



Relevance of the Analysis of the Financial Statements for Business Decision-Making

Sandra Natalia Gallego Gomez^{1*}, Orlando Carmelo Castellanos Polo²

Northern Catholic University Foundation

Corresponding Author: Sandra Natalia Gallego Gomez

sandranngallego@soyucn.edu.co

ARTICLE INFO

Keywords: Business Decision Making, Financial Analysis, Methodologies

Received : 4 April

Revised : 19 April

Accepted : 23 April

ABSTRACT

The importance of the analysis of financial statements for business decision making will be determined, taking into account the financial indicators, to demonstrate which are the methodologies used to perform a financial analysis, in order to provide capabilities of opportunities that allow growth in the current situation due to the pandemic caused by the Covid-19.

©2023 Gomez, Polo: This is an open-access article distributed under the terms of the [Creative Commons Atribusi 4.0 Internasional](https://creativecommons.org/licenses/by/4.0/).



INTRODUCTION

The financial analysis has gained importance in recent times, due to the crisis that is occurring with the Covid-19, it has forced to take measures to close commercial activities for the protection of citizens, which has caused the decrease in income of the companies of the different sectors of the economy, in turn, the financial statements and financial projections become more important to determine the business in progress, since market opportunities have decreased in the different sectors.

According to Carlos, and others, (2017) financial analysis "is a specialized part of Financial Management, and is considered as a set of instruments or tools that serve to evaluate, analyze and interpret economic and financial information, through these results, The financial departments or administrators will make the decisions, based on financial technical information, to reduce the risks in the organization.

According to the previous definition, it is considered that the financial statements can be used for decision-making through the instruments that financial analyzes have, since these analyze, evaluate and interpret all the information contained therein, in turn The ability to reduce the risks of the entity is provided in order to make good decisions with the results obtained.

However, the financial statements will be shown during this crisis and will be analyzed through the most widely used financial analysis methods, in order to identify the differences before and after the pandemic and choose to give positions regarding the different results in the Illustrated examples, in this way it will be possible to demonstrate their importance in the real situation.

Importance of Financial Statement Analysis

The importance of carrying out an analysis towards the financial statements arises when man sees the need to not simply observe the numbers in the financial statements, but to go further and be able to give a value in words to what these mean, in turn, focusing it for decision making and continuous improvement to obtain good results. Due to this, financial analyzes have become more relevant in decision-making, these being the main ones for the continuous improvement of companies, reducing the possibility of economic risk.

It is necessary to recognize the importance of financial statements to be able to resort to financial analysis, Abraham, (2003), defines that "financial statements are the documents that show the financial situation of a company, its ability to pay, at a certain date, past, present or future; or the result of its operations obtained in a past, present or future period, in normal or special situations". For Reyes, (2014) correct and adequate decision-making must take into account the main financial statements of a company that are:

The balance sheet: Report that represents the financial situation of a company, and includes the value of the assets and rights it owns (assets), that of the financing obligations (liabilities) and the contribution of the business owners (capital). This clearly shows the main components for financial analysis.

For Gonzales and others, (2012), Income statement: it is a financial statement that shows, in an orderly and detailed way, the way in which the result of the exercise was obtained during a determined period. Provides a financial summary of the entity's operating results for a specified period.

According to pronouncement No. 9 of the public accounting technical council, the Statement of Changes in the Financial Situation is a dynamic means of an informative nature that complements the other Basic Financial Statements, summarizing, classifying and relating the results of financing and investment activities. , resources from operations and changes in the financial situation during the period.

This is how, from these statements, the respective financial analyzes are carried out according to the results that the company has obtained and what it wishes to improve.

