



Management Indicators of the Coal Sector in a Frontier Context

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Abstract

Every administrator or manager who has responsibility for the management of a company's resources must weigh the economic and financial impact of his or her decisions on the operational management. Financial analysis and diagnosis is important to detect problems as early as possible and take corrective actions. It is crucial to understand the variables that determine the granting of credit to customers as well as the total costs of inventory management. It is necessary to understand the concepts associated with working capital management, which has as its object the management of current accounts, comprising current assets and short-term liabilities. The coal sector in the Department of Norte de Santander in Colombia represents an important source of energy and economic resources for the country. Given the quality of the reserves in the different geographic zones, it is essential to have sufficient information to access national and international markets, allowing for an increase in income generated by royalties and foreign exchange. There are 102 coal mines in Norte de Santander, all of which are undermined; of these, an average of 40 are located in Sardinata and close to 50 in the El Zulia-Sardinata area. Annual royalties for the department amount to 10,000 million pesos. This sector represents 30 percent of Norte de Santander's economy.

Keywords: Financial ratios, NOF, management indicators

1. Introduction

1.1. Financial ratios of profitability

1.1.1. Cash Flow

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A company can be considered a good business and therefore be said to be meeting its Basic Financial Objective if it generates a cash flow that allows it to (Alvarado Chacín, 1999; Musons, 2005):

- Replenish Working Capital and Assets
- Service Debt
- Profit Sharing.

The author adds that there are companies that, due to their operating characteristics, of the cash flow they produce, must retain a high proportion in relation to other companies, in order to be able to guarantee in their company that they demand more cash than others to be able to operate. (Falcón & Martínez, 2021; Faus, 1999; Montoya et al., 2010).

Working Capital Replenishment corresponds to the appropriation of cash flow that must be made to finance additional resource needs as the company grows in order to ensure the continuity of its operations. A company's working capital requirements and requirements are directly related to its operating characteristics, especially two: the degree of rivalry among competitors and management (Núñez et al., 2022; Pinzón Herrera et al., 2022).

He also believes that one way to continue growing market share is to offer longer credit terms, which will always be responded to in the same way by other competitors, thus causing a generalized increase in accounts receivable for all companies in the sector (Galvis-Ciro et al., 2022; Jesús et al., 2022). Likewise, increased rivalry puts pressure on inventory growth because, in order to avoid recording lost sales and to be able to provide customers with a timely supply of products according to their demands, companies are forced to maintain relatively high inventory levels (Caldentey, 2019; Méndez Pinzón et al., 2022).

Operating working capital increases must be financed with the company's own cash flow, otherwise the partners or creditors would have to finance these investments, which would make the companies unattractive. This must be so because it is precisely the turnover of the portfolio and inventory that should produce sufficient cash flow to cover debt service and profit sharing (Díaz et al., 2021; Valles et al., 2021).

Regarding the replacement of fixed assets, these correspond to the proportion of cash flow that must be used to guarantee the sustained operation and installed capacity, this suggests that the financing of fixed assets must be guaranteed by the company's own cash flow; this is what depreciation is for (de La Hoz et al., 2018; Ibáñez-Carpena & Benito, 2019).

1.2. *Profitability.*

More than any other accounting metric, a company's "earnings" demonstrate how well management is making its investment and financing decisions. (Henry Orlando, Wlamyr, et al., 2022). If a company is unable to provide adequate returns in the form of dividends and share price increases to investors, it may be unable to maintain, let alone grow, its asset base (González Mendoza et al., 2022; Henry Orlando, Wlamyr, et al., 2022; Musons, 2005). Profitability ratios measure how effectively a company's management generates profit on sales, total assets and, most importantly, shareholder investment. Therefore, anyone whose economic interests are tied to the long-term survival of the company will be interested in profitability ratios. There are several profitability ratios, including the gross profit margin

ratio, the net profit margin ratio, the return-on-investment ratio and the return on stockholders' equity ratio (Albornoz Silva et al., 2017; Henry Orlando, Marvin Vladimir, et al., 2022).

