

## **Analyzing the Risk-Return relationship of The Algerian SMEs**

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### **Abstract:**

This research attempts to investigate, via the behavior of return and risk of the studied institutions, the relationship between the activities of small and medium-sized businesses and their financial performance. To accomplish this, we created a database obtained from the National Center for Commercial Registration (CRNC) for a sample of 30 small and medium enterprises, based on the panel data multiple linear regression model. The study's findings demonstrated a connection between the institution's activity and financial performance, since the outcomes show that the activity ratio and the liquidity ratio have an impact on the return on equity and the return on assets that is both positive and statistically significant. Regarding the debt ratio, the study's findings showed that it and the study's dependent variables had an inverse connection.

**Keywords:** Financial Ratios, Company Performance, Panel Data Analysis.

**Jel Classification Codes:** G17;G30; G32; H32.

### **Introduction:**

Under the increasingly competitive market conditions, a company's ability to sustain its operations is directly tied to its financial performance, as the financial decisions it makes have a significant impact on this performance.

Small and medium-sized businesses must make a variety of financial decisions in order to fulfill their primary objectives. These businesses' financial performance is directly correlated with the decisions they make. Therefore, in order to continue their operations, get a competitive edge, and accomplish their objectives, they must make wise choices to achieve optimal financial performance. Companies' financial success is impacted by the several financial ratios that are considered while making decisions. Businesses can assess the degree of their activities' success or failure by utilizing a variety of financial ratios.

Business performance is correlated with an organization's capacity to maintain operations, expand, and outperform rivals. Measuring and evaluating the financial

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performance of businesses is the sole method for identifying the pertinent traits in a healthful manner. A number of assessments are carried out to assess the company's success. When assessing the values in the current period or the expectations for the period, firms' present periods are taken into account, especially when corporate financial planning is involved. Thus, one of the most crucial duties of business managers is to monitor and evaluate financial performance. At this point, business managers want to know the answer to the issue of how the firm will perform moving ahead and are interested in learning about both the company's history and present financial states.

Given the foregoing, the study's problem may be stated as follows: **To what extent do different financial ratios affect the financial performance of SMEs in Algeria?**

To answer this problem, a number of sub-questions were raised as follows:

- How much do different financial ratios affect the return on assets of SMEs in Algeria?
- How much do different financial ratios affect the return on equity of SMEs in Algeria?

#### **Study Hypotheses**

Based on the main problem, the main hypothesis can be formulated to achieve the study objectives:

- There is a statistically significant correlation between the explanatory factors and the institution's financial performance indicators at a significance level of 5%.

The following formulation of the sub-hypotheses may be made in light of the above:

- Sub-hypothesis 1: "There is a statistically significant correlation between the return on assets rate and Various financial ratios."
- Sub-hypothesis 2: "There is a statistically significant correlation between the return on equity rate and Various financial ratios"

#### **Objectives of the research**

The purpose of the study is to ascertain, via the return and risk behavior of the institutions under investigation, the degree to which certain financial ratios—such as debt, liquidity, and activity ratios—have an influence on the financial performance of small and medium-sized businesses in Algeria.

#### **Method of study**

Using the analytical method, it was possible to explain why there was a link between the independent and dependent variables by looking at the mathematical relationships. Through data collection, processing, and analysis, the statistical analysis technique was also utilized.

#### **Previous studies**

The study conducted by Frank. N centered on assessing how financial management techniques affect SMEs' organizational performance. The study found that there is a positive relationship between financial management practices and organizational

performance. Effective financial resource management contributes to compliance, efficiency, and the enhancement of value and financial status for enterprises.<sup>2</sup>

The study conducted by Lenka. S and Jindřich. Š sought to investigate the connection, in the Indian setting, between risk behavior and the financial success of SMEs. The research employed survey-based investigation and descriptive and statistical procedures for data analysis. The results indicated a positive relationship between risk behavior and financial performance. Additionally, to gauge how much risk management techniques have improved, a basic risk management maturity index was created.<sup>3</sup>

## **1. The theoretical framework of the study:**

### **1.1. The concept of small and medium enterprises**

After several attempts to characterize Algerian small and medium-sized enterprises, their definition was adopted by Law No. 17-02, it included the guiding law for the growth of small and medium firms, which embraced the European Union's definition of them, which was as follows:

