**

The study aimed to investigate the financial performance among public banks by the application of the CAMEL approach with its parameters that are: capital adequacy, assets quality, management, earnings, liquidity, and sensitivity of the market. The researcher selected three public banks over the period from 2013 to 2017. Data was collected based on published annual reports, and then data was analyzed by descriptive statistics analysis and financial management analysis. The selection of the banks was due to their size. The study resulted in that banks' profitability is not related to their size and the number of their branches.

14. **(Vadrale, 2019), "Financial Performance of Selected Public and Private Sector Banks in the Light of CAMEL Model"**

The study aimed to recognize the comparative financial performance among private and public banks by the use of CAMEL indicators that are capital adequacy, asset quality, management efficiency, earning quality, and liquidity. Ten banks were selected due to the perspective of net profit during the period from 2001 to 2015. Data was collected from annual reports published by banks. The study resulted in that by applying the indicators, banks in the private sector were superior to banks in the public sector.

15. **(Kuhil, 2018), "A Comprehensive Analysis of European Banking Soundness Theoretical Study"**

The study aimed to examine how specific factors for a bank are related to its performance. The independent variables are CAMEL parameters, which are: capital adequacy, asset quality, management, earning, and liquidity. While the dependent variables are NIM, ROE, and ROA. The study was conducted within 18 commercial banks over the period from 1990 to 2015. CAMEL model was applied and used as a tool to monitor banks'

performance. Data were collected from published financial records of the selected banks. The study resulted in that there is a significant relationship between specific factors of banks and their performance. Where it was found that there is a significant and negative relation between NM models and ROA, while there is an insignificant and positive relation with ROE. However, business diversification in a certain bank is essential for management decisions that have an effect on bank's performance. The study recommended that managers in banks are suggested to enhance managerial efficiency.

2.3 What Differentiates the Current Study from Previous Studies

This study aims to find the impact of the CAMELS model on market price among Jordanian commercial banks over the period from 2015 to 2020. This current study is going to be different from other studies, where it will take into consideration the impact of the CAMELS model on market price. Also, it is going to examine Jordanian Commercial Banks to investigate the mentioned impact, where there is a lack of studies conducted in Jordan. However, most of the previous studies were related to finding the relation between the CAMELS model on the performance of banks. Interestingly, some studies took into account the Islamic banks such as the study conducted by (Masood et al., 2016) where the study aimed to investigate the performance of Islamic banks based on their financial results during 2015 by applying the CAMELS model. Also, some studies studied the CAMELS model in both public and private banking sectors such as the study conducted by (Vadrale, 2019) where the study resulted in that banks in the private sector were superior to public banks. At the end, it will enrich the awareness of banks regulators, investors, and also suppliers about the CAMELS model and its impact on market price.

Table (2.1) Summary of previous studies

Researchers/ year	Aim of the study	Methodology	Results
Banu and Vepa, 2021	The study-aimed to study both the operating and financial performance of the banking sector in India	The study was conducted within four banks that are two private banks and two public banks over the period from 2010 to 2019. Where the public banks include: Syndicate bank and State bank of India, and the private banks are HDFC Bank and ICICI bank.	The study resulted in that public banks are experiencing solvency positions over the long term
Gokul, 2020	The study aimed to assess the largest public bank and the largest private bank in India	CAMEL model was used for examining the performance of banks over the period from 2013 to 2017	The study resulted in that the private bank is performing better based on management efficiency and profitability than the public bank
Chhetr and Das, 2020	The study aimed to examine State Level Cooperative Bank of Sikkim State Cooperative (SISCO) Bank Limited Performance that is located in Sikkim	CAMEL approach was applied in this study for the period from 2011 to 2015 to determine the performance of SISCO Bank Ltd financially	The study resulted in that CAMEL model indicators are important for assessing the performance of the bank. Also, it was presented that the bank is performing well and interestingly holders are pleased about the provided service
Tibebe, 2020	The study aimed to recognize CAMEL determinants of bank-specific performance of private commercial banks in Ethiopia	The study included 16 banks over the period from 2016 to 2020; the researcher used panel data in the research methodology.	The study resulted in a bank's financial performance being affected significantly by liquidity, management efficiency, and capital adequacy while earnings and asset quality have an insignificant effect
Nguyen et al., 2020a	study aimed to find the effect of CAMEL indicators on the financial	Data was collected from the financial statements of 31 commercial banks over the period ~~of~~	The study resulted in the financial performance of commercial banks being affected by management efficiency, asset quality,

	performance for commercial banks	2013 to 2018	capital adequacy, and liquidity
Nguyen and Dang, 2020b	The study aimed to investigate the determinants specific to banks for long growth in the banking sector in Vietnam over the period of 2007 to 2019	The researchers used a dynamic panel approach to indicate the effect of each CAMELS variable on loan growth. the selected banks which were 13 commercial banks	The study resulted in that important factors such as asset quality, market risk resiliency, bank capital, and liquidity are participating to the capacity of banks to maintain lending operations. Also, banks that have poorer management effectiveness are expanding
Das and Nayak, 2020	The study aimed to assess the banks sector including both private and public bank's financial performance	The selected banks included 20 public banks and 15 private banks over the period from 2005 to 2019	The study resulted in that based on the rating by the CAMEL model public banks ranked at the top over the mentioned period
Mayakkannan and Jayasnkar, 2020	The study aimed to find the financial performance and position of private and public banks by CAMEL parameters	Banks were selected based on their market position and total assets. The data were analyzed with different statistical tools and financial ratios	The study resulted in that banks vary in their performance due to the CAMEL ratio. Also, based on the overall performance of banks, it was concluded that public banks are being ranked ~~at~~ firsts, and then came private banks
Gutierrez-Lopez and Abad-Gonzalez, 2020	The study aimed to study bank's solvency determinants based on different financial variables	45 banks were selected over the years 2014, 2016, and 2018. The CAMELS model was used as a presenter for financial indicators with its parameters	there is a positive relationship between financial sustainability and liquid assets, earnings, and capitalization. There is a poor relationship between quality assets and financial sustainability. Finally, corporate social responsibility has a positive relationship with the solvency of a bank
Bawaneh and Dahiyat, 2019	The study aimed to find the impact of CAMELS model on banks' performance	Data was collected from listed commercial banks by the Amman Stock Exchange across the year of 2012 till 2018	there is a significant impact of management efficiency, earning quality, liquidity, and risk sensitivity on commercial banks' financial performance. there is no statistically significant impact of capital adequacy and asset quality on

			commercial banks' performance
Al-abedallat, 2019	The study aimed to evaluate the Jordanian banks' performance by the use of CAMELS	the performance that is being measured by ROE, ROA, within the time from 2003 to 2017	The study resulted in that in general the Jordanian banks are experiencing low ROA and ROE due to high liquidity. Moreover, based on CAMELS and the measurements of performance, it led to the conclusion that commercial banks were experiencing an advantage in comparison to Islamic banks
Naser, 2019	The study aimed to study the soundness of banks based on quantitative and qualitative analyses approach including Z-score, Moody's rating system, CAMELS model, and profitability	The collected data was evaluated by using a quantitative method besides studying the determinants of macroeconomics for the purpose of avoiding any financial instability	there was an enhancement in predicting the soundness of banks although the changes based on several studies were considered insignificant
Gangrade and Telang, 2019	The study aimed to investigate the financial performance among public banks by the application of the CAMEL approach	The researcher selected three public banks over the period from 2013 to 2017	The study resulted in that banks' profitability is not related to their size and the number of their branches
Vadrale, 2019	The study aimed to recognize the comparative financial performance among private and public banks by the use of CAMEL indicators	Ten banks were selected due to the perspective of net profit during the period from 2001 to 2015	The study resulted in that by applying the indicators, banks in the private sector were superior to banks in the public sector
Kuhil, 2018	The study aimed to examine how specific factors for a bank are related to its	The study was conducted within 18 commercial banks over the period from 1990	there is a significant relationship between specific factors of banks and their performance. there is a significant and negative

	performance	to 2015	relation between NM models and ROA, while there is an insignificant and positive relation with ROE. However, business diversification in a certain bank is essential for management decisions that have an effect on bank's performance

Chapter Three
Study Methodology (Methods and Procedures)

3.1 Introduction

In this chapter, the researcher is going to describe the research methodology, population, data collection, the research model, variables' equations and measures, and the statistical tools that will be used to conduct this current research.

