The CAMELS Banking Rating System As An Effective Model for Evaluating the Performance of Algerian Public Banks

A Case Study of the Algerian National Bank BNA

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Received: 08./04/2021 Accepted: 07/05/2021 Published: 01/06/2021

Abstract: The aim of the research is to shed light on the classification of Algerian banks according to the CAMELS standard, and the identification of weaknesses and strengths in each component of the model, by taking the Algerian National Bank as a sample in the period from 2017/2019. The study concluded that the nature of the work of Algerian banks does not allow the CAMELS standard to be used as a mechanism for evaluating their performance, as we were unable to test the third and the sixth component of management and sensitivity to market risks. As for evaluating the bank's performance using the CAEL standard without management and sensitivity to market risks, the bank may obtain the third degree to be classified with its reasonable performance

Keywords: Performance, CAMELS standard, Algerian banks, Algerian National Bank BNA

الملخص: تهدف الدراسة الى معرفة تصنيف البنوك الجزائرية وفق معيار CAMELS ، و تحديد نقاط الضعف و القوة في كل مكون من مكونات النموذج، بأخذ البنك الوطني الجزائري كعينة في الفترة الممتدة من 2019/2017.

خلصت الدراسة الى ان طبيعة عمل البنوك الجزائرية لا تسمح باستعمال معيار CAMELS كآلية لتقييم أدائها، اذ لم نتمكن من اختبار المكون الثالث والسادس المتمثل في الإدارة و الحساسية لمخاطر السوق، اما عن تقييم أداء البنك باستخدام معيار CAEL دون الإدارة و الحساسية لمخاطر السوق، فقد تحصل البنك على الدرجة الثالثة ليصنف بأدائه المعقول.

الكلمات المفتاحية: الأداء، معيار CAMELS، البنوك الجزائرية، البنك الوطني الجزائري.

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1. INTRODUCTION

A sound banking system in any country of the world consists of a group of banks that are able to efficiently employ most of their assets and liabilities in financial intermediation and banking transactions, and their enjoyment of financial solvency and the ability to meet the requirements of the adequacy of both capital and absolute liquidity to meet the usual payments in ordinary and extraordinary circumstances.

In order to achieve the continuity of profits in addition to the efficiency of management, effective internal control and sound institutional governance, it is necessary for banking institutions to resort to international standards in order to achieve the desired goals. CAMELS is one of the most important globally used standards.

1.1. Problematic study:

How can the performance of Algerian banks be evaluated according to CAMELS?

1.2. Significance of the study:

The research is important as it relates the components of the CAMELS model to performing Algerian banks. The practical importance of the CAMELS model is highlighted as one of the modern and efficient methods in evaluating the performance of commercial banks, and it is also used to detect the banking crises before they occur and providing solutions. The use of this model would certainly enhance the status of the banking sector in Algeria and contribute to supporting the confidence of depositors and clients, and then it would achieve the bank’s strategic objectives and strengthen its role as a pillar of the local economy.

1.3. Objectives of the study:

Through this study, we seek to achieve the following objectives:

-Study and analysis of the CAMELS model.

-Determine the financial indicators and ratios necessary to implement the CAMELS system.

-Analyze the financial ratios of the Algerian national bank as an example of Algerian public banks according to the components of the CAMELS standard.

- Coming out with results that would assist the management of Algerian banks in accurately measuring banking risks and predicting them early. It gives them a warning to intervene and take the necessary measures, and to materialize field monitoring by adopting the model under study.

2. Literature Review

2.1- Performance evaluation

In this paper, we will shed light on the concept of performance, its importance, and the desired goals.

2.1.1. The concept of performance appraisal

The idea of evaluation is based on the extent to which the actual performance matches the planned performance. The following is a presentation of the performance concept. According to the traditional perspective, performance evaluation is a measure of actual performance and a comparison of the results that are required to be achieved, or it can be reached in order to be a vivid picture of what actually happened and is happening, and the extent of success in achieving the goals and implementing the plans made to ensure that appropriate measures are taken to improve performance.

Some authors believe that performance is directly derived from the work element, and therefore performance is according to the capabilities of each worker and the nature of his work (F.Chevalier, 1993).

