Financial Analysis Of Snack Producing And Marketing Companies In Ecuador

[1]CARRILLO PUNINA ALVARO PATRICIO,
[2]GALARZA TORRES SANDRA PATRICIA,
[3]TIPÁN TAPIA LUIS ALFREDO,
[4]CUEVA OCHOA BETTY ELIZABETH,
[5] VACA PAREDES MAYRA ALEJANDRA,
[6]CANDO LOACHAMIN LUIS ALBERTO

[1]apcarrillo@espe.edu.ec, [2]spgalarza@espe.edu.ec,
[3]latipan@espe.edu.ec, [4]becueva@espe.edu.ec,
[5]mavaca5@espe.edu.ec, [6]lacando@uce.edu.ec
[1,2,3,4,5]Universidad de las Fuerzas Armadas de Ecuador,
[6]Universidad Central del Ecuador

*Correspondence author:
E-Mail adress: apcarrillo@espe.edu.ec (A. P. Carrillo Punina)

Summary

The snack production and marketing sector is an important source of income and foreign exchange for the food and beverage industry worldwide. Although the pandemic has affected this sector as well as other businesses, the consumption of snacks and soft drinks has increased in households due to their price and ease of purchase. In Ecuador, this sector contributes to the economy through the generation of employment, the payment of taxes and the opening of international markets. Therefore, this article analyzes the financial health of the production and marketing sector of finite populations 285 companies in the sector are determined to compile and analyze the indicators available on the website of the Superintendence of Companies, Securities and Insurance of Ecuador. Pearson correlation and principal component analysis are used. The results show that the sector is correlated between liquidity and debt, as well as between liquidity and management, but there is no relationship between liquidity and profitability. Finally, a financial model is designed for the sector, consisting of three components that represent 62.64% of the total variance explained.

Keywords: Financial analysis, liquidity, profitability, indebtedness and management.

1. Introduction

According to several publications, the world economy is in a phase of more marked slowdown than anticipated, accompanied by an increase in inflation that had not been seen in several decades. Factors contributing to this situation include the cost-of-living crisis, declining financial conditions in many regions, Russia's invasion of Ukraine, and the effects of the COVID-19 pandemic (Carrillo and Galarza, 2022). In fact, global growth is projected to slow from 6.0% in 2021 to 2.7% in 2023. This is reportedly the weakest growth profile since 2001, excluding the global financial crisis and the critical phase of the COVIT-19 pandemic (WB, 2020; IMF, 2022).

The COVIT-19 pandemic has significantly impacted the global snacks market, as changing consumer lifestyles, lockdowns, and the growing importance of health have transformed the way these foods are consumed and market demand. According to Statista (2021), the snacks market worldwide generated revenue of USD $ 1,399,815 million in 2021 and is expected to grow annually by 2.44% in the period 2021-2025. The United States in the leading market of this segment, with revenues of 295,929 million dollars in 2021. The main destinations within the top 10 of the snack market are: United States, China, Japan, United Kingdom, Germany, Russia, Brazil, India, France and Italy (Euromonitor, 2021).

Snacks are small snacks that temporarily satisfy hunger and are consumed regularly between meals, in places such as work, schools, group outings and at home (ProEcuador, 2020). New characteristics of the snack consumer include a greater influence of visual appeal and sense of indulgence in relation to the nutritional value of the product. In addition, the confinement of the pandemic has driven the need to bring the snack experience to the home (Fedexpor, 2021).

Younger consumers are looking for personalized experiences in snack consumption globally, such as lighter snacks in the mouth, crunchy and soft textures, sweet and healthy snacks. The change in the lifestyle of consumers has driven the purchase of snacks in online stores, where the visual aspect of the product is increasingly relevant when selecting the product, The COVIT-19 pandemic and health concerns have reinforced the need to look for products that improve health and are less processed than before. Therefore, health concerns are one of the factors driving the improvement of the snack consumption experience (Euromonitor, 2021).

The food and beverage sector is one of the largest in Ecuador, with a 6.6% share in the Gross Domestic Product (2022), in 2020 the sector accounted for 45% of the country's manufacturing activity. In 2021, after an economic recovery related to the health situation of 2019 and 2020, the total sales of the food and beverage sector increased and

represented 42.8% of the income generated in the country. The food and beverage sector is responsible for 5 out of 10 jobs in Ecuador, and 1 in 10 companies belongs to this sector, In 2021, the Internal Revenue Service (SRI) registered for USD 9,934 million dollars, which shows a recovery of the sector.

Ecuador is an important producer and exporter of these products, for example, it is the eighth supplier of snacks to Chile, mainly through the export of fried banana chips. According to Agrocalidad, snacks represent 25% of the 1,261 products registered and processed in Ecuador. Thus, this sector is composed of 1097 large, medium and small companies that are dedicated to the production and marketing of snacks in the domestic market and for export. In Ecuador the largest companies in the sector according to the amount of their assets, sales share and national and international presence are: INDUSTRIAS ALIMENTARIAS ECUATORIANAS, INALECSA S.A., INDUSTRIA DE ALIMENTOS PROCESADOS INALPROCES S.A., MERCAGRO S.A. AND BANCHISFOOD S.A.

Taking into account the above, the study in question proposes to analyze the financial situation of companies belonging to the production and marketing of snacks in Ecuador. The analysis focuses on financial aspects of liquidity, profitability, debt and management (activity), taking into account the pre-pandemic period (2016-2019) and pandemic (2020). At the same time, the research hypothesis "There is a direct and strong relationship between liquidity and profitability in the production and marketing sector of snacks in Ecuador in the period 2016-2020" is established.

2. Literature review

Financial analysis and diagnosis

According to several authors, financial analysis is a technique used to evaluate the operational behavior of a company, allowing the diagnosis of its current situation and the prediction of future events, in order to achieve proposed objectives. This analysis is based on the interpretation of the events that occurred in the business activity, using techniques that allow making sound decisions, examining the company's debt and investment capacity and evaluating its financial position (Alvarez, 2016; Gitman, 2016). Financial analysis involves the application of a set of analytical techniques to financial statements, to generate a series of measures and relationships useful for decision making. This process deals with the reclassification, collection, obtaining and comparison of accounting, operational and financial data to evaluate the financial position, development and results of business activity in the present, past and future (Nava, 2009).

Financial analysis allows management to predict the effect that some strategic decisions may have on the future performance of the company. It is a key tool for the managerial management of any organization, since it contemplates a set of principles and procedures used in the transformation of accounting, economic and financial information that, once processed, is useful for making investment decisions, financing, planning and control with greater ease and relevance, allowing to compare the results obtained by a company during a certain period of time with the results of other businesses. similar (Block et al, 2013; Besley and Brigham, 2016).

Thus, the main tools of financial analysis are financial ratios, which are based on the use of relative values, such as those that can be obtained from the profit and loss statement and the company's balance sheet. In summary, financial analysis is an essential tool for decision-making in business management and is used to assess the current situation of the company and foresee its future. The indicators that diagnosed the financial health of a company are liquidity, profitability, debt and activity (Carrillo, et al, 2022).

Liquidity

According to Gitman (2016), a company's liquidity refers to its ability to meet its short-term obligations when they come due. Liquidity is a measure of solvency of the company's overall financial position and its ability to pay bills. A low level of liquidity or its decrease is an early sign of cash flow problems and possible business failures. Therefore, it is important that companies have liquidity to fulfill their daily operations. However, liquid assets, such as cash and marketable securities. They do not generate high rates of return, which can discourage shareholders from overinvesting in liquidity. Companies must then balance the need for security provided by liquidity with the returns generated by liquid assets.

