The PATROL Model and Its Impact on Evaluating the Efficiency of Banking Performance: A LITERATURE REVIEW

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المستخلص

هدفت الدراسة إلى تسليط الضوء على الآلية التي يمكن من خلالها استخدام نموذج PATROL في تقييم أداء المصارف، وذلك من خلال التعرف على كل من درجات تصنيف وآلية تطبيق نموذج PATROL بهدف الكشف عن نقاط القوة والضعف في الأداء المالي للمصارف وبالتالي رفع فاعلية وكفاءة الأداء المصرفي. وتوصلت الدراسة إلى أن نموذج PATROL يلعب دور هام في تقييم الأداء المصرفي من خلال عناصره الخمسة (كفاية رأس المال، الربحية، مخاطر الائتمان، التنظيم، السيولة) والتي تمكنه من توجيه متخذي القرارات في المصارف، وذلك من خلال الكشف عن نقاط القوة والضعف بهدف اتخاذ الإجراءات المناسبة في الوقت المناسب .

الكلمات المفتاحية: نموذج PATROL، تقييم الأداء، كفاية رأس المال، الربحية، السيولة، التنظيم، مخاطر الائتمان.

Abstract

The study aimed to shed light on the mechanism by which the PATROL model can be used in evaluating the performance of banks, by identifying both the rating degrees and the mechanism of applying the PATROL model in order to reveal the strengths and weaknesses in the financial performance of banks and thus raise the effectiveness and efficiency of banking performance. The study concluded that the PATROL model plays an important role in evaluating banking performance through its five elements (capital adequacy, profitability, credit risk, regulation, liquidity), which enables it to guide decision-makers in banks, by revealing strengths and weaknesses in order to take The right actions at the right time.

Keywords: PATROL model, performance *evaluation*, *capital adequacy*, *profitability*, liquidity, regulation, credit risk.

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1.0. Introduction and problem of the study

The banking system is of great importance in social and economic life. The existence of a good and sound banking system has become one of the important and urgent matters that are imposed in any country. Such a strong banking system creates a high environment for the state’s social and economic policy and creates great and high confidence, and enables the state to pursue its various tasks. But the existence of challenges and many forces, factors and variables that push it towards adopting the performance evaluation process in order to identify the shortcomings and weaknesses and address them through the available tools and mitigate them, as well as identifying the strengths and work to strengthen and support them, so that the banking system can continue to work and achieve the best returns (Saliha & Zidan, 2021).

Accordingly, the best models for evaluating the performance of banks must be adopted in order for the evaluation process to be more efficient and effective, and among these models is the PATROL model used in the banks of the US. Since evaluating the performance of banks has gained great importance by researchers in various fields of business, and because it affects the work of the institution and its survival and continuity, it has become a preoccupation for practitioners. It reflects the effectiveness and efficiency of the administration and the extent to which it utilizes the resources of the institution. Banks in general have been exposed to several factors, including the recent financial crisis and the COVID-19 pandemic, which led to an increase in capital requirements, as well as mergers, expansion and acquisitions, all of this and other changes that led to several changes in the presenting of banking services (Al-Nuaimi, 2017).

An important part of the reasons for the failure of banks to practise their role is the lack of confidence of citizens in their performance, and this is due to the banks' lack of disclosure and transparency in expressing their banking performance in a real way, and this may lead to a significant impact on those dealing with the bank and in general on economic growth. This and others prompted those interested to develop several methods or models to evaluate the performance of banks and to provide an opportunity for evaluation to the public in order to inform them about the reality of the banking sector in order to reach competitiveness and improve performance, and thus help banks in making decisions related to borrowing or depositing and investing in those banks. The PATROL model is one of the models used in evaluating the performance of banks, which we will discuss in this article (Al-Taie, 2019).

Banks are the backbone of the economy and the basis for the movement of money because they preserve, develop and invest them in various industrial, agricultural and other sectors. They also have an importance in the economy of countries because of the services and works they provide to improve the economy and growth (Press and Ali, 2020). Consequently, the economic growth that is supported by banks through financial intermediation operations, which plays a role in the distribution of financial and economic resources in any country under market conditions. The reason behind the lack of resources available to borrowers is due to the lack of strength and efficiency of banks, and those resources may be accumulated in society and this leads to damages to public money (Al Nuaimi, 2017).