3.2 Study methodology

The study adopted quantitative research approach. Therefore, in order to conduct this study, data was collected from published financial Reports across the period of 2015 to 2020. (Abuhamda et al., 2021) mentioned that the quantitative approach is being used whenever having numerical data, and researchers are concerned more about knowing why and how an issue varies. Interestingly, in the same study was mentioned some of the advantages of using a quantitative approach such as this research method saves both money and time for the researcher, allows generalization based on research interpretation, and it can be replicated whenever and wherever needed and the research will still have the same outcomes.

3.3 Study population and sample

The population of the study will be Jordanian commercial banks where all commercial banks that are listed on Amman Stock Exchange will be taken into consideration in this study during the period from 2015 to 2020. So that the researcher used a comprehensive sample since the required information for all banks was available.

3.4 Data collection

Data will be collected from secondary sources in the development of the theoretical side and practical sides. Interestingly, the theoretical side will be covered by using scientific research papers, journals, books, articles, and much more. In addition, the researcher will cover the practical side by collecting data from published financial statements of the related banks that will be used in this study.

3.5 Measuring Study variables

In relation to this study, the independent variable that is the CAMELS model has six indicators that will be calculated by the following ratios that are presented in the table below from the study conducted by (Bashatweh and Ahmed, 2020).

Table (3.1) CAMELS factors measurements

CAMELS	**Ratios**
Capital Adequacy	Tier1 Capital + Tier 2 capital / Risk Weight Assets
Asset Quality	Non-Performing Loans / Total Loans
Management Quality	Operation Expenses / gross income
Earnings	Net Profit after Tax / Total Assets
Liquidity	Liquid Assets / Total Assets
Sensitivity	Total Securities / Total Assets

Source: (Bashatweh & Ahmed, 2020)

In the case of the dependent variable which is the market price, it will be determined as mentioned above whenever demand equals' supply. It will be measured at the closing price for banks based on annual reports for the commercial banks.

Commercial banks' classification based on the CAMELS model

In accordance with the classification of commercial banks based on the CAMELS model the following is a table added by (Bashatweh and Ahmed, 2020) that presents a description of the financial ratios for each indicator that will be used in this study with the application of criteria based on CAMELS model.

Table (3.2) Classification of commercial banks based on the CAMELS model

Code	Categories	1	2	3	4	5
C	Capital Adequacy	≥12%	≥8%	less than 8%	less than 6%	≤2%
A	Asset Quality	<1.25%	1.26%-2.59%	2.60%-3.59%	3.60%-5.50%	>5.5%
M	Management Quality	≤25%	26% - 30.99%	31% - 38.90%	39% - 45.90%	≥46%
E	Earnings	≥1%	0.90% - 0.80%	0.70% - 0.35%	0.34% - 0.25%	≥0.24%
L	Liquidity	≥50%	45% - 49.99%	44.99% - 38%	37.99% - 33%	≥32%
S	Sensitivity	≤25.490%	25.5% - 30.99%	31% - 37.99%	38% - 42.99%	≥43%

Source: (Bashatweh and Ahmed, 2020)

Then it will be followed by performing a calculation as the summation of the ratings and then divide by six for each selected bank in order to classify the categories as mentioned in table 3.3. That is being classified by (Wrinkar and Tanko, 2008), (Sarker, 2006), and (Haq and Nasrin, 2020) where each rating classification is presented and followed with related brief description for each category as mentioned below:

Table (3.3) Ranking based on results CAMELS' model

Rating	Rating Range	Rating Analysis	Interpretation
1	1.0 - 1.4	Strong	Most suitable in all aspect.
2	1.5 - 2.4	Satisfactory	Favorable but has certain weakness
3	2.5 - 3.4	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which needs supervisory concern
4	3.5 - 4.4	Deficient	Involves financial weaknesses up to an alarming stage
5	4.5 - 5.0	Critically Deficient	Involves critical financial weaknesses which may lead to failure of institution

Source: (Wrinkar and Tanko, 2008), (Sarker, 2006), and (Haq and Nasrin, 2020)

In relation to the above table, the following are explanations for each of the rating levels:

Rating 1 ranging from 1.0 to 1.4: By this rating, it is being met whenever a bank is considered strong in all aspects. Moreover, under this rating banks don't experience weaknesses and are able to face risk management by the board of directors of a certain bank. Interestingly, all followed regulations and laws are being imposed by the Central bank. (Abbas et al., 2019).

Rating 2 ranging from 1.5 to 2.4: By this rating, it is being attained when a bank is strong in most aspects and still experiencing problems where the board of directors can solve them. Moreover, the board of directors will implement instructions in their work and manage risk by a satisfactory manner. (Abbas et al., 2019)

Rating 3 ranging from 2.5 to 3.4: By this rating, it is being met when a bank suffers from weaknesses that range from severe to moderate. It requires a supervisory authority in order to fix the situation (Manga, 2019). However, in a certain bank, the board of directors is experiencing risk management difficulties.

Rating 4 ranging from 3.5 to 4.4: By this rating, it is being attained when a bank suffers from serious to critical financial performance weaknesses. Moreover, the board of directors will not be forced to apply legislation imposed by the Central bank (Abbas et al., 2019). However, the board of directors will not be able to manage risk where they require a regular authority to fix the situation. (Manga, 2019)

Rating 5 ranging from 4.5 to 5.0: By this rating, it is being met when a bank is experiencing ~~a~~ poor performance and facing a chance of fail (Abbas et al., 2019). Banks by this rating category require and request Central bank help for the purpose to survive the collapse and perform actions immediately (Manga, 2019). Banks mostly will fail due to the mentioned circumstances including challenges and risks that overtake the ability of management. (Dang, 2011).

3.6 Statistical methods

The researcher used the following statistical methods:

- Descriptive analysis depending on standard deviation, mean, and frequency for the purpose of summarizing data.
- Normality test will be performed based on Kolmogorov-Smirnov.
- Hypotheses are going to be tested by Multiple Regression.
- At the end, CAMELS model will be used in order to rate commercial banks.

Chapter Four
Data Analysis

4.1 Introduction

This chapter details the testing of the impact of the CAMELS model on market prices of Jordanian commercial banks, through a set of statistical tests applied to financial data extracted from the financial statements of listed Jordanian commercial banks (study sample) based on the SPSS program.