Profitability

The profitability of the company is the result of the managerial decisions, policies and financial decisions implemented in the organization and measures the degree of financial attractiveness that the business has. This profitability is reflected in the proportion of profit or profit obtained from an asset used in the production process during a specific period of time. It is a percentage value that measures the efficiency of the company's operations and investments. Through financial analysis, it is possible to determine the profitability levels of a company, evaluating the efficiency in the use of assets, sales levels

and the convenience of making investments (Van Home and Wachowicks, 2010).

Studies on liquidity and profitability

In order to highlight the importance of conducting liquidity and profitability studies, Table 1 describes some works on this topic that have been published in journals indexed in SCOPUS and LATINDEX.

Table 1 Studies on liquidity and profitability (2015 -2021)

Author	**Title**	**Magazine**	**Year**	**Indexing**
Sadig, Naeem and Khan	Impact of Capital Management on the Financial Performance of Pakistani Listed Firms	Journal of Financial Reporting and Accounting	2015	Scopus
Hu y Sun	Working Capital Management and Corporate Financial Perfomance: Evidence from Panel Data Analysis of Chinese Listed Companies	Emerging Markets Finance and Trade	2016	Scopus
Escamilla-Rivera and Pérez Rodríguez	Working Capital Management and Firm Profitability: Evidence from Mexico	Administrative Investigation	2017	Latindex
Liu, Wei y Xie	Corporate Social Responsibility Working Capital Management and Firm Profitability: Evidence from Chinese Listed Firms	Sustainability	2018	Scopus
Moyo and Mhaka	Working Capital Management and Firm Profitability: Evidence from Emerging Markets	Journal of Applied Accounting Research	2019	Scopus
Choudhury y Akhter	Working Capital Management, Liquidity, and Firm Profitability: Evidence	Accouting Research Journal	2020	Scopus

	from an Emerging Economy			
Oliveira, Funchal y de Oliveira	The Relationship between Liquidity and Profitability of the Largest Brazilian Companies in the COVID-19 Crisis Context.	UFSM Management Journal	2021	Latindex

Note: Adapted from the documentary review

3. Methodology

The design of the research is quantitative, since the financial indicators of liquidity, profitability, debt and activity in the companies of the producer and marketer of snacks in Ecuador are analyzed, during the period 2016 to 2020. The study is descriptive and correlational because they apply statistical tools that allow achieving the objectives and testing the hypothesis proposed. The study population are the companies that make up the snack production and marketing sector that are registered in the base of the Superintendence of Companies, Securities and Insurance of Ecuador in the ISIC categories A0150.00, C1030.14, C1030.17, C1071.01, G4630.99 and that amount to 1097 companies, confidence level (z) of 95%, margin of error (e) of 5%, Probability of occurrence of the event (p) of 0.05 and probability of non-occurrence (q) of 0.05, thus determining a sample (n) of 285 companies. For this purpose, the 285 largest companies in the sector are selected for convenience, in order of hierarchy according to the amount of assets.

$$n = \frac{z^2 \times p \times q \times N}{z^2 \times p \times q + (N-1)e^2}$$

In this article, we worked with the financial indicators of the web database of the Superintendence of Companies, Securities and Insurance of Ecuador (2022). The information is processed in the statistical package SPSS version 24 to establish Pearson correlations between the different indicators. Likewise, the principal components analysis (PCA) model is applied in order to identify the financial dimensions that define the financial behavior of these companies. For this study, the sector is the set of average indicators of the 285 companies that make up the sample.

The decision criteria on the financial situation are made according to Table 2 developed by Carrillo et al. (2022) under the theories of Weston and Copeland (1996), Nava (2009), Van Horne and Wachowickz (2010), Gitman (2016), Block et al. (2013), Álvarez (2016), Besley and Brigham (2016) and Ponce et al. (2019).

Table 2 Decision criteria for the financial situation of the indicator

	Favorable Situation Decision
Current Liquidity	• Greater than 1.5. • Higher than the previous year. • Greater than or equal to the industry average.
Acid Test	• Greater than 1.0. • Higher than the previous year. • Greater than or equal to the industry average.
Indebtedness of assets	• Between 60% and 70%
Patrimonial Indebtedness	• Greater than 1. • Higher than the previous year. • Greater than or equal to the industry average.
Short-term indebtedness	• Less than 40%. • Lower than the previous year. • Less than or equal to the industry average.
Leverage	• Greater than 1. • Higher than the previous year. • Greater than or equal to the industry average.
Financial Leverage	• Greater than 1. • Higher than the previous year. • Greater than or equal to the industry average.
Portfolio rotation	• Higher than the previous year. • Greater than or equal to the industry average.
Fixed asset turnover	• Higher than the previous year. • Greater than or equal to the industry average.
Sales turnover	• Higher than the previous year. • Greater than or equal to the industry average.

Average collection period Short term	• Lower than the previous year. • Less than or equal to the industry average. • Less than the average short-term payment period.
Average short-term payment period	• Higher than the previous year. • Greater than or equal to the industry average. • Greater than the Average Short Term Payment Period.
Impact of administrative and sales expenses	• Lower than the previous year. • Less than or equal to the industry average.
Gross margin	• Higher than the previous year. • Greater than or equal to the industry average.
Operating margin	• Higher than the previous year. • Greater than or equal to the industry average.
Net profitability of sales	• Higher than the previous year. • Greater than or equal to the industry average.
Return on equity ROE	• Higher than the previous year. • Greater than or equal to the industry average.
Return on assets ROA	• Higher than the previous year. • Greater than or equal to the industry average.

Note: Adapted from Carrillo et al. (2022).

4. Results

4.1. Financial analysis

4.1.1. Liquidity of snack producing and marketing companies in Ecuador

During 2020, the snack production and marketing sector in Ecuador has a favorable current ratio, since its average current assets were $1.56 for every dollar of current liabilities, exceeding the technical standard of 1.5 established by Gitman (2016). However, due to the pandemic, this current ratio decreased compared to the previous year, and in 2019 it was higher than in 2018, with 2016 being the year with the highest liquidity in this sector. As for the acid test indicator, which measures the liquidity of companies considering current assets except

inventories, in 2020 it was also favorable, since its average was $ 1.23 for every dollar of current liabilities, exceeding the technical standard of 1.0 of Gitman (2016). In 2019, the acid test was higher than in 2018, and as in the current ratio, the highest index was obtained in 2016. The liquidity results are presented in Table 3.

Table 3 Liquidity of snack producing and marketing companies in Ecuador

	Year				
LIQUIDITY	2016	2017	2018	2019	2020
Current Reason	2,18	2,03	1,20	1,86	1,56
Acid test	1,87	1,76	0,89	1,45	1,23

Note: Average annual indicators of the 285 companies

4.1.2. Profitability of snack producing and marketing companies in Ecuador

During the pandemic year, the sector of snack production and marketing companies in Ecuador experienced very favorable profitability, since all the indicators studied show growth in 2020. In particular, gross margin increased from 48.87% in 2019 to an index of 54.16% in 2020, which is the highest recorded in the period 2016 to 2020. The operating margin in 2020 is 24.34% higher than in 2019, although the highest profitability occurred in 2018, with 22.07%. The net profitability of sales is higher in 2020 than that obtained in 2019 and, together with that registered in 2018, are the highest in the industry studied. Return on equity (ROE) in 2020 is the highest recorded in 2019. Finally, the return on assets (ROA) is favorable, since it increases in 2020 and is an indicator of 3.16%, while in 2019 it was 0.16%. The profitability results are described in Table 4.