- Article 8: An enterprise of moderate size is defined as an enterprise that employs between 50 and 250 people, and its annual turnover is between 400M DA and 4billion DA, or its total yearly revenue is between 200 million Algerian dinars and 1 billion Algerian dinars.
- Article 9: A small enterprise is defined as an enterprise that employs between 10 and 49 people, and whose annual turnover does not exceed 400M DA, or whose total annual revenue does not exceed 200M DA.<sup>4</sup>

### **1.2. Concept of financial analysis**

An essential tool for corporate decision-making in a corporation is financial analysis. It comes before the planning process, which is a crucial step in the management of the business. It also comes before the management process. Various forms of analysis exist. What unites them is the utilization of diverse analytical instruments and methodologies to transform the financial statement data into actionable insights pertinent to management.<sup>5</sup>

Observing the balance positions in basic mathematical formulas is the essence of financial analysis, which is primarily a relative analysis. It should be noted that when comparing financial categories that, in accordance with the income statement categories rule, represent the flows and results attained over a specific time period and the flows and balance sheet positions on a specific day, consistent results cannot be obtained. Financial analysis, to varying degrees of success, solves this problem by taking the balance positions over a number of consecutive periods and, based on

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<sup>2</sup> Otoo, Frank Nana Kweku. (2024). Assessing the influence of financial management practices on organizational performance of small-and medium-scale enterprises. Vilakshan-XIMB Journal of Management.

<sup>3</sup> Syrová, Lenka. Špička, Jindřich. (2023). Exploring the indirect links between enterprise risk management and the financial performance of SMEs. Risk management.

<sup>4</sup> Official Gazette. (2017). Law No. 02-17 includes the guiding law for the development of small and medium enterprises. Issue 02. Page 06.

<sup>5</sup> Alshowishin, Aown. (2021). Financial Analysis. International Journal of Scientific and Research Publications (IJSRP).

their number and system, transforming them into flows that, at the very least, roughly represent the positions they represent. This allows for the comparison of the results (flows) accumulated over time.<sup>6</sup>

### **1.3. Predicting Financial Failure Using Financial Ratios**

The development of accounting disclosure in the world, represented by financial statements and reports prepared by institutions, has been mainly linked to the change in the nature and circumstances of the financial failure process. After World War II, it became clear that an institution that possesses a large amount of assets does not mean at all that it is able to pay its obligations on their due date, which led to the emergence of the income statement that shows the institution's ability to achieve profits.

Making a profit is not a sufficient assurance of an institution's capacity to pay its commitments, as was made evident during the global crisis. The amount of change in the value of net working capital, a key indicator of the institution's liquidity, is displayed in the statement of changes in the financial position (the statement of sources and uses of money), which was revealed. The bankruptcy of many institutions that had profits and positive net working capital, but lacked the cash balance to pay their loans, which gave rise to the cash flow statement, which is regarded as one of the most crucial financial statements used to forecast an institution's failure due to its inability to make payments.<sup>7</sup>

Consequently, given the significance of the subject of foretelling institutional collapse for several groups, many researchers have turned to finding models that help distinguish between successful and failed institutions, based on the various characteristics and features that characterize failed institutions in the year preceding the year of failure, which clearly distinguish them from other successful institutions. Scientific research that has appeared in this field is divided into two main groups:

- The first group: represents research and studies that rely on qualitative, non-quantitative data in building models to predict institutional failure, which are based on describing the manifestations of failure, its stages and causes. An example of researchers in this field is Argenti (1976), who is considered one of the most important pioneers of this approach, as the model he presented represents a different trend from the trends represented by Beaver, Althman and other researchers who followed their methods in analysis;
- The second group: These studies rely on quantitative data in forming models for predicting financial failure. This opinion supports the fact that the predictive ability of accounting data is one of the most important qualitative features that this data must have in order to be considered

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<sup>6</sup> Dusan, Vucicevic. (2012). Theoretical aspects and basic settings of financial analysis. School of Business.

