Evaluating the financial performance of Food Processing Companies in Georgia and unpacking factors contributing to its financial success

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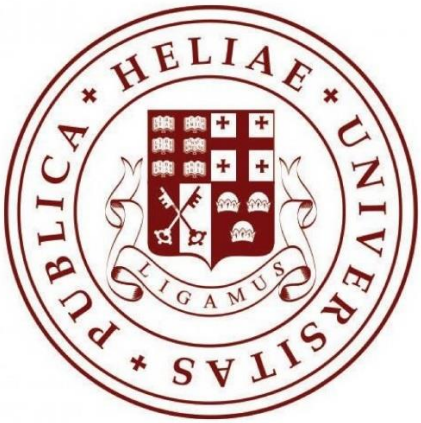

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Declaration and Waiver

I, an author, Papuna Gikorashvili declare that this thesis is hereby submitted to the Ilia State University. It has not been previously submitted for the requirements of any degree at this or other universities. I confirm, that all the sources and information used in the thesis are acknowledged in the section of references.

Master's student Papuna Gikorashvili

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Sincerely,

Master's student Papuna Gikorashvili

Abstract

While analyzing the effectiveness and competitiveness of any industry, it's essential to investigate the financial performance of an organization and unpack factors contributing to its financial stability and efficiency for the given study. The food processing industry was chosen for examination, providing a comprehensive financial state analysis. The current research strives to investigate companies representing the Georgian food processing industry, shedding light on primary challenges and possibilities for further development of the chosen sector. This thesis draws on reliable secondary data, namely, financial reports of reputable Georgian sources (NBG, GEOSTAT, Reportal) to make reliable conclusions about the financial stability of the sector. Moreover, this paper also assesses the impact of COVID-19 on the selected industry. This study utilized probability random sampling and conducted the financial analysis based on relevant financial indicators adopting DuPont Analysis.

Keywords: Food Industry, Food processing, Financial data, Financial indicators, Financial Analysis, DuPont Analysis

ნებისმიერი ინდუსტრიის ეფექტურობისა და კონკურენტუნარიანობის გაანალიზებისას აუცილებელია ორგანიზაციის ფინანსური ეფექტურობის ფაქტორების გამოკვლევა, რომლებიც ხელს უწყობენ მის ფინანსურ სტაბილურობასა და ეფექტურობას. მოცემული კვლევისთვის, საანალიზოდ შეირჩა კვების გადამამუშავებელი მრეწველობა, რომელიც ფინანსური მდგომარეობის ყოვლისმომცველ ანალიზს იძლევა. მიმდინარე კვლევა მიზნად ისახავს გამოიკვლიოს საქართველოს სურსათის გადამამუშავებელი მრეწველობის წარმომადგენელი კომპანიები, მთავარ გამოწვევებისა და არჩეული სექტორის შემდგომი განვითარების შესაძლებლობებს ნათლად წარმოდგენით. ეს თეზისი ეყრდნობა სანდო მეორად მონაცემებს, კერძოდ, ავტორიტეტული ქართული წყაროების ფინანსურ ანგარიშებს (საქართველოს ეროვნული ბანკი, ჯეოსტატი, რეპორტალი), რათა მოხდეს სანდო დასკვნების გაკეთება სექტორის ფინანსური სტაბილურობის შესახებ. უფრო მეტიც, ეს

ნაშრომი ასევე აფასებს COVID-19-ის გავლენას შერჩეულ ინდუსტრიაზე. ამ კვლევამ გამოიყენა ალბათობის შემთხვევითი შერჩევა და ჩაატარა ფინანსური ანალიზი შესაბამისი ფინანსური ინდიკატორის საფუძველზე DuPont Analysis-ის გამოყენებით.

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Acronyms

Geostat – National Statistics Office of Georgia

NBG - National Bank of Georgia

CFA – Chartered Financial Analyst

JSE - Johannesburg Stock Exchange

ROE - Return on Equity

ROCE - Return on capital employed

CCC – Cash Conversion Cycle

GDP – Gross Domestic Pruduct

OECD - Organisation for Economic Co-operation and Development

FAO - Food and Agriculture Organization of the United Nations

WHO – World Health organization

IMF - International Monetary Fund

EBRD - European Bank for Reconstruction and Development

1 Introduction

It is worth highlighting that food is not produced in Georgia on an industrial scale. This information is evident in the structure of GDP, where according to the Geostat 2020 data, the top 5 categories are divided into the following economic activities: 1. wholesale and retail trade; repair of motor vehicles and motorcycles with 14.8% share, 2. real estate activities – 11.7%; 3. manufacturing – 10.7%; 4. construction – 8.7% and 5. agriculture, forestry, and fishing - 8.3% (Geostat, 2021).

The data analysis of the last 4 years reveal that livestock production is characterized by a steadily growing trend (Geostat, 2021). According to the statistics of Geostat 2020, the total meat production amounted to 69.4 thousand tons, the maximum share falling on poultry meat, which in turn is divided into the following four subgroups with the corresponding shares: poultry meat – 34.8% (24.2 thousand tons); beef – 28.9% (20.1 thousand tons); pork – 28.5% (19.8 thousand tons); sheep and goat meat – 7% (4.9% thousand tons). It should be noted that milk production amounted to 569 mill in the same period;dairy cow and buffalo milk (558.7 mill. liters) with 98.1%, and sheep and goat milk (10.3 mill. liters) with 1.9% (Geostat, 2021).

Analysis of the distribution of shares between family holdings and agricultural enterprises in animal production reveals a heterogeneous trend. According to GeoStat, the share of family holdings for meat is 37.7% and for milk – 95.9%; As for the share of agricultural enterprises, for meat, it is 62.3% and for milk – 4.1% (Geostat, 2021). Based on 2020 data, milk production amounted to 569 million liters, where the maximum share was from daily cow and buffalo milk (98.1%) And the minimum for sheep and goat milk 1.9%.

Active enterprises operating in this industry are not characterized by high production rates, targeting their activities at a small segment. The efficiency of processing industries can become an opportunity for the companies themselves both in local and international markets. Therefore, it is important for food processing companies to analyze how financial efficiency can be achieved based on relevant financial indicators and factors contributing to their success. Investigating the differences in terms of meat and milk production in different regions of Georgia is also important. This research paper aims to identify the factors that contribute to the financial stability of food processing companies, unpacking both facilitating and hindering factors.

Food processing transforms raw food materials into other food product categories either by physical or chemical means. It combines raw food materials to produce marketable food products. Food processing might involve one of the various combinations of processes, namely (Geostat, 2016):

- Whishing;
- Chopping:
- Pasteurizing;
- Frizzing:
- Cooling;
- Slicing;
- Fermenting:
- Thermal Processing;
- Packaging:
- Cooking; etc.

Based on the above-mentioned processes, Food Processing can be acknowledged as Transforming Raw materials by adding value to this product. In this Master's thesis, representatives of the following Food Processing industry are considered for examination, namely, milk processing, meat processing, agriculture products processing, and ready and semi-ready products production. All of these four directions have a strong link with manufacturing, representing the main players in the food processing industry. Manufacturing represents one of the most important contributors to the Georgian Economy. According to 2021 GDP statistics, 11.7 percent falls under the share of Manufacturing industries in the Georgian Economy. The food processing value chain guarantees the stability of one of the most important humanity needs. Having own production is vital for the country's economy and stability, reducing the negative balance between exports and imports. Enhanced production will stimulate first-time production and increase the usability of locally produced products, contributing to economic success. However, this master thesis's main objectives are not to determine the relationship between the Georgian economy and production. Instead, it aims to reveal factors contributing to the financial success of Georgian food processing companies. Manufacturing represents the capital-intensive business (CFA 2019), such businesses have a higher potential for big profit margins compared to labor-intensive businesses, yet requiring more solid investment. For the future development of the food processing industry, it is important

to reveal factors contributing to the financial stability/success of the respective companies. Similar studies have been conducted both in developing and developed countries, yet this is still lack of empirical evidence available for the Georgian context. Determination of the financial status of participating food industry representatives would contribute to further development of this sector. This research will therefore shed light on the current financial status of the food processing industry in Georgia by using the framework of DuPont. It should be noted that DuPont's original method of analyzing financial ratios was developed in 1918, providing the opportunity for fundamental financial analysis of companies (Doorasamy, 2016)

The given research project aims to address the following research objectives, namely:

- Evaluate the Financial Performance of the Food Processing Industry by categories;
- Examine the effect of capital structure on the profitability of the Food Processing industry;
- Examine the impact of working capital management on the profitability of the Food Processing industry;
- Assess the usage of Invested Capital for Profit Generation in the food processing industry.

In line with the research objectives, the given study aims to answer the following research questions, namely:

- What financial performance indicators do companies have? What is the industry average and how it affects on the financial performance of companies?
- How does the capital structure affect the profitability of the Food Processing industry?
- To what extent does the working capital management affect the profitability of the Food Processing industry?
- What influence does the Invested Capital has for Profit Generation in the food processing sector?

2 Literature Review

2.1 An overview of the food processing industry

It should be noted that an increasing trend in meat consumption is observed in Georgia. An noteworthy fact is that about 25% of the beef consumed, 50% of the pork and 80% of the poultry are imported products. Therefore, there is a need for further development of modern relevant enterprises. Further enhancement of this industry will initially satisfy the local demand and subsequently could be expanded to the regional context. Companies in Georgia have diverse opportunities in the field of food processing, including clean environment, cheap labor, ease of doing business, access to resources, cheap access to water resources vital for the specified companies. Based on year 2020 data, the number of active food processing companies registered in the GEOSTAT database is 500 throughout Georgia. The National Food Agency, which is a legal entity under public law of the Ministry of Environment and Agriculture, undertakes a regulatory role in the given field. Companies therefore adhere to the requirements of the agency, the ultimate goal of which is to protect the rights of consumers. Despite the fact that the process is automated in Georgia, there are still challenges in this direction, as modern and successful approaches adopted to food processing worldwide are still to be mastered.

According to Geostat 2020 data, the shares of the crop, livestock, and agricultural services in the output of agricultural products are nearly equal, represented by 45% and 48% respectively. As for the category of agricultural services, it is presented with a minimum data equaling 7%. It should be noted that there is a steadily growing demand for dairy products in Georgia. However, according to the available data, local production meets only 65% of the demand within the country. It should also be noted that the unique cheese species of Georgia has great export potential. Gouda cheese, Imereti cheese, Megrelian sulguni, and others are worth mentioning in this regard (Investingeorgia, 2022).

For analytical purposes, it is interesting to analyze the financing structure consisting of the following components: the beneficiary represented by 10%, the grant component by 40%, and cheap agro credit / leasing by 50%.

Among the projects developed in the country to popularize the products produced in Georgia, the program "Produce in Georgia" is noteworthy, which, among many other directions, includes financing the agricultural processing industry (Marketentry, 2022).

In terms of average annual food prices, the maximum price for beef is fixed at 18.69 GEL per kilogram, followed by pork and poultry meat at 14.86 and 7.33 GEL respectively.

The processing of agricultural products has become more active in Georgia in recent years. The main possibilities in this regard are tomato paste, fruit and vegetable juices, various sauces and also mushroom varieties.

According to the OECD study, Georgia has great potential to attract agri-food investments, which will significantly increase exports of high-value food products. This will affect the productivity of employees and lead to an increase in salaries. However, an interesting finding of this research is that the food processing sector reveals a significantly higher level of productivity compared to the general rate of agriculture. It is noteworthy that the analysis of the last five years clearly shows the trend of steadily increasing labor productivity in the agricultural and food sectors of Georgia. (OECD, 2020). The study also highlights the need for additional funding to be carefully assessed by the Rural Development Agency (RDA) along with the need to strengthen food safety and quality standards across the sector. Moreover, there is a need to develop appropriate strategic actions to increase the awareness of small producers.

The analysis of diverse countries reveals different approaches. However, Farmer-Focused Models are especially interesting from the above. The named model combines two main issues: the funding model and farmer (customer) engagement. This allows for optimal financial solutions. It is inconceivable not to analyze the quality of the product and the quality of service as a factor of success of the industry as this is the main criterion for consumers both regionally and globally. A risk-based approach is also noteworthy when talking about success cases, which mostly refers to strict regulation at the governmental level having a positive effect. The above approach places particular emphasis on the cost-benefit approach, as the risk-based approach assumes that there must be a correlation between supply and risk. The approach was developed by FAO / WHO which is solely oriented towards identifying risks in the food processing sector. In terms of human management, FAO's core approach is to constantly train co-workers. However, they should be provided with all the necessary outfits during the process. Data description and monitoring should be performed for company effectiveness. According to the FAO, a successful approach to food

processing is one that is complex and is not based on specific interests. According to the FAO, hygiene, and risk management have been identified as the most important success factors in the food processing industry. At all stages of this production, it is critical to both employees and direct products. This is all directly related to the company's credibility and customer loyalty to both the product and the manufacturer. Although legislative approaches differ in each country, the named issues are common to all food processors and remain a challenge.

Despite successful business models, food processing companies face many risks and challenges. Among them especially noteworthy are the tightening of regulation, proper maintenance of the supply chain, maintaining the optimal level of labor costs, economic indicators, and many more. These risks in the context of globalization easily acquire an international character, which is the basis for the need to analyze the big picture of environmental factors. (BDO, 2017).

2.2 Examples from other countries

Study by Rashid, Abdur, Farooq, Liaqat, Qadeer, Younas (2020) state that the main strength of organizations in the modern world lies in human capital, their knowledge, experience, and structural capital, considering it as a strategic asset. This paper analyzes the role of intellectual capital in the profitability of firms related to the food, personal care, and textile sectors in Pakistan. This paper has used systematic random sampling techniques to select 7 companies from each of the above-mentioned fields and evaluated their financial information from audited reports. This study used the data from 2012 to 2016 utilizing the MVAIC model (a modified value-added intellectual coefficient) for estimating intellectual capital, which permits a comprehensive financial analysis. The MVAIC model integrates the following main components: ICE (Intellectual Capital Efficiency) and CEE (Capital Employed Efficiency); The model within the ICE group in turn is divided into the following subgroups: HCE (Human Capital Efficiency), CEE (Structural Capital Efficiency), RCE (Relational Capital Efficiency). This study concluded that capital employed efficiency (CEE) has a positive impact on the financial performance of selected firms.

In parallel with the above, the analysis of the Italian example is also interesting. Bonazzi, Camanzi, Ferri, Manghi & Iotti's (2021) study outlines that pork is considered to be one of the largest agri-food chains in Italy, having a great importance on agri-food security. This study analyzes the

economic viability of eight major firms slaughtering pigs in Italy using the annual report (AAS) data, integrating the analysis of financial ratios and margins (FRM). The authors conclude that analytical companies have adequate capitalization concerning venture capital. However, it should also be noted that the maximum absorption of capital takes place in the working capital cycle; In addition to the above, corporate profitability is low, even when it is higher than the value of the debt. The authors claim that companies involved in the sample lack profitability in two main areas: the first is the value of debt and the second is the absorption of resources in the working capital cycle. It is worth highlighting that the study results are used not only by companies' management but also for industry analysis. The purpose of the above is to determine the optimal capital structure.

Analyzing the factors that influence the positive financial performance of companies is also vital for this research study. Kasperovica and Lace (2021) identified 33 financial and non-financial factors important for profitable business development. Data were grouped and interpreted through the prism of the Universal Business Model (BM). Factors representing the non-financial digital category included "Digital Data", "Automation", "Digital Communication Network" and "Digital Development". As for the "financial category", factors through which profit strategies were implemented and value structure was improved were considered. Results showed that for a successful BM transformation it was necessary to change all the factors, including value proposition, value creation, and value capture by their interaction. However, the financial results showed that companies initially supported only one dominant factor in profit maximization such as revenue growth. However, there was a difference in terms of cost reduction with the introduction of digitalization. The paper clearly shows a positive impact of digitalization on the financial condition of the company.

Within the scope of this paper, it is important to verify if similar observations can be made in the context of Georgia. National Statistics Office of Georgia (Geostat) regularly publishes reliable and objective information, which is highly recognized both locally and internationally. International financial institutions such as IMF, World Bank, EBRD, and others prepare reports based on

Geostat data. In parallel with the above, it should be noted that Geostat–uses international methodologies and standards. The current paper utilizes the following data produced by Geostat, namely, the classification of business sectors in Georgia, Gross Domestic Product of Georgia, and Agriculture of Georgia. This section will summarize relevant information from Geostat publications in order to provide an overview of Georgian food processing companies.

Analyzing financial performance in terms of decision-making is also essential. This is due to the fact that financial analysis provides an opportunity to identify the company's needs and capabilities. The work by Saputera, Saudi, and Sinaga (2021) emphasizes the importance of measuring the financial performance of companies for making the right managerial decisions. Kasmir (2012) discusses the cost-effectiveness of ratio analysis, outlining its core role in evaluating and enhancing a company's future profitability. This paper uses several ratios, namely, current ratio, debt to asset ratio, total asset turnover, and net profit margin. This article concludes that the current ratio does not have a critical impact on the profits of the food and beverage companies analyzed in this study. It also discusses the effects of each of the above-mentioned ratios on efficiencies through different statistical methods.

The study by Kim, Nhung Le Thi, Daphné Duvernay, and Huyen Le Thanh (2021) analyzes 30 food processing firms in Vietnam, focusing on the high financial performance of businesses which is critical for each manager. The authors use correlation analysis to identify which fundamental determinants contribute to companies' financial growth. Sales growth that significantly affects organizations' financial performance is measured in ROE or ROS, outlining a negative impact of leverage return on the sale of a firm.