Profitability ratios measure the company's performance in relation to its sales, assets, or capital. It is important to know these figures since the company needs to produce profit in order to exist. These indicators are widely used, as they provide important guidance for owners, bankers, and advisors, as they directly relate the ability to generate funds in the company's short-term operation. All the indicators are designed to evaluate whether the profit produced in each period is sufficient and reasonable, as a necessary condition for the business to continue operating.

2. Method

In relation to the methodological framework, this chapter defines the level and type of research, the universe or population, the sample, the instruments and techniques for data collection and analysis. Al respect (Balestrini, 2002) states that "the methodological framework is intended to situate in the research language, the methods and instruments that will be used in the proposed research, from the location about the type of study and the research design" (p.126).

2.1. Research Level

The level of research indicates the degree of depth with which the study will be carried out and indicates that it may be exploratory, descriptive or explanatory. For (Arias, 2006) "descriptive research consists of the characterization of a fact, phenomenon, individual or group, in order to establish its structure or behavior", the author also indicates that correlational research is to determine the degree of relationship or association (non-causal) existing between two or more variables.

For the reasons described above, the research was framed as a descriptive and correlational research, since it will relate the operational finances, solvency and profitability of the coal sector of the Norte de Santander Department in Norte de Santander.

2.2. Research Design

Research design is defined as the approach and strategy adopted by the researcher to develop the work and achieve the objectives set.

According to (Arias, 2006), the research design is classified as follows: Documentary Research, Field Research and Experimental Research (Documentary research refers to those investigations in which "it is a process based on the search, recovery, analysis, criticism and interpretation of secondary data, i.e., those obtained and recorded by other researchers in documentary sources: printed, audiovisual or electronic" (p.27).

He also explains that field research is (Hernández Sampieri et al., 2019) "that which consists of collecting data directly from the subjects under investigation, or from the reality where the facts occur (primary data), without manipulating or controlling any variable, i.e. the researcher obtains the information, but does not alter the existing conditions." (p.31).

According to the above, the research was proposed as a documentary research for the analysis of financial and field information, requesting the support of experts in the area to know their opinions

regarding the analysis of the environment that impacts the coal sector of the Norte de Santander Department of Norte de Santander.

2.3. Population

For (Estupiñan Roa et al., 2022) "a population is determined by its defining characteristics, that is, it is the totality of the phenomenon to be studied in which the population units have a common characteristic, which is studied and gives rise to the research data" (p.92). (p.92). While for (Arias, 2006), "the population is a finite or infinite set of elements with common characteristics for which the conclusions of the research will be extensive. This is delimited by the problem and the objectives of the study" (p.81).

The population in this study was determined by the companies in the coal sector in the department of Norte de Santander, which report to the Superintendence of Companies attached to the Ministry of Industry and Commerce of the Republic of Colombia and which are related to the Association of Coal Entrepreneurs of Norte de Santander (ASOCARBON).

2.4. Sample

Since the population is small, a sample is not selected and we work with the entire population, i.e. a census will be applied. The census is by definition a procedure that allows obtaining primary information and covers all population units, it can be periodic, sporadic or one-time, it is used for different populations, both human, animals and objects.

3. Results

3.1. Operating fund requirements (NOF)

To analyse the behaviour of operating finances or short-term finances, the operating cash flow (NOF) was determined and calculated using the expression:

NOF = Operating current assets - Operating short-term liabilities.

Table 1 shows the result of the operating current assets (ACO) of the Norte de Santander Department's coal sector for the years 2006-2009.