According to Miller and Bromily performance "… reflects the way the organization uses financial and human resources, and uses them efficiently and effectively in a way that makes it able to achieve its goals (K.Miller et all, 1990). Lorino also defines it as the difference between the value provided to the market and the total consumed values, which are the costs of various activities. Some units (cost centers) are considered to be consuming resources, and are negatively charged in the overall performance through their costs and others are profit centers, which are at the same time consuming resources, and a source Returns, and will contribute a margin to the overall performance of the organization (Ph. Lorino, 2003).

2.1.2. Performance components:

The concept of performance consists of two main components, namely, effectiveness and efficiency: Hence, it is useful to present each of the two concepts with analysis.

-Effectiveness: Researchers in management science view effectiveness as a tool for monitoring performance in the organization, based on the fact that effectiveness represents a criterion that reflects the degree to which a set of goals are achieved. There have been many views on the nature and the concept of effectiveness. The traditionalists say that it is the profits made. Thus, the effectiveness of an institution is measured by the size of its profits. According to Vincent Plauchu (V.Plauchu, 2015), it is the ability to achieve the activity. Moreover, Walker & Ruekert defined it as the ability of the institution to achieve its strategic objectives in terms of sales and to maximize its market share compared to the competition. (J.Denis et ell, 2000)

We conclude from the foregoing that effectiveness means the correct and proper performance of tasks or actions, and it is related to the strategic objectives of the organization, and thus the degree of the accomplishment of results. In other words, effectiveness reflects the difference between the expected results and the achieved ones, and at the same time, it is related to the implementation of the objectives of the organization. Therefore, one can say that the more the achieved results are closed to the expected ones, the more effective the performance will be. This is reflected in the performance of the organization as a whole. Thus, the effectiveness depends on the ratio between the capabilities used to the expected capabilities to attain results.

- Efficiency:

There is no agreement among those interested on a specific definition of efficiency, as the concept of efficiency intersects with several concepts such as productivity, cost-effectiveness, optimization ... etc. Walker(J.Denis et ell, 2000) define efficiency as the capacity of the institution, meaning that it refers to the relationship between inputs and outputs and is measured through the ratio of outputs to inputs. As for efficiency, according to Vincent (V.Plauchu, 2015), it is the ability to do the required work with the least potential, and efficient activity is the least expensive. We deduce from this definition that efficiency is related to achieve what is required under the condition of low inputs, that is, the use of fewer inputs.

Efficiency is defined as “the optimal use of institutional resources at the lowest possible cost without any significant waste, and there is another definition that considers efficiency on the other hand, it means "obtaining a lot for what is less, that is, keeping the cost at its minimum and profits within its maximum limits. It is a concept that is limited to the use of the productive resources available to the institution that is primarily related to the cost component and the relationship between inputs and outputs."

From this definition, it can be concluded that efficiency is an inherent characteristic of how the nature of the organization's use of its inputs of resources compared to its outputs, where rational exploitation is necessary, and the combination of production factors at the lowest possible cost. It can be deduced that efficiency can be translated and represented in duality (maximizing profits, versus minimizing costs). This indicates that the production process is considered inefficient if it requires the use of a greater amount of inputs compared to a smaller amount of inputs to produce the same amount of output. Thus, it is necessary to point out that the efficiency of the institution is affected by the size of its inputs, in addition to other factors, the most important of which are the environment, the quality of its management and its organization ... etc.

According to the above-mentioned definitions, efficiency means doing things in a correct manner, and the essence of efficiency is in maximizing output and minimizing costs. In other words, representing efficiency by an equation in which one side contains reaching the maximum output with limited and specific costs while the other party contains reaching the prescribed limit of output. At the lowest cost, efficiency is usually measured through the ratio of output to input.