Paper by Manaf and Yusof (2020) examines emerging trends in the sustainable food processing industry, outlining the importance of meeting customers’ needs for the success of the business. This paper also compares new food processing technologies to traditional ones, outlining key similarities and differences along with the main advantages and disadvantages. Moreover, it discusses the importance of the farm-to-plate and 3D food print concepts. In addition, food processing technology is analyzed by subdivision of Thermal Processing and Non-Thermal Processing. The authors also emphasize the role of digital technology, outlining speed and

simplicity as key advantages of digital technology and highlighting the need for integrating modern technologies into food processing.

The study by Vuković (2019) assessed the impact of working capital management on a company's profitability in the food industry of South East Europe. The study included 9883 active companies and used regression analysis for analyzing 2010-2014 years' data, concluding that most of the working capital management variables affected the probability of higher profitability. Current liquidity, the ratio of current to total assets of companies, the ratio of current liabilities to total assets of companies, financial leverage, and size of the company represented components of working capital within this study. This paper also highlighted the link between the optimal level of working capital management and the overall company profitability. Moreover, it emphasized that proper working capital management was directly related to both the liquidity and profitability of companies. In this study, the current liquidity ratio (Vuković, 2019) is defined as the ability of a company to finance its liabilities with existing current assets. Yet, there could be cases when companies are exposed to liquidity risk due to various non-optimal levels of current liabilities. As for the financial leverage ratio, it represents the share of debt in the total capital of the company, whereas, capital structure is vital when it comes to the company's profitability. No matter what business the company operates in, achieving an optimal level of working capital management is essential for maintaining continuous operation. The study concluded that current liquidity and current liabilities compared to total assets hurt the profitability of food industry companies (Vuković2019).

Bieniasz and Gołaś (2011) examined the influence of working capital management on the food industry enterprises' profitability, focusing on indicators, such as inventory, receivables, current liabilities turnover cycles, cash conversion cycle, and rates of return on non-financial assets. Interestingly, research has shown that the shortest cycles of working capital in the analytical sector have a significant positive impact on profitability and relatively high rates through multiple regression analysis. The credibility of the article is ensured by using two sources of data, the consolidated financial statements, which allow the ranking/identification of economic activities, and unpublished materials from the Central Statistical Office of Poland,

covering the years 2005-2009. The working capital management efficiency in the food industry was analyzed by the following indicators: stocks, receivables, current liabilities, and cash flow conversion management performance indicators. The authors concluded that the efficiency of working capital management varied both in specific countries of the euro area and in enterprises of different dimensions. The size of the enterprise and its corresponding analytical indicators were considered of great importance for achieving financial efficiency. The results of the study showed that enterprises presented the highest rate of efficiency, which in turn was measured by both the one-sided cash conversion cycle and the second-hand profitability(Bieniasz and Gołaś, 2011). Results also indicated that in small, and medium and large enterprises, the profitability ratio was negatively related to the cycles of inventories, accounts receivable and current liabilities.

In addition to the fundamental issues discussed above, it is important to consider the impact of debt funding sources on liquidity. A study by Šeligová and Koštuříková (2019) examined the food industry in the Czech Republic by determining the impact of the structure of loan financing sources on the liquidity of food companies based on the data from 2006-to 2016. The authors discuss the links between debt financing sources. The relationship between the structure of debt financing sources and the liquidity of companies is checked through correlation analysis, Granger causality test, and generalized method (GMM). Several findings are noteworthy: Long-term loans to food companies in the Czech Republic have been identified as a factor having a positive effect on company liquidity and the liquidity of companies has a negative impact on other current liabilities (Šeligová and Koštuříková, 2019). The authors emphasize that food industry companies should monitor the volume of long-term loans and other current liabilities on a regular basis as it has a significant impact on the company; They outline that long-term loans have a positive impact on the cash flow ratio on one hand, and the quick ratio on the other. (Šeligová and Koštuříková, 2019).

The authors also mention that if the company's debt is constantly monitored, many financial risks will be avoided. This in turn means that the amount of debt will be fully controlled by

the company and the borrowed funds will be used effectively for the production process, having a positive impact on corporate liquidity. However, on the other hand, if a steady increase in other current liabilities is fixed within the company, this detail will inevitably have an impact and will reduce corporate liquidity.

In addition to the interesting approaches and methods discussed above, outlining the role of financial ratios is also essential for financial analysis. Financial Ratios are widely used for measuring financial performance. The CFA Financial Reporting and analysis book (2019) discusses analyzing financial data by converting it into financial metrics, assisting experienced analysts in financial decision-making. Financial Ratio analysis can shed light on a company's financial success. CFA Study Book suggests that before starting any financial analysis, the need, purpose, and context of work should be clarified, and the following aspects have to be comprehended, namely, specifics and characteristics of the analysis, subject detailing, data availability, potential impact factors, analytical limitations, and associated risks.

2.3 DuPont Analysis

Since the given research utilizes DuPont Analysis, this part of the paper will provide comprehensive information about its specifics, features, and advantages. ROE is acknowledged as the most important measurement for analyzing a company's performance since it evaluates the return a company generates on its equity. Various research projects have emphasized the importance of this measurement for profitability analysis. Yet in some cases, ROE taken separately might fail to show the full picture of the company's profitability. Therefore, for a better understanding of what drives a company's ROE, it is recommended to decompose it into several parts, the technique known as DuPont Analysis (CFA, 2019). The DuPont model was created in the early 1900s by Donaldson Brown, an engineer at DuPont in charge of the company's finances. The model was named after the company name where it was conducted for the first time. After its first appearance, DuPont Model was modified twice, integrating both mathematical and financial knowledge (Sheela and Karthikeyan, 2012). The first stage of ROE's decomposition is divided into two parts, namely, ROA X Financial Leverage. Its self ROA combines two directions of metrics: Profitability and Efficiency (Net Profit X Asset Turnover). The first modification addressed shifting ROA to ROE. As discussed above, the decomposition of ROE shows

profitability from ROA and incorporates debt known as financial leverage. This modification made the DuPont model a powerful tool for strategic decision-making within an organization to increase ROE (Collier, McGowan, and Muhammad, 2006). The second and the latest modification included adding another level of the deepness to DuPont Analysis. These modifications help the company's management to make better-operating decisions related to profitability and efficiency, and also to make better financial decisions according to financial leverage. Recent evidence has shown that the modified DuPont approach can be used to identify the causes of financial problems within the manufacturing companies (Liesz and Maranville, 2008).

DuPont Analysis is a fairly complex and comprehensive approach to financial analysis. DuPont analysis, which is fundamental to decision making, has been used in several studies for identifying, analyzing as well as offering solutions to potential crisis in business (Kasik, 2020). Based on this approach, the author tried to provide timely information to managers, companies, and stakeholders on potential risks. In addition, the analysis considers assumptions of ROS (Profit Margin) and ROE equal to 0; However, the article focused primarily on the time of crisis detection.

Key advantages of the DuPont analysis is that it is universal, it can be used to analyze any business and make crisis forecasting. Moreover, in the scope of this model, it is possible to use the data disseminated in the managerial accounting system (Kasik, 2020).

Numerous sources confirm that its use is particularly effective in the analysis of the manufacturing industry. Doorasamy's paper used DuPont analysis to assess the financial performance of the top 3 Johannesburg Stock Exchange (JSE) listed companies in the food industry. The author stated that this model allows companies to see and decide between which alternatives to invest through simple calculations.

3 Methodology

3.1 Research context

Food processing has the potential both for local and international development. Successful business models adopted by different countries have confirmed this assumption. It is noteworthy

that the development of technology has greatly simplified the process of food processing and at the same time increased the opportunities for financial success. This is due to the fact that in the named conditions it is much easier to optimize resources and determine the purpose of expenditures. It is worth noting that one of the main advantages of technological development is an enhanced quality of products and a secure business process. It is important for the customer to see the benefits and advantages of the product. In the chosen field, quality is of great and critical importance. In most developing countries, the principle of food processing helps to improve the taste, aroma, nutritional value and quality of food. However, it is through the development of food processing methods that makes it is possible for the company to achieve financial success.

In this study, main financial indicators of the Georgian food processing industry are analyzed under DuPont analysis Framework. More precisely, the following components of financial statements are examined: activity, liquidity, solvency, and profitability ratios. In addition to the above mentioned, financial analysis is necessary for the high financial performance of the company. Models and approaches appropriate to the selected industry are used for analysis.This section also clarifies the stages of financial analysis. The CFA book (2019) outlines 5 stages for financial analysis: 1. Articulate the purpose and context of the analysis; 2. Collect input data; 2. Process data; 3. Analyze/interpret the processed data. 4. Develop and communicate conclusions and recommendations (e.g., with an analysis report), and 5. Follow-up.

The main purpose of foreseen financial analysis in this thesis is to review financial metrics, reveal financial success factors, and unpack indicators that have the highest impact on the company's financial performance in the food processing industry. These metrics will allow to identify successful and unsuccessful companies and shed light on underlying causes. The main data for financial ratio analysis would be companies' annual reports. For this master thesis, financial reports of Georgian food processing companies will be used as the primary source of financial data. It is important to note that Reportal.GE, launched in 2017 by the Ministry of Finance of Georgia, is the first Georgian reporting portal that provides the public information on the financial statements of entities operating locally. Financial Reports are structured according to International Financial Reporting Standards (IFRS), including statements (Balance) on the financial position, income statements (Profit & Loss), Cash Flow statements, owners' capital movements, and notes.

These reports include the company's past performance with historical financial data, income, and cash flow as well as the current snapshots of its financial position (assets, liabilities, and equity). In the process of financial analysis, certain factors may be identified that could have affected the financial performance of companies. COVID-19 could be one of those inhibiting factors. As mentioned before, this master thesis focuses on 2018, 2019, and 2020 financial statements. Since the COVID-19 started in 2020, it could have triggered some changes in trades that would be demonstrated in the data analysis sections. Furthermore, there could be some limitations regarding the framework adopted for financial analysis in this study. This problem is more acute for category III companies as their financial statements are not audited in most cases. Category I and II companies are obliged to present audited financial statements. NACE's assignments of codes to companies, availability of financial information only for 2018-2020, and the differences between standards could represent other limitations of the current research.

Data Processing represents the most important part in the Financial analysis process. Ratio analysis is most frequently used for analyzing financial results. Financial Ratios could be used in three major directions: 1. Common size analysis which involves presenting financial data, including entire financial statements, total assets or revenue representing most frequently used items; 2. Trend analysis which compares financial data between different periods, and 3. Cross-section analysis which compares a specific metric for one company with the same metric for another company or group of companies, allowing comparisons despite the significant difference in terms of company size.

A financial ratio is a metric illustrating enterprise performance to some extent, revealing what has happened yet not clarifying its causes. According to the CFA Study Book (2019), 5 groups of ratios are used for ratio analysis:

1. Activity ratios - measure how efficiently a company performs day-to-day tasks (For example, collection of receivables and inventories management) and include inventory turnover; Days of inventory on hand (DOH), Receivables turnover, Days of sales outstanding (DSO), Payables turnover, Number of days of payables, Working capital turnover, Fixed asset turnover, total asset turnover.

2. Liquidity Ratios - measure the company's ability to meet its short-term obligations and include Current ratio, Quick ratio, and Cash ratio.

3. Solvency Ratios - measure a company's ability to meet long-term obligations (Subsets of these ratios are also known as "leverage" and "long-term debt" ratios) and include Operating leverage, Financial leverage, Total Leverage, Debt- to- assets ratio, Debt-to-capital ratio, Debt- to- equity ratio.

4. Profitability Ratios - measure the company's ability to generate profits from its resources and include Gross profit margin, Operating profit margin, Pretax Margin, Net profit margin, Operating ROA, ROA, Return on total capital, and ROE.

5, *Valuation Ratios* - measure the quantity of an asset or flow (e.g., earnings) associated with ownership of a specified claim (e.g., a share or ownership of the enterprise).

It's worth highlighting that only four of these rations can be used for the Georgian context as it doesn't have a capital market. Since only limited number of companies have made an Initial Public Offering (IPO) and are marketable, it is impossible to calculate Valuation ratios.

DuPont analysis is used in this research, which allows both detailed and complex analysis in the production part. DuPont analysis, which is fundamental to decision making, has been used

in several studies for identifying, analyzing and offering solutions to a potential crisis in a business (Kasik, 2020). Based on this approach, Kasik (2020) tried to provide timely information to managers, companies, and stakeholders on potential risks. In addition, the analysis considered assumptions of ROS (Profit Margin) and ROE equaling to 0; However, the article focused on the time of crisis detection.

To summarize, the following main advantages of the given model can be distinguished: the first is that within the model it is possible to use the data disseminated in the managerial accounting system; The second is that the model is universal. It can be used to analyze any business; And the third advantage concerns crisis forecasting. (Kasik, 2020).

Geostat data, methodology and approaches are consistent with high reliability, quality and customer needs. Data derived from this source is used for analysis. This study adopts analysis of

financial indicators using Dupont and survey results. A questionnaire has been developed within the framework of the paper addressing the main challenges and opportunities in the scope of Georgian food companies.

3.2 Data collection procedures

Financial reporting data of companies representing food processing industry were retrieved from Reportal.ge financial databases. Table 1 illustrates the nace codes which are presented in groups and provide detailed information about the food processing process. The given table represents one of the main sets of statistical standards, which in turn provides management systems and databases Information compatibility. However, it is both economic and social information classification system that makes a unified and unified statistical information (Geostat, 2016).

NACE CODE	NACENAME	NACECLASS
10110	Meat processing and canning	Processing of meat and meat products
10120	Processing and canning of poultry meat	Processing of meat and meat products
10130	Production of meat products	Processing of meat and meat products
10200	Processing and canning of fish, crustaceans and mollusks	Processing of agricultural products
10310	Potato processing and canning	Processing of agricultural products
10320	Production of fruit and vegetable juices	Processing of agricultural products
10390	Other types of fruit and vegetable processing and canning	Processing of agricultural products
10410	Production of oils and fats	Processing of agricultural products
10420	Production of margarine and similar edible fats	Processing of milk and dairy products
10510	Milk processing and cheese production	Processing of milk and dairy products
10520	Ice cream production	Processing of milk and dairy products
10611	Flour production	Processing of agricultural products
10619	Manufacture of other cereal products	Processing of agricultural products
10620	Manufacture of starches and starch products	Processing of agricultural products
10711	Bread production	Production of ready-made food products and dishes

10712	Production of confectionery for short-term storage	Production of ready-made food products and dishes
10720	Production of biscuits and dry cakes; Production of baked goods and cakes for long storage	Production of ready-made food products and dishes
10810	Sugar production	Processing of agricultural products
10820	Production of cocoa, chocolate and sugar confectionery	Production of ready-made food products and dishes
10831	Tea processing	Processing of agricultural products
10832	Coffee processing	Processing of agricultural products
10840	Production of spices and condiments	Production of ready-made food products and dishes
10850	Production of ready-made food products and dishes	Production of ready-made food products and dishes

**Table 1 Source Reportal.Ge Financial Statements.*

3.3 Sampling

For sampling was used, a nonprobability random sample was used. Population size, according to Gestalt, is approximately 2000. For this size of Population, a 95% confidence level with an 18 % of margin of error is achieving by the sample size of 30. for evaluation of the financial performance of this industry was chosen all companies who presented data in Reportal.ge were identifiable (except IV category). This is why results derived from the data collected can be generalized to the whole industry. For this purpose, all sizes of enterprises operating in Georgia in the field of food processing are targeted.

4 main directions of food processing are taken for examining the Food processing industry in Georgia, namely:

- Processing of agricultural products
- Production of ready-made food products and dishes
- Processing of milk and dairy products
- Processing of meat and meat products

For avoiding the bias, companies with incorrect and ambiguous financial statements were removed from the analysis.

3.4 Data Analysis Procedures

Data in this study are visualized and analyzed using Excel, Power BI, and Python (Libraries: Pandas, NumPy, Scipy) .

In total, 209 unique companies' financial statements from year 2018 to 2020 were analyzed, including I, II, or III category enterprises. IV Category companies were excluded from the examination as they primarily use locally accepted accounting principles and also it was impossibleto identify their contact details. Enterprises classified under the categories of II and III are allowed to choose between Standards: IFRS and IFRS for SMEs. Availability of only past financial performance analysis makes it difficult to make a prognosis for the future, yet such information can help in identifying companies' key success factors (Saras, 2022).

Data mining technique was used to remove outliers from the observation, implying 10% removal margin in total, which means 5% of smallest and largest data is not considered in Average Values. Some companies did not present financial statements from 2018 to 2020 which could be due to the liquidation of the company or some other reasons. This research aims to present an overview of chosen industry's financial situation rather than of individual companies. Table 2 presents the quantities of companies across the years:

NACE_CLASS	Year	Company Count
Processing of agricultural products	2018	65
Processing of agricultural products	2019	73
Processing of agricultural products	2020	82
Processing of meat and meat products	2018	20
Processing of meat and meat products	2019	18
Processing of meat and meat products	2020	19
Processing of milk and dairy products	2018	13
Processing of milk and dairy products	2019	15
Processing of milk and dairy products	2020	15
Production of ready-made food products and dishes	2018	57

Production of ready-made food products and dishes	2019	46
Production of ready-made food products and dishes	2020	52

**Table 2 Source Reportal.Ge Financial Statements.*

3.5 Financial analysis

Profitability ratios measure a company's ability to generate profitable sales from its resources. For these purposes, it is important to analyze both Gross profit margin and Net profit margin. Moreover, the analysis of the following components, namely, return on assets or ROA (Net income/ Average total assets) and Return on equity or ROE (Net income/Average total equity) is essential. Solvency ratios measurs a company's ability to meet its debt obligations. Many Types of Ratios are combined under DuPont Analysis and head of Tree of DuPont is ROE. ROE is used for the measurement of profitability, which represents one of the Profitability Ratios. (CFA, 2019).

