Indicators of The Organization's Financial Situation Assessment Using the Factor Analysis

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Summary: this study aims to determine the financial ratios used to demonstrate the real financial situation of the organization through an empirical study of a sample of US industrial companies during the period 2011-2017. In this study, we used both types of the factor analysis; the exploratory analysis to extract and label factors to be relied upon in assessing the company's financial situation, then the confirmatory analysis to confirm the exploratory analysis results through the tests provided by the analyses.

The main findings of the study, according to the sample of the study, the financial situation assessment is done through four sets: indebtedness, liquidity, profitability and efficiency, by identifying the level of dependence on external sources in funding, and the efficiency in using these sources for costs control and generating profits with well thought out liquidity ratios.

Key words: situation, ratios, financial, analysis, Factor.
Jel Classification Codes : C52 ; G33

I- Introduction :

The intense competition that the business environment witnesses has led organizations to change the concept of power, which has become linked to the extent to which the company is able to produce or obtain information credibly, at the right time and place, and therefore, using it in seizing opportunities and avoiding threats. This has increased the importance of information. Nowadays each organization has its own information system designed to collect and process data in order to obtain outputs that support the decision-making process.

The type of information that we need is related to the targeted decision. The financial information produced by the financial and accounting system is one of the most important information needed and used by those who are interested in the organization's status and performance especially in its financial side, so that they use its outputs by following several methods for assessing its financial situation, maybe the most prominent are the financial indicators. On the other hand, plentiful and diversity of outputs often require a double effort and time, with the possibility of inconsistencies in the results. This is what led those interested in this aspect to look for the most important indicators that credibly reflect the financial situation.

The results of previous studies differed on reliable simplified financial indicators in assessing the organizational financial situation. Given the role that factor analysis plays in reducing the number of variables reflecting a particular phenomenon, we have chosen to use it in the current study in order to search for the most important financial indicators which reflect the real financial situation of the organization with the lowest costs and in due course.

I.1. The problem of the study:

The financial analysis topic has gained a great importance for many economists, it became one of the most important pillars that help organizations identify their strengths and weaknesses, and measure their efficiency and ability to continue and expand their activities, hence making good strategic decisions that help them achieve their goals and correct imbalances that they could experience

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before turning into crises. In addition to the expansion of the circle of people using organization's financial information and their interest in its financial situations to make different decisions related to the organization's situation. All this is done through a set of financial indicators calculated using published financial lists and reports.

Researchers in the financial analysis field have presented several types of indicators, foremost the financial indicators, that can help assess the organization's financial situation, despite their multiplicity and sometimes their contradictory results which are difficult to analyze and use to make the right decision, along with the need for a considerable time to calculate and analyze them.

The factor analysis is one of the models used in determining the number of variables related to a phenomenon. In this study, we seek to use the factor analysis to identify the most important indicators that could help assess the organization's financial situation, at any point in time, accurately and in a timely manner through answering the following question: what are the most significant financial indicators that reflect the organization's financial situation?

I.2. The study Hypothesis:

As a preliminary answer to the problem posed, we raise the following hypothesis that we will prove (test) in the current study : there is a limited number of financial indicators summed up in interrelated factors reflecting the real organization's financial situation and can be determined by the factor analysis.

I.3. The study purpose:

We aim in this study to use both types of the factor analysis (exploratory and confirmatory) in order to determine a set of factors, interpreted by indicators selected among a combination of indicators, that help us assess the financial situation of the organization.

I.4. Study Methodology:

We used the analytical approach which is appropriate for the study. It offers the possibility of collecting data from primary sources. Then, tabulating and analyzing data through exploratory and confirmatory analyses by using the SPSS program and IBM AMOS.

I.5. Previous studies:

I-5-1. Mchal Kubenka[1], The success of Business failure prediction using financial creditworthy models: the study tested two models for assessing the organization's financial situation, "Kralicek's Q-test" based on measuring the financial stability indicators through the return on assets ratio, share dividend ratio) and the revenue status indicator, through the incomes' cash-flow ratio and the debt payment from cash flows. The financial situation is the mean of the total previous ratios. The financial situation will be good if results were equal to 01 or 02, and bad if they were equal to 03 or 04. « Bai » Model based on four indicators (stability indicator (S), Liquidity indicator (L), activity indicator (A) and profitability indicator (R), given the financial situation (T) is as follows :

$$T = \frac{(2*S)+(4*L)+(1*A)+5*R)}{12}$$

The situation is good if T >01 and bad in case of the opposite. The study found that the models used were significantly able to assess the financial situation of the studied organizations, particularly those which had gone bankrupt later and recommended the first model. Although the ease of use of these models, their use in forecasting is not absolute.

I.5.2. Konstantin Didenko, and others[2], assessment of enterprises insolvency: challenges and opportunities: The study used Kralicek's Q-test to identify the financial situation (bankruptcy) for a number of companies. It concluded that indicators used in the model affect the organizations' financial situation. Hence, they could be used in assessing the financial situation of any organization and at any point in time. However, it is necessary to explain each indicator individually to determine their impact on the organizational performance.

I-5-3. Weiying Guo[3], Financial Ratios as Predictors of Failure: Evidence from Hong Kong using Logit Regression**.** The study used the following financial ratios: Total Debt to Total Assets, Equity to Total Capital, Retained Earnings to Total Assets, Return on Equity, Cash-Flow to Total Debt, Net Income to Total Assets, Sales to Total Assets, Working Capital to Total Assets, Current Assets to Current Liabilities in order to identify the organization's financial situation and forecasting their financial

failure by using the logistic regression. The study found that the level of debt and the return on equity increase the corporate failure, while it decreases with the organization's size and profitability.

However, the models in this study will only be viewed as a static and myopic way in predicting bankruptcies in short term.

I.6. Theoretical background:

The assessment process is a pre-decision making stage. Therefore, the financial analyst, before making any decision, assesses and analyses the financial situation in order to be able to judge the organization's financial situation, level of activity and the extent to which it is effective in achieving goals, and thus identify strengths and detect imbalances affecting the stability and continuity of the organization's activities.

I.6.1. The financial situation assessment concept: the financial situation is the description of the current situation of the organization and the accurate identification of are of reaching its goals through sales, revenue, assets, liabilities and net wealth[4]. It is also defined as the extent to which activities contribute to the value creation or the effectiveness in using the available financial resources to achieve the financial goals at the lowest financial costs[5].