Table 1. Current operating assets of the coal sector of the Department of Norte de Santander 2006-2009

	2006	2007	2008	2009
1105 Cash	27.289	109.269	166.930	238.040
1305 Trade accounts receivable	2.721.753	1.777.481	663.188	1.081.112
14 Inventories	185.573	1.990.452	446.077	10.446.662
Current Operating Assets (ACO)	2.936.621	3.879.209	1.278.203	11.767.823

It was found that the ACO presented a cyclical behaviour during the study period, characterized by an increase, and decrease in the amount, this behaviour was determined by the variations in inventories, the changes in the cash item were not very noticeable in the last three years of the study, while the customer item presented a downward trend between 2006 and 2008, with a slight increase in 2009.

Table 4 shows the results obtained for the calculation of the short-term operating liabilities (PCO).

Table 2. Short-term operating liabilities in the coal sector of the Department of Norte de Santander 2006-2009

	2006	2007	2008	2009
22 SUPPLIERS	631.805	180.985	1.153.420	2.081.520
2367 Sales Tax Withheld	12.710	20.401	14.210	13.069
2368 Industry and Commerce Tax Withheld	932	1.787	3.011	3.285
2370 Withholdings and payroll contributions	127.354	113.878	139.444	190.467
24 TAXES LEVIES AND FEES	440.965	318.951	297.034	921.294
25 SHORT-TERM LABOR OBLIGATIONS	145.660	114.599	145.227	275.845
26 SUBTOTAL ESTIMATED LIABILITIES AND PROVISIONS	387.149		583	
28 SUBTOTAL OTHER SHORT-TERM LIABILITIES	18.962	7.155	188.857	19.635
SHORT-TERM OPERATING LIABILITIES (PCO)	1.765.537	757.756	1.941.786	3.505.115

It was observed that the PCO also presented a variable and cyclical behaviour determined by the behaviour of the suppliers' accounts and taxes as a source of spontaneous financing. With the data obtained, the NOF of the coal sector in the Department of Norte de Santander for the years 2006-2009 were determined.

Table 3 Operational need for coal sector funds in the Department of Norte de Santander 2006-2009

	2006	2007	2008	2009
OPERATIONAL NEED FOR FUNDS	1.171.084	3.121.453	-663.583	8.262.708

If operating liabilities are "lower" than operating assets, the company will have NOF.

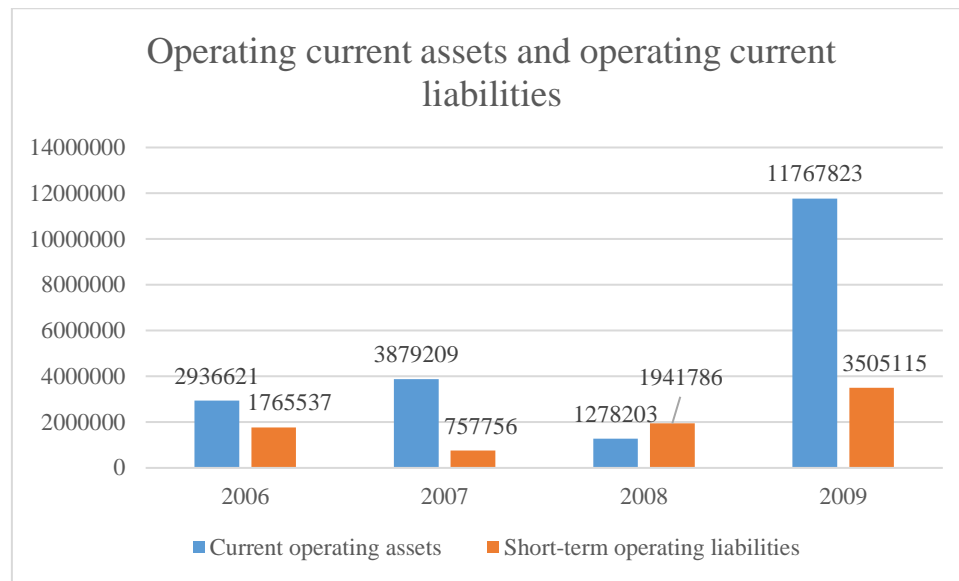
It can be seen that there was a need for funds in 2006, 2007 and 2009, the latter year being the one with the greatest need for funds, which may have been caused by the significant increase in available inventories and the expenses associated with their maintenance.