Table 4 Profitability of snack producing and marketing companies in Ecuador

	Year				
Profitability	2016	2017	2018	2019	2020
Gross margin	48,32%	49,23%	53,58%	48,87%	54,16%
Operating margin	16,93%	14,20%	23,50%	20,30%	22,07%
Net profitability of sales	0,72%	-4,43%	2,30%	-1,12%	1,82%
Return on equity ROE	6,53%	-16,65%	8,75%	-15,41%	8,58%
Performance on ROA assets	2,38%	-2,76%	3,48%	0,16%	3,16%

Note: Average annual indicators of the 285 companies

4.1.3. Indebtedness of snack producing and marketing companies in Ecuador

In the context of snack production and marketing companies in Ecuador, it is observed that in 2020 the active debt indicator is favorable, since 66% of assets are financed through liabilities, which is considered appropriate in the range of 60% to 70% to avoid over-indebtedness and limit the growth of the asset and the distribution of risk between equity owners and creditors. In 2020, the ratio of equity indebtedness is favorable, since it is greater than 1, which implies that, in the production and marketing companies of snacks in Ecuador, each dollar of equity has allowed to obtain 3.94 dollars of liabilities. On the other hand, short-term indebtedness has decreased in relation to 2018 and 2019, being favorable because at the same time long-term liabilities have increased.

As for the leverage indicator, it is favorable, since it is greater than 1 and has decreased compared to 2019, that is, equity is leveraged in fixed costs to generate operating profit. Financial leverage is favorable in 2020, since it is greater than 1, with a value of 3.44, which indicates that the sector relies on financial costs to generate net income. The debt results are shown in Table 5.

Table 5 Indebtedness of snack producing and marketing companies in Ecuador

	Year				
Indebtedness	2016	2017	2018	2019	2020
Indebtedness of assets	0,60	0,61	0,60	0,61	0,66
Patrimonial Indebtedness	1,79	1,94	2,07	2,58	3,94
Short-Term Indebtedness	0,43	0,57	0,80	0,63	0,62
Leverage	2,79	2,94	3,07	3,58	4,94
Financial Leverage	1,45	-0,34	2,44	2,91	3,44

Note: Average annual indicators of the 285 companies

4.1.4. Indicators of management or activity of companies producing and marketing snacks in Ecuador

First, it has been observed that, in 2020, portfolio turnover was 29.07 times, which indicates that accounts receivable recover faster

compared to previous years and is the highest rate since 2016. However, fixed asset turnover and sales turnover are unfavorable as both have decreased in 2020 compared to 2019. The average short-term collection period in 2020 is unfavorable during the pandemic, as it has increased compared to 2019, indicating that the sector takes 37.40 days on average to recover the debts that customers have with companies. The average short-term payment period can be considered as unfavorable because it has decreased in 2020.

In the last five years, from 2016 to 2020, it is observed that the sector has a good situation in terms of the comparison of the indicators of short-term average collection period and short-term average payment period, since the term to pay suppliers is longer than the collection period to customers. This indicates that companies in the sector use the resources obtained from their own business operation, that is, customer money, to cover their debts with suppliers. However, the impact indicator of administrative and sales expenses has increased in 2022, this means that the weight of operating expenses, administrative and sales expenses, with respect to sales is higher during the pandemic, which is an unfavorable situation. The results of management or activity are shown in Table 6.

Table 6 Management or activity of snack producing and marketing companies in Ecuador

Management or Activity	**Year**				
	2016	2017	2018	2019	2020
Portfolio rotation	9,02	8,18	9,60	11,07	29,07
Fixed asset turnover	9,85	6,35	6,20	29,33	4,39
Sales turnover	2,37	1,92	2,16	3,84	2,50
Average short-term collection period	45,15	50,41	38,65	35,54	37,40
Average short-term payment period	98,88	73,15	53,98	78,93	69,47
Impact of administrative and sales expenses	31,39%	35,03%	30,08%	28,57%	32,09%

Note: Average annual indicators of the 285 companies

4.1.5. Financial strengths and weaknesses of snack producing and marketing companies in Ecuador

According to the previous analyses, the following financial strengths and weaknesses are presented in the period 2016 – 2020 for the sector made up of the 285 companies in the sample.

Financial strengths

Liquidity

- In 2020, the current ratio and acid test are favorable, since they are higher than the theoretical standard and higher than those registered in 2019.

Profitability

- In 2020 the indicators of Gross Margin, Operating Margin, Net Profitability on Sales, Return on Equity ROE and Return on Assets ROA are higher than in 2019, therefore, they are favorable indicators for the sector.

Indebtedness

- Asset Indebtedness is in the theoretical range of 60% to 70% and has grown compared to 2019, it is a very favorable indicator.
- Equity indebtedness is favorable because it is greater than 1 and higher than that reported in 2019.
- Short-term indebtedness is favorable, since it is lower than in 2019 and gives way to a greater share of long-term indebtedness.
- Leverage and financial leverage are favorable because by 2020 they are greater than unity.

Management or activity

- Portfolio turnover in 2020 is favorable because it has grown compared to 2019, that is, customer debts are recovered more times.

Financial weaknesses of snack producing and marketing companies in Ecuador

Liquidity

- In 2020, the current ratio and acid test are unfavorable compared to 2019, because they have decreased.

  Management or activity
- Unfavorable fixed asset turnover in 2020 because it is lower than that registered in 2019.
- Sales turnover in 2020 is unfavorable, as it is lower than that calculated in 2019.
- Average short-term collection period in 2020 is unfavorable because it grew in relation to 2019.
- The average short-term payment period in 2020 is unfavorable because it decreased compared to 2019.

- The impact of administrative and sales expenses in 2020 is unfavorable because there is a greater weight of these than that registered in 2019.

Financial strengths and weaknesses of the largest companies in the production and marketing sector of snacks in Ecuador

The financial situation of INDUSTRIAS ALIMENTARIAS ECUATORIANAS INALECSA S.A., INDUSTRIA DE ALIMENTOS PROCESADOS INALPROCES S.A., MERCAGRO S.A. and BANCHISFOOD S.A. is analyzed based on the indicators shown in Tables 7, 8, 9 and 10.

Table 7 INALECSA Financial Indicators

	Years				
	2016	2017	2018	2019	2020
Current Liquidity	1,25	1,83	1,20	1,63	1,60
Acid Test	1,05	1,57	0,97	1,39	1,39
Indebtedness of assets	70,62%	61,31%	55,88%	47,20%	40,57%
Patrimonial Indebtedness	240,33%	158,47%	126,65%	89,40%	68,27%
Short-Term Indebtedness	42,04%	37,46%	63,54%	56,00%	70,78%
Leverage	3,40	2,58	2,27	1,89	1,68
Financial Leverage	3,18	2,51	2,21	1,85	1,64
Heritage Fortress	0,38	0,27	0,23	0,19	0,16
Portfolio rotation	7,17	7,77	9,44	8,40	8,66
Fixed asset turnover	2,55	2,73	2,67	2,74	2,68
Sales turnover	1,56	1,54	1,50	1,51	1,38
Average collection period Short term	50,93	47,00	38,67	43,13	41,85
Average short-term payment period	189,63	84,83	89,50	106,83	91,82
Impact of administrative and sales expenses	0,35	0,35	0,33	0,32	0,35
Gross margin	62,62%	61,94%	64,62%	64,93%	67,67%
Operating margin	27,90%	26,97%	31,19%	33,39%	32,39%
Net profitability of sales	5,50%	6,97%	8,24%	8,91%	8,82%
ROE	29,09%	27,77%	28,06%	25,46%	20,52%

ROA	8,55%	10,75%	12,38%	13,44%	12,20%

Note: Adapted from information from the Superintendence of Companies, Securities and Insurance of Ecuador (2016, 2017, 2018, 2019 and 2020).

Table 8 Financial indicators INALPROCES S.A.