Assessing the financial situation of the organization means « measuring the relationship between its financial situation's components in order to obtain the balance degree between these elements, and therefore determining how strength the organization's financial situation is[6]. It is also known as the « analysis and assessment of results achieved or expected based on known criteria within a specified period of time, in order to diagnose the causes of deviations and imbalances to make the necessary decisions that serve all parties[7].

From what said above, it can be said that assessing the organization's financial situation is « a process of analyzing current and past situations of the organization using a set of financial indicators that measure the relationship between the components of its financial statements, in order to judge the managerial efficiency in exploiting its material and financial resources, as well as determining strengths and weaknesses to make the necessary decisions».

I-6.2. Types of financial analysis: several techniques of financial analysis exist[8]:

a. **Trend analysis (Horizontal analysis):** in this type, we compare the firm's performance with its own history in order to identify how financial statement items have changed over time. for the purpose of trend analysis, a five-year time frame is necessary and a base year is chosen and all the financial statement items are then expressed as an index relative to the base year;
b. **Common size analysis:** in this type, the benchmarking element is the other firms' performance, usually in the same industry. In the external benchmarking the size effect needs to be eliminated and this is done by expressing items of the profit and loss account as percentage of sales and items of the balance sheet in percentages of total assets;
c. **Segmental analysis:** segmental reporting informs the user of the group accounts on the breakdown of the total revenue over different business segments. For an evaluation of the operational costs breakdown in the common size analysis in a more meaningful way, the segmental data included in the accounts also need to be considered.
d. **Ratio analysis:** A ratio analysis is a quantitative analysis of information contained in a company's financial statements. Ratio analysis is used to evaluate various aspects of a company's operational and financial performance such as efficiency, liquidity, profitability and solvency.
e. **Cash flow analysis:** A cash flow statement is a listing of cash flows that occurred during the past accounting period. Cash flow information helps the external user get an idea of whether or not a company is able to generate a positive net cash flow.

I-6.3. assessing the organization's financial situation using financial ratios: the financial situation assessment using financial ratios is one of the oldest and most important tools. These ratios represent an effective tool since they examine the relationship between two variables (the numerator and the denominator) in order to obtain results that help the financial analyst judges the organization's financial situation, profitability and independence… these ratios can be classified into three groups:

a. **Solvency ratios:** these ratios measure whether the organization's assets cover all its debts as well as their ability to fulfill its short and long-term obligations[9]. Solvency ratios include 18 ratios that can be divided into two groups:

* **Liquidity ratios:** liquidity reflects the organization's solvency in the short term, and it means the ability to pay its debts on due dates.

* **Debt ratios:** these ratios are the most controlling tools, they help assessing the financial structure of the organization on a given date, in terms of its degree of dependence on internal and external funding sources.

b. **Profitability ratios:** they measure the organization's ability to generate profits from its sales or invested funds[10] and they consist of 12 ratios.

c. **Efficiency ratios:** these ratios measure the organization's efficiency in using its assets and liabilities and converting them into liquidity (solvency) in order to fulfill its long and short-term obligations[11]. Thus, they are the complementary ratios of liquidity ratios. They are used to determine the managerial efficiency in operating its financial resources and converting them into sales and hence into liquidity. Efficiency ratios consist of 36 ratios that can be classified into two main groups, each group contains two indicators through which the organization's financial situation is assessed.

Depending on the calculated value of indicators, a point (from 4 (good) to 0 (insolvency)) is granted to each one in order to conduct insolvency assessment. The obtained assessment shows the weak sides of the organization and enables to conclude which indicator groups negatively affect the total solvency level. The fewer points the better the financial situation and the more stable is the situation of the analyzed organization in the future (Table 1)[12].

I-6.4. Assessing the organization's financial situation using other indicators: Despite the importance of financial indicators in assessing a financial situation of an organization, they are not sufficient, especially with the development of organization concept, accordingly other non-financial indicators appeared alongside them. And the result was the balanced scorecard, which aims at providing information about the organization's activity through four aspects : the financial aspect, customer satisfaction, internal operations and learning and prosperity.[13] It can be illustrated the following table :

Table (1) : non-financial ratios

Chen et Al (2009)	Prido Revila (2006)	Abdel-Maksoud (2005)
- Customer loyalty. - Attracting new customer. - Competitive advantage. - Reputation. - Percevied image	- Customer satisfaction. - Growth customer's number. - Products and services quality. - Employee satisfaction. - Organizational reputation.	- Customer satisfaction. - On-time delivery. - Efficiency and utilization. - Product quality. - Employee morale (staff turnover, lateness, absenteeism).

Source: Inta Kotan and Irina Kuzmina- Merlino (2011), **non-financial indicators for evaluation of business activity**, European integration studies, N°5, P.215.

These indicators aim mainly to focus on the intangible elements generated internally because of their considerable weight and value to predict the future situation of the organization.

Customers satisfaction and its payoff the so called loyalty, indicators customer trust toward the organization, and when there is customer satisfaction followed by an increase in their desire to obtain the product, this will have a positive impact on the financial position of the organization, because with increased satisfaction, costs decrease and profits rise. In order to build customer loyalty, a set of characteristics should exist (refer to the above table), namely: product and service quality delivered to customers, organization's reputation and market share, the efficient distribution and marketing the products and services. Therefore, customer loyalty can be considered as the main pillar of the organization's success, without omitting employees' satisfaction, as with satisfaction comes better morals, better productivity and organization profitability.[14]

II– Methods and Materials:

II.1. introducing the study:

Recently, accounting systems' outputs have gained more attention, to be used in assessing organizations' financial situations. Different models may be used, the most important of which is the analysis using financial ratios. However, the abundance and complexity of the financial ratios may require a considerable effort and time, as well as the possible conflict between its results which complicates the decision-making process based on its outputs. We seek in this study to determine the

most appropriate financial ratios to assess the organization's financial situation through the appropriate factor analysis.

In this study, we used a group of financial ratios calculated based on the financial statements of the studied organizations. We initially divided the financial ratios used in the study into three groups, with the exclusion of some ratios that yield similar results[15], as shown in the (Table 2).