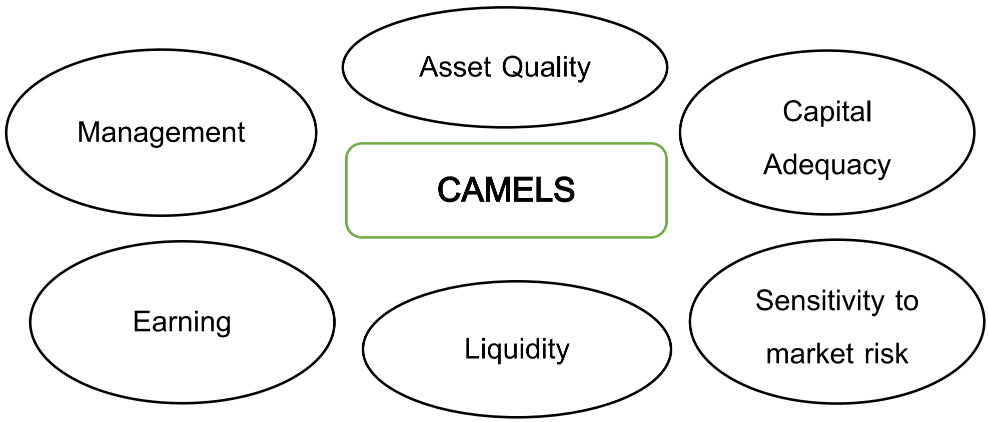
2.2. CAMELS Standard

2.2.1.Definition of CAMELS standard

Most of the authorities have seen the CAMELS standard as an indicator, the purpose of which is to identify banking risks that threaten the financial, operational and administrative operations of the bank. We can include the following definitions: The CAMELS standard is considered as a quick indicator of the fact of the financial position of any bank and a knowledge of the degree of its classification, as it is one of the direct control methods that are carried out through the inspection field.

The CAMELS method is a set of indicators that are made by analysing the financial position of any bank and knowing the degree of its classification, and this method is considered one of the direct control methods that are carried out through the inspection field, as the supervisory authorities in America worked to take the results of the CAMELS standard and rely on them in making decisions through six indicators (Sh.Ghasempour, 2016) that are mainly represented by the elements as in the following figure:

Figure No1: The components of the CAMELS standard



Source : Mohammad Kamrul Ihsan, (2016), Measuring Financial Performance Based On CAMELS: A Study on selected ISLAMIC Banks in Bangladesh, Asian Business Review, V.6, N1, Issue 13, P.47.

It is also known as the method used to analyze banks' performance. It was established by the US regulatory authorities in 1970 for the purpose of monitoring and controlling the performance of banks. The analysis also helps to understand whether the banks rely on effective supervisory laws and systems, and this leads any problem being identified at an early stage (S.Yuksul et all, 2015).

2.2.2.Indicators of the overall classification of the bank's performance according to CAMELS standard

The overall classification of the bank is related to the individual classification for each of the six components of the CAMELS standard. The overall classification does not necessarily represent the arithmetic mean of the total rating of the six elements, but it can include every element that can have an impact on the soundness and durability of the bank’s financial position. Summarizing the ratios approved for the overall classification according to the following table:

Table No 01: Ratings for classification components of the CAMELS standard

CAMELS components	**Ratios**	**Degree**				
		1	**2**	**3**	**4**	**5**
Capital adequacy (C)		More than 11%	8%-11%	4%-8%	1%-4%	Less than 1%
Asset quality (A)	WCR	Less than 5%	5%-15%	15%-35%	35%-60%	More than 60%
	TCR	Less than20%	20%-50%	50%-80%	80%-100%	More than 100%
Management quality (M)						
Earnings (E)	ROA	More than 1.5%	1.25%-1.5%	1.01%-1.25%	0.75%-1%	Less than 0.75%
	ROE	More than 22%	17%-21.99%	16.99%-10%	9.99%-7%	Less than 6.99%
Liquidity (L)	loan-to-deposit ratio	Less than 60%	60%-65%	65%-70%	70%-80%	More than 80%
	Ratio of liquid assets	Less than 60%	60-65%	65-70%	70-80%	More than 80%

	to deposits					
Sensitivity to market risk (S)	Total assets/ total sector assets					

Source: 1/ Nabilah rozzani and rashidah Abdul rahman , (2016), camels and performance evaluation of banks in Malaysia : conventional versus Islamic ,journal of Islamic ,finance and business , research , vol 2 , n1 September , P.40.

2/Khalafalla Ahmed Mohamed arabi , (2013) predicting banks , failure , the case of banking sector in Sudan for the period (2002-2009),journal of business studies, quarterly (JBSQ) VOL 4, N3,2013, p.p164-165

3/ Nabilah rozzani & Rashidah Abdul Rahman,(2013) CAMELS and performance evaluation of bank in Malaysia, P.40.

As for the overall classification of the bank, this is extracted based on the results of the six components, and it is also possible to rely on the results of four components (capital adequacy, asset quality, profitability, and liquidity). According to the CAMEL standard and excluding the third and sixth components due to the lack of legal reference to the classification Results.

If the average score for the elements together is calculated, where the rating is from 1, which is the best to 5, and is the worst (Rozzani and all, 2013).