4.2 Testing the Suitability of Data

According to (Morgan et al., 2019), the study variables that will be investigated must be free of outliers because of their clear effect on dispersing and reducing the accuracy level of the results; therefore, the researcher used the Mahalanobis test to remove outliers, where it was found that the highest value of the Mahalanobis test reached (25.332) which is higher than the distribution value of chi-square at the degree of freedom (*df* = 7; Chi = 24.332) and the level of significance (0.001). Where all values corresponding to the Mahalanobis test value and above the tabular value of the Chi-square test were removed.

Before conducting the multiple regression test, a set of statistical tests must be conducted, the most important of which is to ensure that the study variables follow normal distribution and that the study model is free of auto-correlation problem and mult-icollinearity (Cronk, 2019; Liang et al., 2019).

4.2.1 Normal distribution test

Many studies such as (Cronk, 2019; Liang et al., 2019) indicate that the study variables must follow the normal distribution if the study is to be applied to a sample related to the study community, in order to confirm that this sample has the same characteristics of the real study community. According to (Astivia et al., 2019; Baarda & van-Dijkum, 2019; Schober et al., 2018), if the study is applied to a sample from the study community in the presence of a time series with more than 30 observations, then there is no need to conduct a normal distribution test as it is possible to consider the variables as having the characteristic of a normal distribution. Nevertheless, it was done the moderation of data distribution for the study model was tested using the Kolmogorov-Smirnov test, and the results were as follows:

Table (4.1): Results of Normal distribution test

Variable	Sig	Statistic (K-S)
Capital Adequacy	0.200*	0.981
Asset Quality	0.200*	0.978
Management Quality	0.200*	0.954
Earnings	0.200*	0.966
Liquidity	0.061	0.943
Sensitivity	0.054	0.933
Market Prices	0.064	0.748

The results of the Kolmogorov-Smirnov test shown in table (**4.1**) can be judged by the moderation of data distribution in the study model. The probability value (Sig) for all variables increased from (0.05), according to (Fang & Chen, 2019), and it is possible to judge all variables of the study that follow the normal distribution.

4.2.2 Auto-correlation and multi-collinearity test

For the purpose of conducting multiple regression analysis tests, the study model should not face the problems of auto-correlation and multi-collinearity, which may contribute to the

incompetency of the model to interpret the results optimally; therefore, it was necessary to conduct the multi-collinearity test based on the variation coefficient and the tolerance coefficient, and auto-correlation test based on the Durbin-Watson test, as follows:

Table (4.2) Validity of the study data for statistical analysis

Variable	VIF	Tolerance
Capital Adequacy (C) - Independent variable	1.311	0.763
Asset Quality (a) - Independent variable	1.231	0.812
Management Quality (M) - Independent variable	2.432	0.411
Earnings (E) - Independent variable	2.399	0.417
Liquidity (L) - Independent variable	1.298	0.771
Sensitivity (S) - Independent variable	1.223	0.818
Durbin-Watson= 1.802		

The above results in Table (4.2) portray that there is no problem of multi-Collinearity between the study variables, as all variable reflected a lower value of VIF index than (VIF=5) (Salmerón et al., 2018); as well as a higher Tolerance coefficient values than (Tolerance =20%) for all variables of the study (Baarda & van-Dijkum, 2019), this indicate that there is no problem of multi-collinearity between the study variables that may affects the validity of the study models results.

Additionally, Durbin-Watson test result value, which reached (1.802), indicates that there is no auto-correlation pertaining to the study models, as (Carvajal-Rodríguez, 2018) indicated that if Durbin-Watson test value is between 0 to 1.5 it means that there is a positive correlation within the study model, and if the value of the said test ranges between 2.5 to 4, it indicates that there is a negative correlation within the study model, but if the value is between 1.5 and 2.5, it indicates that there is no auto-correlation within the study model. Therefore, the variables of the study model can be relied upon to reach accurate and reliable results.

4.2.3 Multi-Collinearity matrix

Table (4.3) displays Multi-Collinearity matrix test results, to determine the strength and type of correlation between all variables as follows:

Table (4.3) Multi-Collinearity matrix

	MP	C	A	M	E	L	S
Market Price	**1**						
Capital Adequacy	0.095	**1**					
Asset Quality	0.309*	-0.065	**1**				
Management Quality	-0.136	-0.362**	0.346**	**1**			
Earnings	0.325**	0.320**	-0.051	-0.724**	**1**		
Liquidity	0.545**	0.141	-0.005	-0.290*	0.498**	**1**	
Sensitivity	0.250*	0.306*	-0.039	-0.360**	0.360**	0.097	**1**

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

It was found that there are some correlations between the components of the CAMELS Model with market price, where it was found that the highest correlation was (0.545), which indicates a positive correlation between liquidity and market price at (1%) significant level; followed by a correlation strength of (0.325), which implies that, there is a positive correlation between earnings and market price; followed by a correlation strength of (0.309), between asset quality and market price; which suggest that there is a positive correlation between both variables, while the lowest correlation is reflected between sensitivity and market price, indicating a statistically significant positive correlation at a significance level of (5%) with a value of (0.250).

Also the results of the above test indicates that there are some correlations between the independent variables represented by the CAMELS Model, where it was found that the highest correlation was (-0.724), which indicates a negative correlation between management quality and earnings at (1%) significant level; followed by a correlation strength of (0.498), which implies that, there is a positive correlation between liquidity and earning; followed by a correlation

strength of (-0.362), between capital adequacy and management quality; which suggest that there is a negative correlation between both variables, followed by a correlation strength of (0.360), between earnings and sensitivity; which suggest that there is a positive correlation between both variables, followed by a correlation strength of (-0.360), between management quality and sensitivity; which suggest that there is a negative correlation between both variables, while the lowest correlation is reflected between sensitivity and capital adequacy, indicating a statistically significant negative correlation at a significance level of (5%) with a value of (0.306). This result is supported by what was previously reached by (Cohen et al., 2012; Garson, 2012; Thompson et al., 2017), the multi-collinearity test results between the independent variables, where it was found that there is no multi-collinearity between the independent variables based on the decrease in the correlation values between these variables for less than (80%).

4.3 Descriptive statistics

After extracting the data of the study variables from the financial statements of the study sample (Listed Commercial Banks), the descriptive statistics tests were conducted as follows:

Table (4.4) Descriptive statistics

Factor	Min	Max	Mean	Std.
Capital Adequacy	0.112	0.225	0.165	0.023
Asset Quality	1.460	13.300	6.640	2.479
Management Quality	0.430	0.940	0.630	0.114
Earnings%	0.170	1.820	1.043	0.444
Liquidity%	0.080	0.360	0.199	0.057
Sensitivity%	0.001	0.030	0.012	0.007
Market Price	0.830	6.210	1.975	1.363

As shown in Table (4.4) results related to descriptive statistics tests for each of the variables representing the study model, it is noted that the arithmetic means of the capital adequacy reached (0.165), which explains banks` ability to pay their due obligations and face

any future unexpected losses. The lowest value of capital adequacy ratio of (0.112) refers to Jordan Commercial Bank end of 2019; and the highest value was (0.225) attributed to Societe Generale De Banque Jordan end of 2016, where the standard deviation reached (0.023), which indicates a small deviation in capital adequacy values in listed Jordanian commercial banks as it is lower in value than the arithmetic mean, which indicates convergence of capital adequacy values in listed Jordanian commercial banks through the study period.