Figure 1 shows the behavior of operating current assets and operating current liabilities for the coal sector in the Department of Norte de Santander during the years under study.

Table 4. Operating current assets and operating current liabilities

	Current operating assets	Short-term operating liabilities
2006	2936621	1765537
2007	3879209	757756
2008	1278203	1941786
2009	11767823	3505115

Figure 1. Operating current assets and operating current liabilities



3.2. Management indicators in the carbon sector in the Department of Norte de Santander 2006-2009

Once the NOFs for the years under study were determined, the operational management indicators for the sector were determined to analyse the conversion cycle. The results are presented in table five.

Table 5. Management indicators in the coal sector of the Department of Norte de Santander

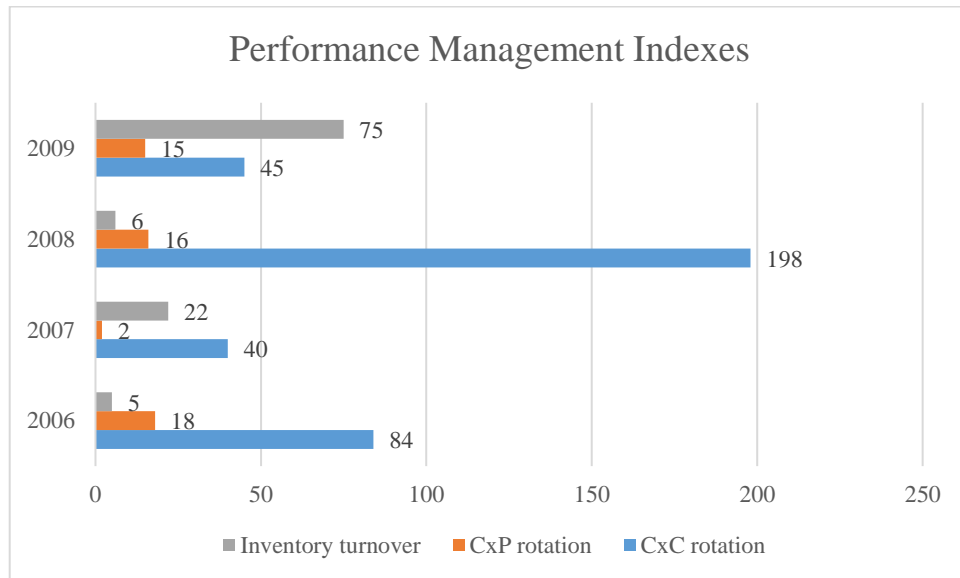
RATIOS	2006	2007	2008	2009	FORMULA	EXPLICACION
Inventory Turnover	5	22	6	75	$\frac{365 \times \text{INVENTORIES}}{\text{CONSUMPTION (VARIAC INV)}}$	Number of days that take the balance In inventories
CxP Turnover	18	2	16	15	$\frac{365 \times \text{SUPPLIERS}}{\text{PROCUREMENT}}$	Number of days payment to suppliers
CxC Rotation	84	40	198	45	$\frac{365 \times \text{CC CUSTOMERS}}{\text{SALES}}$	Average term granted to customers
Treasury Turnover	1300	156	1649	79	$\frac{365 \times \text{AVAILABLE}}{\text{PROCUREMENT}}$	Days of purchase covered with the available

Figure 2 and Table 6 show the performance of the management indicators.

Table 6. Performance Management Indexes

CxC rotation	CxP rotation	Inventory turnover	
2006	84	18	5
2007	40	2	22
2008	198	16	6
2009	45	15	75

Figure 2. Behavior of the coal sector management indexes in the Department of Norte de Santander 2006-2009.