Therefore, the problem of the study can be stated through the following question:
"Does the PATROL model, through its application mechanisms and rating scores, affect the effectiveness and efficiency of banking performance?"

2.0. The Importance of Study

The importance of this study comes by addressing the PATROL model and its role in evaluating banking performance, due to the role and the great impact of banks in supporting the economy and supporting the degree of confidence of depositors, borrowers and investors in banks that use modern systems, which are considered as an early warning process for these banks, to identify the strengths and weaknesses.

3.0. Study Objectives

The study aims to shed light on the mechanism by which the PATROL model can be used in evaluating the performance of banks, by identifying each of the rating degrees and the mechanism of applying the PATROL model in order to reveal the strengths and weaknesses in the financial performance of banks and thus raise the effectiveness and efficiency of banking performance.

4.0. Methodology

The study depends on the deductive reasoning, using both the description and analysis tool to highlight the various theoretical aspects of the PATROL model and its role in evaluating the banking performance, by reviewing scientific articles that have been published in international journals or the official websites of professional institutes on the Internet, then analyzing the content of these variables and identifying the results of the previous studies related to the subject of the study.

5.0. Theoretical Framework

5.1. The Concept of PATROL Model

In 1993, the Italian Central Bank introduced a new classification system called the PATROL system, which is an external monitoring tool to give a clear picture of the soundness of financial banks and provide assistance in the use of supervision resources in on-site inspections on time due to the lack of a specific mandate to conduct periodic on-site checks for banking institutions in Italy, except after subjecting the banks to off-site evaluation (Tadios, 2016).

The development of banking work and the diversity and complexity of its operations have created the need to provide models for evaluating the performance of banks that are compatible with the complexity and continuous development in the banking environment. The PATROL model is one of the important models for evaluating the performance of banks. One of the tools that were presented for off-site evaluation of banks is what was introduced by the Italian Central Bank as the annual PATROL rating system in 1993. It is considered as a tool for evaluation outside the bank and is presented through a systematic financial soundness of the banks. The internal evaluation dates for banks are determined at the expense of their financial health (Sahajwala & Van Den Bergh, 2000).

The word PATROL is derived from the first three letters of the Italian word (PALRIMONIO), which means capital adequacy, and the first letter of each of (RISCHIOITA) and (REDDITIVITA) which mean profitability and credit risk, as well as the first letter of the word (ORGANIZZAZIONE), which means organization, and the word (LIQUIDITA) which means liquidity (Al-Nuaimi, 2017). Each component of PATROL is rated from 1 (best level) to 5 (worst level) based on supervisory standards and guidelines, the specific ratings are verified by comparison with the actual results of the analysis on site (Al-Taie, 2019).

5.2. PATROL Model Application Mechanism

The PATROL model is used by the regulatory authorities to evaluate the performance of banks. There are five components of performance evaluation: (capital adequacy, profitability, credit risk, organization, liquidity), which are as follows:

5.2.1. **Capital Adequacy: It means the methods used by the management** of banks and their owners to achieve a kind of balance between the size of the capital and the risks that the bank expects on the other hand, and it includes identifying the ability and suitability of the bank to bear potential losses (Mohammed et al., 2013). Capital adequacy means maintaining the level of capital allowed for the bank to protect it from any potential losses resulting from potential risks and complying with an acceptable level of suitability, and that the principle of capital adequacy follows the directives issued by the fund management. This principle implements all risks to make them comparable with the capital base of the bank and adjusts the capital to a level that is consistent with the assessment of risks. This means determining the level of probability of the risks of exceeding losses. The risk must be low to be acceptable (Bessis, 2015). The capital adequacy can be calculated by the following equation:

Capital Adequacy = Capital / Assets Ratio

5.2.2. **Profitability: means the final work of all the efforts made and all the** activities provided by the bank at the time of the total measurement of the financial performance, and any economic work in which risks are practised, and whenever there are high risks, there must be profits equal to them, and the credit risks that are generated due to credit that banks must make profits in order to cover these risks through investing and making profits from multiple areas (Al-Taie, 2019). Profitability is a measure of the bank's efficiency and through it the extent of the bank's failure is determined from its success in the end. It represents the bank's ability to achieve a return by investing its resources, where profitability is linked to profit, but the first is a relative rate or standard that determines the scope of the bank's profits based on the size of commercial activity (Adjirackor et al., 2017). Profitability is measured by a large number of indicators, the most important of which are (Abdul Hamid & Al-Namrawi, 2019):