ROE is normally calculated according to the following formula:

$$ROE = \frac{Net\ Income}{Equity}$$

Yet, it is essential to mention ROE's limitations. When Net Profit and Equity (based on negative retained earnings) are negative, ROE shows a positive number. For avoiding such a bias, adjusted ROE is used with the module of equity, namely:

$$ROE = \frac{Net\ Profit}{|Equity|}$$

For understanding the structure of ROE, DuPont analysis with several steps is used. The first step entailed the decomposition of ROE, implying dividing ROE into financial leverage and return on assets:

$$ROE = Leverage * ROA$$

These financial ratios have their explanations. Leverage is the Solvency Ratio that measures a company's ability to meet long-term obligations. Subsets of these ratios are also known as "leverage" and "long-term debt" ratios (CFA, 2019). Coefficient leverage could be a good representation of companies' capital structure.

$$Leverage = \frac{Total\ Assets}{Equity}$$

Debt to asset ratio is one of the Solvency Measurements which is good to identify a company's capital structure. Capital structure is an integral part of a company's strategy. Adequate capital structure enables the company to increase its performance.

$$Leverage = \frac{Total\ Liabilities}{Total\ Assets}$$

ROA represents one of the profitability ratios, which is a part of DuPont analysis, being "responsible" for companies' profitability analysis. This Coefficient demonstrates what profit a company generates in terms of total assets, or total investments in the company (Debt+Equity, which also equals to assets)

$$ROA = \frac{Net\ Profit}{Total\ Assets}$$

Based on DuPont Analysis Model, ROA can be decomposed which would help to better understand the direction of this coefficient. Net Profit Margin and Asset Turnover represent the main drivers of ROA.

$$ROA = Net\ Profit\ margin * Asset\ Turnover$$

Asset Turnover value is calculated by using total assets and total sales. It's one of the important ratios, its combines two financial statements data in one and demonstrate how effectively a company uses assets based on revenue. The measurement shows the sales generated by $ 1 in relation to total assets. It's one of the key measurements in capital intensive businesses because it allows calculating sales with a comparison of total assets. Asset Turnover in combination with Net Profit is part of DuPont analysis. This combination demonstrates a company's ability to generate profit on assets.

$$Asset\ Turnover = \frac{Revenue}{Total\ Assets}$$

As said above, the Net Profit margin is another part of Decomposed ROA. Profit Margin is responsible for Company's Profitability in one full period perspective (in our case one Financial Year) and based on the company's income statement (profit and loss statement).

$$Net\ Profit\ Margin = \frac{Net\ Profit}{Revenue}$$

Net profit Margin demonstrates how much Net Profit is generated from 1$ sales. Net profit is Sales – All expenses (Variable and Fixed). A higher Net Profit Margin is better. Based on net profit margin it is easy to monitor management efficiency of companies. DuPont analysis has a deeper analysis of Net Profit Margin, but addresses tax burden, interest coverage, and EBIT Margin which aren't calculated due to data distribution and expected skewness. Instant of these Coefficients are calculated Gross Profit Margin for industry. Gross Profit Margin is one of the most important parts of income statement analysis as it demonstrates how effectively company manages the cost of goods sold (COGS) and COGS representing nearly all sales-related costs. High Gross Profit margin is one of the Indicators of company health as it demonstrates how many percentage of income is left from revenue after subtracting cost of goods sold.

$$Gross\ Profit\ Margin = \frac{Gross\ Profit}{Revenue}$$

One of the research objectives is to identify how effectively companies are managing working capital and how working capital management affects companies' profitability. For Working Capital management Ratios several ratios are analyzed, one of them being Current Ratio whichis one of the key liquidity measures, demonstrating companies' ability to meet short term liabilities (liabilities within due one year).

$$Current\ Ratio = \frac{Current\ Assets}{Current\ Liabilities}$$

Another liquidity measure is the Quick ratio (Acid Test). The quick ratio is more exquisite and is calculated by subtracting from Current assets and Inventories. Removing Inventories from Calculating Liquidity measures is a proper decision as inventories appear as Frozen assets. If Company isn't able to sell them effectively, they are not part of the current liquidity position.

$$Quick\ Ratio = \frac{Current\ Assets - Inventories}{Current\ Liabilities}$$

Moreover, it is important to identify Inventories Turnover Ratios which shows how many cycles the average inventory goes through in one operating period. With a high inventory turnover ratio liquid assets inventories also raise.

$$Inventories\ Turnover = \frac{COGS}{Inventories}$$

For a more detailed analysis, the inventory turnover ratio is converted to a daily measure and measures the period as Days of Inventories on hand (DOH) over the Financial year. Inventory days on hand (also called 'days of inventory on hand') measures how much time is needed for a business to exhaust a lot of inventory on average. Knowing the current and exact value of inventory days on hand, a company can reduce its 'stockout days.

$$DOH = \frac{365}{Inventories\ Turnover}$$

Another important part of Working Capital Management is Account Receivable Turnover ratio which demonstrates how effectively company collects Account Receivable from selling on credit. Currently, Companies fail to separate sales on credit and sales on cash and because of that the division is total revenue:

$$Accounts\ receivable\ turnover = \frac{Revenue}{Accounts\ receivable}$$

Receivable Turnover Ratios as inventories Turnover ratio give an opportunity to calculate days for collecting account receivables.

$$DSO = \frac{365}{Accounts\ receivable\ Turnover}$$

Besides the above-listed turnover ratios, account Payable Turnover ratios are not considered less important. It measures how quickly a business pays suppliers and creditors. Higher Payable Turnover ratio is better it is for the company. It will demonstrate the efficiency of management with creditors and the bargaining power of companies over creditors. As purchases are taken, cost of goods sold, in some cases, doesn't demonstrate a clear picture, but it's one possible way to calculate the Payable turnover ratio.

$$Accounts\ payable\ Turnover = \frac{COGS}{Accounts\ Payable}$$

Days payable outstanding (DPO) is part of Working Capital Management and is calculated by using the account payable Turnover ratio. It helps to demonstrate how many days companies take to pay to suppliers.

$$DPO = \frac{365}{Accounts\ Payable\ Turnover}$$

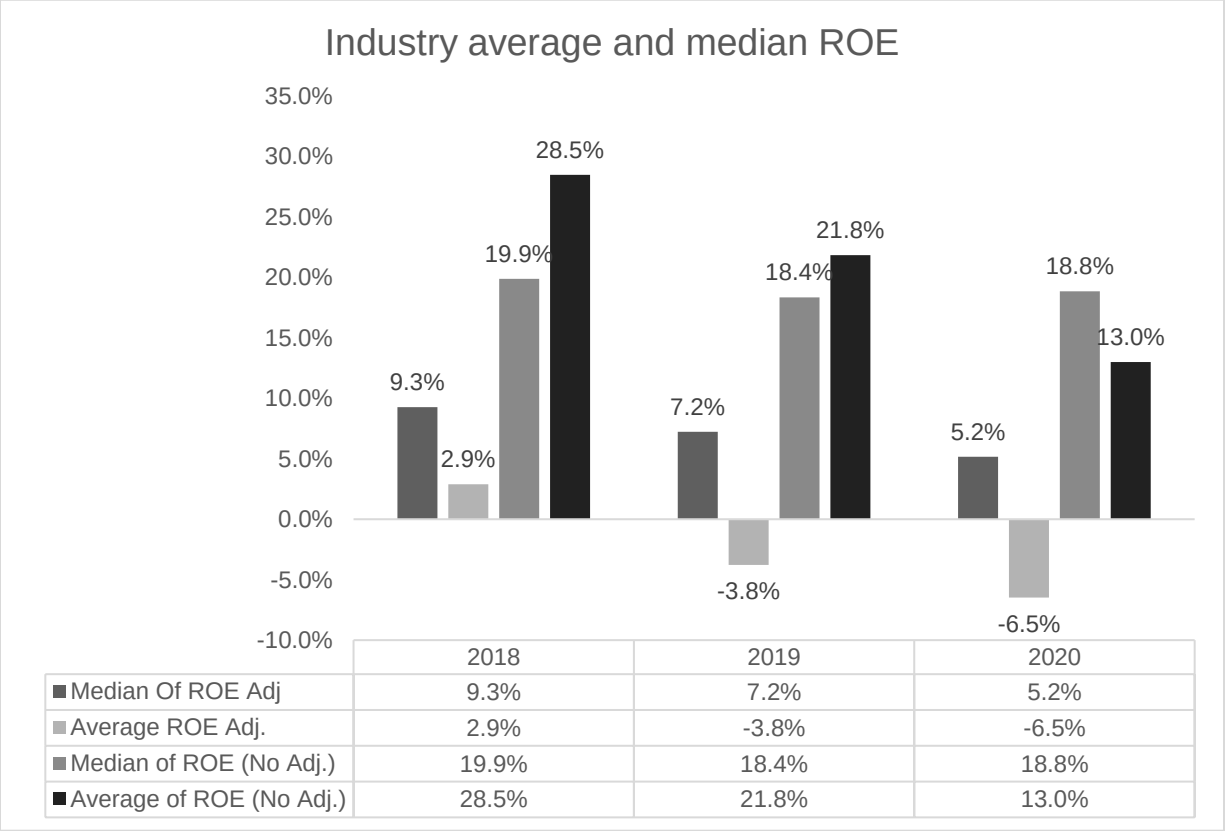
As discussed above, one of the key metrics are DOH, DSO, and DPO, these 3 ratios showing inventories, receivables, and payables turnovers in days, representing the main factors of working capital and especially Cash Conversion Cycle (CCC), also called Net Operating Cycle. CCC is Expressed in time (in days) demonstrates the period for Converting Investment in inventories and other necessary resources into cash. It measures how long each net imputed unit is tried up in the operating process before it gets converted into cash and received by the company.

$$CCC = DOH + DSO - DPO$$

4 Results and Discussion

4.1 Financial Analysis

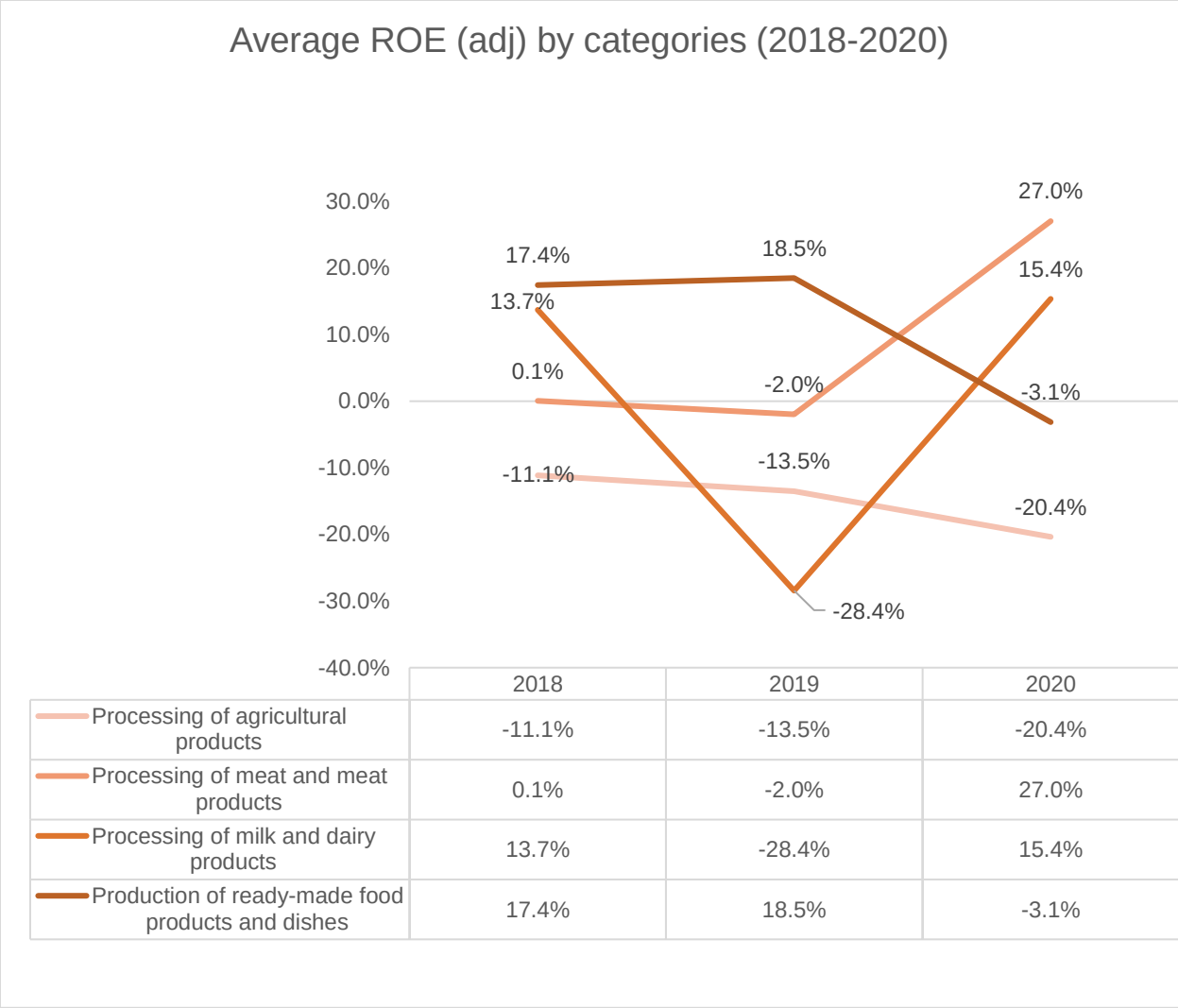
From 2018 to 2020, many changes have been made to the financial statements of companies representing Food Processing Industry. ROE was used as the main financial indicator for companies' profitability, yet for better representation of the data, an adjusted ROE was also adopted. The Chart 1 below shows no significant difference between ROE and an adjusted ROE:



	2018	2019	2020
Median Of ROE Adj	9.3%	7.2%	5.2%
Average ROE Adj.	2.9%	-3.8%	-6.5%
Median of ROE (No Adj.)	19.9%	18.4%	18.8%
Average of ROE (No Adj.)	28.5%	21.8%	13.0%

**Chart 1 Source Reportal.Ge Financial statements*

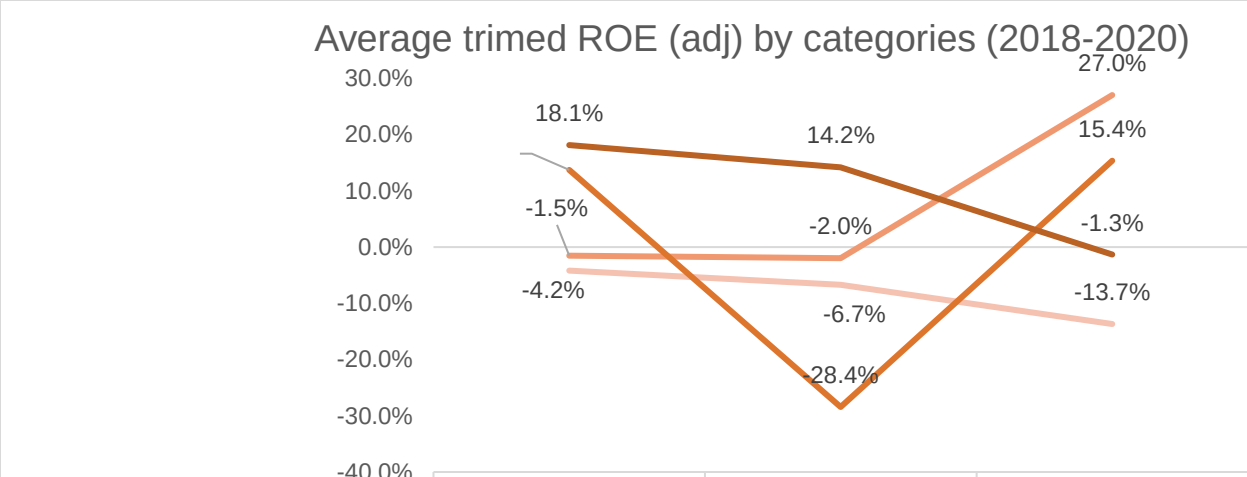
According to the median adjusted ROE, the financial year 2018 was the most profitable one. After 2018, a decreasing trend is observed. The same observation can be made with an average ROE. It's important to mention that the average adjusted ROE has a relatively more nominal value than the median adjusted ROE. The reason for using not adjusted ROE is that loss-making enterprises have a positive ROE (a negative number divided by a negative number gives a positive sign), which caucuses the bias. Decomposition of ROE should help identify the loss-making companies and explain the causes for the loss.