	Years				
	2016	2017	2018	2019	2020
Current Liquidity	1,57	0,95	1,06	0,82	1,56
Acid Test	1,26	0,68	0,75	0,46	1,04
Indebtedness of assets	66,20%	76,40%	82,11%	87,07%	90,40%
Patrimonial Indebtedness	195,89%	323,69%	458,94%	673,65%	941,64%
Short-Term Indebtedness	37,54%	57,39%	54,84%	63,74%	40,19%
Leverage	2,96	4,24	5,59	7,74	10,42
Financial Leverage	1,83	1,65	5,04	6,19	9,50
Heritage Fortress	1,78	3,48	3,20	4,71	4,64
Portfolio rotation	5,23	6,04	10,24	9,37	4,91
Fixed asset turnover	1,69	1,60	3,31	2,78	2,95
Sales turnover	1,01	0,91	1,68	1,47	1,20
Average collection period Short term	67,03	58,72	35,45	38,73	74,09
Average short-term payment period	131,58	135,11	64,57	133,16	94,44
Impact of administrative and sales expenses	0,48	0,41	0,16	0,25	0,20
Gross margin	62,87%	49,82%	45,08%	51,20%	51,49%
Operating margin	14,40%	9,20%	29,40%	26,41%	31,94%
Net profitability of sales	-6,37%	-25,27%	0,67%	-8,16%	0,05%
ROE	-19,11%	-97,32%	6,23%	-92,71%	0,60%
ROA	-6,46%	-22,97%	1,11%	-11,98%	0,06%

Note: Adapted from information from the Superintendence of Companies, Securities and Insurance of Ecuador (2016, 2017, 2018, 2019 and 2020).

Table 9 Financial indicators MERCAGRO S.A.

	Years

	2016	2017	2018	2019	2020
Current Liquidity	2,62	1,12	1,14	1,38	0,41
Acid Test	2,50	1,10	1,00	1,18	0,36
Indebtedness of assets	69,03%	70,27%	64,28%	65,24%	82,33%
Patrimonial Indebtedness	222,85%	236,34%	179,95%	187,71%	466,08%
Short-Term Indebtedness	45,80%	100,00%	100,00%	100,00%	100,00%
Leverage	3,23	3,36	2,80	2,88	5,66
Financial Leverage	-0,63	-6,95	1,11	2,10	1,18
Heritage Fortress	0,01	0,01	0,01	0,01	0,00
Portfolio rotation	10,38	5,28	7,71	17,13	90,39
Fixed asset turnover	31,92	18,03	16,11	108,95	9,04
Sales turnover	5,46	3,81	4,29	11,09	6,00
Average collection period Short term	35,15	69,18	47,36	21,30	4,04
Average short-term payment period	14,77	31,25	17,18	15,68	28,25
Impact of administrative and sales expenses	0,09	0,29	0,31	0,19	0,30
Gross margin	10,05%	28,13%	36,79%	23,38%	33,90%
Operating margin	1,36%	-0,99%	5,94%	4,33%	3,86%
Net profitability of sales	0,50%	0,16%	0,01%	0,59%	0,57%
ROE	8,81%	2,02%	0,14%	18,98%	19,27%
ROA	2,73%	0,60%	0,05%	6,60%	3,40%

Note: Adapted from information from the Superintendence of Companies, Securities and Insurance of Ecuador (2016, 2017, 2018, 2019 and 2020).

Table 10 Financial Indicators BANCHISFOOD S.A.

	Years				
	2016	2017	2018	2019	2020
Current Liquidity	3,28	4,22	1,39	3,61	2,67
Acid Test	2,66	3,67	0,83	2,76	2,12

Indebtedness of assets	35,63%	36,10%	38,25%	44,43%	50,32%
Patrimonial Indebtedness	55,36%	56,50%	61,93%	79,96%	101,30%
Short-Term Indebtedness	45,29%	33,30%	100,00%	31,57%	38,04%
Leverage	1,55	1,57	1,62	1,80	2,01
Financial Leverage	1,41	1,42	1,40	1,49	1,46
Heritage Fortress	0,20	0,20	0,21	0,25	0,36
Portfolio rotation	13,29	13,65	11,03	9,36	12,33
Fixed asset turnover	3,26	3,04	2,73	2,83	2,88
Sales turnover	1,44	1,40	1,18	1,27	1,41
Average collection period Short term	27,47	26,74	33,11	38,98	29,61
Average short-term payment period	59,56	41,41	44,68	60,05	63,38
Impact of administrative and sales expenses	0,34	0,35	0,40	0,39	0,43
Gross margin	57,73%	57,02%	67,81%	55,96%	63,57%
Operating margin	24,06%	21,61%	27,45%	17,06%	20,07%
Net profitability of sales	3,27%	0,42%	0,30%	-5,84%	-2,14%
ROE	7,32%	0,91%	0,58%	-13,37%	-6,07%
ROA	4,71%	0,58%	0,36%	-7,43%	-3,01%

Note: Adapted from information from the Superintendence of Companies, Securities and Insurance of Ecuador (2016, 2017, 2018, 2019 and 2020).

Financial strengths of the largest companies in the production and marketing sector of snacks in Ecuador

Liquidity

- Current ratio is favorable in 2020 with respect to theoretical standards and with the average of the sector in the companies: **INALECSA,** INALPROCES S.A. and **BANCHISFOOD S.A.**
- Acid test is favorable in 2020 with respect to the theoretical standard in **INALECSA,** INALPROCES S.A. and **BANCHISFOOD S.A.**
- Acid test is favorable in 2020 compared to the industry average for **INALECSA** and **BANCHISFOOD S.A.**

Profitability

- Gross margin is favorable in 2020 with respect to the sector average for **INALECSA** and BANCHISFOOD S.A.
- Operating margin is favorable in 2020 with respect to the sector average for **INALECSA** and INALPROCES S.A.
- Net profitability in 2020 favorable with respect to the sector average for **INALECSA.**
- ROE in 2020 is favorable with respect to the sector average for **INALECSA** and MERCAGRO S.A.
- ROA in 2020 is favorable with respect to the sector average for **INALECSA.**

Indebtedness

- Equity indebtedness in 2020 is favorable with respect to the theoretical standard in the companies **INALPROCES** S.A., MERCAGRO S.A. and BANCHISFOOD S.A.
- Equity indebtedness in 2020 is favorable in relation to the sector average for the companies **INALPROCES S.A.** and MERCAGRO S.A.
- Short-term debt ratio in 2020 is favorable due to its low participation in relation to long-term debt in the company BANCHISFOOD S.A.
- Leverage in 2020 is favorable in relation to the sector average for **INALPROCES S.A. companies.** and MERCAGRO S.A.
- Financial leverage in 2020 is favorable relative to the industry average for **INALPROCES S.A.**

Management or activity

- Portfolio turnover and fixed asset rotation in 2020 are favorable for **MERCAGRO S.A.**
- Sales turnover in 2020 is favorable in the company **MERCAGRO S.A.**
- Average collection period in 2020 is favorable for **MERCAGRO S.A.** and BANCHISFOOD S.A.
- Average payment period in 2020 is favorable for INALPROCES S.A.
- Impact of administrative and sales expenses in 2020 is favorable for the companies INALPROCES S.A and **MERCAGRO S.A.**

Financial weaknesses of the largest companies in the production and marketing sector of snacks in Ecuador

Liquidity

- Current ratio is unfavorable in 2020 with respect to theoretical standards and with the industry average for **MERCAGRO S.A.**
- Acid test is unfavorable in 2020 with respect to the theoretical standard in the company **MERCAGRO S.A.**

- Acid test is unfavorable in 2020 compared to the industry average for the companies INALPROCES S.A. and **MERCAGRO S.A.**