<sup>7</sup> Kenneth S. Bigel. (2022). Introduction to Financial Analysis. Open Touro.

appropriate data for making the appropriate decision, which is the primary goal of preparing accounting data.<sup>8</sup>

Consequently, we see that a resurgence of the application of traditional financial measures in the process of predicting the failure of institutions has been the foundation of several works and research, they were nearly forgotten as a measure of judging the degree of performance of the institution. Two fundamental patterns emerge when financial ratio analysis is combined with suitable statistical techniques to create prediction-useful models:

- The first trend is the development of models that primarily rely on a single financial ratio to forecast an institution's collapse;
- The second trend is a contemporary one that builds models to forecast an institution's demise using a set of financial parameters.

Financial ratios have proven successful in predicting financial failure, which has encouraged many researchers to use them in all studies. This has also helped develop a large number of statistical methods, most notably the discriminant analysis technique and the multiple regression technique using probability theory (logistic regression). Using these methods, many researchers have been able to design models that have successfully predicted bankruptcy before it occurs, sometimes up to five years in advance (Altman et al 1974; Beaver 1966; Zavgren 1983; Zavgren and Friedman 1986), which have proven that a noticeable deterioration in the relevant financial ratios indicates that the institution is approaching the stage of financial failure. These models have clearly contributed to revealing many financial indicators that suggest the emergence of signs of failure, which has become possible in light of successive technological developments, continuous changes in legislation affecting institutions of various types, and the intensification of international competition.<sup>9</sup>

## **2. Applied study of enterprise return and risk behavior**

### **2.1 Study Sample**

The sample for this study consists of 30 small and medium-sized enterprises (SMEs) in Algeria, covering the period from 2018 to 2023. This constitutes a total of 180 observations. The selection criteria include the following considerations:

- The enterprise should not have undergone any mergers or acquisitions during the study period.
- The financial year considered should span from N/1/1 to N/12/31.
- Sufficient financial data and information relevant to the study period must be available.

### **2.2 Study variables**

To elucidate the behavior of returns and risk for enterprises, we used (ROE) and (ROA), two dependent variables linked to profitability. Simultaneously, we considered three fundamental ratios—Activity, Liquidity, and Leverage—as

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<sup>8</sup> Manel, Khalkhal. (2018). The possibility of Algerian institutions adopting a model to predict financial failure, a study of a sample of institutions in the mechanical industry sector for the period 2012-2015, University of Algiers 3, P87-89.

<sup>9</sup> Lakshan, AMI; Wijekoon, Nisansala. (2013). The use of financial ratios in predicting corporate failure in Sri Lanka. GSTF Journal on Business Review (GBR)

independent variables, each exerting an impact on the dependent variables under study.

**Table 1:** Measurement Methods for Study Variables

|                      | Variables              | Formula                                                                | Source                                                                         |
|----------------------|------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Dependent variable   | Return on assets (ROA) | $\frac{\text{Operational result}}{\text{Total assets}}$                | Gestion financière (5e édition) Gérard Melyon, Kévin Melyon<br>Pages : 158-171 |
|                      | Return on equity (ROE) | $\frac{\text{Net Income}}{\text{Shareholder's Equity}}$                |                                                                                |
| Independent variable | Activity Ratio (AC)    | $\frac{\text{Total current assets}}{\text{Sales turnover}}$            |                                                                                |
|                      | Liquidity Ratio (LQ)   | $\frac{\text{Total current assets}}{\text{Total current liabilities}}$ |                                                                                |
|                      | Debt Ratio (DE)        | $\frac{\text{Total debts}}{\text{Total assets}}$                       |                                                                                |

**Source:** Prepared by researchers based on previous studies

### 2.3 Multiple Linear Regression Model for Panel Data

Its purpose is to identify and measure effects that cannot be simply estimated by combining cross-sectional data characteristics. Cross-sectional data describe the behavior of a specific set of cross-sectional units or entities (such as countries or companies) at a single point in time. On the other hand, time series aggregate specific time periods while maintaining the description of behavior for only one individual entity. This aggregation allows for studying differences and variations in behavior across these individual entities. Additionally, it controls for individual heterogeneity. Consequently, we have formulated mathematical models as follows:

$$ROA_{it} = \beta_0 + \beta_1 AC_{it} + \beta_2 LQ_{it} + \beta_3 DE_{it} + \varepsilon_{it}$$

$$ROE_{it} = \beta_0 + \beta_1 AC_{it} + \beta_2 LQ_{it} + \beta_3 DE_{it} + \varepsilon_{it}$$

Where it represents:

**ROA<sub>it</sub>**: return on assets of enterprise i in time period t;

**ROE<sub>it</sub>**: return on equity of enterprise i in period t;

**AC<sub>it</sub>**: activity ratio of enterprise i in time period t;

**LQ<sub>it</sub>**: liquidity ratio of enterprise i in time period t;

**DE<sub>it</sub>**: the leverage ratio of enterprise i in time period t;

**β<sub>t</sub>**: model parameters;

**ε<sub>it</sub>**: remainders.

### 2.4 Descriptive statistics between explanatory variables

**Table 2:** Descriptive statistics among explanatory variables

|               | ROA      | ROE      | AC       | LQ       | DE       |
|---------------|----------|----------|----------|----------|----------|
| <b>Mean</b>   | 0.060423 | 0.186248 | 3.575059 | 4.160628 | 0.677343 |
| <b>Median</b> | 0.033481 | 0.090466 | 1.312720 | 1.523854 | 0.749601 |

|                     |            |            |            |            |            |
|---------------------|------------|------------|------------|------------|------------|
| <b>Maximum</b>      | 0.725279   | 2.600789   | 45.34470   | 148.8384   | 1.104152   |
| <b>Minimum</b>      | -0.098622  | -0.769687  | 0.040367   | 0.225789   | 0.001318   |
| <b>Std. Dev.</b>    | 0.096515   | 0.324945   | 6.310208   | 12.30610   | 0.258928   |
| <b>Skewness</b>     | 3.602070   | 3.776677   | 3.606257   | 9.438417   | -0.933809  |
| <b>Kurtosis</b>     | 20.04064   | 24.42580   | 18.707578  | 108.0036   | 3.174248   |
| <b>Jarque-Bera</b>  | 2567.124   | 3870.866   | 2240.190   | 85365.68   | 26.38767   |
| <b>Probability</b>  | 0.000000   | 0.000000   | 0.000000   | 0.000000   | 0.000002   |
| <b>Sum</b>          | 1087622    | 33.52456   | 643.5106   | 748.9130   | 121.9217   |
| <b>Sum Sq. Dev.</b> | 1667395    | 18.90044   | 7127.552   | 27107.79   | 12.00087   |
| <b>Observation</b>  | <b>180</b> | <b>180</b> | <b>180</b> | <b>180</b> | <b>180</b> |

Source: Prepared by researchers based on the EVIEWS 12 program

## 2.5 The correlation matrix between explanatory variables

The correlation matrix arranges and makes clear the degree and intensity of the relationship between the various explanatory factors as well as the relationship between the dependent and independent variables of the study.

**Table 3:** Correlation matrix between explanatory variables

| <b>Indicators</b> | <b>ROA</b>      | <b>ROE</b>      | <b>AC</b>       | <b>LQ</b>       | <b>DE</b>       |
|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>ROA</b>        | <b>1.000000</b> |                 |                 |                 |                 |
| <b>ROE</b>        | * 0.273033      | <b>1.000000</b> |                 |                 |                 |
| <b>AC</b>         | * 0.205835      | * 0.109674      | <b>1.000000</b> |                 |                 |
| <b>LQ</b>         | * 0.057145      | * 0.044312      | * 0.099779      | <b>1.000000</b> |                 |
| <b>DE</b>         | * -0.310164     | * -0.128334     | * 0.131073      | * -0.269674     | <b>1.000000</b> |

Source: Prepared by researchers based on the EVIEWS 12 program

\*Significant at 1%, \* \*Significant at 5%, \* \* \*Significant at 10%

Table 3's data allowed us to determine the correlation coefficient between the first model's variables, which were (AC) and (ROA), is weak and direct, amounting to 20.58%. Furthermore, we discovered that there is a 5.71% link between (LQ) and (ROA). On the other hand, we discovered that there is a (-31.01%) link between (DE) and (ROA). As for the variables related to the second model, the correlation coefficient between (AC) and (ROE) was found to be 10.96%. while 04.43% was achieved between (ROE) and (LQ). In addition, we found that the correlation coefficient between (ROE) and (DE) equals (-12.83%), therefore, the same degree of strength and the same type of association documents were maintained between the variables in the two models. The estimated association between the study's explanatory variables was (-26.96%) between (LQ) and (DE), 13.10% between (AC) and (DE), and 09.97% between (AC) and (LQ).