	2018	2019	2020
Processing of agricultural products	-11.1%	-13.5%	-20.4%
Processing of meat and meat products	0.1%	-2.0%	27.0%
Processing of milk and dairy products	13.7%	-28.4%	15.4%
Production of ready-made food products and dishes	17.4%	18.5%	-3.1%

**Chart 2 Source Reportal.Ge Financial statements*

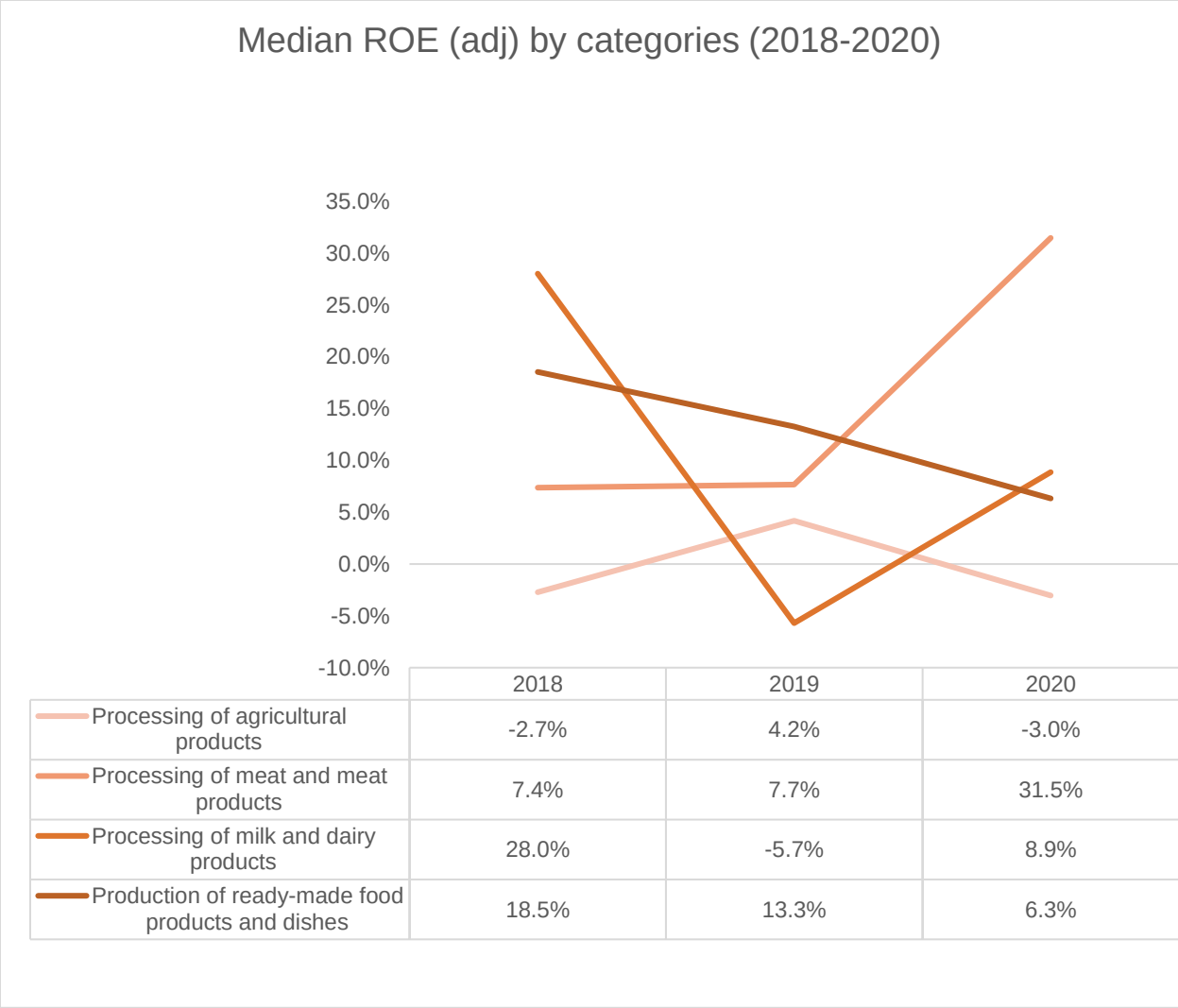
Chart 2 shows average ROE (Adj) movements by years and subcategories. Based on three years of performance in the food processing industry, all categories have many activities from year to year. Since the COVID-19 pandemic started in 2020, many companies in Georgia have encountered problems related to operations. Data analysis shows that the production of ready-made food products and dishes performs better than other categories of the food processing industry. 17.4% in 2018, 18.5% in 2019, and -3,1% in 2020 indicate that companies operating in ready meal processing categories appear more profitable than others. It's also worth mentioning that milk and meat processing categories do not appear less promising. Despite the pandemic year, these two industries significantly grew in average adjusted ROE. In Contrast to other categories, the processing of agricultural products has an opposing average ROE.



	2018	2019	2020
Processing of agricultural products	-4.2%	-6.7%	-13.7%
Processing of meat and meat products	-1.5%	-2.0%	27.0%
Processing of milk and dairy products	13.7%	-28.4%	15.4%
Production of ready-made food products and dishes	18.1%	14.2%	-1.3%

**Chart 3 Source Reportal.Ge Financial statements*

Chart 3 shows a more comprehensive industry analysis, illustrating the trimmed mean of adjusted ROE. Compared to no adjusted mean, companies have a better performance without considering outliers. Charts 2 and 3 show that companies' profitability data have skewness, and average metrics might be misleading during the analysis. Analyzing median metrics is recommended to understand the industry's profitability better.

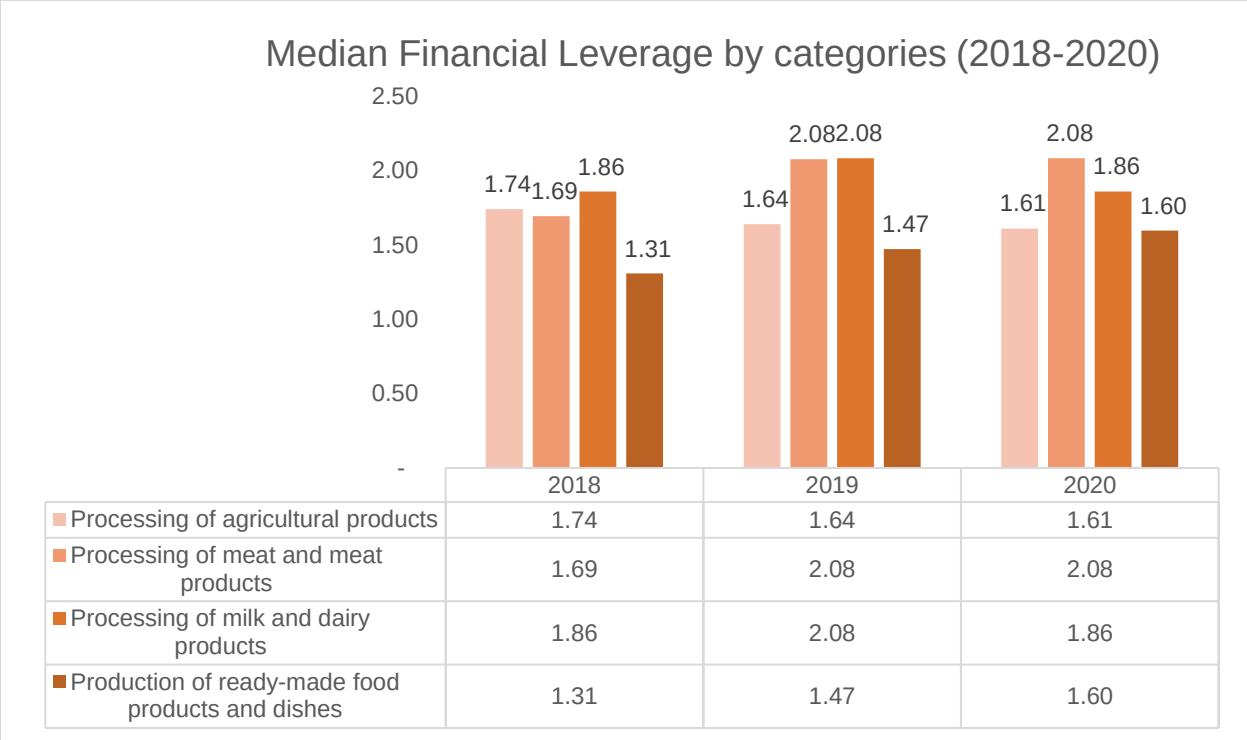


	2018	2019	2020
Processing of agricultural products	-2.7%	4.2%	-3.0%
Processing of meat and meat products	7.4%	7.7%	31.5%
Processing of milk and dairy products	28.0%	-5.7%	8.9%
Production of ready-made food products and dishes	18.5%	13.3%	6.3%

**Chart 4 Source Reportal.Ge Financial statements*

Chart 4 illustrates the median ROE (Adj) by categories. Results are changed by using median ROE. Ready-made food productions have positive returns on equity. Still, meat production shows a better performance than an average ROE, having a positive ROE for all the periods and the most significant change in 2020. Many factors could cause such a change, which should be analyzed in future studies. Milk Production shows less effective financial performance according to a median adjusted ROE, yet this industry has the potential to grow. Agricultural product processing has a better economic performance by a median ROE than an average ROE, yet it has problems regarding profitability. Even though ROE is one of the measurements for profitability, to explain companies' profitability more efficiently, the DuPont analysis is adopted, which allows dividing ROE into two parts: financial leverage and ROA.

Coefficient financial leverage has a significant portion in formulating companies' profitability as it shows how a company uses financial leverage. Liabilities are also crucial in business operations. A properly selected capital structure could enable the company to grow fast by affecting its influence. However, it is essential to create an optimal level of leverage as liabilities (especially long-term loans) have expenses related to interest, which might harm companies' profitability.

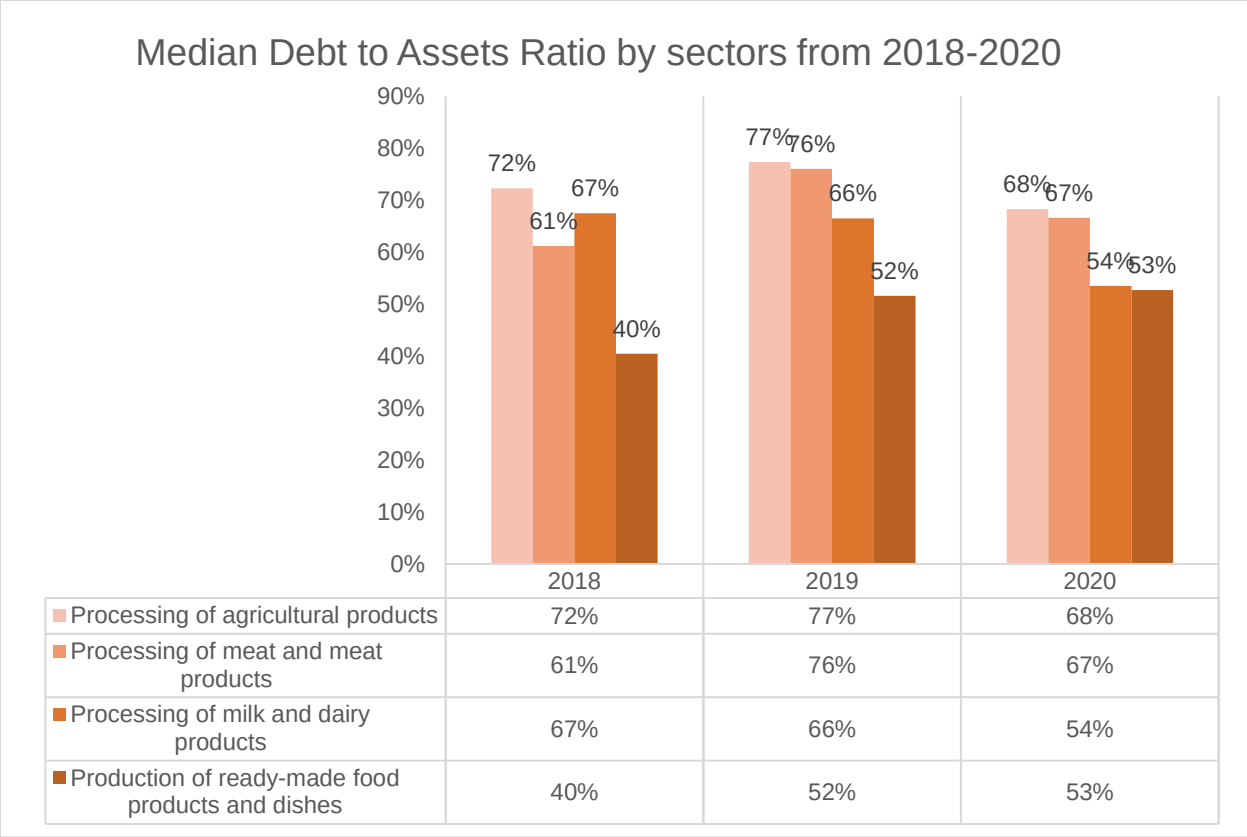


	2018	2019	2020
Processing of agricultural products	1.74	1.64	1.61
Processing of meat and meat products	1.69	2.08	2.08
Processing of milk and dairy products	1.86	2.08	1.86
Production of ready-made food products and dishes	1.31	1.47	1.60

**Chart 5 Source Reportal.Ge Financial statements*

Chart 5 represents the median financial leverage by categories. Financial leverage represents the Solvency Ratio which shows how efficiently the company can meet upcoming liabilities in the long run. It's hard to determine an optimal financial leverage structure, but as financial leverage is as significant as expected ROE, the company could handle interest expenses and profit. When a company is profitable, considerable financial leverage is average. The data illustrated through a median perspective shows that the ready-made food processing sector has less financial leverage. Data from the 3rd chart also shows that companies in this sector have a stable positive ROE, which the coefficient of financial leverage cannot explain. According to the 4th chart, meat processing companies have a relatively significant median coefficient of financial leverage, describing growing ROE. The same assumptions can be applied to the milk processing category. Companies

representing agricultural products' processing have a more significant financial leverage coefficient over the years than ready-made meal processing companies through a median perspective. Yet, the ROE is relatively small and, in some cases, even harmful. To better understand the industry's solvency, the application of another solvency measurement, the debt to asset ratio, should be considered.

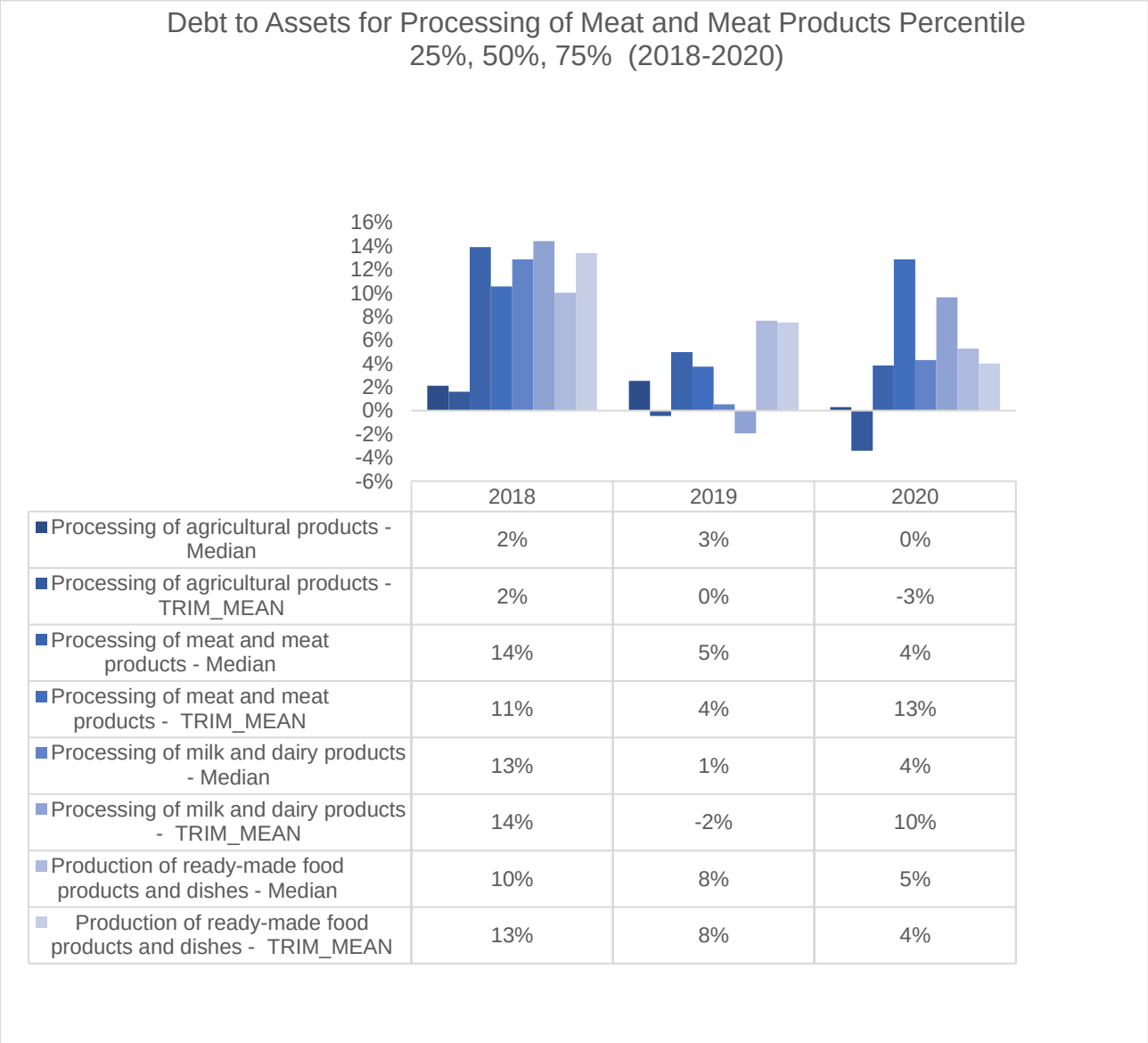


	2018	2019	2020
Processing of agricultural products	72%	77%	68%
Processing of meat and meat products	61%	76%	67%
Processing of milk and dairy products	67%	66%	54%
Production of ready-made food products and dishes	40%	52%	53%

**Chart 6 Source Reportal.Ge Financial statements*

Chart 6 presents a median debt to assets ratio by category. The ready-made food processing sector has the lowest obligation to assets ratio. These two solvency ratios show that this category has fewer liabilities than others. Companies representing milk production categories have a declining trend in debt to asset ratios, and ROE is increasing proportionally in this sector. This is related to the profitability ratio and illustrates that the company's capital structure is most appropriate for lower liabilities than in previous years. As Chart 6 shows, the Agricultural sector has significant financial leverage and an enormous debt to assets ratio. Not sufficient profit margins and low capacity to gain financial power could account for the "not profitability" of the category. Nevertheless, the meat processing industry has a high median debt to assets ratio and significant financial leverage. Still, their profit margins Mak able companies to generate the Greatest Profit

(ROE). For analyzing the sector in-depth and checking the company's capital structure, 25, 50, and 75 percentiles are used (the 50th percentile is the same as the Median results).