ROA (Return on Assets) = Net Profit after Tax / Total Assets × 100%

ROE (Return on Equity) = Net Profit / Shareholders' Equity

5.2.3. **Credit Risk**: Credit risk means the failure of the counterparty of the bank to fulfill its obligations within the agreed terms. It is not limited to the borrowing function only, but extends to other activities such as trade finance, deposits with banks and foreign exchange operations (Naji, 2015). Credit risk represents the oldest form of risk in the financial markets. Every financial institution bears a degree of risk when it grants loans to companies and customers, and is exposed to financial losses when some borrowers fail to repay their loans as agreed (Kahindi, 2012). (Mohammed & Hamid, 2020) believe that it is the possibility that the borrower or the counterparty to the bank will fail to fulfill its obligations in accordance with the agreed terms, especially the risks of errors by the borrower, which occurs when the borrower faces financial difficulties in repaying loan obligations and the interest resulting from them. Credit risk is calculated through the following relationship (Saliha & Zidan, 2021):

Provision for Doubtful Debts = Total Granted Credit

5.2.4. **Organization**: Any organizational work needs to develop the services used in it, and the most important way to change the status of the organization is to provide rare and advanced jobs that keep pace with change. Organization is defined as analyzing organizational performance to diagnose the degree of efficiency and access to development strategies in order for the institution to reach the required level, and that organization is an administrative function whose goal is to build what is known as the organizational structure (Al-Taie, 2019). It is represented in privatization, division of work, clear identification of responsibilities and authorities, simplification and standardization of work procedures, defining the objectives of the employees and the bank's policy, and paying attention to the training of employees. Accordingly, the regular bank is expressed and attached to the indicator of the number of employees who were enrolled in training courses during the research year compared to the number of bank employees combined (Sarifi, 2007). The organization can be found through the following (Saliha & Zidan, 2021):

Total Working Expenses Rate / Total Operational Income

5.2.5. Liquidity: It means the ability of the bank to pay in cash for all its commercial obligations and to respond to credit requests or granting new loans. This requires the availability of liquid cash with the bank or the possibility of obtaining it by liquidating some of its assets, i.e. converting them into liquid cash easily and quickly. Accordingly, the bank liquidity is intended to maintain liquid cash assets in addition to financial assets that are dominated by liquidity to meet immediate cash needs (Marozva, 2015). Liquidity is measured by the number of indicators, the most important of which are (cash to deposits, liquid assets to deposits, liquid assets to total assets) (Abdul Hamid & Al-Namrawi, 2019).

Liquidity Ratio = Monetary / Deposits

5.3. PATROL Model Classification Grades

It is a model used to identify troubled banks and reduce the effects of the crisis. It represents one of the methods of evaluating performance in banks, as it contains a matrix with logic and history in the CAMELS model used in the US. The study of (Al-Taie, 2019), (Dhaireb, 2020) and (Quagliariello & Cannata, 2003) showed the classification of banks according to the PATROL model according to five classifications, which are as follows:

5.3.1. Strong: The bank, which is described as robust in all aspects of its work, and does not have any weaknesses and if found, they are minor and are dealt with by the board of directors and senior management in the bank. Banks which fall within this classification are strong and have the ability to resist any influential external conditions such as economic instability. These banks have full compliance with the regulations and laws and they do not pose any concern to the supervisory authorities because they enjoy strong performance and efficient risk management.

5.3.2. Satisfactory: In this classification the banks are basically solid, but there are some minor problems that fall under the control of the management and the board of directors. They have the ability to deal with economic fluctuations and are stable and highly compliant with regulations and laws. Risk management is somewhat satisfactory given the complexity of the operations and the size of the bank, and there is no concern on the part of the regulatory authorities.