II.2. Sample of the study:

In this study, we relied on financial statements and reports of US organizations for the period 2011-2017. A sample of 15 organizations in the industrial machinery business was selected, this gives us 102 observations per ratio (after excluding 03 outlier observations), with a total of 2.754 observations. These organizations have been selected for their financial statements and reports which provide data needed in calculating the financial ratios. We utilized the website https://www.sec.gov/edgar/searchedgar/companysearch.html to access database that we used as inputs for the exploratory factor analysis(EFA) in the first stage, and then for the confirmatory factor analysis (CFA).

II.3. Study Model (Factor Analysis):

The factor analysis is defined as: «A mathematical process aimed to simplify correlations between the various variables involved in the analysis down to common factors that describe the relationship between these variables and interpreting them»[16]. Therefore, the factor analysis is a statistical method which aims to reduce the number of variables associated with a particular phenomenon, and merge them with each other in order to find factors that explain the relationship between these variables. Two types of factor analysis can be distinguished : the exploratory and the confirmatory.

II.3.1. the exploratory factor analysis

To conduct the factor analysis, we should start by an exploratory analysis in order to discover the factors' structure (number and nature of factors, or the types of loaded paragraphs with each factor), through conducting a series of tests to reach this structure which helps us extract explanatory factors for each set of variables[17] by conducting a series of tests to define eventually a set of variables , each one of them contains a set of influential indicators.

The exploratory analysis is based on the following tests[18]:

a. **Test of the sample size sufficiency of factor analysis:** through conducting two tests:

- **KMO-test**: it estimates the overall level of assignment efficiency. The sample size is sufficient if KMO-test > 0.5, it is calculated as follows:

$$KMO_j = \frac{\sum_{i \neq j} r_{ij}^2}{\sum_{i \neq j} r_{ij}^2 + \sum_{i \neq j} u_{ij}^2}$$

Where:

r_{ij}: is the correlation matrix;

u_{ij} is the partial covariance matrix.

- **Measures of Sampling Adequacy** (**MSA**): indicates the proportion of variance in each variable that might be caused by underlying factors. MSA value should not be less than 0.5 for each variable, it is calculated as follows:

$$MSA_j = \frac{\sum_{k \neq j} R_{jk}^2}{\sum_{K \neq j} R_{jk}^2 + \sum_{K \neq j} U_{jk}^2}$$

Where:

R_{jk} is the correlation between a given variable and other variables;

U_{jk} is the partial covariance matrix.

b. **Correlation matrix testability for factor analysis**: through checking the availability of the following conditions:

- **The correlation matrix** : measures the correlation degree between two or more variables, it is based on the stability of $\hat{\alpha}$ in the linear regression equation. Correlation coefficients must be between [0.9-0.3].The correlation matrix is presented as follows:

$$p(x_i y_i) = \frac{cov(x_i, y_t)}{\delta_{xt}\delta_{yt}}$$

- **The determinant**: the absolute value of the correlation matrix should be greater than 0.00001, otherwise it indicates the existence of correlations between non-real variables.
- **The Bartlett test**: the correlation matrix is different from the unit matrix, this condition is met if the test was statistically significant. This test is presented in the following equation:

$$x^2 = -\left[(n-1) - \frac{1}{6}(2p + 1 + \frac{2}{p})\right]\left[\ln|S| + pln(\frac{1}{p})\sum I_j\right]$$

Where:

P: number of variables;

S: number of components;

I_j: j^{th} eigenvalue of S;

df: (p-1)(p-2)/2

c. **Factors extraction**: when the above condition is met, the next step is extracting factors from the model. In our study, we used the ACP method, as it assumes the absence of measurement errors in its data and this is what we calculate in our data. Factors extraction is considered the most accurate and used method. One of its features is that it leads to accurate loadings, and each factor extracts the maximum amount of variation, in addition it leads to as few residues as possible. Also, the correlation matrix is reduced to the lowest number of orthogonal unrelated factors.

To extract factors, we used (Kaise rule: Eigenvalue > 1). To obtain the simple structure to manage the steering mechanism, we rely on Orthogonal relationship through the Varimax method, Oblimin direct, since the number of study variables is 27 (less than 30) and most communalities after extraction were greater than (0.7).

II.3.2. the confirmatory factor analysis (CFA):

To confirm the validity of factors extracted in the EFA, and their correlation level to reflect the financial situation at any point of time, we move on to the CFA, which is a kind of structural equation modeling that identifies measurement models and measures the relationship between variables[19].

The CFA seeks to validate results obtained from the EFA by verifying that variables are loaded by factors. It also seeks to develop the model reached by deleting a variable from a factor or moving it from factor to another in order to test its suitability and the whole model suitability[20].

The CFA of the model depends on several tests with specific thresholds to estimate the conformity quality. In the case of non-conformance, we make the necessary improvements to reach the required thresholds; otherwise, the model will be rejected. Some of the most important tests we do in this model are[21]:

a. Estimation: The objective of CFA is to obtain estimates for each parameter of the measurement model that produce a predicted variance–covariance matrix that resembles the sample variance–covariance matrix as closely as possible. The goal of the analysis is to find a set of factor loadings, which yield a predicted covariance matrix (ϵ) that best reproduces the input matrix (S). This process entails a fitting function, a mathematical operation to minimize the difference between Σ and S. By far, the fitting function most widely used in applied CFA research is maximum likelihood (ML) (Chi-Square). The fitting function that is minimized in ML is:

$$F_{ML} = \ln|S| - \ln|\varepsilon| + trace[(S) + (\varepsilon^{-1})] - p$$

Where:

$|\boldsymbol{S}|$: is the determinant of the input variance–covariance matrix;

$|\epsilon|$: is the determinant of the predicted variance–covariance matrix;

P: is the order of the input matrix.

