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Using modern financial indicators to evaluate the financial performance of commercial banks: A BNA case study

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Abstract---This study seeks to highlight the importance of evaluating the financial performance of commercial banks using modern financial indicators, focusing on the National Bank of Algeria (BNA) during the period 2014–2022. The research employs both descriptive and analytical approaches, which use the Economic Value Added (EVA) and Market Value Added (MVA) indicators to assess the bank's financial performance. The main findings reveal that the bank has faced periods of weakness and a decline in net profit in certain years. This can be attributed primarily to an increase in provisions for doubtful debts, the repercussions of economic crises, pressure on interest margins, and high operating costs. Additionally, the rise in non-performing loans presents a significant challenge, directly impacting profitability and increasing credit risk ratios. The evaluation of the bank's performance also underscores inefficiencies in cost management and weaknesses in its technical infrastructure. However, with the implementation of financial reforms and restructuring programs, the bank may experience an improvement in performance, particularly due to the ongoing digital transformations in the sector,

which are enhancing electronic services. However, with financial reforms and restructuring programs, the bank may see an improvement in performance, especially with the digital transformations taking place in the sector in general through the enhancement of electronic services.

Keywords---financial performance, financial performance evaluation, financial indicators, commercial banks, financial analysis, BNA.

I. Introduction

Evaluating the financial performance of commercial banks using modern financial indicators is essential for ensuring the stability of the banking sector and enhancing its role in supporting economic growth. This, in turn, strengthens the bank's market position by attracting both investors and customers. In Algeria, the banking sector plays a pivotal role in financing economic activities and promoting sustainable development by aligning with international standards and enhancing bank governance, which in turn fosters competitiveness and innovation. This is particularly important given the ongoing economic transformations and monetary policies in the country. Evaluating the performance of the BNA using modern financial indicators helps to identify its strengths and weaknesses, providing valuable insights for decision-makers. Such evaluations are essential for the formulation of effective strategies and mechanisms that can improve the bank's efficiency and enable it to address critical challenges, especially in the context of economic fluctuations.

1. The problem Statement

Given the critical role of financial statements in banks, the use of these statements to calculate modern financial indicators has become increasingly important, as they are essential for evaluating the financial performance of commercial banks. Thus, to what extent do these modern financial indicators enhance the evaluation of the BNA's financial performance?

In order to explore and address the main problem, it is essential to break it down into more specific inquiries. The following sub-questions will guide the investigation:

- ❖ What are the most important modern financial indicators used to evaluate the financial performance of commercial banks?
- ❖ How can modern financial indicators be applied to the BNA, and is its performance improving as a result?

2. Hypotheses of the study

To address the questions raised in this study, the following hypotheses are proposed:

- ❖ The performance of commercial banks is evaluated based on a set of modern financial ratios and indicators.
- ❖ As one of the largest commercial banks in Algeria, the BNA demonstrates strong financial performance.

3. Significance of the study

The evaluation of financial performance in commercial banks is a crucial topic in the field of banking, as it has garnered significant attention from researchers and scholars. Given that commercial banks serve the primary drivers of a nation's economy, any weakness in their financial performance can have adverse repercussions that negatively impact the country's economic stability. Therefore, it is essential for banks to assess their financial performance in a way that enables them to understand their financial condition, identify weaknesses and deviations, and take corrective actions. This process is critical for ensuring the soundness of their financial position while carrying out their operations.

4. Previous empirical studies:

Due to the great importance that this topic enjoys, there are many researches and studies that dealt with this field of research from different aspects, so we have identified some of the studies that dealt with this study^{11,12,13,14}

II. The Financial Performance

Financial performance evaluation is of paramount importance for institutions, particularly in the current context of rapid changes and the frequent bankruptcy of major global institutions. In the banking sector, performance evaluation aims to assess the efficiency with which banks utilize their available resources. This evaluation process, however, varies across banks depending on their objectives and the needs of their stakeholders. For instance, depositors prioritize liquidity, while shareholders focus on profitability. This distinction underscores the growing significance of performance evaluation in the banking industry.