5.3.3. Fair: Banks within this classification constitute the concern of the regulatory authorities due to some components of this classification. These banks suffer in some areas of weakness, ranging from moderate to severe, and are unable to deal with fluctuations in work, and are more exposed to risk than the banks in the aforementioned 1 and 2. It does not abide by regulations and laws and its risk management is less than satisfactory in relation to the size of the risks, the size of the banks and their complexities. They need attention by the regulatory authorities.

5.3.4. Marginal: Banks which fall within this classification suffer from unstable and insecure practices, and they have serious financial and administrative problems which, in turn, make the bank's performance unsatisfactory. These problems range from severe to severe, as the bank's management does not deal with these problems properly. This group is unable to deal with economic fluctuations and fluctuations in business conditions and these banks do not abide by regulations and laws. Managing their risks is unacceptable compared to the extent of risk and the size of the bank and the degree of its complexity. Therefore, this group of banks requires great oversight by the regulatory authorities, as it sometimes requires a compulsory request to correct the situation. These banks constitute an explicit threat to the deposit insurance corporation. If the weaknesses are not dealt with properly, the possibility of their failure is great.

5.3.5. Unsatisfactory: It is considered the lowest rating and a weak indicator of performance and needs immediate attention and treatment because it is dangerous. Its performance, in itself, is a threat to the survival of the bank and the size of the problems fall outside the management's ability to correct them as they need the help of financial institutions to eliminate liquidity problems and avoid bankruptcy for the bank, as the possibility of failure within this group will be great.

6.0. Literature Review

The study of (Al-Nuaimi, 2017) aimed at evaluating the performance of banks using one of the modern models that have not been used before, which is the PATROL model. This model is one of the early warning models, and it consists of five components (capital adequacy, profitability, credit risk, organization and liquidity). The research hypotheses, including the possibility of using the PATROL model in evaluating the performance of Iraqi private banks, were validated. The research concluded that when banks evaluate their performance based on their own capabilities, they can identify errors and deviations and identify their causes, and thus find ways to address them, as well as enable them to draw up an appropriate strategy to raise and improve their current level of performance.

The study of (Al-Taie, 2019) sought to evaluate the performance of Islamic banks, which is one of the most important topics that preoccupied researchers because of the prominent role of these banks in the economy. The role played by the banking system in general and Islamic banks in particular cannot be ignored, despite their modernity, but they have proven their presence compared to traditional banks. As a result of the succession of setbacks, turmoil and financial bubbles, financial institutions in general and banks in particular were exposed to several crises. Consequently, they were required to use modern evaluation models, which were considered as an early warning device instead of the traditional evaluation, which is limited to quantitative sub-qualitative analysis to measure the risks that the bank may be exposed to. One of the most important modern models for evaluating the performance of banks is the PATROL model. It concluded that there is a weakness in some indicators (credit quality and regulation) and focus on *Murabaha* and the lack of use of other tools such as participation and speculation.

The study of (Abdul Hamid & Al-Namrawi, 2019) examined the impact of entrepreneurship in enhancing financial performance indicators according to the PATROL model. The adoption of entrepreneurship is one of the factors that help the majority of banks to reach a state of excellence in the banking market and acquire new and profitable customers. Banks have realized that the role of creativity and searching for new opportunities, ensuring that they are implemented through innovative approaches, taking risks, and making better use of available resources, are the cornerstones for enhancing competitiveness in them. In light of the foregoing, the current study adopts highlighting and diagnosing the impact of the dimensions of entrepreneurship on financial performance indicators. The results showed that there is a significant relationship between entrepreneurship and financial performance, and that the dimensions of entrepreneurship have a significant impact on increasing financial performance indicators.

Whereas the research of (Press and Ali, 2020) aimed at identifying the most important models used in measuring and evaluating the performance of Islamic banks, knowing the degree of their arrangement, each according to a specific performance, and determining the factors affecting the evaluation of the performance of banks as well as identifying the indicators of the PATROL model to evaluate the performance of banks and their success. The study arrived at the conclusion that Islamic banks are exposed to risks similar to those in traditional banks in addition to the legitimate risks and non-compliance with them, and that there is a clear tendency for savers to invest their savings in ways permitted by *Sharia*, however, they must be provided with halal returns on their investments.