Chi-square should be statistically significant $p<0.05$.

b. CMIN/DF: is the minimum discrepancy, divided by its degrees of freedom. however, χ to degrees of freedom ratios in the range of 2 to 1 or 3 to 1 are indicative of an acceptable fit between the hypothetical model and the sample data."

c. **Root Mean Square Error of Approximation (RMSEA):** it is one of the most informative criteria in covariance structure modeling. It is an "error of approximation" index because it assesses the extent to which a model fits reasonably well in the population. The formula is:

$$RMSEA = \sqrt{\frac{X_M^2 - df_M}{df_m(N-1)}}$$

RMSEA is expressed per degree of freedom, thus making it sensitive to the number of estimated parameters in the model; values less than 0.05 indicate good fit, and values as high as 0.08 represent reasonable errors of approximation in the population values ranging from 0.08 to 0.10 indicate mediocre fit, and those greater than 0.10 indicate poor fit.

d. **Goodness-of-Fit Index (GFI):** The range of values for this pair of approximate fit indexes is generally 0–1.0 where 1.0 indicates the best fit. The GFI is an absolute fit index that estimates the proportion of covariance in the sample data matrix explained by the model. That is, the GFI estimates how much better the researcher's model fits compared with no model at all. A general formula is:

$$GFI = 1 - \frac{C_{res}}{C_{tot}}$$

Where:

C_{res}: estimate the residual variability.

C_{tot}: total the residual variability.

GFI should be >0.90

e. **Comparative fit indices (CFI):** evaluate the fit of a user-specified solution in relation to a more restricted, nested baseline model.

$$CFI = 1 - \frac{\chi_T^2 - df_T}{\chi_B^2 - df_B}$$

Where:

χ_T^2, df_T are X^2 , df values of the target model

χ_B^2, df_B are X^2 , df values of the baseline model

With value close to 1 being indicative of good fit.

f. **Tucker–Lewis index (TLI)**: the TLI has features that compensate for the effect of model complexity; it includes a penalty function for adding freely estimated parameters that do not markedly improve the fit of the model. The TLI is calculated by the following formula:

$$TLI = \frac{[(\chi_B^2/df_B) - (\chi_T^2/df_T)]}{[(\chi_B^2/df_B) - 1]}$$

With value close to 1 being indicative of good fit.

III- Results and discussion :

III.1. results of the exploratory factor analysis:

III.1.1. Factor analysis achievability of the correlation matrix: after conducting the analysis for each group separately, and making the necessary adjustments, the following results were obtained:

a. **The first set (a1 – a11)**: based on results obtained from the EFA (table 3), we note the existence of strong correlations between variables after deleting variables a4, a11 since they are less correlated. These correlations are significant, and the correlation matrix determinant (d= 8.946^{E}–5) indicates that there is no linear correlation problem. The sampling adequacy scale (KMO = 0.647), and Bartlett index significance is (0.0000). The anti-image matrix shows that the MSA value for all variables is greater than 0.5, accordingly, the correlation matrix of the first set is adequate for factor analysis.

b. **The second set (b1-b9)**: after the least-correlated variables (b2, b4, b5) has been deleted, we note (according to table 4) that there are strong significant correlations between the rest of the variables. The matrix determinant (d=3.302^{E}-5) indicates that there is no linear correlation problem. The sampling adequacy scale was (KMO=0.693), and Bartlett index significance is (0.0000), along with MSA values greater than (0.6). This confirms the adequacy of the second set matrix to the factor analysis.

c. **The third set (m1- m7)**: according to the analysis' results (table 4), we note that there is a significant strong correlation between only 3 variables. 4 variables (m1-m4) should be deleted

since there is no correlation between them. Thus, after the deletion, we obtained the following results: the matrix determinant (d=0.072) indicates that there is no linear correlation problem, the (KMO = 0.697) means that this indicator's values are good, the significance of Bartlett indicates that the matrix is not an identity matrix, alongside with MSA values that are greater than (0.6) which means that it is good. Accordingly, the third set's correlation matrix is adequate to factor analysis.

III.1.2. Extracting and naming factors: based on the factors' matrix, we can extract four factors as follows:

Table (3) shows that the explanatory variables of solvency ratios are divided into two factors and explain (75.35%) of its total variance. The factor F2 explains (49.81%) of the total variance in solvency ratios for the period 2011-2017, the eigenvalue is (4.48) this indicates that factor F1 explains four times what one variable explains. However F2 explains (25.54%) of the total variance of solvency ratios and its eigenvalue is (2.29). This means that it explains approximately three times what is interpreted by one variable.

The factor F1 explains the debt to assets ratio, the net financial debt to assets, the debt to equity ratio, the net financial debt to equity, equity to assets, net financial debt to profit before benefits, taxes and depreciation. All these ratios explain the extent to which the organization relies on the others' funds in financing its assets structure; we can therefore name this factor «**the organization's indebtedness**».

The factor F2 explains the trading ratio, the quick liquidity ratio and the instant liquidity ratio. All these ratios explain the extent to which the organization has a margin that its current assets value can go down to it before the organization falls into financial insolvency. Therefore, this factor can be named the «**organization's liquidity**».

Table 4 shows that the second set of variables is integrated into one factor that explains (82%) of the total variance of the profitability ratios during the period 2011-2017, its eigenvalue is (4.9) which indicates that it interprets approximately (5) times what one variable interprets.

We note that the factor F3 explained by the net profit, the profit before interest and taxes, the return on assets, the return on equity, the return on the capital used and the return on the capital employed, all of which explain the extent to which the organization succeeds in collecting profits from its sales and invested funds, this factor is called «**the organization's profitability**»

Table 5 shows that the third set of variables also merges into one factor that explains (85%) of the overall variance of efficiency ratios for the period 2011-2017, with an eigenvalue of (2.6) which indicates that it interprets approximately (3) times what is interpreted by one variable.

We note that the factor F4 explained by the rate of fixed assets turnover, total assets turnover and the net assets turnover, all of which interpret the management efficiency in utilizing its assets for generating sales and profits. This factor is named «**the organization's efficiency**».

III.2. Results of the CFA:

III.2.1. The proposed model: based on the results obtained from the EFA, factors extracted and variables loaded on each factor, a model is proposed to test the extent of their interpretation of the organization's financial situation, as shown in the (figure 1).

The above figure shows that most of the conditions for the model acceptance are not achieved, which necessitates making modifications needed to improve the model, this is done through eliminating some variables that have weak loadings and linking standard errors for each factor separately.

III.2.2. The enhanced final model: after making many improvements required for the model acceptance, we concluded with the model (Figure 2).