Irene and Mariana, (2006), establish that the background to financial analysis took place when "at the end of the 19th century the American Bankers Association held its annual convention, at this meeting a paper was presented proposing that all Associated banks require, as a prerequisite for granting a loan, the presentation of a Balance by the applicants, in order for the institutions to be in a position to Analyze the financial statements as a means to ensure the recoverability of said credit ". Depending on this, the use of financial analyzes arose to be able to continue granting credits and that is where this measure arises to know the situation of the entities; according to Alberto Ibarra, (2009) some antecedents of financial analysis arose from "the empirical study to determine the level of solvency in order to predict or avoid a possible bankruptcy in a company through the use of ratios, statistical methods and financial analysis on the components of solvency, liquidity, profitability, among other factors, have been explored in numerous studies starting in 1932 when Fitzpatrick carried out the first works that gave rise to the so-called descriptive stage. According to the above, it is established that the financial analysis arose as a result of avoiding the bankruptcy of a company, therefore, it was an empirical process carried out to be able to foresee a situation and likewise, provide the respective solutions to this problem, this to turn, showing the importance of financial analyzes in order to avoid business bankruptcy and to remain firm. Perfecting in turn the methods that are increasingly being used according to when they are required. Knowing thus the emergence of financial analysis, it is necessary to highlight the following question, what is financial analysis, according to Carlos Prieto, (2010) establishes that financial analysis can be defined as a process that includes the compilation, interpretation, comparison and study of the financial statements and operational data of a business. So, the financial statements are the most relevant so that the proper financial analysis can be given, since this is where the information that is intended to be interpreted and compared is collected, according to past periods or past years, in order to provide an answer and in turn make decisions about these analyses. Accordingly, the analyzes are specified using different understandable numerical methods to obtain a more reasonable and comparative solution.

Today there are various investigations and advances in relation to the creation, management and development of information systems, which provide timely tools to contribute to the strategic management of organizations. In this sense, financial information is very useful for the efficient management of companies, and even more so, its analysis conditions the decision-making of managers, who face more demanding challenges every day (as cited in Puerta , Fabio and others, 2018, p.89).

Due to the current situation of Covid-19, these tools have become in constant use, so that the development of financial analyzes has become less complex, the response capacity obtained for their implementation and the time solution on the weak points that arise when using the most used financial analysis methods. So that the importance of the analysis of financial statements is established, for Sánchez, (2014), Financial analysis is important since it constitutes a critical process aimed at evaluating the present and past financial position and the results of operations, with the use of techniques, methods of analysis and interpretation and application of financial indicators that allow managers to know the liquidity, profitability and indebtedness to establish the real situation of the organization, this information is not only useful for those who direct it, but also for third parties interested in the operation of the Company. According to this, the importance of the analysis of the financial statements is reflected in the critical processes that are carried out for each result, continuing with its due evaluation and the techniques to be used, since it is essential to establish the tools that are going to be applied. Because that is where the results to be obtained will be focused.

LITERATURE REVIEW

According to Carlos, and others, (2017) financial analysis "is a specialized part of Financial Management, and is considered as a set of instruments or tools that serve to evaluate, analyze and interpret economic and financial information, through these results, The financial departments or administrators will make the decisions, based on financial technical information, to reduce the risks in the organization. According to the previous definition, it is considered that the financial statements can be used for decision-making through the instruments that financial analyzes have, since these analyze, evaluate and interpret all the information contained therein, in turn The ability to reduce the risks of the entity is provided in order to make good decisions with the results obtained.

METHODOLOGY

Financial Reasons Most Used for Business Decision Making

Too many financial ratios have been made to observe the different changes of each account in the statements of financial position of a company, due to this, to know those most used ratios which are influenced in large quantity, we must first know its meaning. For Morelos, Herrera and de la Hoz, (2012) "Financial indicators are a tool for the financial evaluation of a company and to approximate its value and its economic prospects". Therefore, this tool is used in order to provide a perspective based on the financial statements and thus provide a definition to the numerical value.

Horizontal and Vertical Analysis Methodology for Decision Making

Gómez, (2001), states that vertical analysis "is used to analyze financial statements such as the Balance Sheet and the Income Statement, comparing the figures vertically. It consists of determining the percentage composition of each account of the Assets, Liabilities and Equity, taking as a base the value of the total Assets and the percentage that each element of the Income Statement represents from the Net Sales". This analysis is of great importance, because the statements of financial position are involved and the figures obtained are compared to see the percentages they have and thus draw conclusions about the parts that must be improved, then the procedure for the development of this vertical analysis.

Procedure: Integral percentage = Partial value/base value X 100

Bautista, (2012) presents the horizontal analysis which "determines what was the growth or decrease of an account in a given period. It is the analysis that allows determining if the behavior of the company in a period was good, regular or bad. Also adding that to determine this analysis, more than two periods must be taken, which are the ones that are going to be evaluated and thus find the absolute values that appear in their differences to take the necessary measures and improve.

RESULTS AND DISCUSSION

Liquidity Ratio

According to Alexander, Victor and others, (2016) "The liquidity of a company represents the agility it has to meet its short-term obligations as they reach maturity." This can be presented factors such as current liquidity and acid test, where the first one is obtained on the Assets on the liabilities in the short term, in order to measure if its obligations can be covered in this period of time. So, the acid test consists of subtracting from the assets the inventories that the company has, because it is expected that the company will not count for them in order to have better liquidity.