The study of (Abdullah, 2020) aimed at erasing financial literacy in relation to the PATROL model by identifying its variables and how to use it in evaluating the performance of banks, as well as evaluating the performance of banks using the PATROL model according to two different methodologies and making a comparison between the performance of the sample banks in question. The thesis concluded, through the results of evaluating the performance of the banks and the research sample, that there is a discrepancy in the performance between one bank and another and at the level of the same bank from year to year. We find banks that have improved their performance from year to year, while we find other banks that have achieved a decline in performance from year to year, and this is the result of changing and differing basic variables of banking work.

While the study of (Saliha & Mohamed, 2021) aims to introduce one of the modern models of bank evaluation, which is the PATROL model, and its use in evaluating the performance of the National Bank of Algeria during the period from 2015 to 2019. The study concluded that the performance evaluation process should be given special importance and be taken care of on a regular basis and continues to ensure the safety and continuity of the banks. It has granted the National Bank of Algeria a rating of No. 2, which means that the bank is solid and stable. The study also showed the role of the PATROL bank assessment model in guiding the bank's decision makers by revealing the bank's strengths and weaknesses to enable appropriate measures to be taken at the right time.

The study of (Al-Hashimi, 2021) focused on how to hedge against banking crises by studying an important topic in the financial and business sectors, which is the subject of financial sustainability and its ability to hedge against banking crises. The research also aimed to analyze the financial sustainability indicators of the investigated banks to identify the strength and solidity of the financial position of these banks. The research also used financial analysis to reach at the results using a package of financial tools to measure financial sustainability indicators according to the PATROL model, which is an early warning model used by the supervisory authorities to assess the performance of banking work in the surveyed banks. The research also came out with a number of conclusions, the most important of which is that banks which achieve financial sustainability using a PATROL model are safe from banking crises.

7.0. Results & Discussion

The PATROL ratings represent the synthetic judgments assigned annually to the banks. When assigning supervisory rating, supervisors use nearly all available relevant information according to standardized procedures, so the output of the analysis is a combination of quantitative evaluation and human judgment. Similar to the CAMELS system in the US, the PATROL rating system focuses on five components of a bank's performance: capital adequacy (PATrimonio), profitability (Redditività), credit risk (Rischiosità), organization (Organizzazione) and liquidity (Liquidità). Following this approach, each of the five profiles and the overall status of a broker are rated. Ratings can vary from 1 (strong banks) to 5 (unsatisfactory banks) (Quagliariello & Cannata, 2003).

The PATROL model plays a significant role in evaluating banking performance through its five elements (capital adequacy, profitability, credit risk, organization, liquidity), which enable it to guide decision-makers in banks, by revealing strengths and weaknesses in order to take appropriate measures in the right time and this is consistent with the study of (Saliha & Muhammad, 2021). The researchers also agree with the study of (Al-Hashimi, 2021) and the study of (Al-Nuaimi, 2017) that the PATROL model is one of the early warning models used by regulatory authorities to evaluate the performance of banking work in banks.

The use of the PATROL model in evaluating the performance of banks comes due to its reliance on five important elements that have a direct relationship to the specificity of banking performance, that enable it to identify deviations and errors and determine their causes to find ways to ensure their treatment.

Furthermore, this model enables the bank to draw up an appropriate strategic policy to improve and raise the current bank's performance. Thus, it becomes clear to the researchers that the PATROL model is not much different from the CAMELS model in terms of rating degrees, as they are considered as two modern models that aim to assess banking performance with the aim of identifying strengths and weaknesses. The two models share rating scores and there is no difference between them.

8.0. Conclusion

The importance of the study comes from the importance of the PATROL model and its role in evaluating banking performance because of the role and the great impact of banks in supporting the economy and supporting the degree of confidence of depositors, borrowers and investors in banks that use modern systems, which is considered as an early warning process for these banks, to find out the strengths and weaknesses. Therefore, the PATROL model is characterized as a supervisory and control tool for banks by collecting available and relevant information through standardized procedures to obtain important results, and it represents a combination of human and quantitative judgment on the performance of banks. The use of the PATROL model in evaluating the performance of banks comes due to its reliance on five important elements that have a direct relationship to the specificity of banking performance, which enable it to identify deviations and errors and determine their causes to find ways to ensure their treatment. Moreover, this model enables the bank to draw up an appropriate strategic policy to improve and raise the performance of the current bank.

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