From the above figure and the data displayed (as detailed in annex 04), we find that indicators of the financial situation assessment's model didn't exceed the test of the match with data, i.e. the existence of a similarity and match between the model and its data. As chi's square value is (79.300) with a degree of freedom equal to (58) and a significance level of (P=0.033) –statistically significant-. This does not indicate that there is a match, because chi's square is affected by the sample size, that is why we need to take into account more accurate indicators. First; standard chi's square (1.367) is less than the value criterion, the Root Mean Square Error of Approximation (RMSEA = 0.06) less than the key test (0.08), the value of the Confirmatory Fit Index (CFI = 0.96) close to 1, this reflects a relationship between the variables as well as a correlation between the four axes of the model. The

conclusion of analyzing these indicators is that there is a correspondence between the theoretical model and the data used.

The correlations between the model axes in the form of binaries was statistically significant (CR > 1.964), and the level of significance is less than 0.05, except in the case of (liquidity-efficiency) where it was just close to the required level. Correlation coefficients vary from a binary to another, ranging from (0.24) to (0.47). Since they are greater than (0.2), they are acceptable, which explains the correlation between the four axes.

According to (Annex 04), the correlation between each axis with associated variables are statistically significant, the CR for all variables is greater than (1.964), and the level of significance is (0.000), the correlation ratio is greater than (0.6). Therefore, we conclude that all variables are competent to assess the financial situation for the studied organizations.

III.3. Discussion of results:

The indebtedness factor is explained by three financial indicators, the debt to equity ratio, the net financial debt to equity ratio and the equity to total assets ratio, all of which reflect the extent to which the organization relies on the others' funds in financing its assets. The higher it is compared to equity, the greater the pressure on the organization and restriction on its financial independence, and the harder it obtains new financing, and if this is done, it will be on the terms of the financier, thus a higher financial risk for the organization.

The organization's liquidity is also explained by three financial indicators; the general liquidity, the quick liquidity and the immediate liquidity. They refer to the adequacy of current assets in covering current liabilities, or the obligation of using equities or equities plus stocks, or even fixed assets. Thus, the organization's stability is based on the rise of these ratios to prevent the implications of being unable to pay off short-term debts or being forced to relinquish its assets, thus, the resulting imbalances in the production structure. However, its high rise will lead to the freeze liquidity, and therefore, missing out on alternative opportunities.

The organization's profitability: this factor is explained by four financial indicators; net profit margins, profit before interest and tax, the profitability of the capital used and the profitability of the invested capital. These indicators point to the efficiency of the organization in controlling costs and generating profits using funds under its control. This indicator is important for those wishing to invest their money in the organization, it also makes the comparison possible between investment in equities and investment in debt securities.

The organization's efficiency : measures the efficiency of the organization in exploiting its and others' funds in generating sales. It is explained by three indicators ; fixed assets turnover, total assets turnover and net assets turnover. This factor shows the level of mobility in the organization, i.e. the time needed to transfer the asset from its nature into liquidity, so that the rotation speed is directly related to profit generation, which is also directly related to the organizational efficiency in generating profits. Therefore, it is an important indicator for owners and investors wishing to invest in the organization.

According to the findings, it is clear that for assessing the organization's financial situation it is sufficient to know its funding sources, its efficiency in controlling costs and generating profits, as well as the availability of liquidity to meet its obligations on time. So that the more the organization relies (within reasonable limits) on others' funding's, being efficient in using its resources, controls its costs to generate profits in addition to maintaining appropriate levels of liquidity, the better is the organization's financial situation, and any imbalance in these factors will inevitably affect this situation.

The findings confirm the study hypothesis. Thus, through the factor analysis, we identified thirteen financial ratios distributed among four interrelated indicators that can be relied upon to assess the organization's financial situation, and this is consistent with previews studies (which identified one financial ratio for each factor), but conversely to them, our study identified more than one financial ratio for each indicator.

IV- Conclusion:

The assessment of the organization's financial situation reflects a comprehensive assessment of the financial situation of the organization and all the mechanisms used to achieve its objectives. People interested in the organization and its environment seeks to know this situation and analyze it in order to make different decisions based on the information derived from this analysis. The validity of

decisions depends on the validity of the data used and the credibility of tools relied upon in the analysis, without neglecting the role of time and cost, this requires focused on expressive tools that reflect the financial situation of the organization.

The factor analysis is a modern dynamic statistical method that uses a mathematical methodology designed to simplify the reality. It is divided into two types ; the EFA which merges variables and studies, thereby reduces indicators and determines the most interrelated ones to form one factor that interprets an aspect of the studied phenomenon. The second type is the CFA, which confirms results of the EFA through a series of tests. We used the CFA in the study to develop a model that defines financial indicators which have a greater explanatory ability to reflect the organization's financial situation at any point in time.

According to the findings of the study, the financial situation can be assessed through identifying the ratio of dependence on external sources in funding the needs and the possession of the liquidity necessary to meet external obligations at due time on the one hand, and identifying the efficiency in controlling costs and using internal and external resources to generate profits on the other hand.

The use of financial ratios without specifying their areas of acceptance is insufficient to assess the organization's financial situation, therefore, in future studies, we will try to determine the acceptance area for each indicator, and applying them to the case of Algeria, especially in predicting the organizations' financial failure.

- Appendices:

Table (2): Indicators and assessment of Kralicek Quick test

Indicators		Points (P_{xi})				
		4	3	2	1	0
Financial stability	Equity in balance sheet	0.3	0.2-0.3	0.1-0.2	0-0.1	<0
	Period of debt payment	3<	3-5	5-12	12-30	30>
Efficiency	Profitability of assets	0.15	0.12-0.15	0.08-0.12	0-0.08	<0
	Cash flow/ Revenues	0.1	0.08-0.1	0.05-0.08	0-0.05	<0
$KQT = \sum_{i=1}^{4} P_{xi}$	KQT>11 very good situation; 11<KQT<8 good situation; 8<KQT<4 dire financial situation; KQT<4 very dire financial situation; KQT>19 extremely dire.					