1. The concept of Financial Performance

The term performance is a key concept in management, often discussed in various management literature, either directly or indirectly, as the primary goal that every manager seeks to improve. Performance is defined in two distinct ways. First, it reflects the institution's ability to achieve its long-term goals. Second, it is also understood as the desired results that the institution seeks to achieve.¹

In commercial banking, the evaluation of financial performance is seen from different angles. *First*, the performance evaluation of commercial banks aims to measure their efficiency in utilizing available resources.² *Second*, it is considered an administrative function, representing the final link in the continuous chain of management work. It involves a series of actions taken by the management apparatus to ensure that results are achieved with the highest degree of efficiency. *Third*, at the strategic level, financial performance evaluation serves as a diagnostic tool to identify strengths and weaknesses, which then informs the formulation of plans for managing the bank's assets and liabilities.³ Based on these definitions, the evaluation of financial performance can be seen as the process of diagnosing the institution's financial position to assess its ability to create value through the optimal use of available resources.

2. The Importance of Evaluating Financial Performance

The importance of evaluating financial performance can be summarized in the following key points: ⁴

- 2.1.** Evaluating financial performance is a fundamental pillar and a key data source for effective planning and control processes;
- 2.2.** It is instrumental in diagnosing and addressing problems, identifying the institution's strengths and weaknesses, uncovering the root causes of deviations, and determining accountability;
- 2.3.** It also provides management with essential information for making critical decisions, whether related to development, investment, or fundamental organizational changes;
- 2.4.** It reflects the institution's (or bank's) performance over time, indicating whether it has improved or declined.

3. Objectives of evaluating financial performance in commercial banks

The objectives of evaluating financial performance can be outlined as follows:

- 3.1.** Evaluating financial performance helps assess the institution's (or bank's) financial position, providing insight into management's ability to implement measures aimed at achieving specific goals. Additionally, it identifies potential issues in operational practices that need to be addressed, especially in the case of a poor financial situation;
- 3.2.** The process of measuring and evaluating an institution's financial performance provides insight into its liquidity position, specifically its ability to meet short-term obligations;
- 3.3.** The efficiency of the enterprise in utilizing working capital, ensuring it is neither excessive nor insufficient ;
- 3.4.** The adequacy of the financing structure, which refers to the suitability of long-term liabilities in relation to the institution's circumstances;
- 3.5.** The institution's ability to generate sufficient profits to cover the interest on borrowed funds;
- 3.6.** The capacity of the institution to achieve a financial surplus, enabling it to self-finance the completion of certain projects;
- 3.7.** Identifying errors and deviations, specifically their causes and accountability, to minimize their impact in the future;
- 3.8.** The performance appraisal process is crucial for assessing the extent to which goals and plans have been achieved.

4. Key Principles for Evaluating Financial Performance in Commercial Banks

These can be explored through the following elements:

- 4.1. Setting Goals:** This is the initial step in the performance evaluation process. The institution must define its objectives and thoroughly analyze them to assess their accuracy and feasibility, ensuring they align with both short-term and long-term goals, as well as primary and secondary objectives;
- 4.2. Develop Detailed Plans for Task Completion:** After setting the goals to be achieved, detailed plans are developed for each area of activity. These plans outline the necessary resources, the policies for acquiring them, and the strategies for their effective utilization;

4.3. Determining the Centers of Responsibility: Each department of the bank is assigned a designated official responsible for overseeing and supervising the performance evaluation process. This requires clear delineation of the responsibilities for each center, as well as an understanding of the organizational relationships between them and the extent to which the activities of one center impact those of others;

4.4. Setting Clear Criteria and Indicators of Performance: This involves establishing the criteria by which the financial performance of the institution, or its individual centers of responsibility, can be assessed. It is a challenging task, as multiple criteria must be considered when making comparisons. Key considerations include selecting the most relevant criteria and choosing those that best reflect the performance level. These standards may vary across different units, depending on the nature of each unit's activities.

III. Evaluating the Financial Performance of Commercial Banks Using Modern Financial Indicators

Financial performance indicators are crucial tools that management uses to analyze financial statements, assess the institution's financial soundness, and evaluate its profitability.

1. What Are Financial Indicators?

These are considered among the oldest tools of financial analysis, and have several definitions. *First*, A financial ratio reflects a relationship between two numerical values from the financial statements, with one value in the numerator and the other in the denominator. This relationship constitutes a certain meaning.⁵ *Second*, a financial indicator is ratio between two elements and can include aggregate data, such as inventory or other budget items, as well as more specific data, such as working capital or total surplus. By comparing these elements, the ratio allows financial analysts to assess various aspects of the institution, such as profitability, financial independence, and other key performance indicators.⁶ Therefore, financial performance indicators measure the quantitative relationship between two items from the financial statements, providing meaningful and significant insights into the institution's financial performance.