	2018	2019	2020
Processing of agricultural products - Median	2%	3%	0%
Processing of agricultural products - TRIM_MEAN	2%	0%	-3%
Processing of meat and meat products - Median	14%	5%	4%
Processing of meat and meat products - TRIM_MEAN	11%	4%	13%
Processing of milk and dairy products - Median	13%	1%	4%
Processing of milk and dairy products - TRIM_MEAN	14%	-2%	10%
Production of ready-made food products and dishes - Median	10%	8%	5%
Production of ready-made food products and dishes - TRIM_MEAN	13%	8%	4%

**Chart 6 Source Reportal.Ge Financial statements*

Percentiles analysis shows that the food processing industry has a high debt concentration of 75 percentile from 2018 to 2020 is more than 100%. (Illustrating that companies in previous years were loss-making). Food processing companies can generate profit.

Processing of meat and meat products (Adjusted ROE Percentile 2018-2019)

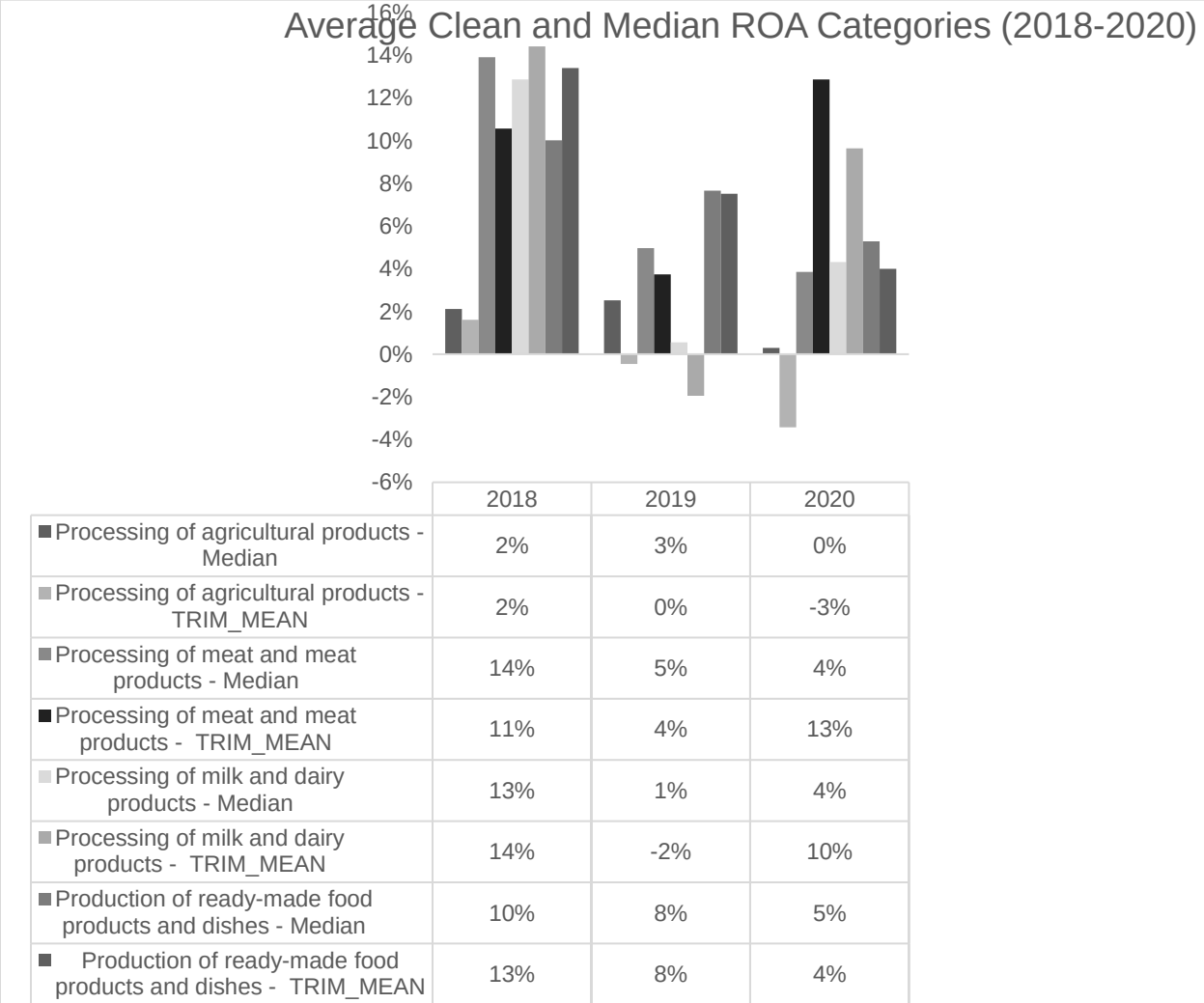
Year	25 Percentile	50 Percentile	75 Percentile

2018	-22.0%	45.5%	127.7%
2019	-50.9%	31.4%	76.7%
2020	7.7%	67.3%	92.3%

**Table 3 Source Reportal.Ge Financial statements*

Table 3 illustrates that companies with solvency problems, especially ones with more than 100% debt to assets ratio, have difficulties with profitability. Still, most companies in these categories are profitable and could have significant financial leverage.

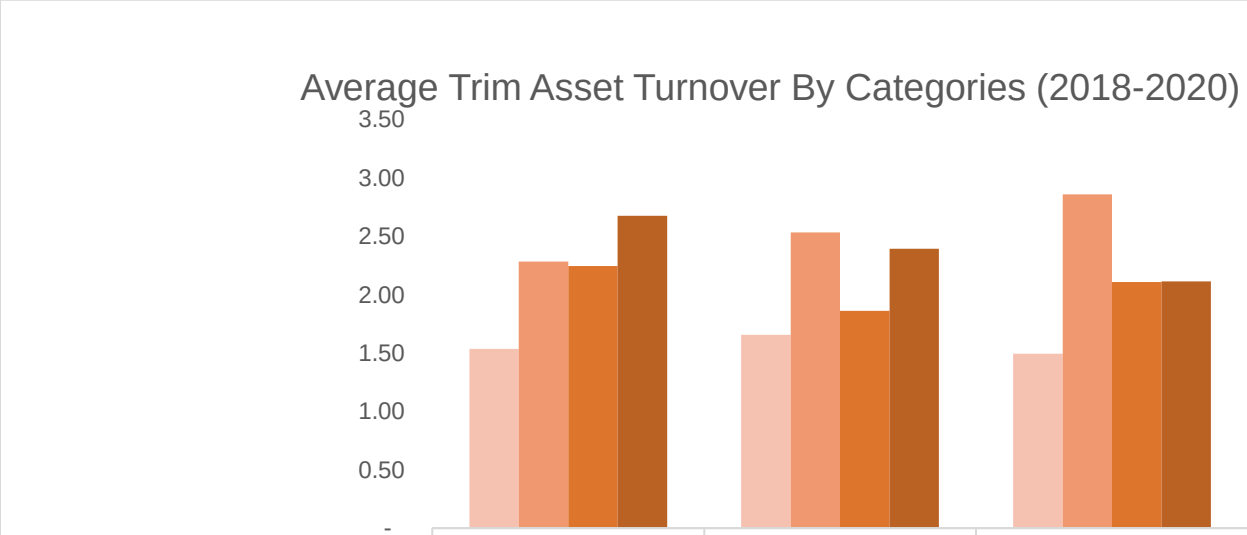
As discussed previously, the profitability side represents another phase of ROE Decomposition. ROA means profitability, which is one of the essential parts of ROE decomposition.



	2018	2019	2020
Processing of agricultural products - Median	2%	3%	0%
Processing of agricultural products - TRIM_MEAN	2%	0%	-3%
Processing of meat and meat products - Median	14%	5%	4%
Processing of meat and meat products - TRIM_MEAN	11%	4%	13%
Processing of milk and dairy products - Median	13%	1%	4%
Processing of milk and dairy products - TRIM_MEAN	14%	-2%	10%
Production of ready-made food products and dishes - Median	10%	8%	5%
Production of ready-made food products and dishes - TRIM_MEAN	13%	8%	4%

**Chart 7 Source Reportal.Ge Financial statements*

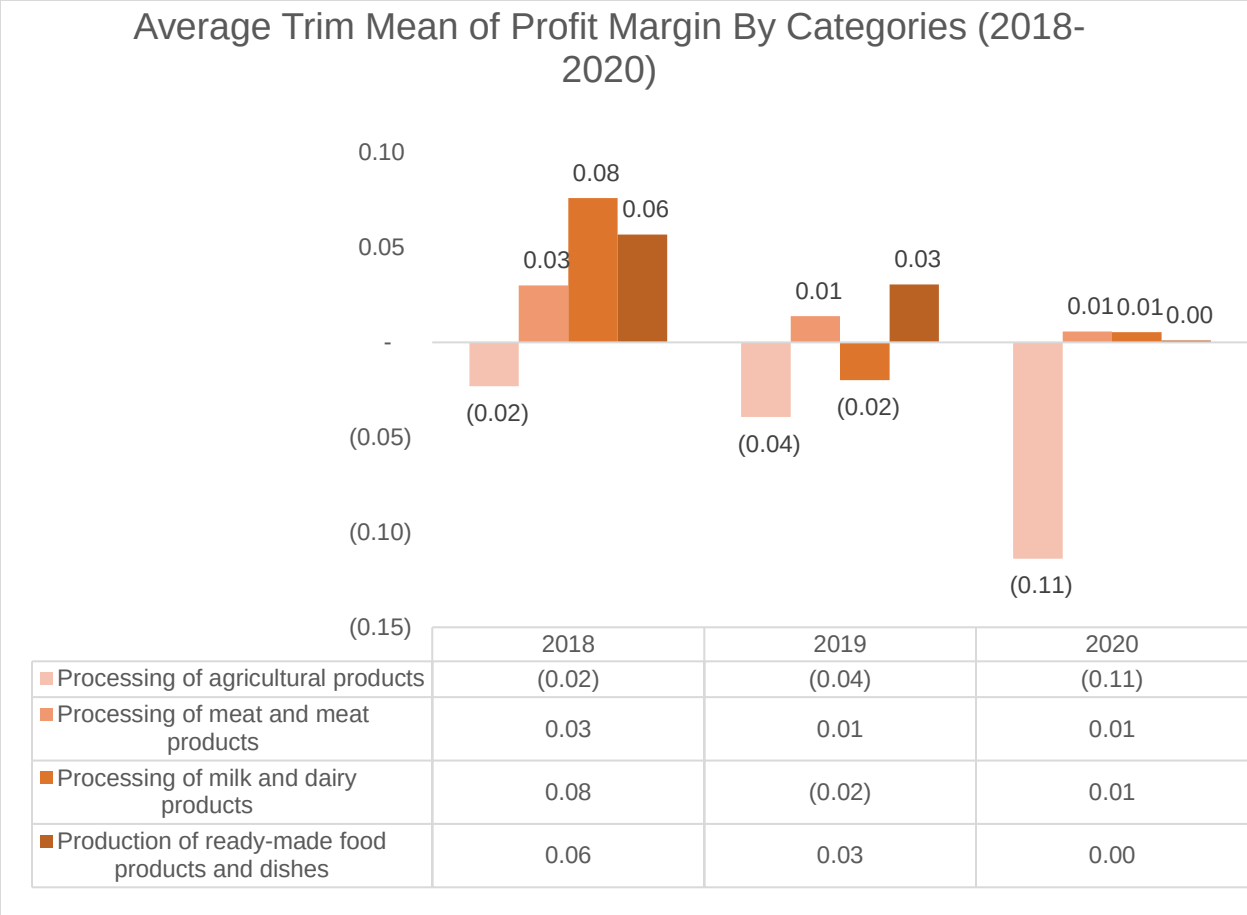
Chart 7 illustrates the food proceedings sector's profit on assets (ROA) by clean Mean and Median. In most cases, the trim mean and median are very closely distributed, which validates assumptions about profitability. Taking ROA and financial leverage in combination must give a good picture of the Company's profitability distribution. The agricultural processing sector has considerable financial leverage but doesn't have profitability (ROE) of more than 0 according to the trimmed average, which is explained by significant financial leverage. The company's profit margins (net profit) are not enough to generate high positive profits on assets (capital). Milk processing companies have a better situation regarding ROA on average and Median metrics. Combination of high financial leverage, this sector can generate positive returns on assets that could explain the high positive returns on equity—the same concerns meat product production. Ready-made meal processing companies have high median and mean returns on investments. Despite the COVID-19 situation, they can generate positive profits. This year company's financial leverage increased, but it balances returns on equity. Further analysis of ROA is required by decomposing it into Net Profit Margin and Asset Turnover.



	2018	2019	2020
Processing of agricultural products	1.54	1.65	1.49
Processing of meat and meat products	2.28	2.53	2.86
Processing of milk and dairy products	2.25	1.86	2.11
Production of ready-made food products and dishes	2.68	2.39	2.11

**Chart 8 Source Reportal.Ge Financial statements*

Chart 8 presents Food Proceedings Sectors' Assets Turnover Ratio by categories. As discussed in the methodological chapter, Asset Turnover is part of the decomposition of ROE. Asset Turnover is an efficiency Ratio and demonstrates how effectively the company uses assets compared to sales. Based on trim average asset turnover, all categories have asset turnover higher than 1, which is generally a good indicator. The lowest asset turnover has agricultural product processing in the range of 1.49-1.65. This Ratio might be one of the reasons for the low-level ROA of this sector. Meat product processing categories have grown in asset turnover ratio from 2.28 to 2.86. This increase in asset turnover might have two potential explanations, an increase in sales or a decrease in assets. According to the past information, these companies, from 2018 to 2020, on average, don't have significant losses, which indicates this sector's growth in sales (might be small growth in assets as well). To evaluate the performance of this sector, they are growing and becoming better at utilizing their assets. In contrast to meat production, milk processing products have a declining asset turnover ratio. This sector also has a decline in ROA. Ready-made food products processing companies have also declined in Asset turnover ratio. They had the most significant reduction in 2020, but this sector demonstrates positive Returns on assets year by year. For an in-depth analysis of asset turnover ratio contact, it is necessary to analyze and calculate companies' profit margins.

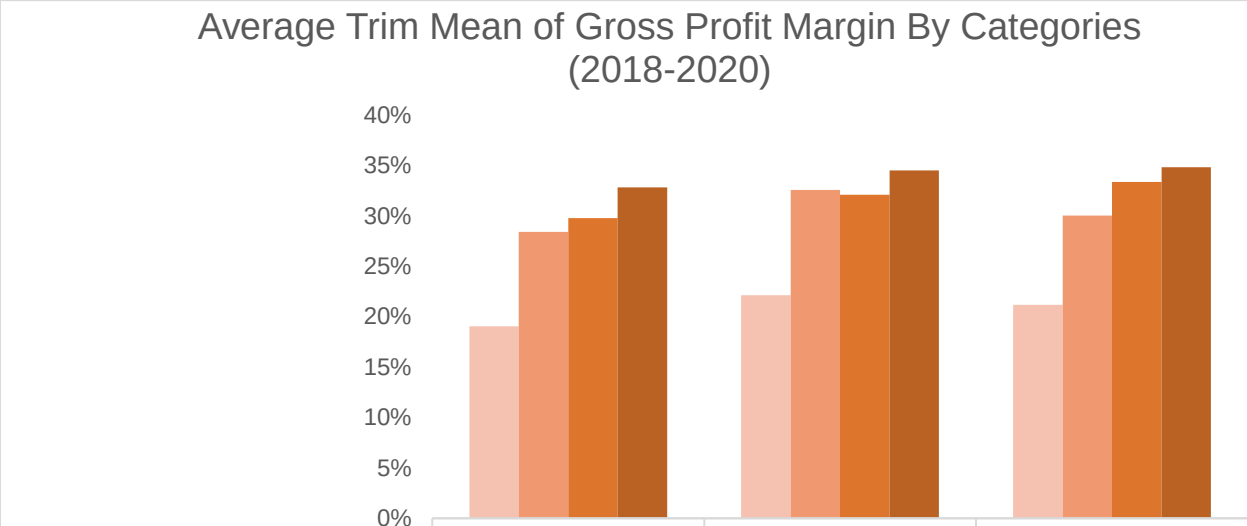


	2018	2019	2020
Processing of agricultural products	(0.02)	(0.04)	(0.11)
Processing of meat and meat products	0.03	0.01	0.01
Processing of milk and dairy products	0.08	(0.02)	0.01
Production of ready-made food products and dishes	0.06	0.03	0.00

**Chart 9 Source Reportal.Ge Financial statements*

Chart 9 presents Food Proceedings Sectors' Net Profit Margins by categories. Net profit margin is one of the most critical indicators of companies' financial performance for the past financial years. If the Net Profit margin is negative, then the company is loss-making. Loss and profit have their explanations for companies, and further analysis can reveal them. As discussed above, the Profit margin is one of the essential Ratios for determining companies' profitability. Agricultural product processing, on average, has a loss that is growing year by year, and from – 0.02 in the year 2018, data achieves a minimum -of 11% in the year 2020. As it is known, the year 2020 was a pandemic, and this global situation might have affected this category of the food processing industry. According to Net profit margins, the meat and meat products processing industry has positive returns from 2018 to 2020; this sector, on average, can generate positive returns. Milk and milk products processing have highly fluctuated Net profit margins on average. This sector might have an enormous potential for profit generation; according to the year 2018 data, this sector generates

7.59% of the net profit on average. This is the highest achievement—ready-made food product processing developing from 2018 to 2022 positive Net profits. In 2018, this sector had a 5.67% net profit margin. The pandemic year of 2020 was undoubtedly harmful to this sector, but the company's margins could generate positive returns. It's essential to determine which categories' profitability is changing for this sector. For an in-depth income statement analysis, it is necessary to decide on Gross Profit Margin.