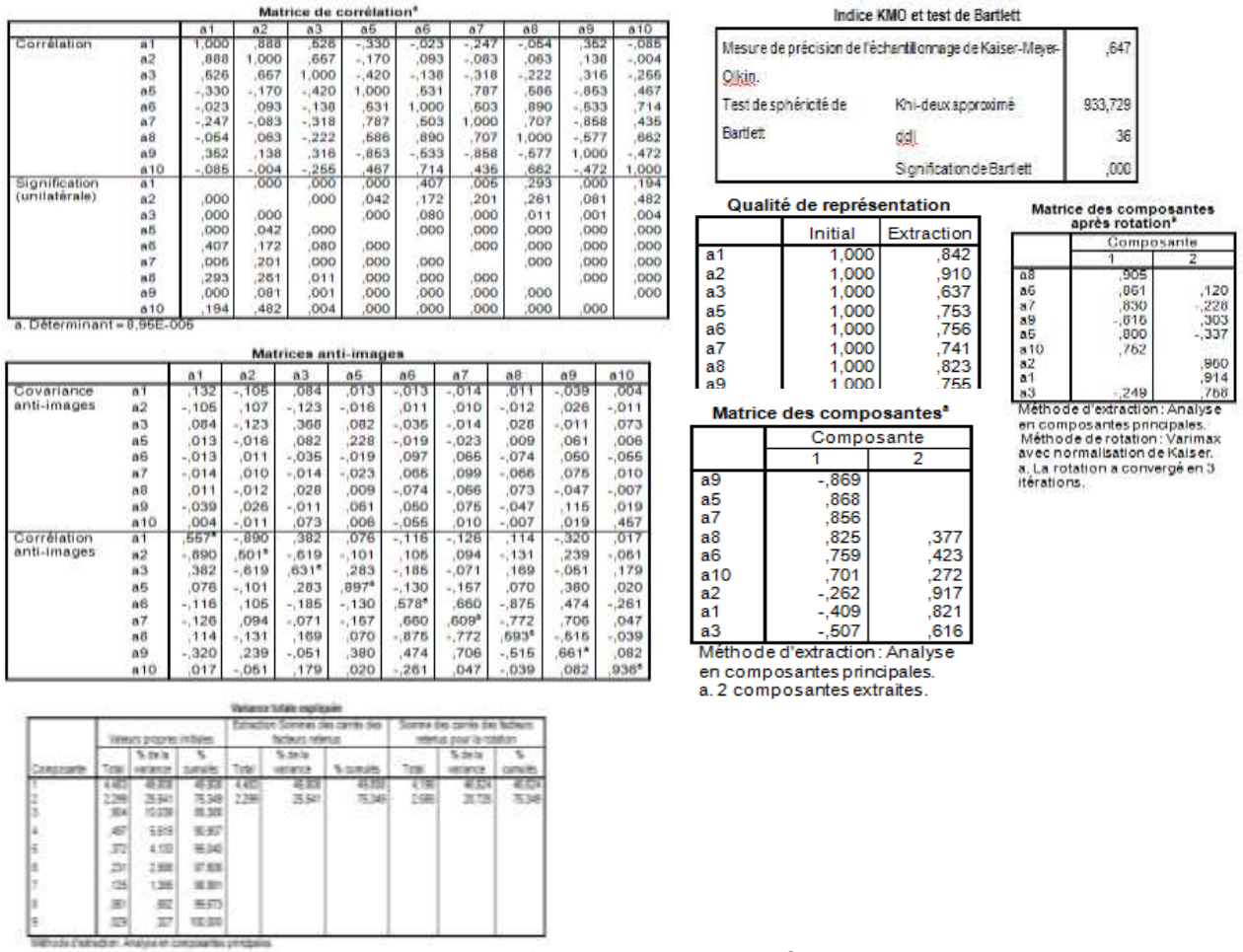
The source: Konstantin Didenko, Janis Meziels and Irina Voronova (2012), **assessment of enterprises insolvency: challenges and opportunities,** Economics And Management review 17 (1), P71, Online: http://www.ecoman.ktu.lt/index.php/Ekv/article/viewFile/2253/1735, (visited 17/01/2019).

Table (3): Ratios used in study and their codes

code	Solvency ratios	code	Profitability ratios	code	Efficiency ratios
a 1	The general liquidity	b 1	Net profit margin	m 1	Inventory turnover
a 2	The rapid liquidity	b 2	Gross profit margin	m 2	Customer turnover
a 3	The instant liquidity	b 3	Profitability before interests and taxes	m 3	Suppliers turnover
a 4	Working capital to total assets	b 4	Net operating profit after tax	m 4	Working capital turnover
a 5	Depts to assets ratio	b 5	Profitability coefficient	m 5	Fixed assets turnover
a 6	Net financial depts to total assets	b 7	Return on assets (ROA)	m 6	Total assets turnover
a 7	Dept to equity ratio	b 8	Return on equity	m 7	Net assets turnover
a 8	Net financial dept to equity	b 9	profitability used capital		
a 9	Equity to total assets ratio	b 10	Profitability of invested capital		
a 10	Net debt to EBITDA				
a 11	Interest coverage ratio				

The source: prepared by the researchers based on previous studies

Table (4): results of the exploratory factor analysis first set



Matrice de corrélation[a]

		a1	a2	a3	a5	a6	a7	a8	a9	a10
Corrélation	a1	1,000	,888	,626	-,330	-,023	-,247	-,064	,362	-,085
	a2	,888	1,000	,667	-,170	,093	-,083	,063	,138	-,004
	a3	,626	,667	1,000	-,420	-,138	-,318	-,222	,316	-,266
	a5	-,330	-,170	-,420	1,000	,631	,787	,586	-,863	,467
	a6	-,023	,093	-,138	,631	1,000	,603	,890	-,633	,714
	a7	-,247	-,083	-,318	,787	,603	1,000	,707	-,858	,435
	a8	-,064	,063	-,222	,586	,890	,707	1,000	-,577	,662
	a9	,362	,138	,316	-,863	-,633	-,858	-,577	1,000	-,472
	a10	-,085	-,004	-,266	,467	,714	,435	,662	-,472	1,000
Signification (unilatérale)	a1		,000	,000	,000	,407	,005	,293	,000	,194
	a2	,000		,000	,042	,172	,201	,261	,081	,482
	a3	,000	,000		,000	,080	,000	,011	,001	,004
	a5	,000	,042	,000		,000	,000	,000	,000	,000
	a6	,407	,172	,080	,000		,000	,000	,000	,000
	a7	,005	,201	,000	,000	,000		,000	,000	,000
	a8	,293	,261	,011	,000	,000	,000		,000	,000
	a9	,000	,081	,001	,000	,000	,000	,000		,000
	a10	,194	,482	,004	,000	,000	,000	,000	,000	

a. Déterminant = 8,95E-005

Indice KMO et test de Bartlett

Mesure de précision de l'échantillonnage de Kaiser-Meyer-Olkin.		,647
Test de sphéricité de Bartlett	Khi-deux approximé	933,729
	ddl	36
	Signification de Bartlett	,000

Qualité de représentation

	Initial	Extraction
a1	1,000	,842
a2	1,000	,910
a3	1,000	,637
a5	1,000	,753
a6	1,000	,756
a7	1,000	,741
a8	1,000	,823
a9	1,000	,755

Matrice des composantes après rotation[a]

	Composante 1	Composante 2
a8	,905	
a6	,861	,120
a7	,830	-,228
a9	-,816	,303
a5	,000	-,337
a10	,762	
a2		,950
a1		,914
a3	,249	,756

Méthode d'extraction : Analyse en composantes principales.
Méthode de rotation : Varimax avec normalisation de Kaiser.
a. La rotation a convergé en 3 itérations.