It is also noted that, the arithmetic mean of asset quality is (6.640), which indicate that commercial banks allocate a percentage of their assets as fixed assets, which is normal because the nature of the bank's work does not require a large volume of fixed assets, moreover and as per Jordanian Central Bank rules and regulations, commercial banks in Jordan are allowed to invest in fixed assets for management purposes only and not a form of real investment. The lowest value of asset quality reached (1.460) related to Arab Jordan Investment Bank in 2015; and the low value of standard deviation (2.479) due to its lower value than the arithmetic mean, indicates convergence of asset quality values in Jordanian commercial banks over the years of study.

Additionally, the arithmetic mean of management quality is (0.630), which measures the ability of the banks` management to manage their business efficiently and effectively and achieve sustainability and success, as well as the ability to mitigate and control unexpected risks. Regarding the lowest value of management quality of (0.430) refers to Societe Generale De Banque Jordan in 2016, while the highest value of (0.940) was assigned to Jordan Commercial Bank in 2020; concerning the standard deviation of management quality values of listed Jordanian commercial banks which amounted to (0.114), it indicates a low dispersion due to, its low value comparing to the arithmetic mean, which indicates convergence of management

quality values in listed Jordanian commercial banks over the study period. Additionally, the arithmetic mean of earnings is (1.043), which implies that listed Jordanian commercial banks achieve ~~a~~ reasonable returns and profits on their assets. As on 2019, Arab Banking Corp/Jordan achieved the lowest value of earnings which amounted to (0.170), while the highest value of (1.820) refers to Bank of Jordan as in 2015; while the low value reflected by the standard deviation (0.444) in comparison with the arithmetic mean, indicates a convergence of returns on assets achieved by listed Jordanian commercial banks over the years of study. We can also notice that the liquidity arithmetic mean is (0.199), suggesting that the study sample apply appropriate credit policies or efficient investment policy to exploit their liquidity to achieve higher returns. The lowest value of liquidity reached (0.080) refers to Arab Bank of Jordan end of 2020, while the highest value was (0.360) was attained by Societe Generale De Banque Jordan end of 2015, while the value of liquidity standard deviation reached (0.057), which suggest that there is an acceptable between the study sample in their liquidity ratio. Regarding sensitivity arithmetic means, it reached (0.012), which measures the extent to which banks are exposed to credit risks, based on market interest risks and the extent to which they are managed and controlled. The lowest value of the sensitivity indicator reached (0.001) relates to Societe Generale De Banque Jordan as of 2020, and the low value of standard deviation (0.007) compared to the arithmetic mean, indicates a convergence of listed Jordanian commercial bank's sensitivity indicator over the study period. Regarding arithmetic mean of market price was (1.975), which this value is good, which indicates that the share price is higher than the book value. The lowest value of market price reached (0.830) of Arab Banking Corp/Jordan in 2019, while the highest value was (6.210) from Arab Bank of Jordan in 2018, and the standard deviation reached (1.363), indicates

to lost dispersion in market price in listed Jordanian commercial banks compared to its arithmetic mean.

To clarify the results of the CAMELS Model indicators, related to list Jordanian commercial banks (study sample) in more detail, a set of measurements were used initially in classifying each CAMELS Model indicator as follows:

Table (4.5) Evaluation of the Ranks of CAMELS Components.

Factor/ Rank	Capital adequacy (C)	Asset quality (A)	Management quality (M)	Earnings (E)	Liquidity (L)	Sensitivity (S)
1	12% or more	Less than 1.25%	Less than 26%	1% or more	50% or more	Less than 25.5%
2	8%--11.99%	1.26%-- 2.59%	26%--30.99%	0.8 – 0.99%	45%--49.99%	25.5%--30.99%
3	6%--7.99%	2.6%--3.59%	31%-- 38.99%	0.35 – 0.79%	38%--44.99%	31%-- 37.99%
4	2%--5.99%	3.6%--5.5%	39%--45.99%	0.25 – 0.34%	33%--37.99%	38%--42.99%
5	Less than 2%	More than 5.5%	46% or more	Less than 0.25%	Less than 33%	43% or more

Source: Bashatweh and Ahmed (2020)

Table (4.5) above displays the ranks of CAMELS Model indicators, where it is noted that each component has been distributed into five ranks in order to find a single rank of all CAMELS Model indicators, and each component is explained as follows:

Table (4.6) CAMELS model indicators rank

No.	Bank	Capital adequacy		Asset Quality		Management Quality		Earnings%		Liquidity%		Sensitivity%	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	Jordan Kuwait Bank	0.19%	1	5.85%	5	0.68%	5	0.98%	2	0.20%	5	0.02%	1
2	Jordan Commercial Bank	0.13%	1	8.11%	5	0.81%	5	0.48%	3	0.14%	5	0.00%	1
3	The Housing Bank For Trade And Finance	0.17%	1	9.07%	5	0.58%	5	1.24%	1	0.21%	5	0.02%	1
4	Arab Jordan Investment Bank	0.16%	1	2.01%	2	0.58%	5	0.93%	2	0.20%	5	0.02%	1
5	Bank Al Etihad	0.14%	1	4.72%	4	0.62%	5	0.96%	2	0.19%	5	0.01%	1
6	Arab Banking Corporation / (Jordan)	0.20%	1	7.02%	5	0.68%	5	0.84%	2	0.14%	5	0.03%	1
7	Invest Bank	0.16%	1	6.56%	5	0.60%	5	1.34%	1	0.17%	5	0.01%	1
8	Capital Bank Of Jordan	0.16%	1	8.26%	5	0.67%	5	1.03%	1	0.20%	5	0.01%	1
9	Societe Generale-Jordan	0.20%	1	5.21%	4	0.52%	5	0.62%	3	0.20%	5	0.01%	1
10	Cairo Amman Bank	0.16%	1	4.61%	4	0.66%	5	1.08%	1	0.24%	5	0.01%	1
11	Bank Of Jordan	0.19%	1	7.61%	5	0.56%	5	1.63%	1	0.28%	5	0.02%	1
12	Jordan Ahli Bank	0.15%	1	7.54%	5	0.79%	5	0.59%	3	0.15%	5	0.03%	1
13	Arab Bank	0.16%	1	9.32%	5	0.67%	5	0.94%	2	0.28%	5	0.01%	1

Table (4.6) above exposes the arithmetic means and ranks of CAMELS model indicators (capital adequacy, Asset quality, Management quality, Earnings, Liquidity, and Sensitivity) of commercial banks listed at the Amman Stock Exchange, and in accordance with ranks displayed in Table (4.5) for all CAMELS model indicators.