Profitability

- Gross margin is unfavorable in 2020 with respect to the industry average for INALPROCES S.A. and **MERCAGRO S.A.**
- Operating margin is unfavorable in 2020 with respect to the sector average for **MERCAGRO S.A.** and **BANCHISFOOD S.A.**
- Net profitability in 2020 is unfavorable with respect to the sector average for **INALPROCES S.A., MERCAGRO S.A. and BANCHISFOOD S.A.**
- ROE in 2020 is unfavorable with respect to the sector average for INALPROCES S.A. and **BANCHISFOOD S.A.**
- ROA in 2020 is unfavorable with respect to the industry average for INALPROCES S.A., **MERCAGRO S.A.** and **BANCHISFOOD S.A.**

Indebtedness

- Equity indebtedness in 2020 is unfavorable with respect to the theoretical standard in the company **INALECSA.**
- Equity indebtedness in 2020 is unfavorable in relation to the sector average for the companies **INALECSA** and BANCHISFOOD S.A.
- Short-term debt ratio in 2020 is unfavorable due to its participation in relation to long-term debt in the companies **INALECSA,** INALPROCES S.A. and MERCAGRO S.A.
- Leverage in 2020 is unfavorable in relation to the sector average for the companies **INALECSA and** BANCHISFOOD S.A.
- Financial leverage in 2020 is unfavorable in relation to the industry average for **INALECSA,** MERCAGRO S.A. and BANCHISFOOD S.A.

Management or activity

- Portfolio turnover and fixed asset rotation in 2020 are unfavorable for **INALECSA,** INALPROCES S.A. and BANCHISFOOD S.A.
- Sales turnover in 2020 is unfavorable in the companies **INALECSA,** INALPROCES S.A. and BANCHISFOOD S.A.
- Average collection period in 2020 unfavorable for **INALECSA** and INALPROCES S.A.
- Average payment period in 2020 is unfavorable for **INALECSA,** MERCAGRO S.A. and BANCHISFOOD S.A.
- Impact of administrative and sales expenses in 2020 is unfavorable for the companies **INALECSA** and BANCHISFOOD S.A.

4.2. Correlation between liquidity and profitability of snack producing and marketing companies in Ecuador

To define the correlation present between financial indicators of companies in the snack production and marketing sector in Ecuador, the Pearson correlation ranges established by Cohen as cited by Hernández et al. (2014) are considered in Table 11. Thus, Table 12 identifies correlations between liquidity indicators (current ratio and acid test) with some indicators of debt and management or activity, however, no correlations between liquidity and profitability are revealed, which is why the hypothesis raised "There is a direct and strong relationship between liquidity and profitability in the production and marketing sector of snacks in Ecuador in the period 2016 - 2020" is rejected.

Through the Pearson coefficients calculated in the SPSS statistical package, a moderate and inverse correlation is determined between the current ratio and the indebtedness of the asset, that is, if current liquidity increases, there is a decrease in the asset's debt. Strong and inverse correlation is established between the current and acid test ratios with short-term indebtedness, therefore, when the current ratio and the acid test increase, the short-term debt ratio is reduced. Also, moderate and inverse correlation is determined between the current ratio and the acid test with the average short-term payment period, then, if current liquidity increases and acid test causes the term of payment to suppliers to increase also and, if liquidity indices fall, there is a decrease in the term of payment to suppliers.

Table 11 Pearson correlation ranges

Value range	**Interpretation**
Greater than or equal to 0 and less than 0.10	No correlation
Greater than or equal to 0.10 and less than 0.30	Weak correlation
Greater than or equal to 0.30 and less than 0.50	Moderate correlation
Greater than or equal to 0.50 and less than 1.00	Strong correlation

Note: Prepared according to Hernández et al. (2014)

Table 12 Correlation between liquidity and financial indicators

Financial reasons	Coefficient of correlation	Liquidity	
		Reason stream	Test Acid

Indebtedness of the asset	Pearson	-,358*	-,322
	Level of significance	,008	,047
Short-term borrowing	Pearson	-,649**	-,633**
	Level of significance	,000	,000
Average short-term payment period	Pearson	-,377*	-,384*
	Level of significance	,021	,013

4.3. Financial model

4.3.1. Financial model of snack producing and marketing companies in Ecuador

In the design of the financial model for snack production and marketing companies, made up of the 285 companies in the sample, ACP Principal Component Analysis is applied, since it is the technique of reducing the dimensionality of the data that seeks the minimum number of dimensions capable of explaining the maximum information contained in the data. The GPA determines the components that financially shape the situation of the industry in the period 2016 – 2020. The KMO and Barllett Test shows the feasibility of applying the PCA, since the Kaiser-Meyer-Olkin Measure of sampling adequacy is greater than 0.6, the Chi-Square coefficient is positive and large, and the significance level is less than 0.05, as described in Table 13.

Table 13 KMO and Bartletta Test

Kaiser-Meyer-Olkin measurement of sampling adequacy		,738
Bartlett's sphericity test	Approx. Chi-square	2082,889
	Gl	284
	Gis.	,000

to. It is based on correlations

Table 14 shows a total explained variance of 62.64% and together with Fig. 1 they show that the financial model for companies in the snack production and marketing sector in Ecuador is composed of 3 groups of indicators. Table 15 describes that COMPONENT 1 is structured as asset indebtedness, equity and leverage; COMPONENT 2 of this model is formed by fixed asset turnover, sales turnover and average short-term payment period and; COMPONENT 3 houses the financial leverage indicator. Therefore, it can be defined that the financial model of snack production and marketing companies in Ecuador is composed of three dimensions: DEBT - ACTIVITY - DEBT.

Table 14 Total variance explained

	Initial eigenvalues			**Squared load extraction sums**			**Squared load rotation sums**		
	Total	% variance	Cumulative %	Total	% variance	Cumulative %	Total	% variance	Cumulative %
1	18,723	56,169	56,169	4,973	26,176	26,176	4,957	26,090	26,090
2	8,517	25,551	81,720	5,293	27,856	54,032	4,522	23,798	49,888
3	3,502	10,506	**92,226**	1,636	8,608	**62,640**	2,423	12,752	**62,640**
4	1,255	3,766	95,992						
5	,727	2,180	98,172						
6	,379	1,137	99,309						
7	,161	,484	99,793						
8	,028	,083	99,877						
9	,017	,052	99,928						
10	,017	,050	99,978						
11	,005	,014	99,992						
12	,001	,004	99,996						
13	,001	,002	99,998						
14	,000	,001	99,999						
15	,000	,001	100,000						
16	3.010E-05	9.029E-05	100,000						
17	1.738E-06	5.215E-06	100,000						
18	4.552E-07	1.366E-06	100,000						
19	-7.985E-18	-2.396E-17	100,000						

a. When analyzing a covariance matrix, the initial eigenvalues are the same between the re-scaled and pure solution.

Table 15 Rotated component matrix

	Components		
Financial reasons	1	2	3
Current ratio	-,594	-,150	,145
Acid test	-,616	-,084	,048
Indebtedness of the asset	**,900**	,200	,019
Equity indebtedness	**,944**	,062	,299
Short-term borrowing	,157	,499	-,455
Leverage	**,944**	,062	,299
Financial leverage	,364	-,050	**,929**
Portfolio rotation	-,120	,535	,029
Fixed asset turnover	,028	**,884**	-,373
Sales turnover	,026	**,967**	-,233
Average short-term collection period	,120	-,532	-,028

Average short-term payment period	,151	**-,737**	,374
Impact of administrative and sales expenses	-,422	-,566	-,062
Gross margin	-,339	-,699	,429
Operating margin	-,109	-,514	,670
Net profitability of sales	-,360	,190	,105
ROE	-,443	,314	,003
ROA	-,409	,269	,072

Note: covariances greater than 0.7 are considered. Extraction method: principal component analysis. a. 3 extracted components.