Matrices anti-images

		a1	a2	a3	a5	a6	a7	a8	a9	a10
Covariance anti-images	a1	,132	-,105	,084	,013	-,013	-,014	,011	-,039	,004
	a2	-,105	,107	-,123	-,016	,011	,010	-,012	,026	-,011
	a3	,084	-,123	,368	,082	-,036	-,014	,028	-,011	,073
	a5	,013	-,016	,082	,228	-,019	-,023	,009	,081	,006
	a6	-,013	,011	-,036	-,019	,097	,065	-,074	,060	-,065
	a7	-,014	,010	-,014	-,023	,065	,099	-,066	,075	,010
	a8	,011	-,012	,028	,009	-,074	-,066	,073	-,047	-,007
	a9	-,039	,026	-,011	,081	,060	,075	-,047	,115	,019
	a10	,004	-,011	,073	,006	-,055	,010	-,007	,019	,457
Corrélation anti-images	a1	,557[a]	-,890	,382	,076	-,116	-,126	,114	-,320	,017
	a2	-,890	,601[a]	-,619	-,101	,105	,094	-,131	,239	-,061
	a3	,382	-,619	,631[a]	,283	-,185	-,071	,169	-,051	,179
	a5	,076	-,101	,283	,897[a]	-,130	-,157	,070	,380	,020
	a6	-,116	,105	-,185	-,130	,578[a]	,660	-,875	,474	-,261
	a7	-,126	,094	-,071	-,157	,660	,609[a]	-,772	,706	,047
	a8	,114	-,131	,169	,070	-,875	-,772	,593[a]	-,515	-,039
	a9	-,320	,239	-,051	,380	,474	,706	-,515	,661[a]	,082
	a10	,017	-,061	,179	,020	-,261	,047	-,039	,082	,936[a]

Matrice des composantes[a]

	Composante 1	Composante 2
a9	-,869	
a5	,868	
a7	,856	
a8	,825	,377
a6	,759	,423
a10	,701	,272
a2	-,262	,917
a1	-,409	,821
a3	-,507	,616

Méthode d'extraction : Analyse en composantes principales.
a. 2 composantes extraites.

The source: outputs of Amos 24

Table (5): results of the exploratory factor analysis second set

Matrice de corrélation[a]

		b1	b3	b6	b7	b8	b9
Corrélation	b1	1,000	,836	,928	,757	,697	,665
	b3	,836	1,000	,768	,694	,856	,830
	b6	,928	,768	1,000	,784	,812	,784
	b7	,757	,694	,784	1,000	,674	,697
	b8	,697	,856	,812	,674	1,000	,976
	b9	,665	,830	,784	,697	,976	1,000
Signification (unilatérale)	b1		,000	,000	,000	,000	,000
	b3	,000		,000	,000	,000	,000
	b6	,000	,000		,000	,000	,000
	b7	,000	,000	,000		,000	,000
	b8	,000	,000	,000	,000		,000
	b9	,000	,000	,000	,000	,000	

a. Déterminant = 3,30E-005

Matrices anti-images

		b1	b3	b6	b7	b8	b9
Covariance anti-images	b1	,025	-,031	-,024	,002	,013	,004
	b3	-,031	,048	,029	-,016	-,021	-,003
	b6	-,024	,029	,026	-,019	-,015	-,001
	b7	,002	-,016	-,019	,319	,027	-,040
	b8	,013	-,021	-,015	,027	,025	-,023
	b9	,004	-,003	-,001	-,040	-,023	,042
Corrélation anti-images	b1	,610[a]	-,892	-,940	,022	,514	,120
	b3	-,892	,632[a]	,829	-,128	-,594	-,058
	b6	-,940	,829	,629[a]	-,208	-,595	-,034
	b7	,022	-,128	-,208	,906[a]	,303	-,344
	b8	,514	-,594	-,595	,303	,676[a]	-,717
	b9	,120	-,058	-,034	-,344	-,717	,830[a]

a. Mesure de précision de l'échantillonnage

Variance totale expliquée

	Valeurs propres initiales			Extraction Sommes des carrés des facteurs retenus		
Composante	Total	% de la variance	% cumulés	Total	% de la variance	% cumulés
1	4,924	82,071	82,071	4,924	82,071	82,071
2	,535	8,915	90,986			
3	,307	5,109	96,095			
4	,203	3,382	99,477			
5	,022	,373	99,850			
6	,009	,150	100,000			

Méthode d'extraction : Analyse en composantes principales.

Indice KMO et test de Bartlett

Mesure de précision de l'échantillonnage de Kaiser-Meyer-Olkin.		,693
Test de sphéricité de Bartlett	Khi-deux approximé	1043,875
	ddl	15
	Signification de Bartlett	,000

Qualité de représentation

	Initial	Extraction
b1	1,000	,807
b3	1,000	,843
b6	1,000	,873
b7	1,000	,712
b8	1,000	,856
b9	1,000	,834

Méthode d'extraction : Analyse en composantes principales.

Matrice des composantes[a]

	Composante
	1
b6	,935
b8	,925
b3	,918
b9	,913
b1	,898
b7	,844

Méthode d'extraction : Analyse en composantes principales.
a. 1 composantes extraites.