Table 1. Liquidity Ratio

Liquidity Ratio	
Indicators	Applied Formula
1. current liquidity	$\frac{\text{Activos corrientes}}{\text{Pasivos corrientes}}$
2. Acid test	$\frac{\text{Activos corrientes} - \text{Inventarios}}{\text{Pasivos corrientes}}$

Debt Ratio

According to Lorena and Angélica, (2015) The debt ratio, "measures the relationship between the total short- and long-term funds provided by creditors, and those provided by the table itself." It can be said that the reason is important for good decision-making, because this relationship that is being measured helps to know how much of the entity belongs to third parties and how much really belongs to the employer.

Table 2. Debt Ratio

Debt Ratio	
Indicators	Applied Formula
Total debt ratio	$\left(\frac{(\text{Pasivos Corrientes} + \text{Pasivos no corrientes})}{\text{Patrimonio}} \right) * 100$

Profitability Ratios

According to Gerencie.com, (2017), "These ratios make it possible to analyze and evaluate the profits of the company with respect to a given level of sales, assets or the investment of the owners". It is established that these reasons allow evaluating the income produced in the entity, according to the sales made, being an important method to know the total utility. Likewise, the Gross Profit Margin is presented, which is established as sales minus the cost of sales.

Table 3. Profitability Ratio

Profitability Ratio	
Indicators	Applied Formula
gross profit margin	$(\text{Ventas} - \text{Costo de lo vendido})$

Altman Z-Score Model

Salazar and Silva, (2019). In their specialized work they comment that "the Z-Score Model is created to highlight the analytical and practical value of financial ratios in a context of corporate difficulties... This type of technique is used to classify and/or make predictions in problems where the The dependent variable appears qualitatively female or male or a group classified as bankrupt and non-bankrupt".

The first model created by Altman in 1968 is presented in the following table.

Table 4. Altman Z-Score Model

$Z = 1.2 (X1) + 1.4 (X2) + 3.3 (X3) + .6(X4) + .999 (X5)$
Where: X1: Working capital / Total assets
X2: Retained earnings / Total assets
X3: Earnings before taxes and interest / Assets
X4: Market value of equity / Book value of total debt
X5: Sales / Total assets Z= general index

Source: Salazar and Silva. (2019)

So you can see how this model allows you to predict events or problems that may occur to find out if the entity is bankrupt or not, and choose which methods to use to get out of this situation.

Business in Progress During Covid 19

The permanence of the entities has been really affected due to the current situation caused by the Covid-19, in this regard the entities have had to resort to temporary closures, really affecting the commercial and economic part. For the speaker Roberto Valencia, (2020), He points out through the effect of Covid-19 that the going concern hypothesis is not met, because it may be considered not to operate for a period, because the financial statements they cannot be presented under international standards. This means that businesses must take advantage of other modalities to continue operating.

According to Bob and Ken, (2020) The important thing to note is that when a going concern assessment involves projections and there is uncertainty involved such as that discussed above about the feasibility of the entity as a going concern, the disclosures in the financial statements that will highlight those uncertainties, they may be included in a special section of the notes to the financial statements on risks and uncertainty or in some other general note, depending on the circumstances of the entity. Consequently, the Covid-19 has highlighted the projections and uncertainties towards the business in progress, thus modifying its statements of financial position.

Analysis of the Financial Statements of the Company Ecopetrol SA During the Covid-19 Crisis

Ecopetrol is a Colombian entity originated in 1951, in order to provide activities of the oil industry and trade and its related, according to Decree 1209 of 1994. Later it grew until it became a public joint stock company owned by one hundred percent to the state and linked to the ministry of mines and energy, as established in Decree 1760 of June 26, 2003. Thus, currently, due to the growing crisis caused by Covid-19, Ecopetrol SA, like any other entity, has had repercussions which have affected to a degree the activities they carry out, with which, the case becomes pertinent for study on a financial analysis, to know the proper management that has been provided based on the consolidated statements of financial position comparative, corresponding to the periods of December 2019 and June 2020. This in order to provide a critical observation on the relevance of financial analysis for business decision-making.