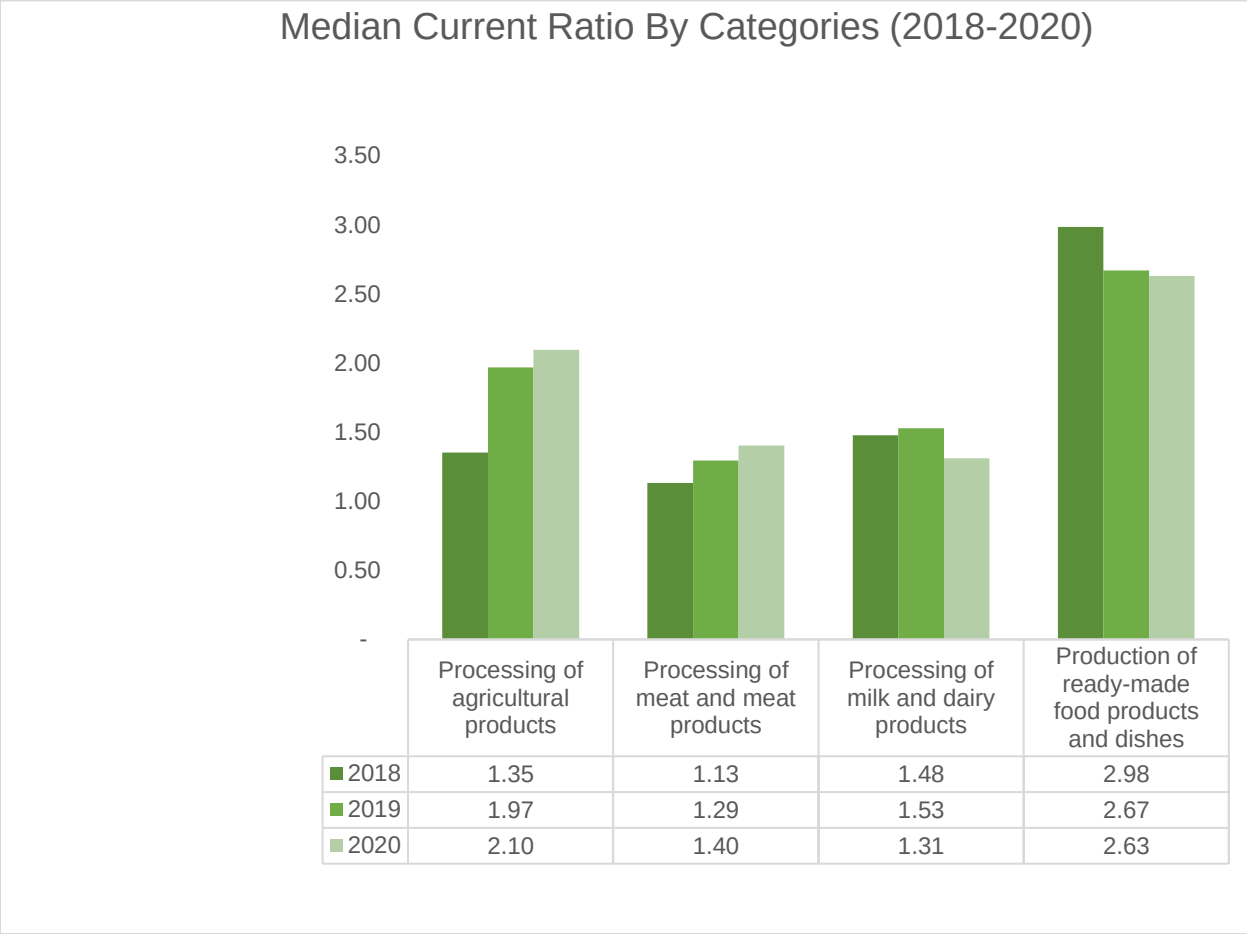


	2018	2019	2020
Processing of agricultural products	19%	22%	21%
Processing of meat and meat products	28%	33%	30%
Processing of milk and dairy products	30%	32%	33%
Production of ready-made food products and dishes	33%	34%	35%

**Chart 10 Source Reportal.Ge Financial statements*

Chart 10 illustrates the Food Proceeding industry's Gross Profit Margins by categories. Gross Profit Demonstrates how effectively the company manages the Cost of Goods Sold. A significant Gross Profit margin indicates that companies can sell to COGS at a higher price. As expected from Net profit margins, the agricultural food processing sector has the lowest Gross Profit margins, deviating from 19% to 21%. Gross profit margin might be one of the main reasons for this sector's loss-making. Another three categories of the food processing industry have approximately equal Metrics of Gross Profit margins, changing from year to year. The highest Gross Profit margins have the processing of ready meal products. It shows that companies in this sector add the highest product value.

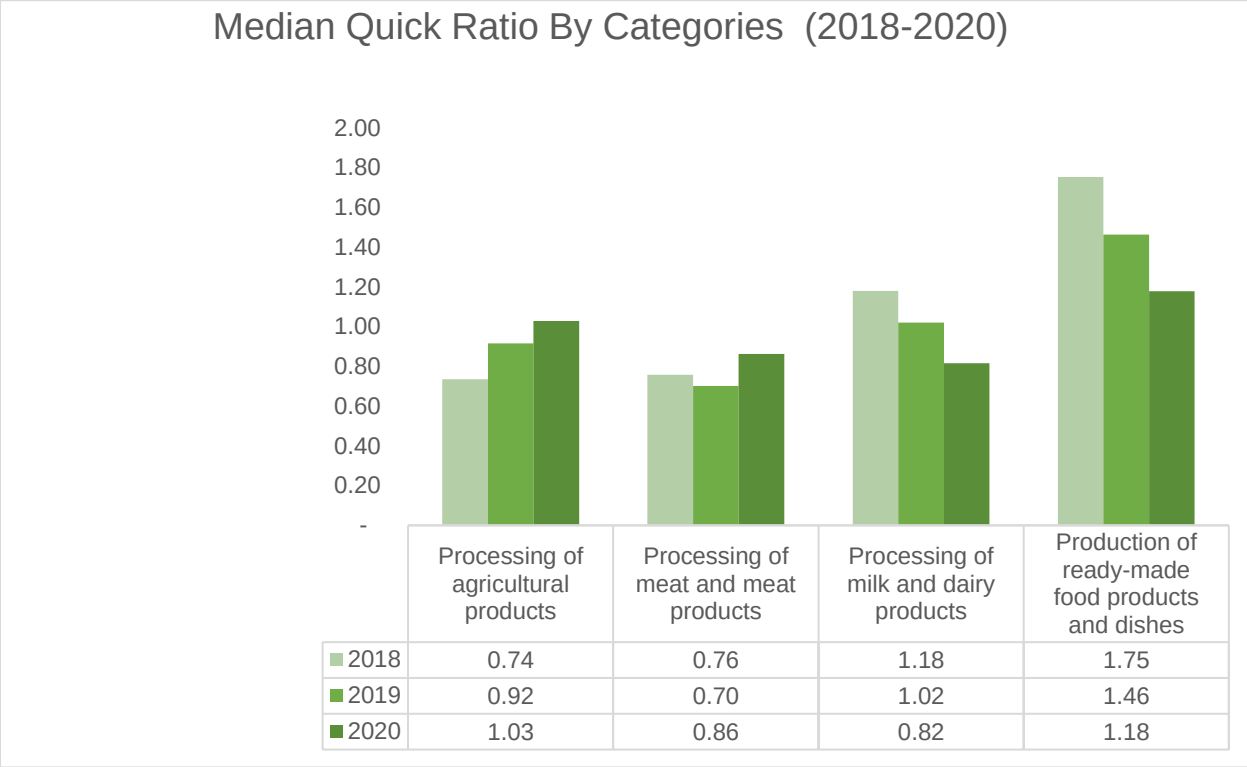
One of the essential parts of this sector is its Liquidity. Liquidity Coefficients show an effect on companies' profitability.



	Processing of agricultural products	Processing of meat and meat products	Processing of milk and dairy products	Production of ready-made food products and dishes
2018	1.35	1.13	1.48	2.98
2019	1.97	1.29	1.53	2.67
2020	2.10	1.40	1.31	2.63

**Chart 11 Source Reportal.Ge Financial statements*

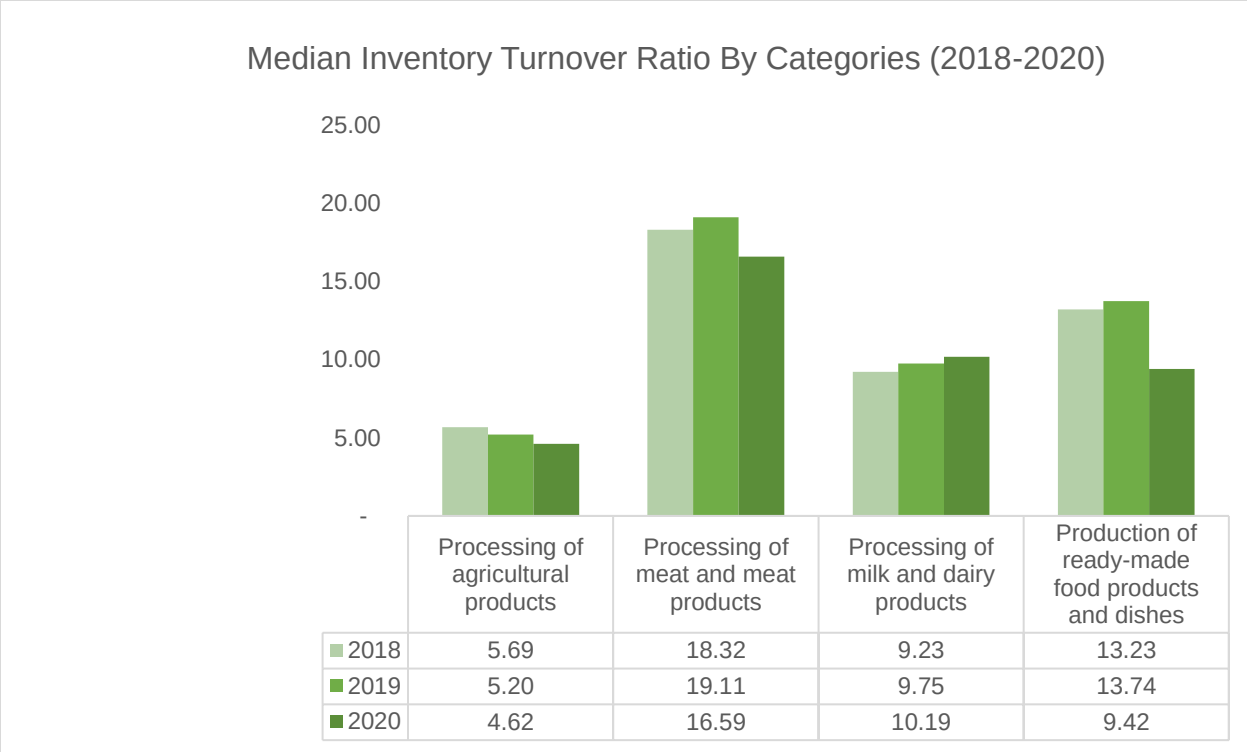
Chart 11 shows the Food Processing Industry's Current Ratio by category. The Current Ratio is one of the liquidity measures. To avoid skewness for this analysis, median measures are used. In some cases, a company has accumulated a large amount of cash, inventories, receivables, or payables at the ending period, which might change the picture of the analysis. According to media metrics, it should be easy to determine how categories under the umbrella of the Food Processing sector s can meet short-term liabilities. All Categories can meet short-term liabilities; the highest current ratio is evident in the ready-made food products' processing industry.



	Processing of agricultural products	Processing of meat and meat products	Processing of milk and dairy products	Production of ready-made food products and dishes
2018	0.74	0.76	1.18	1.75
2019	0.92	0.70	1.02	1.46
2020	1.03	0.86	0.82	1.18

**Chart 12 Source Reportal.Ge Financial statements*

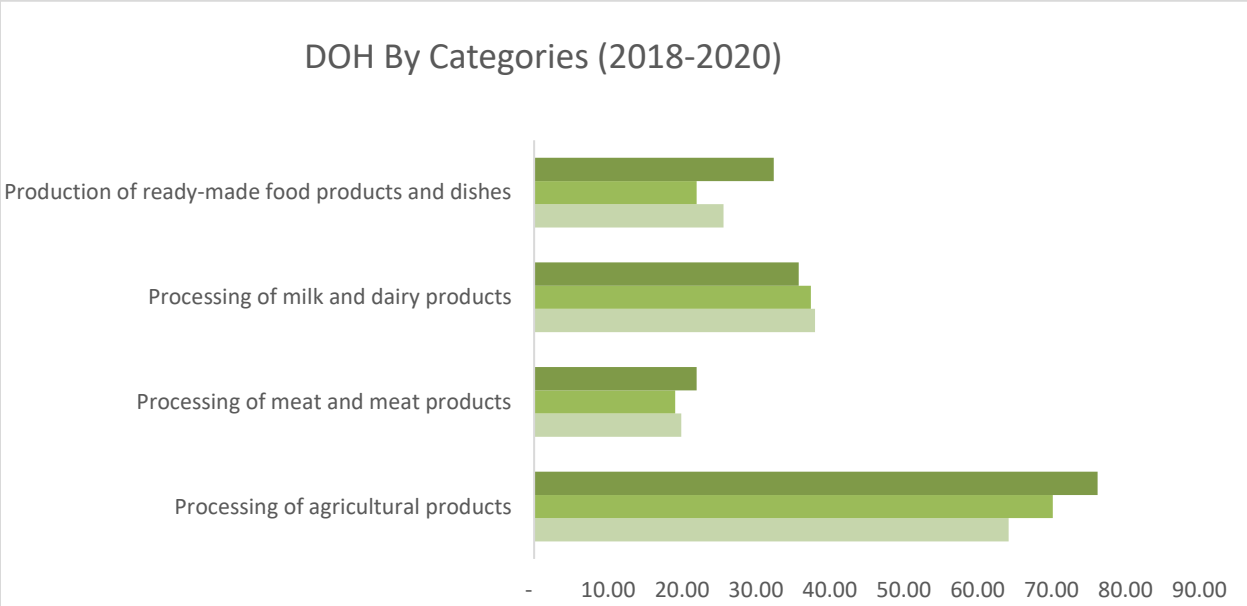
Chart 12 illustrates the Food Processing Industry's Quick Ratio by categories. As discussed earlier, the quick ratio measures a company's liquidity without considering inventories. A comparison of the short and current ratios shows that inventories represent one of the main aspects of companies' liquidity. The Quick ratio demonstrates the approximately same liquidity picture as the current ratio. Still, agricultural food and meat products processing companies have a Q=quick ratio of less than 1, milk products processing has close to 1 quick ratio, and ready-made food products have high liquidity positions and can meet short-term liabilities. Inventories play a crucial role in a company's liquidity, so it should be interesting to calculate inventory turnover ratios.