The source: outputs of Amos 24

Table (6): results of the exploratory factor analysis third set

Matrice de corrélation[a]

		m5	m6	m7
Corrélation	m5	1,000	,711	,697
	m6	,711	1,000	,923
	m7	,697	,923	1,000
Signification (unilatérale)	m5		,000	,000
	m6	,000		,000
	m7	,000	,000	

a. Déterminant = ,072

Indice KMO et test de Bartlett

Mesure de précision de l'échantillonnage de Kaiser-Meyer-Olkin.		,697
Test de sphéricité de Bartlett	Khi-deux approximé	268,845
	ddl	3
	Signification de Bartlett	,000

Qualité de représentation

	Initial	Extraction
m5	1,000	,742
m6	1,000	,913
m7	1,000	,904

Méthode d'extraction : Analyse en composantes principales.

Matrices anti-images

		m5	m6	m7
Covariance anti-images	m5	,483	-,064	-,040
	m6	-,064	,140	-,121
	m7	-,040	-,121	,146
Corrélation anti-images	m5	,923[a]	-,245	-,152
	m6	-,245	,636[a]	-,847
	m7	-,152	-,847	,644[a]

a. Mesure de précision de l'échantillonnage

Matrice des composantes[a]

	Composante
	1
m6	,956
m7	,951
m5	,861

Méthode d'extraction : Analyse en composantes principales.
a. 1 composantes extraites.

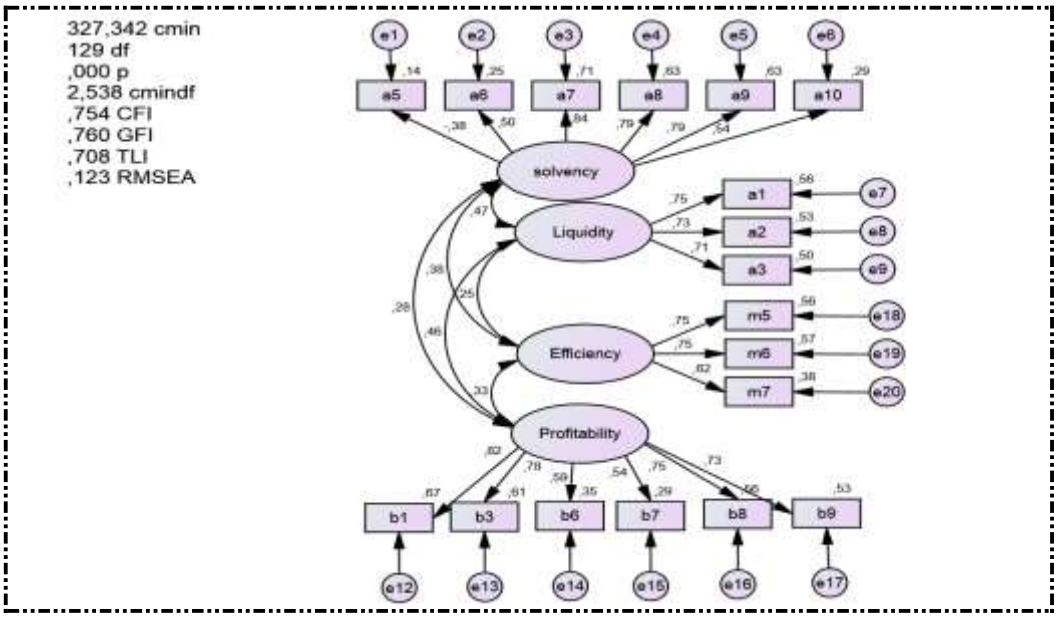
Variance totale expliquée

	Valeurs propres initiales			Extraction Sommes des carrés des facteurs retenus		
Composante	Total	% de la variance	% cumulés	Total	% de la variance	% cumulés
1	2,559	85,287	85,287	2,559	85,287	85,287
2	,364	12,138	97,425			
3	,077	2,575	100,000			

Méthode d'extraction : Analyse en composantes principales.

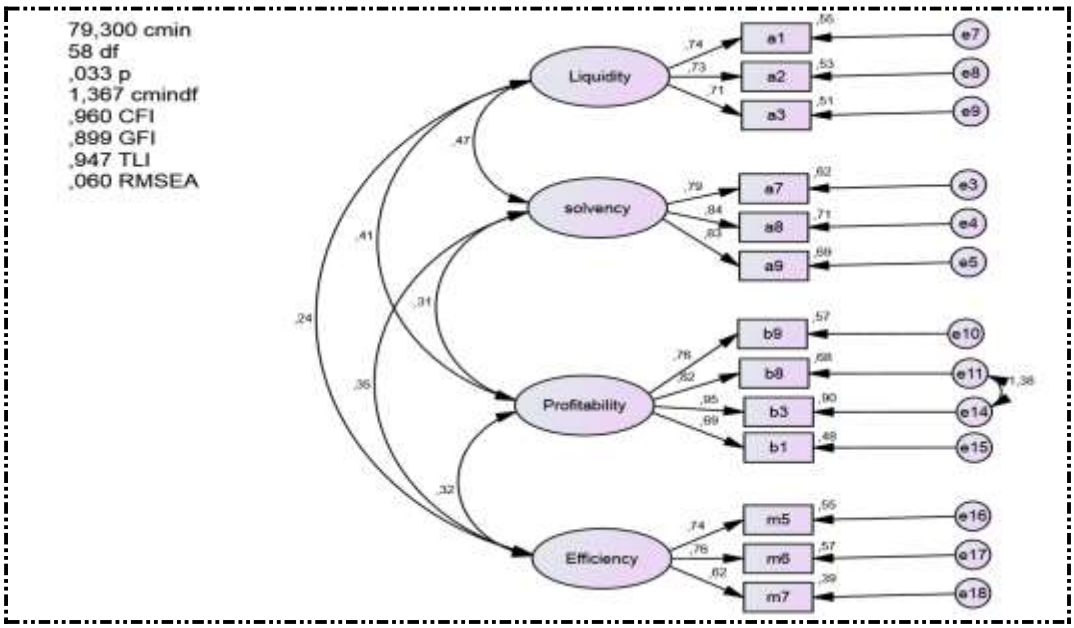
The source: outputs of Amos 24

Figure (1): Results of the confirmatory factor analysis (a proposed factor matrix model)



The source: outputs of Amos 24

Figure (2): Results of the confirmatory factor analysis (the final factors model of the matrix)



The source: outputs of Amos 24

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