The most used financial reasons for making business decisions that have been cited are presented, in order to corroborate the changes that the entity has had, according to the statements of financial position of the company Ecopetrol that are of a public nature. , in order to provide real figures. The following data and figures were taken from: (Ecopetrol. 2020. Consolidated financial statements, June)

Application of the Ratios of Liquidity, Current Liquidity and Acid Test

Liquidez corriente Diciembre 2019: $\frac{23,364,461}{21,742,299}$ *Expresado en millones de pesos Colombianos*

Result of current liquidity December 2019: 1.07

Liquidez corriente Junio 2020: $\frac{27,933,579}{26,618,637}$ *Expresado en millones de pesos Colombianos*

Result of current liquidity June 2020: 1.04

Analysis according to the results obtained on liquidity indices.

According to the current ratio analysis carried out, the change that was obtained in both periods evaluated can be observed, it is possible to understand due to the crisis presented by the Covid-19 how its current liabilities increased more than current assets, thus achieving almost the capacity that the company has with its current assets to settle current liabilities since it can barely cover these and obtain a positive result. Therefore, to continue, the debts caused by the situation that the entity is facing must be mitigated, in order to achieve better results in this financial analysis and thus supply the debts that it has in the short term with greater need.

Acid Test

Prueba ácida Diciembre 2019: $\frac{(23,364,461 - 5,658,099)}{21,742,299}$ *Expresado en millones de pesos Colombianos*

Acid test result December 2019: 0.81

Prueba ácida Junio 2020: $\frac{(27,933,579 - 5,034,963)}{26,618,637}$ *Expresado en millones de pesos Colombianos*

Acid test result June 2020: 0.86

In the acid test, it can be observed how a drastic change occurs according to the periods compared and in the current situation of Covid-19, where before there was more inventory movement and therefore it was not enough to cover short-term needs because of For each peso that was owed, 81 cents were earmarked for the payment of short-term debts; Likewise, in the situation of the pandemic, observing the result obtained in June 2020, it can be seen that for each peso owed to third parties, 86 cents can cover short-term debt without making use of inventories, which makes effect in that these moved less than in the period of December 2019. Likewise, despite this, it is expected to improve so that the entity does not depend on its inventories, but can cover its debts according to other current assets.

Application of the Debt Ratio

Razón de endeudamiento Diciembre 2019: $\frac{(75,103,896)}{60,344,122} * 100$ Expressed in millions of Colombian pesos

December 2019 debt ratio result: 124%

Razón de endeudamiento Junio 2020: $\frac{(91,513,083)}{55,636,720} * 100$ Expressed in millions of Colombian pesos

Result of debt ratio June 2020: 164%

Analysis according to the results obtained on the debt ratio

Based on the results, it can be seen that Ecopetrol SA's indebtedness capacity as of December 2019 had already exceeded the limit, despite the fact that equity is unable to cover the debts it has, therefore, it can be said that the entity belongs more to third parties than to the partners themselves, also due to the Covid-19 event, the need to make loans is violated in order to continue being a going business and not go bankrupt during the crisis, so their debts increased and their Revenues decreased significantly, causing the debt capacity to be at a percentage of 164%, with this it can be inferred that the entity cannot make more loans and should inject more capital through the associates to correct the debts that are pending in the short term, long term.

Application of the Profitability Ratio

Razón de rentabilidad Diciembre 2019: 34,251,230 – 21,447,435

Expressed in millions of Colombian pesos

Debt ratio result December 2019: \$12,803,795

Razón de rentabilidad Junio 2020: 23,513,642 – 18,902,163

Expressed in millions of Colombian pesos

June 2020 debt ratio result: \$4,611,479

Analysis according to the results obtained on the profitability ratio

By obtaining a positive return in both comparisons, it can be said that despite the circumstances that have arisen for the continuous activity, the percentage that has reduced its earnings comparing June 2020 with December 2019 is 2.77% which, despite the cessation of activities by the market in the purchase and sale of oil, is pertinent, since it has been possible to continue obtaining profits.