	Processing of agricultural products	Processing of meat and meat products	Processing of milk and dairy products	Production of ready-made food products and dishes
2018	5.69	18.32	9.23	13.23
2019	5.20	19.11	9.75	13.74
2020	4.62	16.59	10.19	9.42

**Chart 13 Source Reportal.Ge Financial statements*

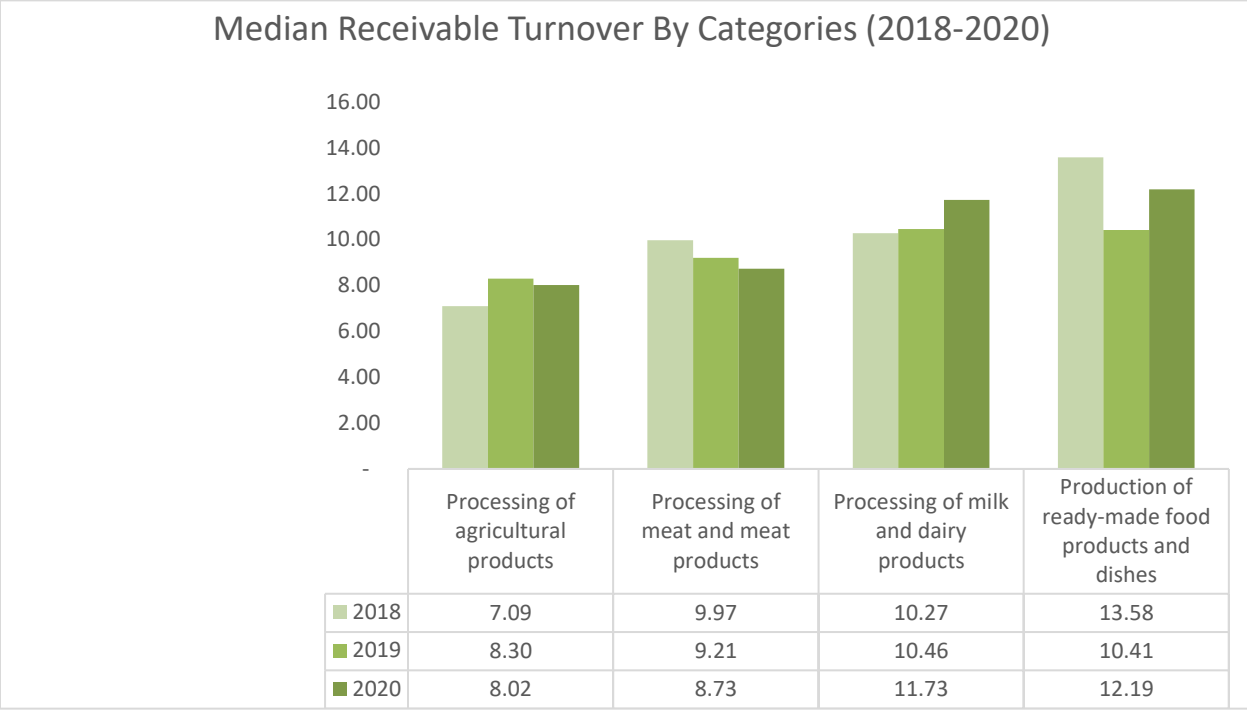
Chart 13 demonstrates the median inventory turnover ratio by category. The enormous inventory turnover ratio indicates how effectively companies manage inventories. Inventories management is essential for all companies as a significant amount of stocks is equal to frozen cash. As chart 12 shows, from mentioned categories, the processing of agricultural products has a minimum inventories' turnover; one of the main reasons for this could be the seasonality of farm products; companies in this category must keep a large number of stocks and turn it over, meat products in most cases are durable or semi-durable, the same applies to the majority of ready-made food products and dairy products which explains why this category has more excellent inventory turnover ratios.



	Processing of agricultural products	Processing of meat and meat products	Processing of milk and dairy products	Production of ready-made food products and dishes
2020	76.24	22.00	35.81	32.41
2019	70.19	19.10	37.44	21.98
2018	64.20	19.93	38.02	25.61

**Chart 14 Source Reportal.Ge Financial statements*

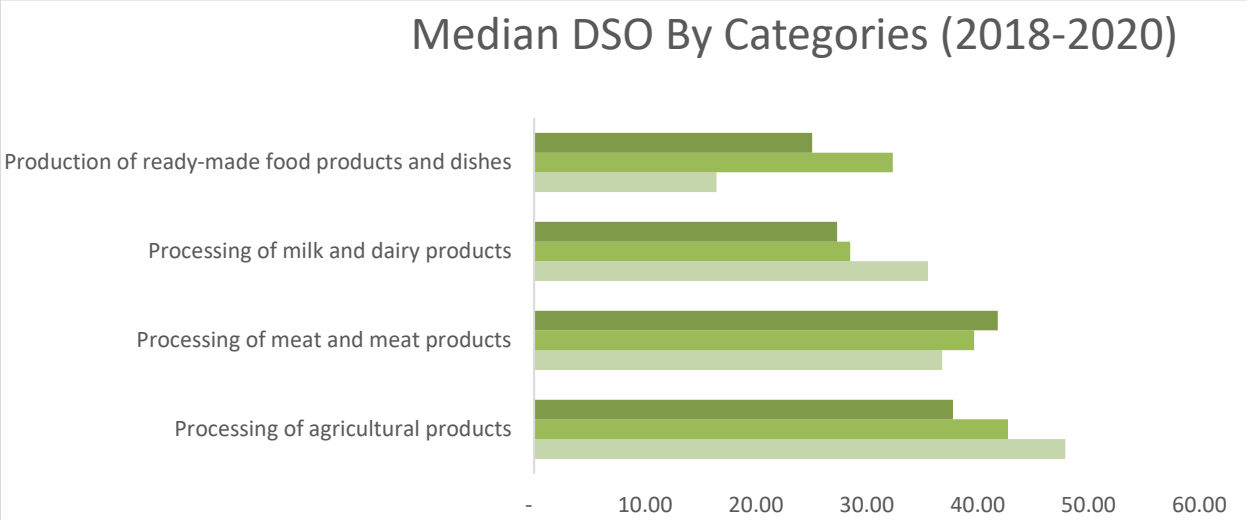
Chart 14 shows the median inventory days on hand (DOH) ratio by category. It's a critical ratio, demonstrating how many days companies hold inventories on average. As shown in the chart above, agricultural product processing has more than 64 days of holding period of stocks on average. Meat and meat products processing companies have approximately 20 days for maintaining inventories, and dairy and ready-made products have a range of 25-40 days holding period as inventories' account receivables are also an essential part of Working Capital management.



	Processing of agricultural products	Processing of meat and meat products	Processing of milk and dairy products	Production of ready-made food products and dishes
2018	7.09	9.97	10.27	13.58
2019	8.30	9.21	10.46	10.41
2020	8.02	8.73	11.73	12.19

**Chart 15 Source Reportal.Ge Financial statements*

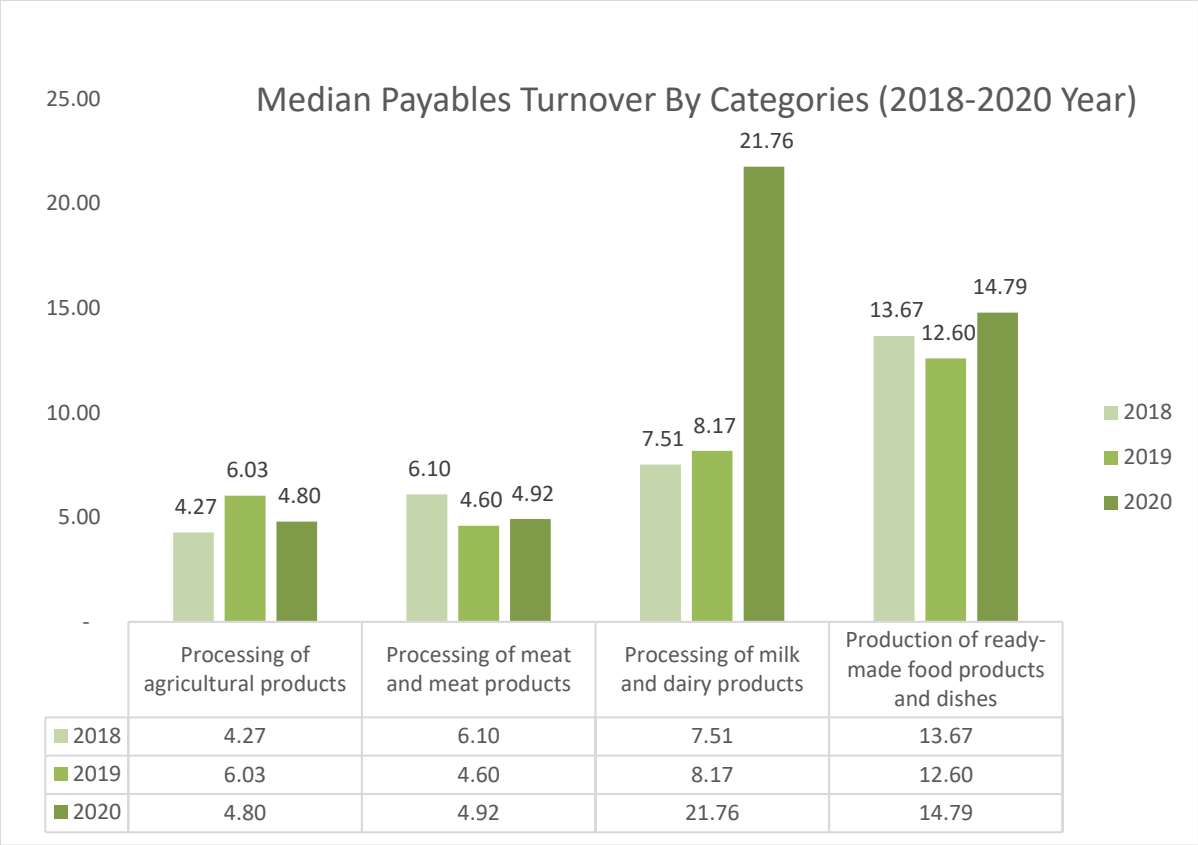
Chart 15 illustrates the median accounts' Receivable Turnover ratio by category. The more significant the accounts receivable turnover, the better it is for companies operating. Moreover, Chart 15 indicates that all the categories have the same level of funds receivable turnover.



	Processing of agricultural products	Processing of meat and meat products	Processing of milk and dairy products	Production of ready-made food products and dishes
2020	37.78	41.83	27.34	25.08
2019	42.74	39.69	28.50	32.36
2018	47.91	36.79	35.53	16.44

**Chart 16 Source Reportal.Ge Financial statements*

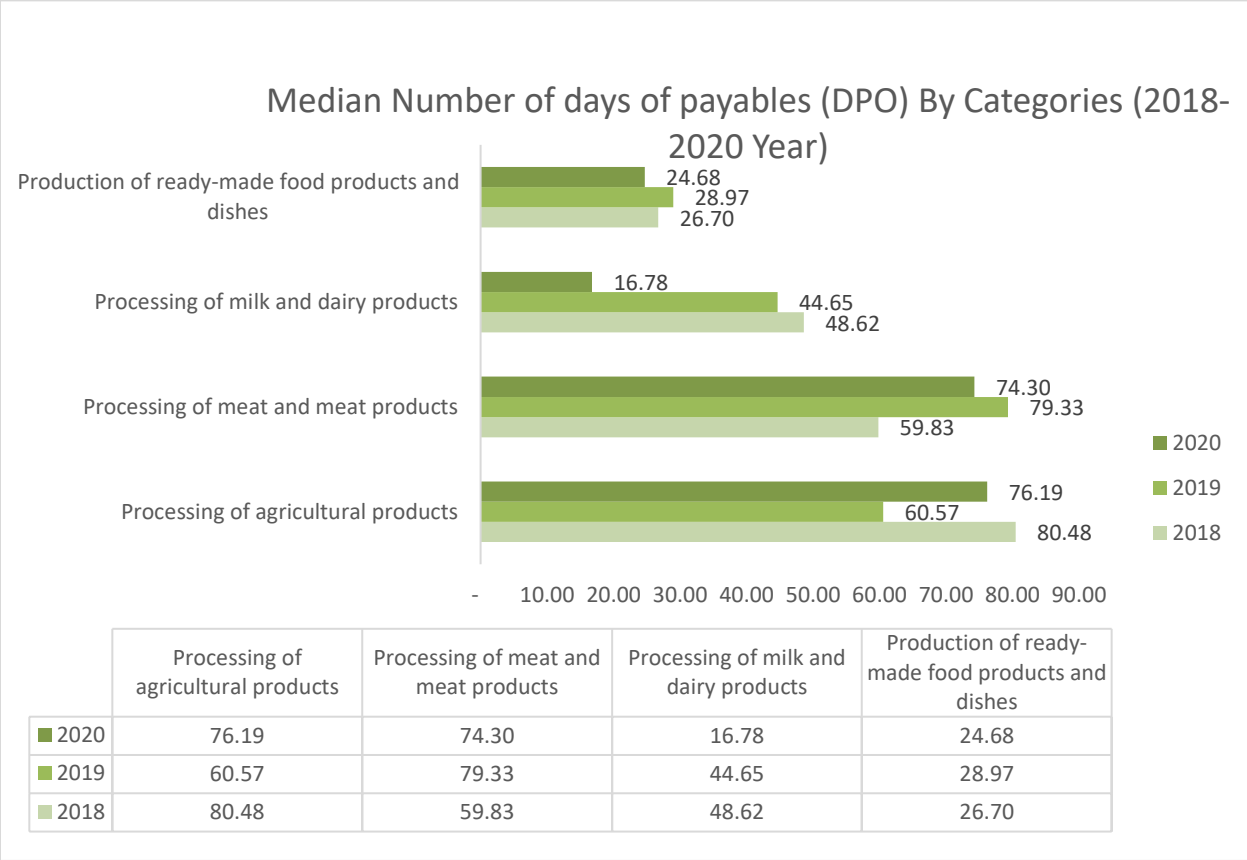
Chart 16 shows the median Days Sales Outstanding (DSO) ratio by category. As expected, agricultural product processing has the highest DSO rates, and ready-made food products generally have the lowest rates. That means agricultural processing products are sold in credit and need 42-48 days to receive cash from sold products, while ready-made food processing companies need 16-25 days to obtain some money from marketed products. Another vital ratio for working capital management is Payable Turnover.



	Processing of agricultural products	Processing of meat and meat products	Processing of milk and dairy products	Production of ready-made food products and dishes
2018	4.27	6.10	7.51	13.67
2019	6.03	4.60	8.17	12.60
2020	4.80	4.92	21.76	14.79

**Chart 17 Source Reportal.Ge Financial statements*

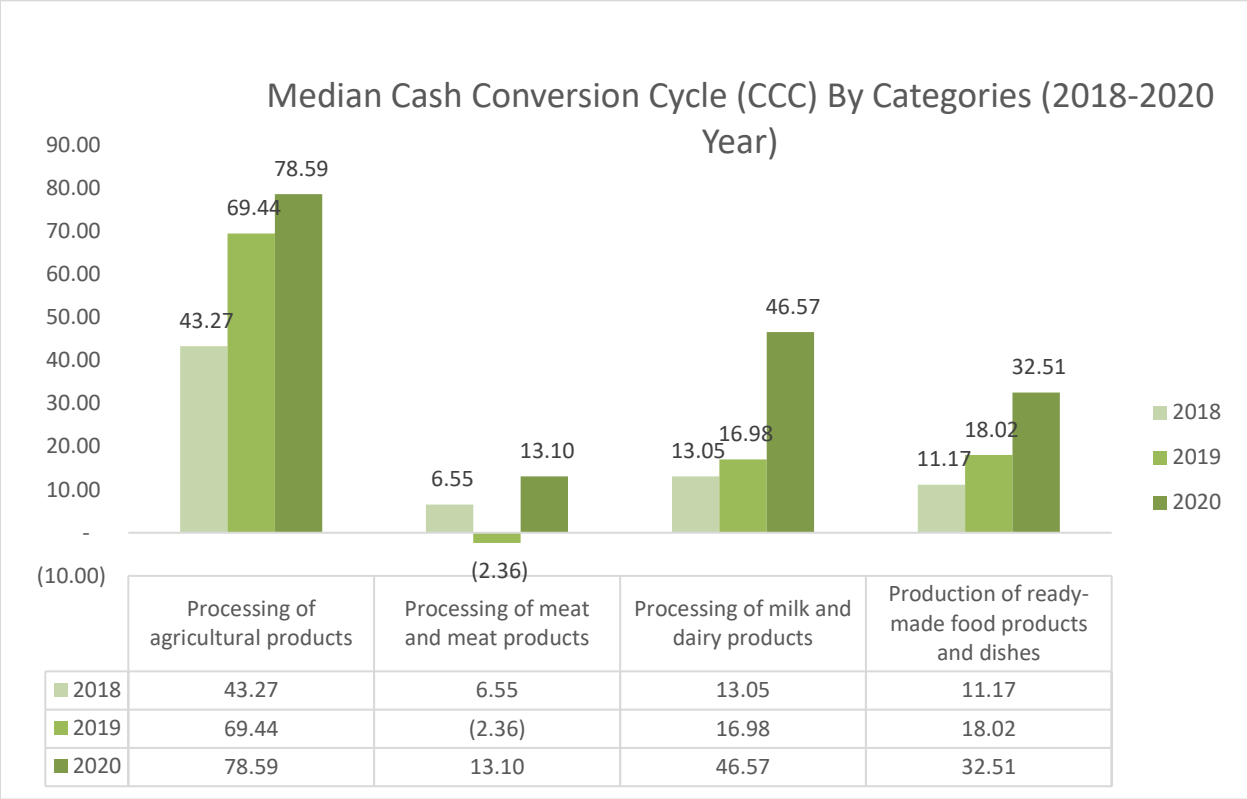
Chart 17 presents the median Payables Turnover Ratio by category. The fewer Payables turnover, the better it is for Company, implying that they are acting with creditors and can buy row products on credit. It's an essential part of cash and working capital management. Agricultural products processing has the lowest rates in payables turnover ratio. Meat and meat product processing categories' payables turnover is slightly surprising. Milk and ready-made food processing products have high payables turnover ratio. That means this company needs more cash in hand to pay short-term liabilities.



	Processing of agricultural products	Processing of meat and meat products	Processing of milk and dairy products	Production of ready-made food products and dishes
2020	76.19	74.30	16.78	24.68
2019	60.57	79.33	44.65	28.97
2018	80.48	59.83	48.62	26.70

**Chart 18 Source Reportal.Ge Financial statements*

Chart 18 shows the median number of days of Payables. As expected from the previous analysis, the agricultural and meat products processing sectors have a high coefficient for paying payables. Processing of agricultural products has from 60.57 to 80.48 days for paying payables. Meat processing products companies have 59.83 to 79.33 days for paying payables. The lowest rate demonstrates ready-made food products processing sectors. This sector has 24.68 to 28.97, but these numbers are just numbers if they don't consider the total working capital management and cash conversion cycle.