There is a mismatch between the turnover of accounts receivable, which is higher than accounts payable, which led to the accounts receivable being financed with non-operating resources, hence the need for funds. It was observed that the variations of the inventory turnover fluctuated in lower value except for the year 2009 when it presented a 500% variation and reached seventy days.

3.3. To evaluate the solvency of the coal sector in the department of Norte de Santander for the period 2006-2009.

Solvency Ratio

Valuation of the result, the ideal result of the index would be equal to 1.5; less than 1.5 would indicate that the company does not have the necessary solvency to meet its short-term payments. If it is greater than 1.5, the company may run the risk of having too many current assets, for example, cash on hand, which may lose value over time if it is not invested.

$$\text{Solvency Ratio} = \text{Current Assets} / \text{Current Liabilities}$$

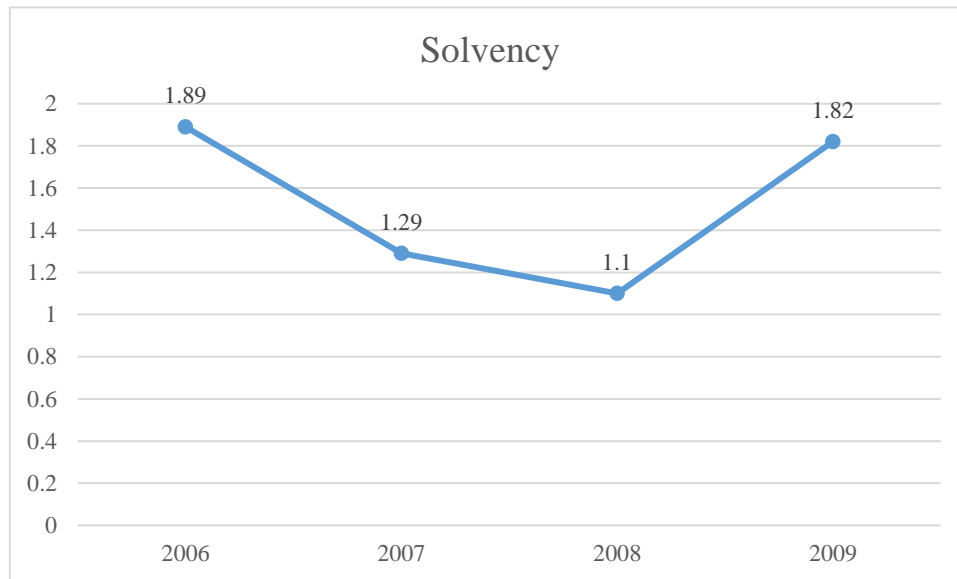
ETable 7 shows the results of the solvency indicator.

Table 7. Solvency of the coal sector in the Department of Norte de Santander 2006-2009

	2006	2007	2008	2009
Current Assets	4.904.858,00	7.226.622,00	19.970.455,00	24.321.709,00
Current Liabilities	2.594.827,00	5.599.404,00	18.196.249,00	13.355.676,00
Solvency	1,89	1,29	1,10	1,82

These results are presented graphically in figure three.

Figure 3. Solvency index of the coal sector in the Department of Norte de Santander, years 2006-2009



The solvency index showed deterioration in 2007 and 2008 when it was below the reference value proposed by some authors of 1.5, in 2009 its value reached 1.82 reaching a value similar to that of 2006, which means that for that year the companies in the sector could meet their short-term commitments with the current assets available. Table 8 shows the sector's financial ratios.

4. Discussion and conclusions

After completing the study and analysing the relationships between operating finances, solvency and profitability of the coal sector in the Department of Norte de Santander in the period 2006-2009, it is concluded that:

When calculating the Operating Needs for Funds (NOF) it was evidenced that there was a need for funds in the years 2006, 2007 and 2009, being this last year where the greatest need for funds was presented, which could have been caused by the significant increase in available inventories and the expenses associated with their maintenance.