Applying the Altman Method

It is developed for December 2019

$$Z = 1.2 (X1) + 1.4 (X2) + 3.3 (X3) + .6(X4) + .999 (X5)$$

$$x1 = (23,364,461 - 21,742,299)/135,448,018 \text{ Expressed in millions of Colombian pesos}$$

$$x1=0,012$$

$$x2=(593,577)/135,448,018 \text{ Expressed in millions of Colombian pesos}$$

$$x2=0,004$$

$$x3=(10,914,348)/135,448,018 \text{ Expressed in millions of Colombian pesos}$$

$$x3=0,08$$

$$x4=(60,344,122)/75,103,896 \text{ Expressed in millions of Colombian pesos}$$

$$x4=0,8$$

$$x5=34,251,230/135,448,018 \text{ Expressed in millions of Colombian pesos}$$

$$x5=0.25$$

$$Z = 1.2 (0.012) + 1.4 (0.004) + 3.3 (0.08) + .6(0.8) + .999 (0.25)$$

$$Z = 1.01$$

It is developed for June 2020

$$Z = 1.2 (X1) + 1.4 (X2) + 3.3 (X3) + .6(X4) + .999 (X5)$$

$$x1 = (27,933,579 - 26,618,637)/147,149,803 \text{ Expressed in millions of Colombian pesos}$$

$$x1=0,008$$

$$x2=(623,855)/147,149,803 \text{ Expressed in millions of Colombian pesos}$$

$$x2=0,004$$

$$x3=(2,325,998)/147,149,803 \text{ Expressed in millions of Colombian pesos}$$

$$x3=0,015$$

$$x4=(55,636,720)/91,513,083 \text{ Expressed in millions of Colombian pesos}$$

$$x4=0,60$$

$$x5=23,513,642/147,149,803 \text{ Expressed in millions of Colombian pesos}$$

$$x5=0.16$$

$$Z = 1.2 (0.008) + 1.4 (0.004) + 3.3 (0.015) + .6 (0.6) + .999 (0.16)$$

$$Z = 0.58$$

By obtaining such a low result, it is considered that the entity is at risk of bankruptcy according to the Altman model, since the result obtained was below the standards accepted in the formula, also when developing it in the period from June As of 2020, there is a value of 0.58, which indicates an even greater risk of bankruptcy, which if some attention is not paid to this problem to continue as a going concern, can, according to this method, go bankrupt in less than 2 years. ; It should be noted that these predictions by this method are not always fulfilled since there are factors that influence, but it has a great probability.

CONCLUSIONS AND RECOMMENDATIONS

The financial analyzes are of great importance for the entities, since thanks to these, it is possible to know the current economic and financial situation of the company and through these it will be possible to evaluate, analyze and make decisions that allow the improvement and stability of the same. With the emergence of Covid -19, an economic decline was generated worldwide, which seriously affected the economic situation of many companies, forcing them to reach total closure, for this reason it is necessary to apply financial analyzes, to seek to obtain a result in time, which allow administrators and/or owners to make decisions that generate stability and durability over time.

Obviously it can be seen that the Ecopetrol company is not in a satisfactory economic moment, which is largely due to the current pandemic situation, it is necessary for its owners and investors to make timely decisions that favor the proper development of activities , that allow the crisis to be overcome and continue operating over time, but can financial analyzes mitigate the events that may occur, if only the most common are evaluated?

REFERENCES

S,Carlos, R,Ronald, S,Alexandra, S,Carlos, M,Maria Teresa, ANALYSIS OF FINANCIAL STATEMENTS THE KEY TO MANAGEMENT BALANCE, Grupo COMPAS, 2017.

Puerta, Fabio, Vergara, Jose, Huertas, Netty, Financial analysis: approaches in its evolution, Free criteria, 2018. P (85-104)

Nava Rosillon, Marbelis Alejandra. (2009). Financial analysis: a key tool for efficient financial management. Venezuelan Management Magazine, 14(48), 606-628. Retrieved on August 19, 2020, from http://ve.scielo.org/scielo.php?script=sci_arttext&pid=S1315-99842009000400009&lng=es&tlng=es.

Sanchez, Claudia, ANALYSIS AND INTERPRETATION OF THE 2012 FINANCIAL STATEMENTS OF THE COMPANY "LA FERIA CÁRNICOS Y ALGO MAS", OF THE CITY OF BAÑOS DE AGUA SANTA, TO IMPROVE ADMINISTRATIVE AND FINANCIAL MANAGEMENT PROCESSES, Ecuador, 2014, retrieved from : <https://repositorio.uta.edu.ec/jspui/bitstream/123456789/20406/1/T2430i.pdf>

Prieto, Carlos A, Financial Analysis, Foundation for Higher Education San Mateo, 2010, Retrieved from: <https://www.sanmateo.edu.co/documentos/publicacion-analisis-financiero.pdf>

Ibarra, Albero, Development of Multivariate Factorial Analysis Applied to Current Financial Analysis, FUNDACION UNIVERSITARIA TECNOLOGICO DE COMFENALCO, 2009, retrieved from: <https://soylector.neocities.org/imagenes/finanzas/finanzas3.pdf>

Morelos Gómez, José, Fontalvo Herrera, Tomás José, & de la Hoz Granadillo, Efraín. (2012). Analysis of financial indicators in Colombian port companies. Lattice, 8(1), 14-26.
Recovered from: http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S1900-38032012000100002&lng=en&tlng=es.