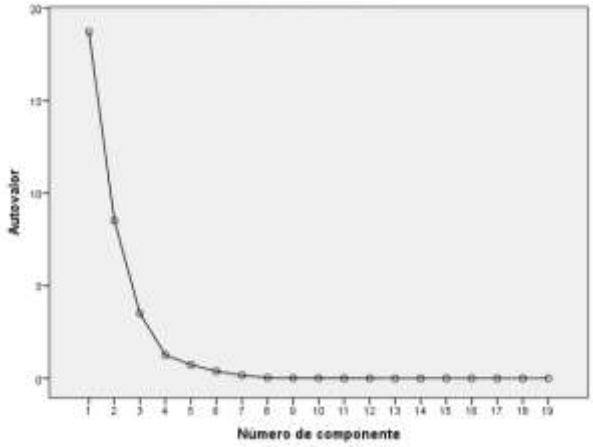

Fig. 1 Sedimentation Graph

4.3.2. Financial model of the largest companies in the production and marketing sector of snacks in Ecuador

INALECSA

The KMO and Barllett Test shows the feasibility of applying the PCA, since the Kaiser-Meyer-Olkin Measure of sampling adequacy is 0.71, the Chi-Square coefficient is positive and large, and the significance level is less than 0.05. Table 16 shows a total explained variance of 83.71% and together with Fig. 2 and Fig. 3 show that the financial model for INALECSA is composed of 2 groups of indicators.

Table 17 describes that COMPONENT 1 is structured as asset indebtedness, equity indebtedness, short-term indebtedness, leverage, financial leverage, portfolio turnover, sales turnover, average short-term collection period, gross margin, operating margin, net return on sales and ROA. COMPONENT 2 of this model is formed of current ratio, acid test and fixed asset turnover.

Therefore, it can be defined that INALECSA's financial model is composed of two dimensions: DEBT, ACTIVITY and PROFITABILITY – LIQUIDITY and ACTIVITY.

Table 16

Total variance explained

	Initial eigenvalues			**Squared load extraction sums**			**Squared load rotation sums**		
	Total	% variance	Cumulative %	Total	% variance	Cumulative %	Total	% variance	Cumulative %
1	1,406	88,494	88,494	11,694	64,966	64,966	10,221	56,784	56,784
2	,133	8,345	**96,839**	3,374	18,742	**83,708**	4,846	26,924	**83,708**
3	,046	2,922	99,760						
4	,004	,240	100,000						
5	1.874E-16	1,180E-14	100,000						
6	2.781E-17	1.751E-15	100,000						
7	2.088E-17	1.315E-15	100,000						
8	1.277E-17	8.040E-16	100,000						
9	8.747E-18	5.507E-16	100,000						
10	2,395E-18	1.508E-16	100,000						
11	1,250E-18	7.870E-17	100,000						
12	-1.012E-19	-6,370E-18	100,000						
13	-7.204E-19	-4.535E-17	100,000						
14	-1.987E-18	-1.251E-16	100,000						
15	-3.999E-18	-2.518E-16	100,000						
16	-1,720E-17	-1.083E-15	100,000						
17	-4.181E-17	-2.632E-15	100,000						
18	-8.647E-17	-5.444E-15	100,000						

a. When analyzing a covariance matrix, the initial eigenvalues are the same between the re-scaled and pure solution.

Table 17 Rotated component matrix

	Component	
Financial reasons	1	2

Current ratio	,158	**,982**
Acid test	,153	**,974**
Indebtedness of the asset	**,842**	-,499
Equity indebtedness	**,842**	-,539
Short-term borrowing	**-,966**	-,089
Leverage	**,842**	-,539
Financial leverage	**,852**	-,519
Portfolio rotation	**-,893**	,043
Fixed asset turnover	-,414	**,832**
Sales turnover	**,756**	-,276
Average short-term collection period	**,910**	-,064
Average short-term payment period	,481	-,658
Impact of administrative and sales expenses	,532	,065
Gross margin	**-,885**	,037
Operating margin	**-,917**	,037
Net profitability of sales	**-,889**	,419
ROE	,681	-,448
ROA	**-,791**	,482

Note: covariances greater than 0.7 are considered. Extraction method: principal component analysis. a. 2 extracted components.

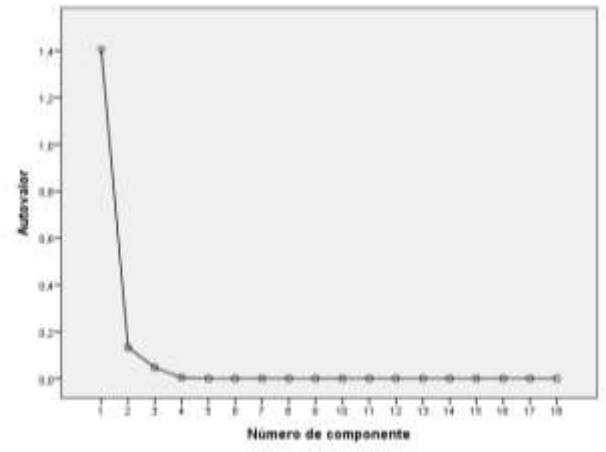

Fig. 2 Sedimentation Graph

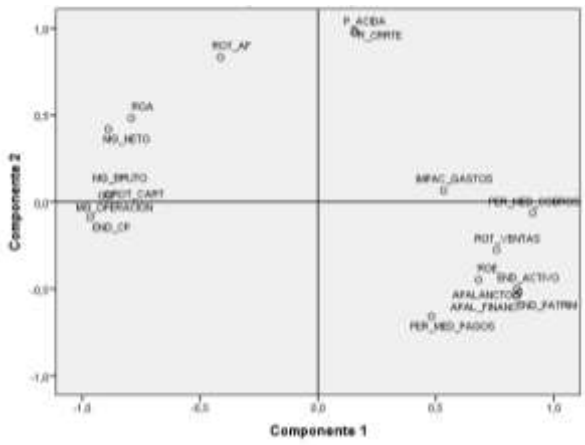

Fig. 3 Rotated Space Component Graph

INALPROCES S.A.

The KMO and Barllett Test shows the feasibility of applying the PCA, since the Kaiser-Meyer-Olkin Measure of sampling adequacy is 0.66, the Chi-Square coefficient is positive and large, and the significance level is less than 0.05. Table 18 shows a total explained variance of 95.53% and together with Fig. 4 they show that the financial model for INALPROCES is composed of 1 group of indicators.

Table 19 describes that COMPONENT 1 is structured as asset indebtedness, equity indebtedness, fixed asset turnover, leverage, financial leverage, impact of administrative and sales expenses and operating margin. Therefore, it can be defined that the financial model of INALPROCES is composed of the dimension: DEBT, ACTIVITY and PROFITABILITY.

Table 18 Total variance explained

	Initial eigenvalues			**Squared load extraction sums**		
	Total	% variance	Cumulative %	Total	% variance	Cumulative %
1	27,944	95,532	**95,532**	27,944	95,532	**95,532**
2	,742	2,537	98,069			
3	,517	1,768	99,836			
4	,048	,164	100,000			
5	2.678E-16	9.156E-16	100,000			
6	9.626E-17	3.291E-16	100,000			
7	5.621E-17	1.922E-16	100,000			
8	4,548E-17	1.555E-16	100,000			
9	2.872E-17	9.819E-17	100,000			
10	9.565E-18	3,270E-17	100,000			
11	7.485E-18	2,559E-17	100,000			
12	2,750E-18	9.402E-18	100,000			
13	4.622E-33	1,580E-32	100,000			
14	-1.948E-17	-6.659E-17	100,000			
15	-3.752E-17	-1.283E-16	100,000			
16	-7.510E-16	-2.568E-15	100,000			
17	-1.018E-15	-3.479E-15	100,000			
18	-6.607E-15	-2.259E-14	100,000			

a. When analyzing a covariance matrix, the initial eigenvalues are the same between the re-scaled and pure solution.