The preventive measures and procedures in each of the five cases can be summarized in the following table:

Table No2. The final classification of the bank and the necessary precautionary measure for each case

Degree	Rating ratio	Type of classification	Bank position
1	1-1.4	strong	Indicates strong performance
2	1.5-2.4	patient	Indicates above average performance which means sound and relatively safe operations
3	2.5-3.4	reasonable	Indicates performance that is flawed to some degree
4	3.5-4.4	marginal	Indicates unsatisfactoory performance. If left unchecked , such performance could threaten the solvency of the banking comany
5	4.5-5	not patient	Indicates very unsatisfactory performance, in need of immediate remedial attention for the sake of the banking cmpany’s survival.

Source: Mohammad Kamrul Ahsan (2016), Measuring Financial Performance Based On CAMEL: A Study on selected ISLAMIC Banks in Bangladesh, Asian Business Review, V6, N1, Issue 13. P.49

3. Applied literature

3.1- A study (E.Ferrouhi 2014)

The study revolves around analyzing the performance of six Moroccan financial institutions using the CAMELS standard in the period between 2001-2011. The research aims to assess capital adequacy, asset quality, management, profits and liquidity and then verify the soundness of Moroccan banking, and the extent of the compliance of Moroccan financial institutions with the Moroccan banking regulation in the aforementioned period.

The research concluded that the CAMEL model allows for arranging banks and knowing the degree of their strength or weakness. Through the results obtained, the researcher was also able to know which is the strongest and the best institution among the six institutions, and then he could arrange it according to the degree of its performance. What we did not include is that the researcher prolonged the study period without mentioning the reasons, especially since it does not require more than 4 or 5 years to evaluate the bank's performance using the CAMEL model. He chose the CAMEL model, not the CAMELS model, which contains the market risk sensitivity components S , which is an important component of the model because it studies the effect of external interest rate fluctuations on net output, and studies the gap between assets and liabilities.

3.2- A study (M.Rostami 2015)

The researcher in this study chose some of the important and effective indicators that make up the CAMELS standard from the annual reports of an Iranian bank, then compared these results with the ones obtained from using another model to evaluate the performance of the same bank.

He found that the CAMELS standard is a very effective and accurate tool in its use to evaluate the performance of banks and predict future risks, especially as it includes the most important ratios contained in the balance sheet of any bank. He also concluded that the Iranian bank can benefit from the study in order to find out the weaknesses and strengths of the bank itself in a brief manner, and then focus on the weaknesses directly and treat them.

3.3- A study (T. Ahmed Mousa 2016)

The study aimed to evaluate the performance of three Islamic banks (Jordan Islamic Bank, Islamic International Arab Bank, Jordan Dubai Islamic Bank), during the period 2010-2015 and analyze their financial performance using the CAMEL standard. The researcher found that all Islamic banks in Jordan have sufficient capital and assets necessary to face risks, as for profitability, it is constantly increasing despite the slowdown in economic growth in Jordan. As a conclusion, the performance of Islamic banks operating in Jordan according to the CAMEL standard has a strong performance according to the central bank regulations.

4. The experimental study: Evaluating the performance of Algerian public banks using the CAMELS standard

The sample: all Algerian public banks represent the community and the research sample, namely:

- The Algerian External Bank, BEA
- Bank for Agriculture and Rural Development, BADR.
- Local Development Bank BDL.
- The National Bank of Algeria BNA.
- Popular Algerian CPA loan.

CNEP Savings and Reserve Fund.

Five public banks (CNEP.BDL.BNA.BADR.CPA) were excluded

We applied the model to one bank, the Algerian National Bank BNA.

As for the study period, it will be from 2017 to 2019

The tools: In order to be able to implement the CAMELS model, we need the bank's detailed budget and results chart for the last three years 2017, 2018, 2019.

We will also rely on Excel to extract the results and convert them into graphical forms.

4.1. Introducing the bank:

The National Bank of Algeria is one of the public commercial banks approved by the structural reforms that affected the banking system inherited from the French colonialism, as it was directed to achieve specific goals. The National Bank of Algeria was established on June 13, 1966, to be a financial planning tool and a pillar for the socialist and agricultural sector. This bank included a group of foreign banks on different dates. These banks are represented in, the mortgage loan to Algeria and Tunisia, the industrial and commercial loan, the National Bank. It collects deposits and grants short-term loans. Depending on the banking specialization, the bank has guaranteed the granting of loans to the agricultural sector, import professional groups, public institutions and the private sector.