Herrera, Alexander. Betancourt, Victor. Humberto, Alex. Wow, Sarah. Vivanco, Estefania, FINANCIAL REASONS FOR LIQUIDITY IN BUSINESS MANAGEMENT FOR DECISION-MAKING, 2016. Retrieved from: <https://revistasinvestigacion.unmsm.edu.pe/index.php/quipu/article/download/13249/11757/>

Cedeno, Lorena, Zambrano, Angelica. (2015). ANALYSIS OF THE FINANCIAL STATEMENTS IN THE DECISION-MAKING OF THE 5 DE MAYO INTRAPROVINCIAL TRANSPORT COOPERATIVE (Undergraduate thesis). Secular University Eloy Alfaro de Manabí Extension Chone. Ecuador.

Gonzalez, Israel. (2017). Classification of financial analysis methods. Manage. Recovered from:
https://www.gerencie.com/clasificacion-de-los-methods-de-analisis-financiero.html#Reazones_de_dedeudamiento

Valencia, Robert. (2020). Going concern assumption: effect of COVID-19. update yourself. Recovered from:
<https://actualicese.com/hipotesis-de-negocio-en-marcha-efecto-del-covid-19/>

Dohrer, Bob, CGMA, Tysiac, Ken. (2020). Tips for Auditors on the Going Concern Concept during the COVID-19 Pandemic. GetIFRS. Recovered from:
<http://getniif.com/temas-de-auditoria/temas-de-auditoria-externa/50-concepto-de-negocio-en-marcha-y-covid-19>

Perdomo Moreno, Abraham. (2003). Analysis and interpretation of financial statements. Mexico: Thompson

Hernandez, Irene, Hernandez, Mariana. (2006). Importance of financial analysis for decision making. Autonomous University of the State of Hidalgo. Recovered from:
<http://dgsa.uaeh.edu.mx:8080/bibliotecadigital/bitstream/handle/231104/406/Importancia%20del%20 analisis%20 financiero.pdf;jsessionid=DC8584B997BDC2BD33E1E04C7E30AFCA?sequence=1>

Reyes, C.J. (2014). I am Conta, Accounting Innovation. Recovered from:
<https://www.soyconta.com/el-analisis-financiero-para-una-adecuada-toma-de-decisiones/>

Gonzales, Hugo, Quintanilla, Ivette, Sanchez, Veronica. (2012). IFRS SMEs FOR THE PREPARATION, PRESENTATION AND DISCLOSURE OF FINANCIAL STATEMENTS OF PHARMACEUTICAL PRODUCTS TRADING COMPANIES, IN THE MUNICIPALITY OF SAN SALVADOR. EL SALVADOR UNIVERSITY. Recovered from:
<http://ri.ues.edu.sv/id/eprint/10514/1/G%20643el.pdf>

TECHNICAL COUNCIL OF PUBLIC ACCOUNTING. (1993). Statement of changes in financial situation. Recovered from:
<https://docplayer.es/17756355-Estado-de-cambios-en-la-situacion-financiera.html>

Gomez, Giovanni. (2001). Polis Management. Recovered in 2020, from <https://www.gestiopolis.com/analisis-vertical-y-horizontal-de-los-estados-financieros/>

Baptist, Libya. (2012). FINANCIAL ANALYSIS. MINUTE DE DIOS UNIVERSITY CORPORATION. Recovered from: https://repository.uniminuto.edu/bitstream/handle/10656/2565/TCA_BautistaArenasLibiaVannesa_2012.pdf?sequence=3&isAllowed=y

Salazar, Nayeth, Silva, Angie. (2019). Does Altman's Z-Score model allow predicting the state of bankruptcy in SMEs?. University Corporation God's Minute. Recovered from: https://repository.uniminuto.edu/bitstream/handle/10656/9873/Salazar%20Nayeth_Silva%20Angie_2019.pdf?sequence=1&isAllowed=y

Ecopetrol. (2020). Consolidated financial statements, June. Retrieved from: <https://www.ecopetrol.com.co/wps/portal/Home/es/Inversionistas/InformacionFinanciera/Estadosfinancieros>