2. The importance of financial indicators

The importance of financial indicators lies in:⁷

- 2.1.** Providing an opportunity to make comparisons between similar projects;
- 2.2.** Assisting financial analysts in diagnosing the financial condition of a project;
- 2.3.** Directing performance toward areas that exhibit signs of weakness;
- 2.4.** Planning the future performance of the economic unit;
- 2.5.** Assisting internal and external oversight bodies in performing their duties effectively ;
- 2.6.** Measuring the institution's growth and identifying its strengths and weaknesses;
- 2.7.** Providing the necessary data and information for decision-making, policy formulation, and budget preparation;

- 2.8.** Measuring the effectiveness with which a company utilizes its various assets to achieve profitability.⁸

3. Modern Financial Indicators

Performance measurement indicators vary depending on the beneficiaries of the performance reports. Given that the banking performance evaluation process is comprehensive and benefits both the bank's management and all oversight bodies, several modern indicators are used to assess banking performance, including:

3.1. Economic Value Added (EVA)

Due to developments in the banking industry, the return on equity model no longer accurately reflects the financial position of banks. As a result, managers have been compelled to seek new methods for performance evaluation and decision-making, such as the use of the economic value added (EVA) model.⁹

3.1.1. Definition of Economic Value: EVA as a concept, was developed to provide a more accurate reflection of institutional performance compared to traditional performance measures. It is used to assess and evaluate the performance of enterprises, considering the interests of shareholders. Unlike accounting profit, EVA does not ignore the cost of capital; rather, it seeks to determine the cost of capital, thereby reflecting the total costs of the limited resources utilized by the entity during the period. EVA also evaluates whether revenues are sufficient to cover the cost of capital. An enterprise that generates returns greater than those required by investors has achieved economic profit, or in other words, has added economic value. This implies that shareholders receive returns in proportion to the risks associated with their investments. Therefore, if the economic value added exceeds the cost of capital, the company has maximized value for its shareholders.

3.1.2. Advantages of EVA: these include:

- a. It exhibits the strongest correlation with the formation of market value among all measures of profitability. This is because the economic value added is more accurate than the other measures of profitability;
- b. It can serve as a foundation for all decision-making processes and for developing results-based financial strategies;
- c. The accuracy provided by the EVA scale enables management to make informed and informed and sound financial decisions;
- d. It aids in developing appropriate strategies;
- e. Being effective as an incentive program: The use of EVA results in fair and productive employee incentive programs by leveraging performance data as the basis for remuneration, enabling managers to motivate competitive behavior.

3.1.3. EVA Measurement: EVA is measured using the following relationship:ⁱ

$$\text{EVA} = (\text{net operating profit after tax} - \text{cost of capital}) \times \text{amount invested}$$

3.2. Market Value Added (MVA)

3.2.1. Definition of MVA

It serves as a criterion for evaluating the market value of stocks, as it is directly based on future economic value. Specifically, it represents the difference between the company's market value and the capital invested by owners and borrowers. Alternatively, it can be viewed as the difference between the market value of the company's shares and the book value of shareholders' equity.

Based on the previous concept, MVA is conceptually similar to the Market-to-Book Value (MBV) multiplier. The key distinction between them is that MVA is an absolute value, while MBV is a relative ratio. Specifically, when the former is positive, the latter is greater than one, and vice versa. MVA is a crucial tool for assessing a company's ability to create value for shareholders. Thus, a key criterion for evaluating the performance of successful companies is achieving a positive MVA, as it serves as a fundamental measure of management effectiveness and operational performance, reflecting the company's ability to manage resources and maximize shareholder wealth.