There is a mismatch between the turnover of accounts receivable and accounts payable, accounts payable have a lower turnover than accounts receivable, which led to accounts receivable being financed with non-operating resources, hence the need for operating funds.

References

- Albornoz Silva, M. J., Ramírez Ramírez, A., Gomez Mantilla, A., Rueda Barrios, G. E., Cadrazco Suárez, M. A., Fernández Aranda, H. armando, García Gómez, A. M., Luna Pereira, H. O., Arévalo Ascanio, J. G., Cabra Arango, G. E., Mujica Granados, C., Ordóñez Santos, M. L., Oliveros Contreras, D., Giraldo Pacheco, J. E., Mayerly Suárez, J., Leuro Casas, G. D., & Anchicoque Cadena, J. P. (2017). *Perfil Emprendedor del Estudiante de las Facultades de Administración, adscritas al Capítulo Oriente Ascolfa* (1st ed.). Ediciones Universidad Simón Bolívar.
- Alvarado Chacín, N. (1999). The execution of the amplified mother-infant program in Zulia State and the attitude of the beneficiaries | La ejecución del Programa Ampliado Materno-infantil en el Estado Zulia y la actitud de sus beneficiarios. *Revista Venezolana de Gerencia*, 4(9), 115–132.
- Arias, F. (2006). El Proyecto de Investigación: Introducción a la. In *Metodología Científica. Quinta Edición*.
- Balestrini, M. (2002). *Como se elabora el proyecto de investigación* (2nd ed.). BL Consultores y Asociados.
- Caldentey, E. P. (2019). A critical essay on the independence/autonomy of the central bank according to the dominant paradigm | Un ensayo crítico sobre la independencia/autonomía de la banca central según el paradigma dominante. *Investigacion Economica*, 79(311), 54–82. <https://doi.org/10.22201/FE.01851667P.2020.311.72436>
- de La Hoz, E. J., Fontalvo, T. J., & Morelos, J. (2018). Design of business clusters in the chemical sector of Colombia through multivariate calculus | Diseño de perfiles financieros empresariales del sector químico en Colombia mediante cálculo multivariado. *Informacion Tecnologica*, 29(4), 197–204. <https://doi.org/10.4067/s0718-07642018000400197>
- Díaz, M. P. M., Oña, V. M. M., & Falcón, V. V. (2021). Risks in placing credits. Case study: Coac textil “14 de marzo” | Riesgos en la colocación de créditos. Caso de estudio: coac textil “14 de marzo.” *Universidad y Sociedad*, 13(S2), 90–100.
- Estupiñan Roa, N., González Mendoza, J. A., & Luna Pereira, H. O. (2022). *Deserción, Permanencia y Graduación en la Universidad Francisco de Paula Santander* (1st ed.). Ecoe Ediciones.
- Falcón, V. V., & Martínez, B. S. (2021). The black swan of COVID-19 and the figure of the controller in business management | El cisne negro de la COVID-19 y la figura del controller en la gestión empresarial. *Universidad y Sociedad*, 13(S3), 196–202.
- Faus, J. (1999). *Finanzas Operativas* (4th ed.). Editorial: Universidad de Navarra España.
- Galvis-Ciro, J. C., Hincapié-Vélez, G. D., de Moraes, C. O., & García-Lopera, J. (2022). The SPREAD of Interest Rates in Colombia for the Period 2010-2020 | L'évolution des taux d'intérêt en Colombie pour la période 2010-2020 | El SPREAD de las tasas de interés en Colombia para el período 2010-2020. *Lecturas de Economía*, 97, 45–78. <https://doi.org/10.17533/udea.le.n97a345596>
- González Mendoza, J. A., Riaño Solano, M., & Luna Pereira, H. O. (2022). *Competencias Gerenciales de la Industria Hotelera de Cúcuta* (1st ed.). Ecoe Ediciones.
- Henry Orlando, L.-P., Marvin Vladimir, D.-P., & José Ivan, L.-P. (2022). Impacto Of The Manufacturing Sector In The Fase Of The Socioeconomics Crisis Case: Colombia-Venezuela. *Journal of Language and Linguistic Studies*, 18(4), 126–133. www.jlls.org
- Henry Orlando, L.-P., Wlamyr, P.-A., & Marvin Vladimir, D.-L. (2022). Application Of International Financial Reporting Standards (Niif) In Smes Latin American Borders Case Colombia Venezuela. *Journal of Language and Linguistic Studies*, 18(3), 245–256. www.jlls.org
- Hernández Sampieri, Roberto., Fernández Collado, C., & Baptista Lucio, M. del P. (2019). *Metodología de la Investigación* (Quinta edición). Mc Graw Hill.