## 2.6 Estimation of the First Model (Effect of Independent Variables on Return on Assets, ROA)

**Table 5:** Characteristic results for study model parameters

| <b>Dependent variable: represents return on assets (ROA)</b> |             |            |                           |
|--------------------------------------------------------------|-------------|------------|---------------------------|
| <b>Total panel views : 6*30=180</b>                          | <b>N=30</b> | <b>T=6</b> | <b>Period : 2018-2023</b> |

| Explanatory variables    | Pooled Regression Model   | Fixed Regression Model    | Random Regression Model   |
|--------------------------|---------------------------|---------------------------|---------------------------|
| C                        | 1.548971<br>(7.647713)*   | 1.650370<br>(5.749808)*   | 1.871327<br>(4.992649)**  |
| AC                       | -0.272300<br>(2.110505)*  | 0.381879<br>(1.452639)*   | 0.370949<br>(1.199993)*   |
| LQ                       | -0.151011<br>(1.757894)*  | -0.130321<br>(5.749808)*  | 0.131089<br>(0.217402)*   |
| DE                       | -0.121089<br>(-4.415230)* | -0.143346<br>(-3.925373)* | -0.178475<br>(-3.438248)* |
| R-squared                | 0.801380                  | 0.739860                  | 0.720703                  |
| Adjusted R-squared       | 0.794405                  | 0.780823                  | 0.738135                  |
| Fisher statistic (F)     | 9.477452                  | 5.547900                  | 7.517480                  |
| Fisher's probability (F) | 0.000008                  | 0.000000                  | 0.000000                  |

**Source:** Prepared by researchers based on the EVIEWS 12 program

\* M-S-L at 1%, \*\* M-S-L at 5%, \*\*\* M-S-L at 10%

### 1.6.1. Lagrange Test Multiple Breusch Pagan

By adopting the probability value of the Lagrange multiplier (LM) statistic for testing heterogeneity, which is based on the application of the clustering regression model, the test was proposed by Breusch and Pagan (1980) to help choose between the random effects model and clustering regression, and the hypotheses of the (LM) test are as follows:<sup>10</sup>

- H0: The proper model is p.r.m;
- H1: The proper model is the f.e.m or r.e.m.

**Table 6:** Breusch-pagan test results for the first model

| P-Value | Test value | Test type     |
|---------|------------|---------------|
| 0.0000  | 94.90242   | Breusch-pagan |

**Source:** Prepared by researchers based on the EVIEWS 12 program

The results of the test (Table 6) at level-01 showed that the P. statistic, which was estimated at 0.0000, is smaller than the 5% s-level. Therefore, we reject the null hypothesis and accept the alternative hypothesis. Therefore, the fixed or random

<sup>10</sup> Erdogan, Eda Oruç; Erdogan, Murat; Ömürbek, Vesile. (2015) Evaluating the effects of various financial ratios on company financial performance: Application in Borsa Istanbul. Business and Economics Research Journal

effects model is the appropriate model for estimating the effect of independent variables on ROA.<sup>11</sup>

### 1.6.2. Hausman Test

**Table 7:** Hausman test results for the first model

| Chi-Sq. Statistic | Chi-Sq. d.f | Prob   |
|-------------------|-------------|--------|
| 3.295745          | 3           | 0.3482 |

**Source:** Prepared by researchers based on the EVIEWS 12 program

According to the HAUSMAN test for the first model, through (Table No. 7), the probability associated with the Chi-Sq. Statistic appears with a value of 0.3482, which is greater than the 5% s-level, which makes us accept H0 and reject H1. Therefore, the random effects model (r-e-m) is the appropriate model to explain the relationship. On this basis, we rely on the results of (r-e-m) in analyzing this standard model. The proposed model can be formulated as follows:

$$ROA_{it} = 1.871327 + 0.370949AC_{it} + 0.13108LQ_{it} - 0.178475DE_{it} + \epsilon_{it}$$