Based on the information presented in table (4.6) above, we can notice that the capital adequacy ratio for all commercial banks of the study sample was ranked with the highest rank, and the rank for all banks is 1 because the averages for all banks were greater than 12%. On the other hand, there was a variation in banks classification related to asset quality ratio, and the highest bank in terms of asset quality ratio is (Arab Jordan Investment Bank) because its asset quality was between 1.26% and 2.59%, , which was ranked 2 (refer to table 4.5); followed by (Bank Al Etihad, Societe Generale-Jordan, and Cairo Amman Bank) because their asset quality was between 3.6%and 5.5%. thus, they scored rank 4; followed by (Jordan Kuwait Bank, Jordan Commercial Bank, The Housing Bank For Trade And Finance, Arab Banking Corporation / Jordan, Invest Bank, Capital Bank Of Jordan, Bank Of Jordan, Jordan Ahli Bank, and Arab Bank) as their asset quality were more than 5.5%, which were ranked 5. Moreover, the management quality indicator, for all commercial banks of the study sample was also ranked with the lowest rank, and the rank for all banks in this regard was 5 because all averages for all banks were greater than 46% (refer to table 4.5). On the other hand, there was a variation in banks classification related to earnings ratio, and the highest banks in terms of earnings rank are (The Housing Bank For Trade And Finance, Invest Bank, Capital Bank Of Jordan, Cairo Amman Bank, and Bank Of Jordan) because their earnings were greater than 1% (refer to table 4.5); followed by (Jordan Kuwait Bank, Arab Jordan Investment Bank, Bank Al Etihad, Arab Banking Corporation / Jordan, and Arab Bank) because their earnings were between 0.8% and 0.99%. Thus, they scored rank 2. followed by (Jordan Commercial Bank, Societe Generale-Jordan, and Jordan Ahli Bank) as their earnings

were between 0.35% and 0.79%, which was ranked 3. It is clear also that liquidity ratio for all of the study sample banks were ranked low, and the rank for all banks is 5 because their liquidity ratio was low, less than 33%. Finally, the results show that all commercial banks of the study sample were ranked with the highest rank regarding sensitivity ratio, as all banks were 1, because their sensitivity indicator was less than 25.5%.

Table (4.7) CAMELS Model Rating Analysis and Interpretation

Rating Range	Rating Analysis	Interpretation
1.0 - 1.4	Strong	Most suitable in all aspects.
1.5 - 2.4	Satisfactory	Favorable but has a certain weakness.
2.5 - 3.4	Less Than Satisfactory	Involves financial, operational, or managerial weaknesses which need supervisory concern.
3.5 - 4.4	Deficient	Involves financial weaknesses up to an alarming stage.
4.5 - 5.0	Critically Deficient	Involves critical financial weaknesses which may lead to failure of institution.

Source: Wrinkar and Tanko (2008), Sarker (2006), and Haq and Nasrin (2020)

After presenting the arithmetic means and ranks for each component of the CAMELS model components pertaining to listed Jordanian commercial banks. Based on that, it was necessary to address CAMELS Model Rating analysis; therefore, the arithmetic mean of the six CAMELS component ranks was calculated in order to reach to a single average that describes the performance level by CAMELS model in all Jordanian commercial banks. Table (4.7) presents a rating range of each bank ranks, based on each bank scoring related to CAMELS components, in order to interpret and discuss the results more comprehensively and to rank the results of each bank from critically deficient to strong.

Table (4.8) CAMELS ranks in Jordanian banks

No.	Bank	Rank	Rating Analysis	Interpretation
1	Jordan Kuwait Bank	3.17	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which need supervisory concern.
2	Jordan Commercial Bank	3.33	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which need supervisory concern.
3	The Housing Bank For Trade And Finance	3.00	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which need supervisory concern.
4	Arab Jordan Investment Bank	2.67	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which need supervisory concern.
5	Bank Al Etihad	3.00	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which need supervisory concern.
6	Arab Banking Corporation / (Jordan)	3.17	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which need supervisory concern.
7	Invest Bank	3.00	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which need supervisory concern.
8	Capital Bank Of Jordan	3.00	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which need supervisory concern.
9	Societe Generale-Jordan	3.17	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which need supervisory concern.
10	Cairo Amman Bank	2.83	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which need supervisory concern.
11	Bank Of Jordan	3.00	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which need supervisory concern.
12	Jordan Ahli Bank	3.33	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which need supervisory concern.
13	Arab Bank	3.17	Less Than Satisfactory	Involves financial, operational or managerial weaknesses which need supervisory concern.

Table (4.8) shows CAMELS rank related to listed Jordanian banks (study sample), and it is noted that rating analysis and interpretation of each bank have been determined based on the Rating Range presented in Table (4.7).

According to the data displayed in Table (4.8), it is clear that the rating analysis of all banks is less than satisfactory. Accordingly, and based on the interpretation of these ranks, it means that there are financial, operational, or managerial weaknesses that need supervisory concern.

4.4 Test Study Hypotheses:

In this section, the hypotheses of the study were tested by using the appropriate statistical methods, and reached to the below results as follow:

- **Testing the Main Hypothesis**:

H01: The First Main hypothesis:-*There is no statistically significant impact at the level of significance ($\alpha \leq 0.05$) of the CAMELS model through its dimensions (capital adequacy, asset quality, management quality, earnings, liquidity, and sensitivity) on the market price of Jordanian commercial banks.*

According to the test of the main hypothesis and its sub-hypotheses, multiple regression was relied upon, and the results were as below:

Table (4.9) Results of the Hypothesis Test

Variable	Coefficient (β)	Sig.T	Std. Error	β	T-Statistic
Constant	----------	0.367	2.403	-2.189	-0.911
Capital Adequacy	0.021	0.863	8.028	1.389	0.173
Asset Quality	0.332	0.010	0.068	0.182	2.689
Management Quality	-0.012	0.946	2.286	-0.157	-0.069
Earnings	-0.066	0.695	0.559	-0.220	-0.394
Liquidity	0.501	0.000	3.183	12.995	4.083
Sensitivity	0.263	0.032	23.460	51.720	2.205

Adjusted R^2	0.361
R^2	0.430
R	0.656
F-Statistic	6.172
Sig. F-Statistic	0.000

$$MP_{B,T} = (\alpha_0 + \beta_1 * C_{B,T} + \beta_2 A_{B,T} + \beta_3 M_{B,T} + \beta_4 E_{B,T} + \beta_5 L_{B,T} + \beta_6 S_{B,T} + e_{B,T})$$

Table (4.9) shows that the value of calculated F amounted to (Sig F= 0.000; F-Statistic= 6.172), which is lower than the significance level of (0.05), indicating that there is a statistically significant impact of the CAMELS model on the market price of Jordanian commercial banks; and thus, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that "There is a statistically significant impact at the level of significance ($\alpha \leq 0.05$) of CAMELS model on the market price of Jordanian commercial banks".

Also, based on the adjusted R^2 value, the outputs imply that (36.1%) of the market price of Jordanian commercial banks variance, arises from fluctuations that may occur in some components of the CAMELS model represented by (asset quality, liquidity, and sensitivity) combined; and this value is considered good according to (Sarstedt et al, 2020) who developed a rank for the explanatory power, explaining that if the adjusted coefficient is below (0.10) it indicates the inability of the model to predict and explain the change. Furthermore, when this value is between (0.10-0.25), it indicates that there is a low ability of

the model to predict and explain the changes; when this value is between (0.26-0.55), this indicates that there is a medium ability of the model to predict and explain the changes; while if this value rises above (0.55), it indicates that there is a high ability of the model to predict and explain the changes. Based on the foregoing, it appears that the value of the market price variance interpretation is an average in the process of forecasting and interpreting the market price of Jordanian commercial banks variance. Therefore, it is possible to rely on the current model in predicting and explaining the market price of Jordanian commercial banks in later years through some of the CAMELS model indicators described above, and it should be noted that the complementary value of the adjusted coefficient, which is (63.9%), indicates that there are some other factors that play a role in explaining the fluctuations that occur in the market price of Jordanian commercial banks.