4.2. Discussing the results:

4.2.1. Partial classification of each standard component

4.2.1.1 Capital adequacy:

Table 03: The ratio of the bank's capital adequacy for the years 2017/2019

Year / Statement	2017	2018	2019
Solvency ratio	28.23%	27.22%	23.39%
Partial classification of capital adequacy according to the prudential rules in force in Algeria	1	1	1
Average price of capital adequacy	$\%26.28 = \frac{28.23 + 27.22 + 23.39}{3}$		
Total rating	1		

Source: The National Bank of Algeria's 2017/2019 report from the World Bank website

The table shows that the ratio of the bank's capital solvency decreased from 28.23 in 2017 to 27.22% in 2018 by 1.01%, but the ratio of its decrease from 2018 to 2019 was very clear at an average of 3.83%, reaching 23.39%.

By the schedule, the partial rating of the bank's capital solvency ratio was first, which means that the capital adequacy ratio is in good shape and the bank has sufficient capacity to cover the risk of its assets through its capital

4.2.1.2 Asset quality.

The asset quality of the Bank can be evaluated according to CAMELS standard by the following percentages.

Weighted Asset Ratio (WCR) = Royalty allocations + allocations

That is a measure of the size of troubled debt allocations on equity and allocations, and the lower 5%, the more evidence that the bank is able to cope with the risk of non-performing loans.

Percent TCR= non-performing loans / property rights + allocations

This ratio measures the volume of non-performing loans to property rights and

Allocations, and the smaller that percentage is at 20%, is the better.

Table 04: The WCR and TCR ratios for the bank from 2017 to 2019

Year / Item	2017	2018	2019
WCR	9.26	7.15	7.94
TCR	38.30	37.7	20.26

Source: Annual report of the National Bank of Algeria

Table 05: The total classification of WCR and TCR per CAMELS standard

Year / item	2017	2018	2019
WCR	9.26	7.15	7.94
partial classification	2	2	2
total classification			2
TCR	38.30	37.7	20.26
partial classification	2	2	2
total classification			2

Source: Prepared by the researchers based on the previous table

The quality of the bank's assets is ranked second, by average rating for each item, and since the asset quality rating is second, that means it's satisfactory

4.2.1.3 Management

There are several laws for calculating and evaluating bank management (Hasan Dincer, and all, 2015) that we have chosen from:

Interest/total expenses

Interest income/gross income

Total income/total expenses

However, these ratios have no reference on how to classify them according to the five-year LIKERT classification, and therefore we cannot evaluate the management of the National Bank of Algeria according to the camels standard

4.2.1.4 Earning

To classify the profit of the bank, the following rates must be calculated:
ROI rate: Net gain/total assets
Efficiency is the use of assets: the higher the 1.5%, the better.
ROE rate: Net profit/equity
These percentages indicate how much the bank makes a profit on property rights, the higher it gets over 22% the better.

Table 06: The ratio of ROE to bank from 2017/2019

Year / Ratio	2017	2018	2019
ROA	%1.06	%1.16	%0.55
Partial classification	4	4	5
Mean ROA ratio	1.06+1.16+0.55/3=0.92%		
Total classification	4		

ROE	13.22%	13.57%	13.06%
Partial classification	3	3	3
Mean ROA ratio	13.22+13.57+13.06/3=13.28%		
Total classification	3		

Source: Annual report of the National Bank of Algeria for 2017/2019

We note that the ROA ratio of the Bank experienced a decline in 2019 compared

to 2017 and 2018, which is evidence that the Bank did not achieve profits this year for the profits it achieved in 2017/2018, due to the low rate of its assets.

In terms of ROE, we see that it's also down compared to 2017 and 2018, because of the lower equity/reserve ratios and the fiscal year and the lower net profit ratio compared to 2018 and 2017.

For CAMELS profitability, they were ranked third with moderate performance.

4.2.1.5 Liquidity

To calculate the liquidity rate of the National Bank of Algeria, we relied on the following references (Anwanul, Suman, 2012).

Ratio of loans to deposits = total loans/total deposits

The lower this ratio is 60%, the more the bank is efficient at managing its liquidity.