3.2.2. How to Calculate MVA?

The value of long-term debt is assumed to be constant and is taken as equal to its book value. Therefore, the market value of the company can be calculated as the difference between the market value of the company's shares and the book value of the owners' equity. This relationship is typically expressed as:¹⁰

$$\text{MVA} = \text{Economic Value Added} / 1 + \text{Weighted Average Cost of Capital}$$

Table 1. Net Operating Profit After Tax (NOPAT)

2017	2016	2015	2014		year
26%	26%	26%	26%		Tax on corporate profits
41364507	43890376	41703276	39896266		Result before tax
30609735.18	32478878.24	30860424.24	29523236.84		NOPAT
2022	2021	2020	2019	2018	Year
26%	26%	26%	26%	26%	Tax on corporate profits
56986454	57944651	28147801	28369379	50036273	Result before tax
42169975.96	42879041.74	20829372.74	20993340.46	37026842.02	NOPAT

Source: Prepared by the researchers based on the BNA's financial statements

The evaluation of financial performance is a critical aspect in determining the success or failure of commercial banks, as it reflects their efficiency and serves as a tangible measure of their strategic goals and plans. In this section, the focus will be on assessing the financial performance of the BNA through the use of modern financial indicators comprising, EVA and MVA.

1. Evaluating the BNA's performance using EVA

To calculate EVA, the method below is considered:

1.1. Net Operating Profit After Tax (NOPAT)

The table above presents the NOPAT of the BNA for the period from 2014 to 2022. It is observed that there is fluctuation in NOPAT, with periods of both increases and decreases throughout the study period. The NOPAT rose from 29.5 million in 2014 to 42.8 million in 2021, before experiencing a slight decrease in 2022, dropping to 42.1 million.

1.2. The weighted Average Cost of Capital (WACC) over the Studied period (2014-2022)

$$WACC = (We \times Re) + (Wd \times Rd \times (1 - Tc))$$

Wherein:

- We: Equity Weight
- Wd: Debt weight
- Re: Cost of equity (rate of return required by shareholders)
- Rd: Cost of debt (interest rate on debt)
- Tc: Corporate tax rate

Table 2: Weighted Average Cost of Capital (WACC)

2022	2021	2020	2019	2018	2017	2016	2015	2014	Year
0.1035	0.1150	0.1742	0.1713	0.1649	0.1417	0.1165	0.0103	0.0374	We
0.8965	0.8850	0.8258	0.8287	0.8351	0.8583	0.8835	0.9897	0.9626	Wd
0.0501	0.0510	0.0556	0.0554	0.0549	0.0530	0.0511	0.0428	0.0449	WACC

Source: Prepared by researchers based on the BNA's annual reports 2014/2022

It can be seen from Table 2 that the WACC from 2014 to 2020 was gradually increasing, rising from 4.49% in 2014 to 5.56% in 2020. This indicates that the cost of capital was on the rise during this period. From 2021 to 2022, a slight decrease in the WACC was observed, from 5.10% in 2021 to 5.01% in 2022. This may reflect an improvement in the capital structure or a decrease in the cost of debt or equity.

1.3. Calculating the investor's capital (CI)

This can be illustrated through the following table:

Table 3: Investor Capital

2022	2021	2020	2019	2018	2017	2016	2015	2014	Year
361536	292897	267183	276533	243438	218744	188358	216585	191933	Long-
417209	380489	559153	571417	480687	361284	248412	224451	720342	Right of
403257	330946	323098	333675	291506	254873	213199	218829	192656	CI

Source: Prepared by researchers based on the BNA's annual reports

It can be seen from the table that the invested capital fluctuated between periods of increase and decrease. It increased from 2014 to 2019, reaching 3,336,754,582 Algerian dinars. However, it decreased in 2020 to 3,230,985,160 DZD, before increasing again in 2021 to reach 4,032,577,659 DZD in 2022.

1.4. Calculating the EVA during the study period from 2014 to 2022

Economic value added = net operating profit after tax - (weighted average cost of capital x invested capital)

Table 4: Economic Value Added (EVA)

2022	2021	2020	2019	2018	2017	2016	2015	2014	Year
4216997 5.96	4287904 1.74	20829372. 74	20993340.46	37026842.02	30609735. 18	3247887 8.24	30860424. 24	2952323 6.84	NO PA T
0.0501	0.0510	0.0556	0.0554	0.0549	0.0530	0.0511	0.0428	0.0449	WA CC
4032577 659	3309464 056	323098516 0	3336754582	2915067704	254873195 0	2131999 487	218829701 0	1926569 407	CI
2020321 40.71	1687826 66.85	179642774 .89	184856203.8 4	160037216.9 4	135082793 .35	1089451 73.78	93659112. 02	8650296 6.37	WA CC* CI
- 1598621 64.75	- 1259036 25.11	- 158813402 .15	- 163862863.3 8	- 123010374.9 2	- 104473004 .17	- 7646629 5.54	- 62798687. 78	- 5697972 9.53	EV A