- **Testing the Sub Hypotheses**:

The results of the sub-hypotheses test which demonstrate the impact of individual CAMELS model indicators on the market price of Jordanian commercial banks separately are presented as follows:

H01.1: The First Sub Hypothesis: ***There is no statistically significant impact at the level of significance ($\alpha \leq 0.05$) of capital adequacy on the market price of Jordanian commercial banks.***

Table (4.9) also presents the calculated T value (Sig T= 0.863; T-Statistic= 0.173), which is above the 5% significance level, meaning it is not statistically significant. This conclusion indicates that there is no impact of capital adequacy on market price, and thus the first null hypothesis is accepted, which states that "there is no statistically significant impact of capital adequacy on the market price of Jordanian commercial banks".

H01.2: The Second Sub Hypothesis ***There is no statistically significant impact at the level of significance (α ≤ 0.05) of asset quality on the market price of Jordanian commercial banks.***

Table (4.9) above suggests that the value of calculated T (Sig T= 0.010; T-Statistic= 2.689), is lower than the significant level of (0.05), meaning that it is statistically significant. This result indicates that there is a positive impact of asset quality on market price (β) Coefficient = 0.332, which means if the independent variable increases (asset quality) by 1 unit the dependent variable will increase by 0.332unit. Thus, the second null hypothesis is rejected and the alternative hypothesis is accepted, which states that "There is a statistically significant impact of asset quality on the market price of Jordanian commercial banks". The results also indicate that there is a positive impact of asset quality with a value of (Coefficient β = 0.332) on the market price of Jordanian commercial banks and that asset quality second ranks in its impact among the CAMELS model indicators that were investigated under the market price of Jordanian commercial banks.

H01.3: The Third Sub Hypothesis ***There is no statistically significant impact at the level of significance (α ≤ 0.05) of management quality on the market price of Jordanian commercial banks.***

Table (4.9) also presents the calculated T value (Sig T= 0.946; T-Statistic= -0.069), which is above the 5% significance level, meaning it is not statistically significant. This conclusion indicates that there is no impact of management quality on market price, and thus the third null hypothesis is accepted, which states that "there is no statistically significant impact of management quality on the market price of Jordanian commercial banks".

H01.4: The Fourth Sub Hypothesis ***There is no statistically significant impact at the level of significance (α ≤ 0.05) of earnings on the market price of Jordanian commercial banks.***

On the other hand, the results of the analysis above show that the value of calculated T reached (Sig T= 0.695; T-Statistic= -0.394), which is above the study's significant level of (0.05), which means that the impact of earnings Coefficient (β) = 0.035 is not statistically significant. Therefore, the fourth null hypothesis is accepted, which states that "there is no statistical impact of earnings on market price of Jordanian commercial banks".

H01.5: The Fifths Sub Hypothesis ***There is no statistically significant impact at the level of significance (α ≤ 0.05) of liquidity on the market price of Jordanian commercial banks.***

From the results displayed in table (4.9) related to liquidity T value which was (Sig T= 0.000; T-Statistic= 4.083), which is lower than the significant level (0.05), this indicates that the results are statistically significant. This, imply that liquidity a positive impact on market price (β Coefficient = 0.501), this imply that if liquidity increases by 1 unit the market price will also increase by 0.501 unit, this lead to reject the null hypothesis and accepting the alternative hypothesis, which states that "there is no statistically significant impact of liquidity on the market price of Jordanian commercial banks". Moreover, results also indicate that there is a positive impact of liquidity with a value of (Coefficient β = 0.501) on market price and that liquidity ranks first in its impact among the CAMELS model components that are under scrutiny regarding the market price of Jordanian commercial banks.

H01.6: The Sixth Sub Hypothesis ***There is no statistically significant impact at the level of significance (α ≤ 0.05) of sensitivity on the market price of Jordanian commercial banks.***

Finally, the results of the regression analysis above reflect that the value related to sensitivity T value which was (Sig T= 0.032; T-Statistic= 2.205), which is lower than the

significant level (0.05), this indicates that the results are statistically significant. This, imply that sensitivity a positive impact on market price (β Coefficient = 0.263), this implies that if sensitivity increases by 1 unit the market price will also increase by 0.263 unit, this leads to rejecting the null hypothesis and accepting the alternative hypothesis, which states that "there is no statistically significant impact of sensitivity on the market price of Jordanian commercial banks". Moreover, results also indicate that there is a positive impact of sensitivity with a value of (Coefficient β = 0.263) on market price, and that sensitivity ranks last in its impact among the CAMELS model components that are under scrutiny regarding the market price of Jordanian commercial banks.

Chapter Five
Findings and Discussion

5.1 Introduction

In this chapter, the researcher will present a discussion based on the obtained results in the previous chapter. Then, it will be followed by a set of recommendations that are suggested after conducting this study. After that, the researcher is going to mention the limitations that were faced while conducting this study.

5.2 Results Discussion

This current study aimed to find the impact of the CAMELS model through its dimensions (capital adequacy, asset quality, management quality, earnings, liquidity, and sensitivity) on the market price of Jordanian commercial banks. Interestingly, listed below are the obtained results that will be followed with a brief discussion for each one:

- Based on the main hypothesis, it is noticeable that there is a significant impact of the CAMELS model on market price. That might be justified since the CAMELS model is considered as an essential system that is being used to evaluate banks' financial situation that is either strong or weak. Which will reflect banks' health and profitability. Furthermore, profitability has a direct and positive relationship with market price, so this reflects the positive impact of the CAMELS model on market price. In accordance with the findings of the study and the sub hypotheses, that presented CAMELS indicators that have a positive impact on market price as follows:
  - There is no statistically significant impact of capital adequacy on market price. That might be justified because banks maintain their assets and take into consideration all practices to avoid risks. Also, the capital adequacy ratio reflects the amount of

available capital in a certain bank, where it is used to ensure that there is sufficient capital to survive losses. The result is in contrast with the studies conducted by (Rostami, 2015) and (Kengatharan, 2018), where the studies resulted that capital adequacy has an impact on banks' performance.

- There is a statistically significant impact of asset quality on market price. That might be justified that an asset quality reflects the capability of paying future loans and it reflects the associated credit risk that will lead clients to pay an interest rate on their loan, where interest rate will affect the market price at the end. This result is contrast with the study conducted by (Tibebe, 2020) where the study resulted that asset quality has insignificant effect on banks' financial performance. However, the result is consistent with the study conducted by (Nguyen et al., 2020) where the study resulted that financial performance of commercial banks is affected by asset quality.
- There is no statistically significant impact of management quality on market price. That might be justified because management quality in banks refers to the offered services in order to meet clients' satisfaction and expectations that is not affected by the market price. The result is contrast with the studies conducted by (Kengatharan, 2018) and (Rostami, 2015) where the studies resulted in that management quality has an impact on banks' performance.
- There is no statistically significant impact of earnings on market price. That might be justified because earnings in banks refer to the gained earnings based on loans. However, the market price of loans is hardly observable, where that is based on the nature of loans. The result is contrast with the studies conducted by (Kengatharan, 2018) and (Rostami, 2015) where the studies resulted in that earnings has an impact on banks' performance.