Ratio of liquid assets to total deposits = liquid assets/total deposits

The lower that 60%, the more efficient the bank is to keep its liquidity to face risk

The national bank's liquidity can be analyzed by including the ratios shown in the following table:

Table 07: Liquidity ratios at the National Bank of Algeria for the years in question

year / Statement	2017	2018	2019
Loans/total deposits	88.36%	97.08%	101.09%
partial classification of ratio	5	5	5
Average ratio of loans to total deposits	88.36%+97.08%+101.09%/3=95.51%		
Total classification	5		
Liquid assets/total deposits	39.76%	33.04%	35.86%
partial classification of ratio	1	1	1
average ratio	39.76+33.04+35.86/3=36.22%		
Total classification	1		

Source: Prepared by the researchers based on the National Bank of Algeria data.

We notice from the ratio of loans to total deposits that the bank gets a 5 in relation to the overall rating, and this indicates that the bank gives more loans than it receives deposits, and this may cause a liquidity shortage.

As for classifying the ratio of liquid assets to total deposits, the bank gets first class, and this indicates that the bank has more liquid assets represented by the fund, the treasury and the central bank than the deposits it receives, which rules out the risk of it falling into a liquidity shortage. From this, we conclude that the bank does not rely heavily on customer deposits to manage its liquidity.

4.2.1.6 Sensitivity assessment of market risk

Sensitivity assessment of market risk is not based on percentages as are other elements of the CAMELS standard, but depends on the components of the balance sheet and the activities it contains.

Due to the lack of the required ratios and legal references to CAMELS, we were unable to assess the performance of this element for the Algerian National Bank.

4.2.2 Total Classification of the National Bank of Algeria

Since we were able to calculate the most important components of the CAMELS standard and find a reference for their classification and ranking, these components are (capital adequacy, asset quality, profitability, liquidity), as far as management and market risk sensitivity are concerned, we were not able to assess their performance and classify them, and the following countries show the CNES's overall rating

Table 08: Degree of classification of each standard component

Element	Average ratio for the years studied	Category	Degree
Capital adequacy c	26.28%	Strong	1
Asset Quality A	WCR 8.11% TCR 32.08%	Patient	2 2
Management M.	/	/	/
Profitability E	ROA= 0.92%	Marginal	4

	ROE= 13.28%		3
Liquidity L	95.51% 36.22%	Reasonable	5 1
Sensitivity to market risk S	/	/	/

Source: Prepared by the two researchers based on the results of the partial classification.

Total bank rating = 2.57

Thus, the performance of the bank by the four components falls into the third degree, to classify its reasonable performance, and in this case it is characterized by a moderate to severe weakness that can cause problems in the management, and therefore it is affected by external fluctuations, and the administration is not committed to the laws and regulations, so the bank requires the intervention of the monitoring authorities because in this case it is a source of concern to them.

5. Conclusion:

The aim of this study was to classify the performance of Algerian banks according to the CAMELS model in the period between 2017/2019. We chose the National Bank of Algeria as a sample for applying the components of the CAMELS standard to its data. It was done to determine if the nature of the work of Algerian banks allows the application of the standard as a tool to evaluate its performance, especially with the developments taking place in the performance evaluation tools, and since this criterion is considered a means of inspection and field control and a tool for early prediction of crises before they occur.

After studying theory and practice we came up with the following results:

According to the CAEL standard, the bank will receive the second degree, to classify its performance as satisfactory, and therefore it is relatively sound with some negatives, and with a simple action, it has to deal with shortcomings and rectify shortcomings to prevent crises. As for the classification of the bank's performance according to the CAEL standard, without management and sensitivity to market risks, the bank will get the second degree as well.

Because we were not able to test the third and sixth element of the CAMELS standard, which is management and sensitivity to market risks, we could not judge the performance of the National Bank of Algeria, we could only classify its performance according to the CAMEL standard, so we conclude that the nature of the work of Algerian banks does not allow the use of the CAMELS standard as a means of evaluating their performance.

Finally, we can make some points that we've concluded that the bank can apply these criteria if it follows them, which we summarize as follows:

- Algerian banks should rely on transparency and disclosure of all financial information and the systems and methods of managing and monitoring risks.
- Rely on sophisticated systems to evaluate the risks of the banking profession and ensure that all types of risks are covered.
- Periodically revise its risk assessment systems to ensure that they are in line with the developments in the global banking arena.
- allocate a budget to contain the costs of applying such regulations and standards, because they require huge costs from them.

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