## 2.7 Estimation of the Second Model (Effect of Independent Variables on Return on Equity, ROE)

**Table 8:** Characteristic results for study model parameters

| Dependent variable: represents return on assets (ROA) |                           |                           |                           |
|-------------------------------------------------------|---------------------------|---------------------------|---------------------------|
| Total panel views : 6*30=180                          |                           | N=30                      | T=6                       |
| Explanatory variables                                 | Pooled Regression Model   | Fixed Regression Model    | Random Regression Model   |
| C                                                     | 1.068096<br>(4.428822)*   | 1.051897<br>(0.538264)*   | 1.301870<br>(4.984224)*   |
| AC                                                    | 0.612746<br>(3.3112859)*  | 0.473065<br>(0.996962)*   | 0.384699<br>(-1.840337)*  |
| LQ                                                    | 0.137708<br>(0.274475)*   | 0.218593<br>(0.145639)*   | 0.135090<br>(-0.031669)*  |
| DE                                                    | -0.057613<br>(-0.274475)* | -0.175002<br>(-1.376593)* | -0.103417<br>(-2.785313)* |
| R-squared                                             | 0.844289                  | 0.817218                  | 0.807315                  |
| Adjusted R-squared                                    | 0.829703                  | 0.790466                  | 0.817139                  |

<sup>11</sup> Karaca, Suleyman Serdar; Savsar, Arif. (2012). The effect of financial ratios on the firm value: Evidence from Turkey. Journal of Applied Economic Sciences.

|                          |          |          |          |
|--------------------------|----------|----------|----------|
| Fisher statistic (F)     | 9.892327 | 1.027815 | 44.96945 |
| Fisher's probability (F) | 0.000005 | 0.003816 | 0.000000 |

**Source:** Prepared by researchers based on the EVIEWS 12 program

\*M-S-L at 1%, \*\* M-S-L at 5%, \*\*\* M-S-L at 10%

After the estimation process and ensuring that there is a difference in the parameters of each of the three models, we move to the process of comparing them.

#### 1.7.1. Lagrange Test

**Table 9:** Breusch-pagan test results for the first model

| P-Value | Test value | Test type |
|---------|------------|-----------|
| 0.0000  | 22.67556   | LM        |

**Source:** Prepared by researchers based on the EVIEWS 12 program

The test's outcomes (Table 9) at the 2nd model level showed that the P-statistic, which was estimated at 0.0000, is smaller than the 5% s-level. Therefore, we reject H0 and accept H1. Therefore, the (F-E-M) or (R-E-M) is the appropriate model for estimating the effect of the independent variables on ROE.

#### 1.7.2. Hausman Test

**Table 10:** Breusch-pagan test results for the first model

| Chi-Sq. Statistic | Chi-Sq. d.f | Prob   |
|-------------------|-------------|--------|
| 0.603153          | 3           | 0.8957 |

**Source:** Prepared by researchers based on the EVIEWS 12 program

According to the HAUSMAN test for the second model, through (Table No. 10), the probability associated with the Chi-Sq. Statistic appears with a value of 0.8957, which is greater than the 5% significance level, which makes us accept H0 and reject H1. Therefore, the (R-E-M) is the appropriate model to explain the relationship. On this basis, we rely on the results of the (R-E-M) in analyzing this standard model. The proposed model can be formulated as follows:

$$ROE_{it} = 0.130187 + 0.384699AC_{it} + 0.135090LQ_{it} - 0.13417DE_{it} + \epsilon_{it}$$

## 2. Examination of standard model outcomes

### 2.1 Examination of the first model's outcomes

Based on the (R-E) model, which is considered the appropriate model for estimating the connection between the different financial ratios that were chosen and ROA, and based on Table No. (05), the results will be analyzed as follows:

- The adj R<sup>2</sup> was (0.738135), indicating that the model's explanatory variables, represented by each of (AC-ratio), (DE-ratio) and (LQ-ratio), explain 73.81% of the changes in the rate of (ROA-ratio), while 26.19% is due to other factors. It also indicates a Fisher's S-probability is lower than the significance thresholds and so how the independent factors' combined impact on the variable that is dependent, which attests to the explanatory model's validity.