- There is a statistically significant of liquidity on market price. That might be justified because due to the application of BASEL 3 where its main aim is to eliminate banking risks internationally and the reduces the damage in the economy that are done by banks. This result is consistent with the study conducted by (Nguyen et al., 2020) where the study resulted that financial performance of commercial banks is affected by liquidity. Also, it is consistent with the study conducted by (Tibebe, 2020) where banks' financial performance is affected by liquidity.
- There is a statistically significant impact of sensitivity on market price. That might be justified because banks generally are sensitive to all risks in the market. Therefore, banks consider all related risks that might affect their performance and consequently will affect banks' reputation and then their shares' price. This result is consistent with the study conducted by (Bawaneh and Dahiyat, 2019) where there is a significant impact of risk sensitivity on the performance of commercial banks. Also, consistent with the study conducted by (Rostami, 2015) where sensitivity has a relation with banks' performance.

At the end, based on the results of table (4.8) it is noticeable that rating analysis for all banks is considered less than satisfactory. That might be justified because banks are unable to perform acquisitions and integrations in order to make changes, such as having new branches. Also, having unsound practices because of facing serious financial challenges and difficulties, such as: increasing competition in the market among banks and changes in clients' demographics where they became more aware regarding digitalizing services that will affect their expectations and satisfactions. In addition, it might be justified due to the regulations imposed by the central bank, which will lead all banks to have a similar financial performance. From the obtained results, all banks ranked 3 which indicates that banks reflect a supervisory interest based on different indicators. In the end, banks are suggested to work

more on their performance and apply the CAMELS model regularly in order to be updated with their position and related status.

5.3 Conclusion

In conclusion, this study aimed to find the impact of the CAMELS model through its dimensions (capital adequacy, asset quality, management quality, earnings, liquidity, and sensitivity) on the market price of Jordanian commercial banks. The researcher used a quantitative research approach, where data was collected from published financial reports within the period from 2015 to 2020. The study resulted in that based on the CAMELS model through its indicators, only asset quality, liquidity, and sensitivity have a positive and significant impact on commercial banks in Jordan. At the end, based on the results of the rating, a bank rating by this study is less than satisfactory due to facing financial challenges. Thus, this indicates that there are financial weaknesses that should be taken into consideration to enhance the financial health of commercial banks.

5.4 Recommendations

After considering the study problem, examining the study sample substantiality, and testing the study hypotheses, the researcher recommends the following:

- The managements of Jordanian commercial banks should adopt the CAMEL model to evaluate their performance periodically and publish its results in the annual report interpretation to enable investors and other stakeholders to make their investment and financing decisions because of its impact on banks` financial soundness.
- The results of this study might be used by bank managements to improve their performance, and take corrective actions based on all levels of the study model in order to maximize their financial soundness, by addressing their weaknesses factors in order to maintain their financial soundness.

- Based on the results of this study, banks are suggested not to take excess leverage.
- Banks are recommended to develop their work and performance for the purpose of meeting their profitability by the quality of the offered services.
- The study also recommend that commercial banks should raise their capital level, increase their profits, improve the quality of assets and also focus on efficient management in order to improve performance.
- Commercial banks should always avoid liquidity risks and manage them in a manner consistent with the Bank's business, generate more profits through increasing their productive investment and reduce bad and questionable debt.
- Commercial banks should make optimal use of the available extra liquidity to increase their earnings and enhance market risk response.
- Central Bank of Jordan needs to adopt CAMELS model as a tool of banks` performance evaluation, due to its comprehensiveness in several performance aspects.
- Conducting further studies, investigating other factors affecting banks` Financial Soundness, such as: corporate governance, market risk, and others factors that were not addressed in the study.

References

Abbas,A. Obayes,A. And Abdulkadhim,A.(2019), Use of CAMELS Standard in the Assessment of Iraqi Commercial Banks. *International Journal of Multicultural and Multireligious Understanding (IJMMU*). 6 (3), 24-48.

Abuhamada, Enas, Ismail, Islam, & Basharat, Tahani (2021). Understanding Quantitative and Qualitative Research Methods: A Theoretical Perspective for Young Researchers. *International Journal of Research*, 8(2), 71-87.

Abu-shkeerah, Malek, Dagarah, Arij, Almeri, Mohammad, & Saleh, Mousa (2016). The Geographical Spreading of Banks in Jordan and Its Reflection on Economic Development An Analytical Study for the Period 2014-2016. *Journal of Management Research* ,8 (4), 159- 171.

Al-abedallat, Abedalfattah (2019). The Factors Affecting the Performance of the Jordanian Banks using Camels Model. *European Journal of Scientific Research,* 152 (2), 116-127.

Al-Dmour, Hani, Algharabat, Raed, & Khawaja, Rawan, & AL-Dmour, Rand (2018). Investigating the Impact of ECRM Success Factors on Business Performance Jordanian Commercial Banks. *Asia Pacific Journal of Marketing and Logistics*, 31 (1), 105-127.

Almahadin, Hamed, Kaddumi, Thair, & Al-Kilani, Qais (2020). Banking Soundness Financial Stability Nexus: Empirical Evidence from Jordan. *Banks and Bank Systems*, 15 (3), 218-227.

Altarawneh, Marwan & Shafie, Rohami (2018). Risks and Bank Performance in Jordan. *Academy of Accounting and Financial Studies Journal*, 22 (6), 1-15.

Banu, Meraj & Vepa, Sudha (2021). A Financial Performance of Indian Banks Using CAMELS Rating System. *Journal of Contemporary Issues in Business and Government*, 27 (1), 2135-2153.

Bashatweh, Ammar & Ahmed, Emad (2020). Financial Performance Evaluation of the commercial banks in Jordan: Based on the CAMELS Framework. *International Journal of Advanced Science and Technology*, 29 (5), 985-994.

Bawa, Nancy (2017). Comparative Performance Analysis of Nationalized Banks: A CAMEL Model Analysis. *The IUP Journal of Bank Management*, XVI (4), 34-49.

Bawaneh, Ahmad & Dahiyat, Ahmad (2019). Performance measurement of commercial banks in Jordan using the CAMELS rating system. *Academy of Accounting and Financial Studies Journal*, 23 (6), 1-8.

Central Bank of Jordan (CBJ). (2018). Annual Report 2018. Retrieved from https://bankofjordan.com/sites/default/files/annual_report_2018_final.pdf

Chhetr, Madan & Das, Pradip (2020). Performance Analysis of Sikkim State Co-operative Bank Ltd. using Camel Model. *Journal of Critical Reviews*, 7(11), 3788-3796.

Dang, U. (2011), The CAMEL Rating System in Banking Supervision: A Case Study https://www.theseus.fi/bitstream/handle/10024/38344/Dang_Uyen.pdf.

Das, Girija & Nayak, Bhagirathi (2020). A CAMEL Model Study for Financial Performance of Public and Private Sector Banks in Odisha. *Journal of critical reviews*, 7 (13), 2486-2492.

Gangrade, Shailendra & Telang, Vidya (2019). CAMEL'S Model as An Effective Measure of Financial Performance-Analysis of Selected Nationalised Banks in India. *Prestige International Journal of Management and Research*, 12R (1/2), 113-120.

Gokul, G. (2020). A Relative Study of SBI and ICICI: CAMEL Framework. *Journal of Engineering Sciences*, 11 (4), 712- 719.