- Ibáñez-Carpena, N., & Benito, B. (2019). The action plan in foundations: Public support for its preparation and impact measures | El plan de actuación en las fundaciones: Apoyo público para su elaboración y medidas de impacto. *CIRIEC-España Revista de Economía Pública, Social y Cooperativa*, 96, 189–213. <https://doi.org/10.7203/CIRIEC-E.96.12908>
- Jesús, G. G., Annherys, P. M., & Mariby, B. (2022). Management strategies in contractor companies in the construction sector in Barranquilla Atlántico | Estrategias gerenciales en empresas contratistas del sector construcción en Barranquilla Atlántico. *Revista Venezolana de Gerencia*, 27(100), 1825–1836. <https://doi.org/10.52080/rvgluz.27.100.32>
- Méndez Pinzón, M., Velez Rolon, A. M., Villarreal Ramos, R. L., & Gómez Osorio, M. (2022). Financial implications of including shared value in business practices | Implicaciones financieras de la inclusión del valor compartido en prácticas empresariales. *Revista Venezolana de Gerencia*, 27(98), 649–665. <https://doi.org/10.52080/rvgluz.27.98.17>
- Montoya, A., Montoya, I., & Castellanos, O. (2010). Situación de la competitividad de las Pyme en Colombia: elementos actuales y retos. *Agronomía Colombiana*, 28(1), 107–117. <http://www.scielo.org.co/pdf/agc/v28n1/v28n1a13.pdf>
- Musons, J. I. L. (2005). Operational risk management in financial institutions: A dead-end journey | Gestión del riesgo operativo en las entidades de crédito: Un camino sin retorno. *Cuadernos de Gestión*, 5(1), 53–78.
- Núñez, E. R. V., Álvarez, A. T. V., Lascano, M. E. C., & Sarango, A. F. H. (2022). Evaluation of the Financial Sustainability of the Associative Human Development Credit in the Province of Tungurahua, Ecuador | Évaluation de la viabilité financière du Crédit Associatif pour le Développement Humain dans la province de Tungurahua, Equateur. *Lecturas de Economía*, 97, 325–368. <https://doi.org/10.17533/udea.le.n97a346723>
- Pinzón Herrera, M., Sánchez Piraban, E. M., Serrano Serrat, L. V., & Guevara Garzón, C. N. (2022). ANALYSIS OF OPERATING VALUE DRIVERS FOR SABANA CENTRO COMPANIES IN CUNDINAMARCA, COLOMBIA | ANÁLISIS DE INDUCTORES DE VALOR OPERATIVO EMPRESAS SABANA CENTRO EN CUNDINAMARCA, COLOMBIA. *Universidad y Sociedad*, 14(S1), 403–416.
- Valles, V. M. R., Cuesta, P. Y. C., & Reina, L. B. M. (2021). Analysis of ventures created in time of the covid-19 pandemic in the Canton Ibarra | Análisis de emprendimientos creados en tiempo de pandemia co-vid-19 en el Canton Ibarra. *Universidad y Sociedad*, 13(S1), 345–353.