- The (AC-ratio) had statistical significance at the 1% level and a positive sign, and thus there was a direct relationship between (AC-ratio) variable and (ROA-ratio), such that an increase in (AC-ratio) by one unit leads to an increase in (ROA-ratio) by 0.370949 units. This direct relationship arises when the value of the company's sales increases, so the value of the operating result increases directly, and this is likely to raise the value of the return on the company's assets.
- The (LQ-ratio) signal was positive and statistically significant at the 1% level, meaning that there is a direct relationship between (LQ-ratio) variable and (ROA-ratio). Whenever the (LQ-ratio) increases by one unit, it leads to an increase in the return on assets ratio by 0.13108 units. This direct relationship is explained by the increase in the liquidity ratio, which would make an institution more effective in using its assets to achieve cash profits, and thus the value of the return on assets would increase.
- The (DE-ratio) had statistical significance at the 1% level and a negative sign, and thus there is an inverse relationship between (DE-ratio) variable and the return on assets ratio, such that an increase in the debt ratio by one unit leads to a decline or decrease in the return on assets ratio by 0.178475 units. This inverse relationship arises as a result of the increase in the (DE-Ratio) on the institution. This increase leads to pressure on profits due to the increase in debt, which negatively affects the return on assets.

## 2.2 Examination of the second model's outcomes

Based on the (R-E) model, which is considered the appropriate model for estimating the connection between the different financial ratios that were chosen and ROA, and based on Table No. (08), the results will be analyzed as follows:

- The adj  $R^2$  was (0.817139), indicating that the model's explanatory variables, represented by each of (AC-ratio), (DE-ratio) and (LQ-ratio), explain 81.71% of the changes in the rate of (ROE-ratio), while 18.29% is due to other factors. It also indicates a Fisher S-probability is lower than the significance thresholds and thus, how the independent factors collectively affect the dependent variable, which attests to the explanatory model's validity.
- The (AC-ratio) had statistical significance at the 1% level and a positive sign, and thus there was a direct relationship between (AC-ratio) variable and (ROE-ratio), such that an increase in the (AC-ratio) by one unit leads to an increase in the (ROE-ratio) by 0.384699 units. This direct relationship arises when the institution is active in achieving profits from its assets, and then the (ROE-ratio) increases as a result of the increase in the net result.
- The (LQ-ratio) signal was positive and statistically significant at the 1% level, meaning that there is a direct relationship between (LQ-ratio) variable and the (ROE-ratio). Whenever the (LQ-ratio) increases by one unit, it leads

to an increase in the (ROE-ratio) by 0.135090 units. This direct relationship is explained when the institution is able to convert its assets into cash and use them effectively, then the net result increases, and then the return on equity ratio.

- The (DE-ratio) had statistical significance at the 1% level and a negative sign, and thus there is an inverse relationship between (DE-ratio) variable and (ROE-ratio), such that an increase in the (DE-ratio) by one unit leads to a decline or decrease in (ROE-ratio) by 0.103417 units. This inverse relationship arises when the debt ratio is high, then debt increases over equity, which leads to a decrease in the return on equity ratio.

### **Conclusion:**

This study looked at the impact of several financial parameters on the financial performance of SMEs for a sample of thirty SMEs in Algeria between 2018 and 2023 in an effort to address the relevant question. The findings and conclusions can be summed up as follows:

- There is a statistically significant direct relationship at the 5% level between the (AC-ratio) and (ROA-ratio). This direct relationship arises when the value of the company's sales increases, so the value of the operating result increases directly, which increases the value of the return on the company's assets.
- There is a statistically significant direct relationship at the 5% level between the (LQ-ratio) and (ROA-ratio). This direct relationship is explained by the increase in the (LQ-ratio), which will make an institution more effective in using its assets to achieve cash profits, and thus the value of the return on assets will increase.
- The relationship between (DE-ratio) and (ROA-ratio) is significant at the 5% level and has a negative impact. This inverse relationship arises as a result of the high debt ratio of the institution. This increase leads to pressure on profits due to the high debt, which negatively affects the return on assets.
- There is a statistically significant direct relationship at the 5% level between (AC-ratio) and (ROE-ratio). This direct relationship arises when the institution is active in generating profits from its assets, and the return on equity ratio then increases as a result of the increase in the net result.
- There is a statistically significant direct relationship at the 5% level between (LQ-ratio) and (ROE-ratio). This direct relationship is explained when the institution is able to convert its assets into cash and use them effectively, then the net result increases, and then (ROE-ratio).
- The relationship between (DE-ratio) and (ROE-ratio) is significant at the 5% level and has a negative impact. This inverse relationship arises when the debt ratio is high, then debt exceeds equity, leading to a decrease in the (ROE-ratio).

The study's findings allow for the following recommendation to be made:

- To validate and bolster the findings of the present investigation, we propose conducting the study again with a larger sample size and in other industries.

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