Guan, Fangyuan, Liu, Chuanzhe, Xie, Fangming, & Chen, Huiying (2019). Evaluation of the Competitiveness of China's Commercial Banks Based on the G-CAMELS Evaluation System. *Sustainability,* 11, 1-24.

Gutiérrez-López, Cristina & Abad-González, Julio (2020). Sustainability in the Banking Sector: A Predictive Model for the European Banking Union in the Aftermath of the Financial Crisis. *Sustainability,* 1-25.

Handorf, W. C. (2016). CAMEL to CAMELS: The Risk of Sensitivity. *Journal of Banking Regulation*, 17 (4), 273–287.

Haq, A. And Nasrin,H. (2020), Benchmarking and Rating of Private Commercial Banks of Bangladesh Through CAMELS Components. *Bangladesh Journal of Multidisciplinary Scientific Research.* 2 (2), 40-49.

Indriastuti, M., & Ifada, L. M. (2016). CAMELS: The Trouble Bank Prediction. *International Journal of Organizational Innovation (Onlin*e), 8 (3), 137–145.

International Valuation Standards Council (2020). *International Valuation Standards (IVS).*

Islatince, Nuray (2015). CAMELS Performance Rating Model: Comparative Analysis of the Performance of Deposit Banks Operating in Turkey with Sector Average for the Period between 2006 and 2011. *International Research Journal of Finance and Economics,* 131, 1-27.

Jothr, Osama, Hameed, Ayad, & Mohaisen, Hussien (2021). CAMELS Model and its Impact on the Evaluation of Banking Performance: A Literature Review. *Research Gate,* 1-12.

Kengatharan, Lingesiya (2018). Camel Rating System and Performance of Commercial Banks in Sri Lanka. *SUMEDHA Journal of Management*, 7 (2), 55-61.

Kuhil, Abdurezak (2019). A Comprehensive Analysis of European Banking Soundness Theoretical Study. *Financial Markets, Institutions and Risks,* 3 (2), 17-43.

Kumar, Vinod & Malhotra, Bhawna (2017). A CAMEL Model Analysis of Private Banks in India. *EPRA International Journal of Economic and Business Review*, 5 (7), 87-93.

Lind, Hans & Nordlund, Bo (2019). The Concept of Market Value in Thin Markets and its Implications for Accounting Rules. Working Paper February 2019. Available at: https://www.brec.se/wp-content/uploads/2019/02/The-concept-of-Market-Value-in-thin-markets-WP-Feb-2019.pdf

Majumder, Shapan, Appiah, Bismark, & Cardorel, Obambi (2021). Determinants of Market to Book Value and Financial Performance of Chinese Listed Firms: Implication of MVAIC Model. *Int. J. Learning and Intellectual Capital*, 18 (2), 131-153.

Manga, R. (2019), *The Financial Soundness of Selected Banks in South Africa: A Camels Rating System Approach*. Master Thesis. Nelson Mandela University. Port Elizabeth.

Masood, O., Ghauri, S. M. K., & Aktan, B. (2016). Predicting Islamic Banks Performance through CAMELS Rating Model. Banks & Bank Systems, (11, Iss. 3), 37-43.

Miranda, Catalina, Aronsohn, Alexander, Sawchuk, Christine, Tarbell, Jeffrey, Parris, Lucas, Smith, Mark, Alkhalaf, Muath, Zaman, Omar, & Choi, Steve (2020). International valuation glossary-business valuation. Available at: https://us.aicpa.org/content/dam/aicpa/interestareas/forensicandvaluation/resources/standards/downloadabledocuments/56175896-international-valuation-glossary-business-valuation-dec14-2020.pdf

Mitchell, Cory (2020). Market Price. *Investopedia*. Retrieved 18/7/2021 from **Error! Hyperlink reference not valid.**

Mohammed, Shariq, Sha, Nadia, & Al amri, Jayda (2019). Analyzing the Financial Soundness of Bank Dhofar: A CAMEL Approach. *The IUP Journal of Accounting Research & Audit Practices*, XVIII (4), 52-61.

Naser, Nahidah (2019). A Comprehensive Analysis of European Banking Soundness – Theoretical Study. *Financial Markets, Institutions and Risks*, 3 (2), 17-34..

Naushad, Mohammad (2021). Comparative Analysis of Saudi Sharia Compliant Banks: A CAMEL Framework. *Accounting,* 7, 1119–1130.

Ngoboka, Jean & Gatauwa, James (2020). Camel Rating System and Financial Performance of Rwandan Commercial Banks. *IOSR Journal of Economics and Finance,* 11 (6), 1-13.

Nguyen, Anh, Nguyen, Hang, & Pham, Huong (2020a). Applying the CAMEL Model to Asses Performance of Commercial Banks: Empirical Evidence from Vietnam. *Banks and Bank Systems,* 15 (2), 177-186.

Nguyen, Hoang & Dang, Van (2020b). Bank-Specific Determinants of Loan Growth in Vietnam: Evidence from the CAMELS Approach. *Journal of Asian Finance, Economics and Business* , 7 (9), 179–189.

Nhan, Do, Pho, Kim-Hung, Anh, Dang, & McAleer, Michael (2021). The Safety of Banks in Vietnam Using CAMEL. *Advances in Decision Sciences,* 25 (2), 1-35.

Rizvi, N. U., Kashiramka, S., & Singh, S. (2018). Basel I to Basel III: Impact of Credit Risk and Interest Rate Risk of Banks in India. *Journal of Emerging Market Finance*, 17 (1_suppl), S83–S111.

Rostami, Malihe (2015). Determination of CAMELS Model on Bank's Performance. *International Journal of Multidisciplinary Research and Development*, 2 (10), 652-664.

Salami, Abdulai, Uthman, Ahmad, & Sanni, Mubaraq (2021). Bank-Specific Variables and Banks' Financial Soundness: Empirical Evidence from Nigeria. *Zagreb International Review of Economics & Business*, 24 (1), 37-66.

Salina, Aigul, Zhang, Xin, & Hassan, Omaima (2020). An Assessment of the Financial Soundness of the Kazakh Banks. *Asian Journal of Accounting Research*, 6 (1), 23-37.

Sander, Michael (2018). Market Value: What Does It Really Mean? *The Appraisal Journal*, 206-218.

Sarker, A. (2006), CAMELS Rating System in the Context of Islamic Banking: A Proposed 'S' for Shariah Framework. *Journal of Islamic Economics, Banking and Finance,* 2 (2) , 1-26.

Szutowski, Dawid (2016). Innovation and Market Value. *Research Gate*, 1-268.

Tibebe, Ashenafi (2020). Determinants of Financial Performance of Private Commercial Banks in Ethiopia: CAMEL Approach. *International Journal of Research in Business Studies and Management*, 7 (4), 25-34.

Vadrale, Kavita (2019). Financial Performance of Selected Public and Private Sector Banks in the Light of CAMEL Model. *IJMBF*, 8 (1), 49-58.

Van-Thep, Nguyen & Day-Yang, Liu (2019). Determinants of Financial Soundness of Commercial Banks: Evidence from Vietnam. *Journal of Applied Finance & Banking*, 9 (3), 35-63.

Wirnkar, AD. And Tanko, M. (2008), CAMELS and Banks Performance Evaluation: The Way Forward, Working Paper, SSRN.