Table 19 Component Matrix

	Component

Financial reasons	1
Current ratio	,115
Acid test	-,156
Indebtedness of the asset	**,921**
Equity indebtedness	**,996**
Short-term borrowing	-,026
Leverage	**,996**
Financial leverage	**,991**
Portfolio rotation	,012
Fixed asset turnover	**,755**
Sales turnover	,400
Average short-term collection period	,037
Average short-term payment period	-,332
Impact of administrative and sales expenses	**-,773**
Gross margin	-,417
Operating margin	**,857**
Net profitability of sales	,527
ROE	,258
ROA	,469

Note: covariances greater than 0.7 are considered. Extraction method: principal component analysis. a. 1 extracted components.

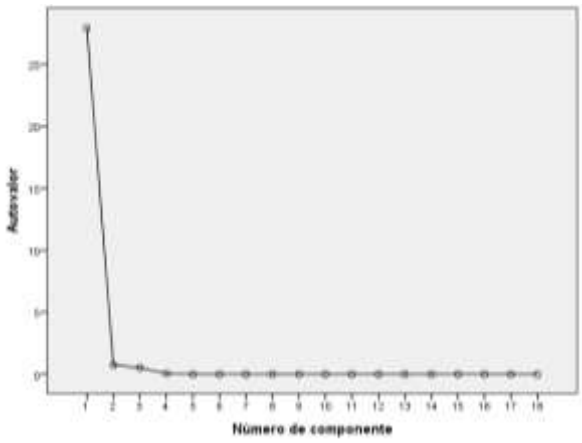

Fig. 4 Sedimentation Graph

MERCAGRO S.A.

The KMO and Barllett Test shows the feasibility of applying the PCA, since the Kaiser-Meyer-Olkin Measure of sampling adequacy is 0.83, the Chi-Square coefficient is positive and large and the significance level less than 0.05. Table 20 shows a total explained variance of

76.31% and together with Fig. 5 they show that the financial model for MERCAGRO is composed of 3 groups of indicators.

Table 21 describes that COMPONENT 1 is structured by current ratio, asset indebtedness, equity indebtedness, leverage, portfolio turnover, average short-term collection period and average short-term payment period. COMPONENT 2 consists of fixed asset turnover, sales turnover, ROA and ROE. Component 3 is represented by financial leverage operating margin. Therefore, it can be defined that the financial model of MERCAGRO is composed of the dimensions: LIQUIDITY, DEBT and ACTIVITY – ACTIVITY and PROFITABILITY – DEBT and PROFITABILITY.

Table 20 Total variance explained

	Initial eigenvalues			**Squared load extraction sums**			**Squared load rotation sums**		
	Total	% variance	Cumulative %	Total	% variance	Cumulative %	Total	% variance	Cumulative %
1	18,658	63,249	63,249	4,957	27,536	27,536	6,964	38,691	38,691
2	6,347	21,515	84,765	5,692	31,622	59,158	4,093	22,737	61,428
3	3,639	12,338	**97,103**	3,088	17,154	**76,312**	2,679	14,884	**76,312**
4	,855	2,897	100,000						
5	2.887E-15	9.786E-15	100,000						
6	7.173E-16	2,432E-15	100,000						
7	4.031E-16	1.366E-15	100,000						
8	7.617E-17	2.582E-16	100,000						
9	3.352E-17	1.136E-16	100,000						
10	5.862E-18	1.987E-17	100,000						
11	-2.313E-18	-7,840E-18	100,000						
12	-2.815E-17	-9.543E-17	100,000						
13	-8.767E-17	-2.972E-16	100,000						
14	-2.444E-16	-8.284E-16	100,000						
15	-3.310E-16	-1.122E-15	100,000						
16	-5.451E-16	-1.848E-15	100,000						

17	-8.199E-16	-2.779E-15	100,000						
18	-3.591E-15	-1.217E-14	100,000						

a. When analyzing a covariance matrix, the initial eigenvalues are the same between the re-scaled and pure solution.

Table 21 Rotated component matrix

	Components		
Financial reasons	1	2	3
Current ratio	**-,708**	-,050	,024
Acid test	-,674	-,099	-,030
Indebtedness of the asset	**,962**	-,054	-,054
Equity indebtedness	**,984**	-,019	,071
Short-term borrowing	,335	,199	-,117
Leverage	**,984**	-,019	,071
Financial leverage	,054	,375	**,925**
Portfolio rotation	**,829**	,342	,419
Fixed asset turnover	-,644	**,759**	,003
Sales turnover	-,114	**,963**	,244
Average short-term collection period	**-,829**	-,342	-,419
Average short-term payment period	**,708**	-,220	-,613
Impact of administrative and sales expenses	,471	-,301	-,092
Gross margin	,436	-,241	,147
Operating margin	,064	,103	**,878**
Net profitability of sales	,277	,623	,356
ROE	,484	**,794**	,258
ROA	-,030	**,965**	,118

Note: covariances greater than 0.7 are considered. Extraction method: principal component analysis. a. 3 extracted components.

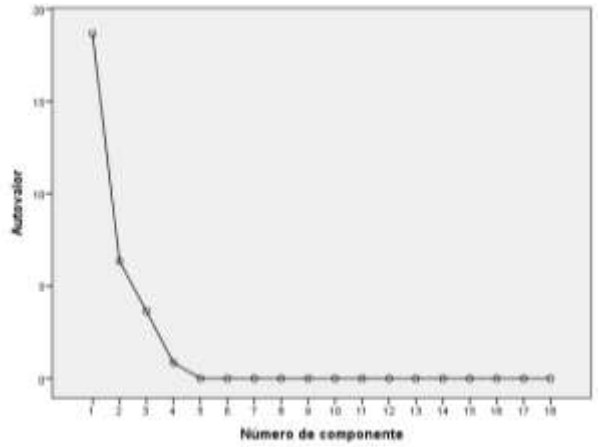

Fig. 5 Sedimentation Graph

BANCHISFOOD S.A.

The KMO and Barllett Test shows the feasibility of applying the PCA, since the Kaiser-Meyer-Olkin Measure of sampling adequacy is 0.70, the Chi-Square coefficient is positive and large and the significance level less than 0.05. Table 22 shows a total explained variance of 91.81% and together with Fig. 6 they show that the financial model for BANCHISFOOD S.A. is composed of 1 group of indicators.

Table 23 describes that COMPONENT 1 is structured by current ratio, acid test, short-term indebtedness and gross margin. Therefore, it can be defined that the financial model of BANCHISFOOD S.A. is composed of the dimension of LIQUIDITY, DEBT and PROFITABILITY.

Table 22

Total variance explained

	Initial eigenvalues			**Squared load extraction sums**		
	Total	% variance	Cumulative %	Total	% variance	Cumulative %
1	2,320	91,806	91,806	2,320	91,806	**91,806**
2	,132	5,232	97,038			
3	,052	2,060	99,098			
4	,023	,902	100,000			
5	1.008E-15	3.989E-14	100,000			
6	6.908E-16	2.734E-14	100,000			
7	8.902E-18	3.523E-16	100,000			
8	5.899E-18	2.335E-16	100,000			
9	1.355E-18	5.362E-17	100,000			
10	7.494E-19	2.966E-17	100,000			
11	6.331E-19	2.506E-17	100,000			
12	-1.223E-19	-4.841E-18	100,000			
13	-2.145E-18	-8.489E-17	100,000			

14	-3.347E-18	-1.325E-16	100,000			
15	-5.345E-18	-2.115E-16	100,000			
16	-2.141E-17	-8.474E-16	100,000			
17	-5,540E-17	-2.192E-15	100,000			
18	-7.736E-16	-3.062E-14	100,000			

a. When analyzing a covariance matrix, the initial eigenvalues are the same between the re-scaled and pure solution.