Source: Prepared by researchers based on previous data

From the results shown above, the values achieved by the bank during the study period are negative from 2014 to 2022, where continuous negative EVA values indicate that the bank did not cover the cost of capital in any of the study years, i.e. it suffers from structural issues in capital management and profitability. This can be further illustrated in the following figure:

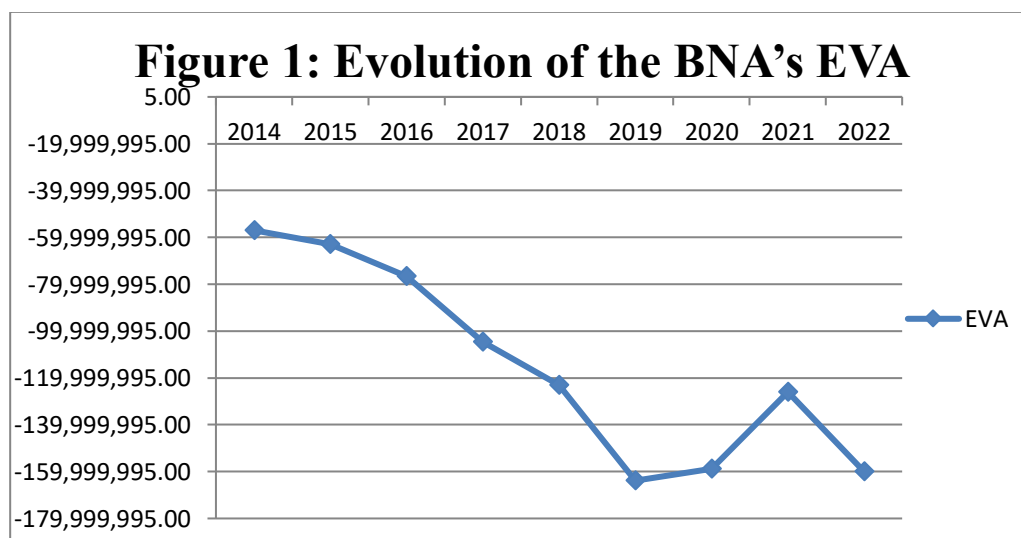


Figure 1: Evolution of the BNA's EVA

Source: Prepared by researchers based on table data

2. Evaluating the performance of the BNA using MVA

MVA is considered one of the most important criteria for assessing the market value of a commercial bank, as it aims to maximize the bank's benefits and is based on economic value added.

2.1. Calculating the MVA

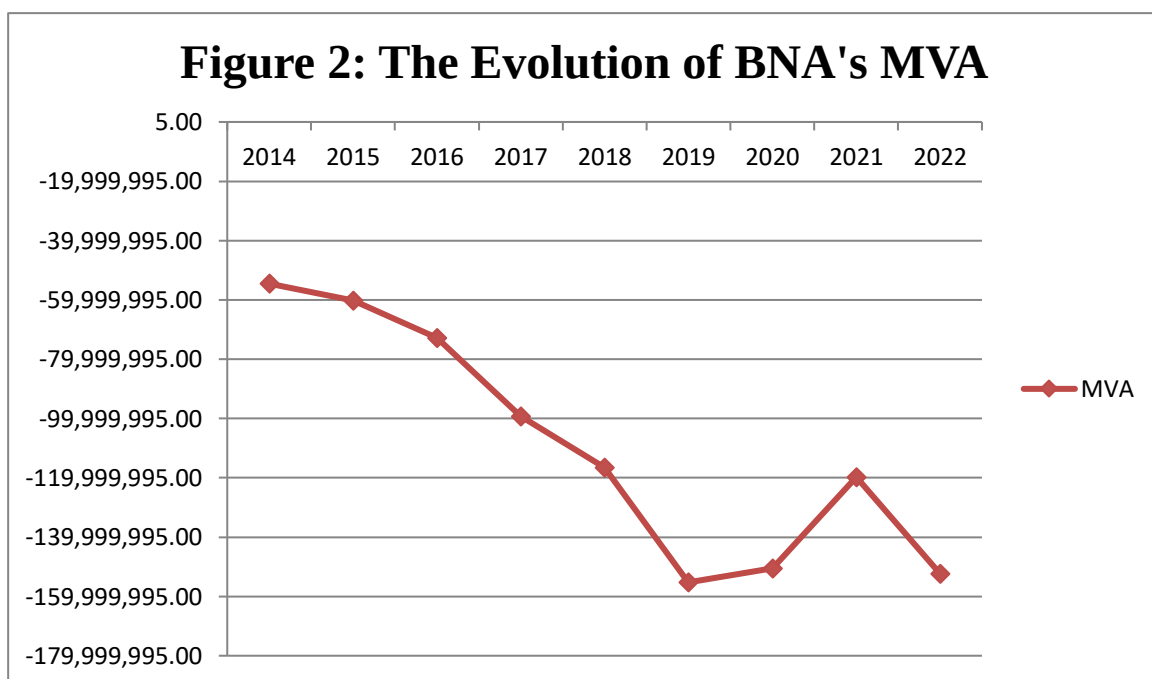
This can be illustrated through the following table:

Table 5. Market Value Added

2022	2021	2020	2019	2018	2017	2016	2015	2014	Year
-159862164.75	-125903625.11	-158813402.15	-163862863.38	-123010374.92	-104473004.17	-76466295.54	-62798687.78	-56979729.53	EVA
0.0501	0.0510	0.0556	0.0554	0.0549	0.0530	0.0511	0.0428	0.0449	WACC
1.0501	1.0510	1.0556	1.0554	1.0549	1.0530	1.0511	1.0428	1.0449	1+wacc
-152235182.12	-119794124.74	-150448467.36	-155261382.77	-116608564.71	-99214628.84	-72748830.31	-60221219.58	-54531275.27	MVA

Source: Prepared by the researchers based on previous findings

From the results of the table above, it is revealed that the values achieved by the bank during the study period were negative from 2014 to 2022, indicating a deterioration in the BNA's market values and a loss of confidence by investors. Additionally, an urgent need for comprehensive restructuring is highlighted.



Source: Prepared by researchers based on table results

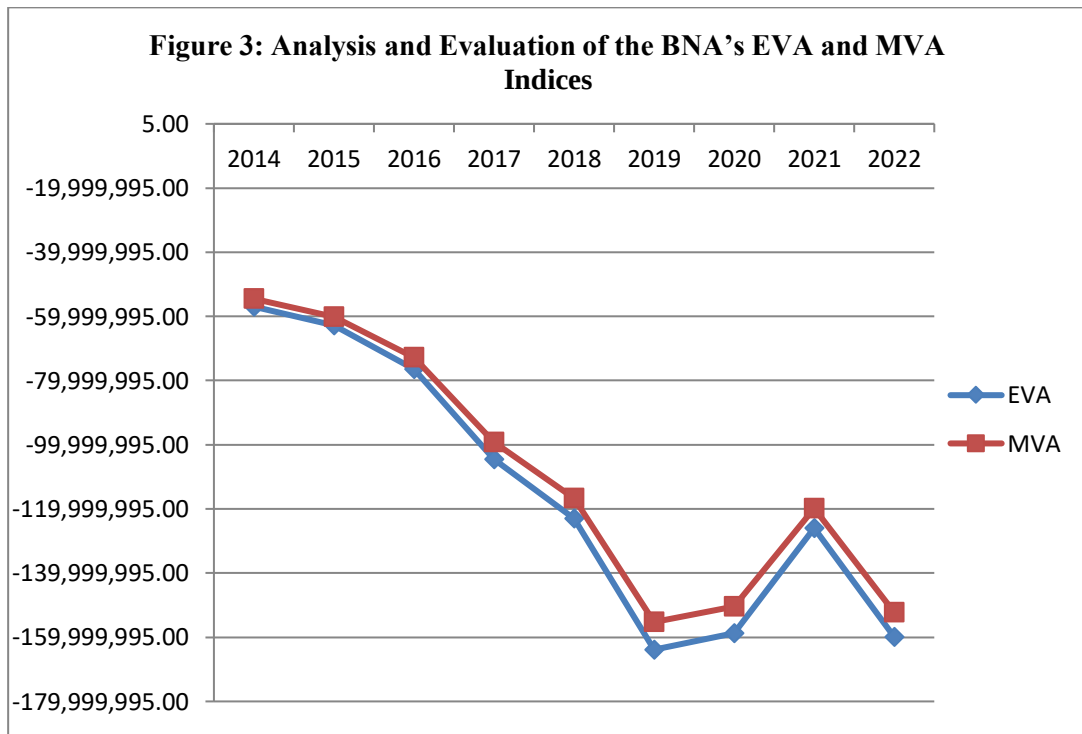
3. Analysis and Evaluation of the BNA's EVA and MVA indicators

In this section, the BNA's financial performance will be analyzed and evaluated using modern indicators, namely EVA and MVA. The results are presented in the following table:

Table 6 Analysis and Evaluation of the BNA's EVA and MVA Indices

2022	2021	2020	2019	2018	2017	2016	2015	2014	Year
-159862164.75	-125903625.11	-158813402.15	-163862863.38	-123010374.92	-104473004.17	-76466295.54	-62798687.78	-56979729.53	EVA
-152235182.12	-119794124.74	-150448467.36	-155261382.77	-116608564.71	-99214628.84	-72748830.31	-60221219.58	-54531275.27	MVA

Source: Prepared by the researchers based on previous findings



Source: Prepared by researchers based on table results

From the results of the table above, the values achieved by the BNA during the study period are negative from 2014 to 2022, where:

In the period (2014-2019), the negative values can be attributed to the following possibilities:

- Accumulation of debt and a high cost of capital;
- Reduced efficiency in asset utilization;
- Increased credit risk.

In 2020-2021, a relative improvement is observed in the decrease of negative values due to:

- A slight improvement in capital adequacy;
- Austerity policies implemented during the COVID-19 pandemic.

In 2022, a further decrease in negative values is observed, where:

- ❖ Radical measures are needed to improve profitability and restore investor confidence.

V. Conclusion

Evaluating the financial performance of commercial banks using modern financial indicators is crucial due to their vital role in supporting the national economy and financing investment and development projects. This study sought to analyze the BNA's financial performance, a representative example of commercial banks in Algeria, through modern financial indicators. The focus was on understanding the challenges and opportunities within the context of ongoing economic reforms and digital transformations in the banking sector. The BNA faces several challenges, including a high volume of doubtful debts, outdated financial technology compared to international standards, and elevated credit risk. Despite these challenges, the bank has demonstrated mixed financial performance, with acceptable solvency but struggles in profitability, credit quality, and operational efficiency. Therefore, assessing financial performance using modern financial indicators is critical for making informed strategic decisions that will enhance the bank's competitiveness in both local and international markets and strengthen its role in driving economic development.

The study reached several key findings:

- ❖ To achieve its financial goals, a bank must optimize its financial performance through constant monitoring of its financial position;
- ❖ The financial performance evaluation process relies on a number of modern financial indicators that assist in analyzing the bank's financial position;
- ❖ The values realized by the National Bank of Algeria during the study period were negative due to the following reasons:
 - Accumulation of debt and high cost of capital;
 - Reduced efficiency in asset utilization;
 - Increased credit risk.

In light of the previous findings, the following recommendations are proposed:

- ❖ Strengthening capital reserves to address potential risks;
- ❖ The bank should regularly analyze its financial statements to evaluate its financial performance, allowing for the identification and correction of weaknesses to prevent recurrence in the future;
- ❖ Improving loan quality by implementing stricter credit policies;
- ❖ Since it is impossible to use all modern financial indicators to measure financial performance, it is necessary to test the indicators that accurately reflect financial performance, rank them in terms of their importance, compare them with planned performance, and link them to the desired goals;
- ❖ Reducing operational costs through automation and digital transformation;
- ❖ Working on studying the elements of equity in detail to ensure that they are utilized as factors that increase the ability of commercial banks to enhance their financial performance and thus achieve profitability;
- ❖ Intensifying accounting and auditing procedures for the preparation of statements and reports;
- ❖ Diversifying revenue sources to minimize reliance on interest;

- ❖ It can also be emphasized that the BNA's adoption of modern financial indicators in a more sophisticated manner, coupled with the integration of international banking experiences, will enable it to enhance its operational efficiency and ensure its financial sustainability in a dynamic economic environment.

Competing Interests

The authors declare no conflict of interest.

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