Table 23 Component Matrix

	Component
Financial reasons	1
Current ratio	**,998**
Acid test	**,998**
Indebtedness of the asset	-,150
Equity indebtedness	-,141
Short-term borrowing	**-,888**
Leverage	-,141
Financial leverage	,310
Portfolio rotation	,305
Fixed asset turnover	,613
Sales turnover	,652
Average short-term collection period	-,305
Average short-term payment period	,010
Impact of administrative and sales expenses	-,575
Gross margin	**-,922**
Operating margin	-,575
Net profitability of sales	-,096
ROE	-,083
ROA	,012

Note: covariances greater than 0.7 are considered. Extraction method: principal component analysis. a. 1 extracted components.

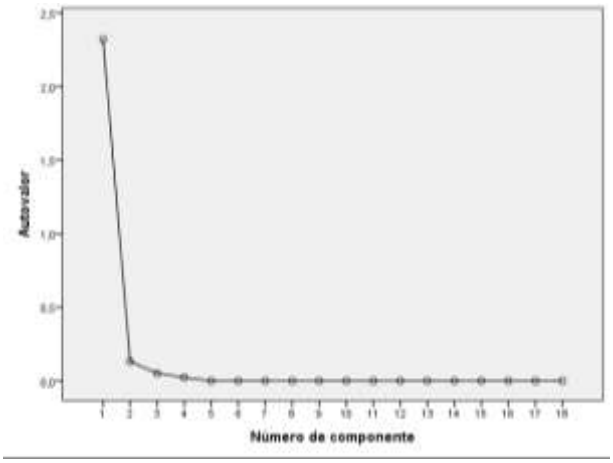

Fig. 6 Sedimentation Graph

5. Discussion

The sector of production and commercialization of snacks in Ecuador is large and consists of 1097 companies of which 20% concentrate 80% of the total assets of the sector, that is, 219 companies. Therefore, the selected sample of 285 companies includes that 20% of companies to deduce, through these, the financial situation of the sector. In addition, the four largest companies in the sector are identified: INDUSTRIAS ALIMENTARIAS ECUATORIANAS INALECSA S.A., INDUSTRIA DE ALIMENTOS PROCESADOS INALPROCES S.A., MERCAGRO S.A. and BANCHISFOOD S.A., in order to analyze each of these to identify their financial strengths and weaknesses.

The results of this study reveal important aspects about the financial situation of the snack production and marketing sector in Ecuador, such as the favorable financial health of liquidity, profitability and indebtedness, especially during the height of the Covid-19 pandemic. Meanwhile, the activity indicators present some distortion in 2020 in terms of the period of payment to suppliers that has decreased and the period of collection to customers that has increased, but maintaining the positive gap between both indicators, since the term of collections is shorter than the term of payments.

On the other hand, it is identified that, in the sector formed by 285 companies, there is no statistically significant relationship between liquidity and profitability. Therefore, financial decisions when they generate high or low availability of financial resources do not affect the financial results achieved. Rather, inverse and moderate correlations are identified between liquidity indicators and debt ratios, that is, when the availability of financial resources increases, they are destined to the payment of debts, that is why debt indicators fall and, on the contrary, the lower liquidity there is an increase in debt levels.

Likewise, there is an inverse correlation between liquidity and the period of payment to suppliers, then, when companies in the sector have high liquidity, the period of payment to suppliers is decreased and, when liquidity decreases, the terms of payments to suppliers increase. Consequently, financial decisions are aimed at maintaining good relationships with creditors and suppliers to reduce their debt levels and maintain adequate negotiation deadlines with suppliers.

Precisely, the individual analysis of the four large companies in the sector identifies that INALECSA and BANCHISFOOD S.A. have high financial strength in liquidity, INALECSA in profitability, INALPROCES S.A. in debt levels and MERCAGRO S.A. in management or activity. On the other hand, high financial weaknesses of liquidity are identified in the company MERCAGRO S.A., in profitability the companies INALPROCES S.A., MERCAGRO S.A. and BANCHISFOOD S.A., in the debt indices the company INALECSA and, finally, in the management or activity indices the company INALECSA.

On the other hand, in the design of the financial model of the study sector, three components are identified that contain as their elements the indicators of DEBT and ACTIVITY and, although in the third component financial leverage appears as the only element that is also part of the debt indicators. Therefore, it should be noted that, in the sector of production and marketing of snacks in Ecuador, through this model, the independence of the liquidity and profitability dimensions is confirmed, perhaps due to their excellent management during the years of analysis 2016 – 2020 and that they are well represented through the effects they produce in the indicators of indebtedness and activity.

The components of each company's financial models are compared with those identified in the snack production and marketing sector as shown in Table 24.

Table 24 Financial models of the sector and leading companies

		SNACKS PRODUCTION AND MARKETING SECTOR	**INALECSA**	**INALPROCES S.A.**	**MERCAGRO S.A.**	**BANCHISFOOD S.A.**
	No. Components	3	2	1	3	1
Component 1	Liquidity				X	X
	Profitability		X	X		X
	Debt	X	X	X	X	X
	Activity		X	X	X	

Component 2	Liquidity		X			
	Profitability				X	
	Debt					
	Activity	X	X		X	
Component 3	Liquidity					
	Profitability				X	
	Debt	X			X	
	Activity					

6. Conclusions

During the years of pandemic, the producer and marketer of snacks has been an important contribution to the economic dynamics of the world and in particular for Ecuador, since snacks have been one of the foods of high consumption due to their low price, variety, availability and many of these products composed of natural raw material that does not affect the health of the consumer. In the Ecuadorian case, to this is added the presence of an adequate financial structure in the sector that is confirmed by the favorable indicators of liquidity, profitability, debt and activity in 2020, which is the pandemic period.

In Ecuador the sector of production and sales of snacks is composed of a significant number of companies amounting to 1097 and through the study of the sample of 285 companies it is verified that there is no relationship between liquidity and profitability, but the inverse relationship between liquidity and debt is statistically confirmed and, liquidity and activity. In the same way, a financial model is designed for the sector that is composed of three categories (debt-activity and leverage).

From the financial analysis, it can be deduced that the snack production and sales sector in Ecuador has adequate financial health during the pandemic in the fields of liquidity, profitability and indebtedness with slight gaps in activity indices. This situation occurred despite the fact that other sectors decreased financially during the pandemic, such as tourism, education and trade, in addition to other aspects such as the closure of factories, cuts in services, rupture of logistics and production chains that led to the closure of sectors that depend on distribution, increased unemployment, greater poverty and human losses, among others.

It is important to note that the financial health of the sector as such, composed of 285 companies, presents significant differences in the individual conditions of each large company. Thus, INALECSA presents better financial health in liquidity and profitability, but has weaknesses in indebtedness and activity. This result joins other empirical studies

that indicate that the financial situation of one group of indicators does not necessarily have to be the same as that found in another group of indicators evaluated in the same time and space. In fact, this research has determined that there is no correlation between liquidity and profitability despite the fact that these indicators reflect the best financial strength in the sector.

It is necessary to expand this study by generating financial models by types of companies (large, medium and small), in order to carry out a comparative analysis between them and identify possible gaps or lags between financial indicators. In addition, it is suggested to apply this methodology to know the financial health in the soft drink sector that grew in the pandemic at the same pace as the snacks sector. Finally, it is essential to expand the scope of the use of other econometric tools for this study and those proposed.

Statement

All authors have been equally involved in the study design, data collection, analysis and interpretation, and in the writing of this research report.

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