	Processing of agricultural products	Processing of meat and meat products	Processing of milk and dairy products	Production of ready-made food products and dishes
2018	43.27	6.55	13.05	11.17
2019	69.44	(2.36)	16.98	18.02
2020	78.59	13.10	46.57	32.51

**Chart 19 Source Reportal.Ge Financial statements*

Chart 19 illustrates the median Cash Conversion Cycle (CCC). As unpacked in the methodology chapter, CCC combines DSO, DOH, and DPO. It demonstrates how many days the company needs for one complete cash conversion cycle, representing one of the critical ratios for companies. When it is close to 0, it's a sign of a good metric. It's necessary to mention that all companies grew CCC in 2020; one of the main reasons for this might be the COVID-19 Pandemic and imposed regulations. Processing of agricultural products has a growing rate in CCC from 43.27 to 78.59. It demonstrates that companies in this sector have problems with cash collections, despite high rates

of payables turnover ratios. Moreover, these categories have problems with inventory and receivables turnover. Milk and dairy products processing have from 13 to 46, but it's also necessary to say that this category might not have problems with CCC if the pandemic situation did not emerge. Ready-made food product processing has good metrics related to CCC. From 11 days to 32.51 days for the complete Cash Conversion Cycle. This sector has approximately the same picture as milk and dairy products processing categories; both sectors have low CCC but have significant growth in the 2020 Pandemic Year. Best CCC is evident in meat and meat products processing, with reasonable rates in DSO, DOH, and DPO. This explains why the given sector has a good CCC.

4.2 Questionnaire Results

Conducted research is important for the analysis of Georgian companies' financial performance in the field of food processing. This subsection presents the main findings of the fieldwork undertaken in the scope of this project with the help of an online questionnaire:

**Chart 20 Source Author survey*

Chart 20 shows that 91% of the surveyed companies were Limited Liability Company (LLC) (31), 6% were Joint Stock Company (JSC) (2), and 3% were cooperatives.(1)

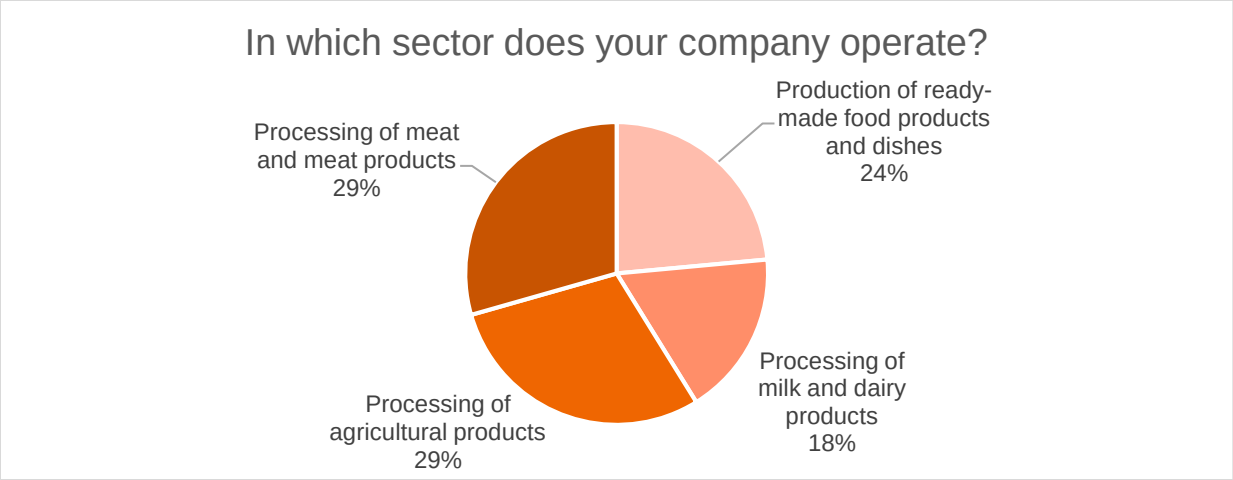


**Chart 21 Source Author survey*

Chart 21 shows that the distribution of respondents by sectors is as follows: Production of ready-made food products and dishes 24%, Processing of milk and dairy products 18%, Processing of agricultural products 29%, Processing of meat and meat products 29%.

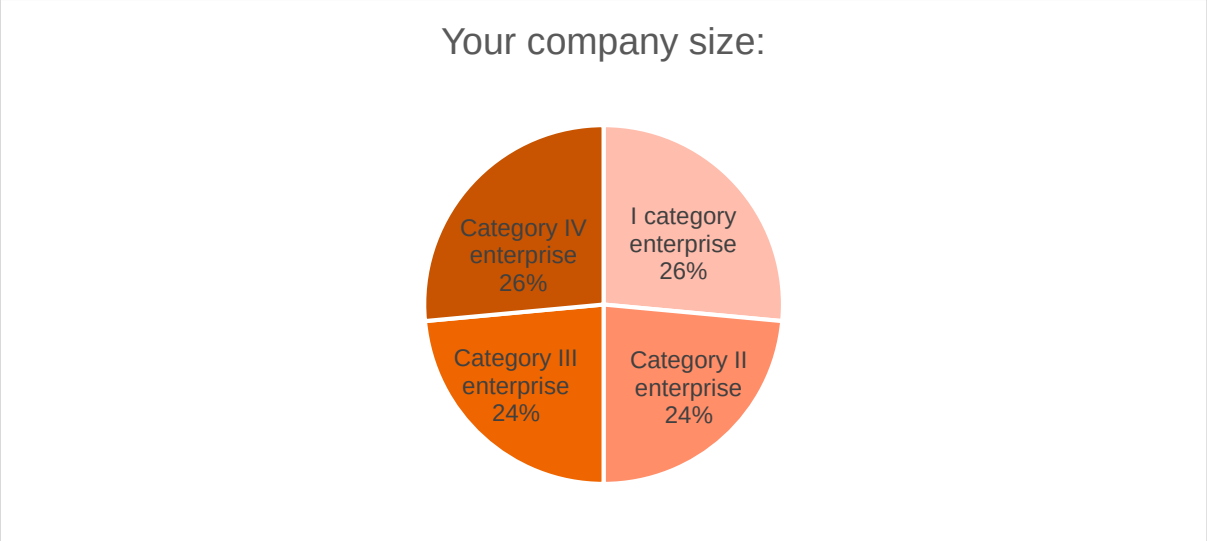


**Chart 22 Source Author survey*

Chart 22 demonstrates that the following is the distribution of companies in terms of their size: I category enterprise 26%, Category II enterprise 24%, Category III enterprise 24%, Category IV enterprise 26%.

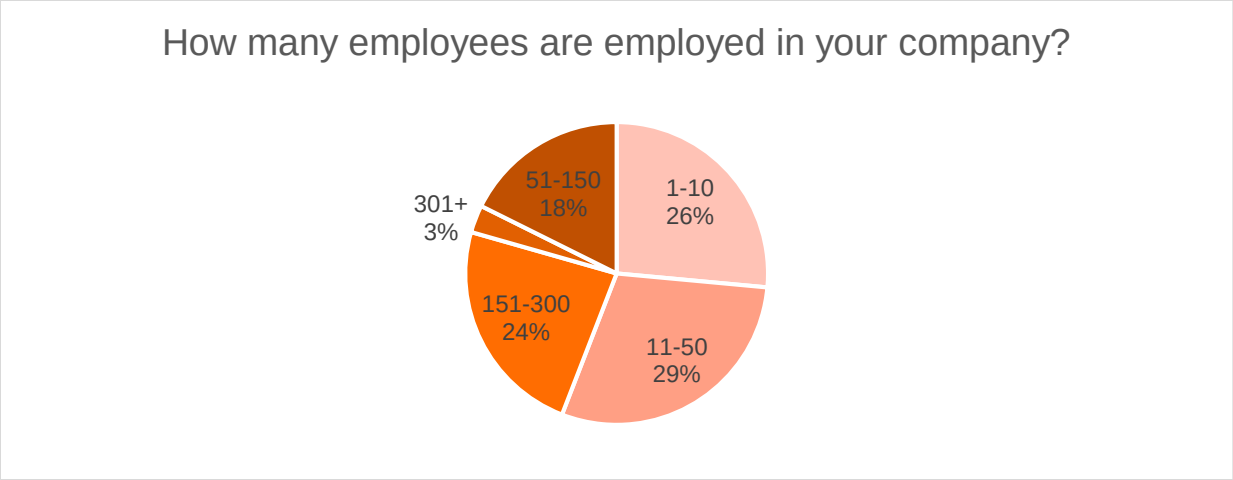


**Chart 23 Source Author survey*

Therefore, the number of employees is divided according to the categories formed in the study as follows: 1-10 employees- 26%, 11-50 - 29%, 151-300 - 24%, 301+ - 3%, 51-150 - 18%. This finding is presented on the chart 23.

In terms of employees' salaries, the average is as follows: 1201-2000 GEL - 24%, 2001-3500 GEL - 26%, Less than 700 - 6%, 701-1200 GEL - 44%, which is presented on chart 24.

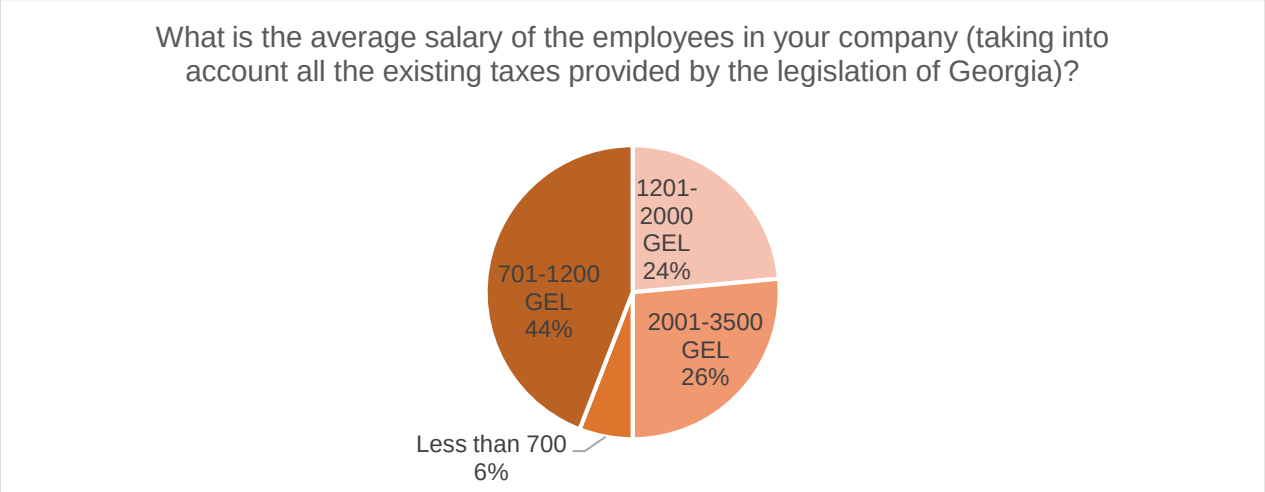


**Chart 24 Source Author survey*

Chart 25 presents respondents' perceptions in regards to the importance of having qualified staff in the company.

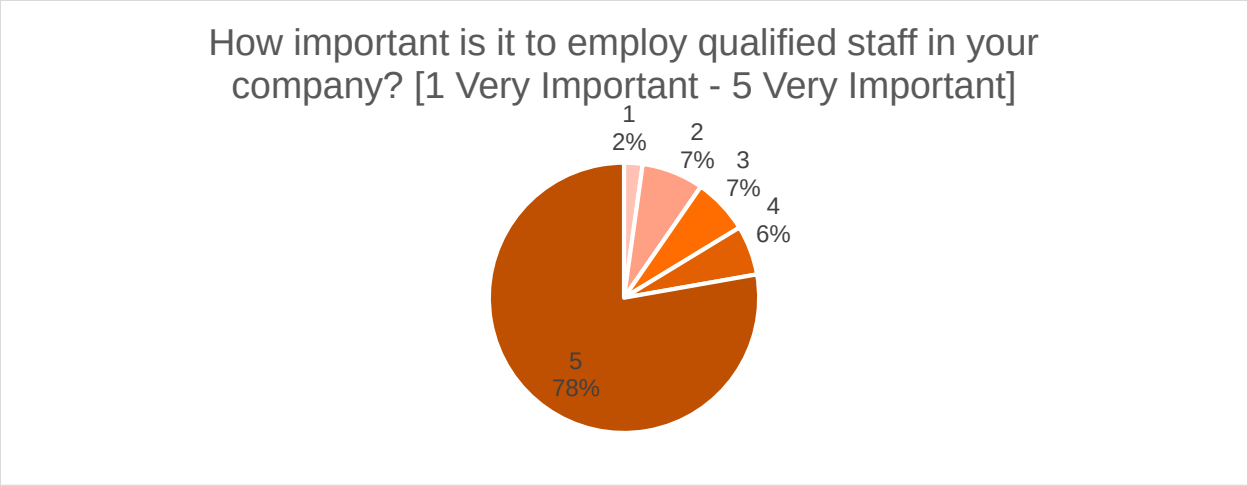


Chart 25 Source Author survey

Chart 26 summarizes the length of employment in the company: 1 to 2 years - 12%, 12 to 1 year 3%, more than 2 years - 59%, 3 to 6 months - 9%, up to 3 months - 3%, 6 to 12 months - 9%.

67% of companies indicated that it is very easy to find qualified staff for a key position. At the same time, 16% rated the question with a score of 4, which is vizualised on chart 27.

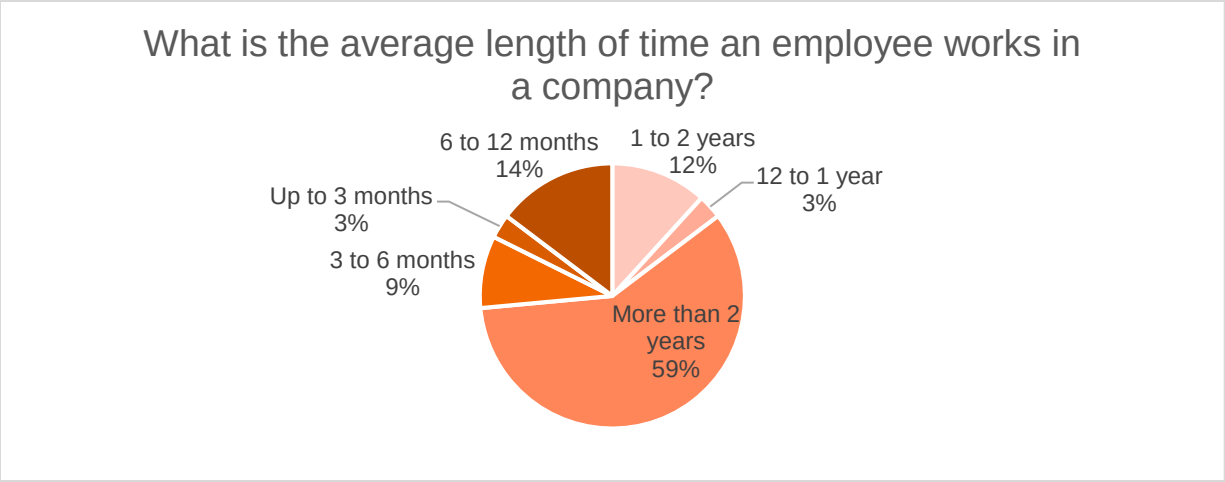


Chart 26 Source Author survey

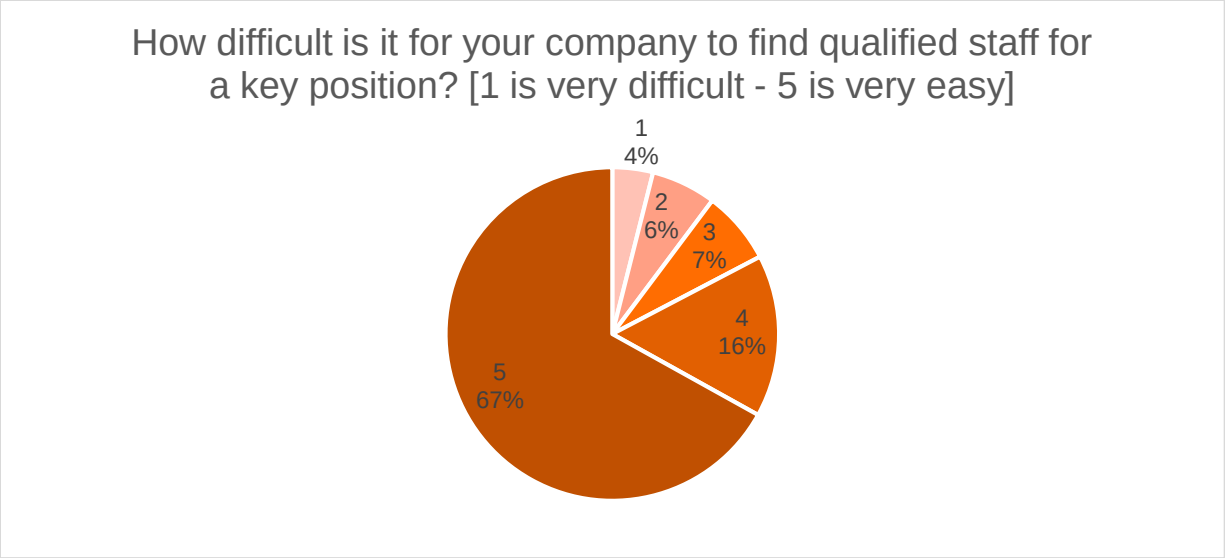


Chart 27 Source Author survey

In contrast to the above, company representatives indicated that it is very important to retrain employees to improve and or acquire job-related skills (1 Very Negative- 5 Very Positive, 61% chose answer category 5, and 2% of respondents 1).

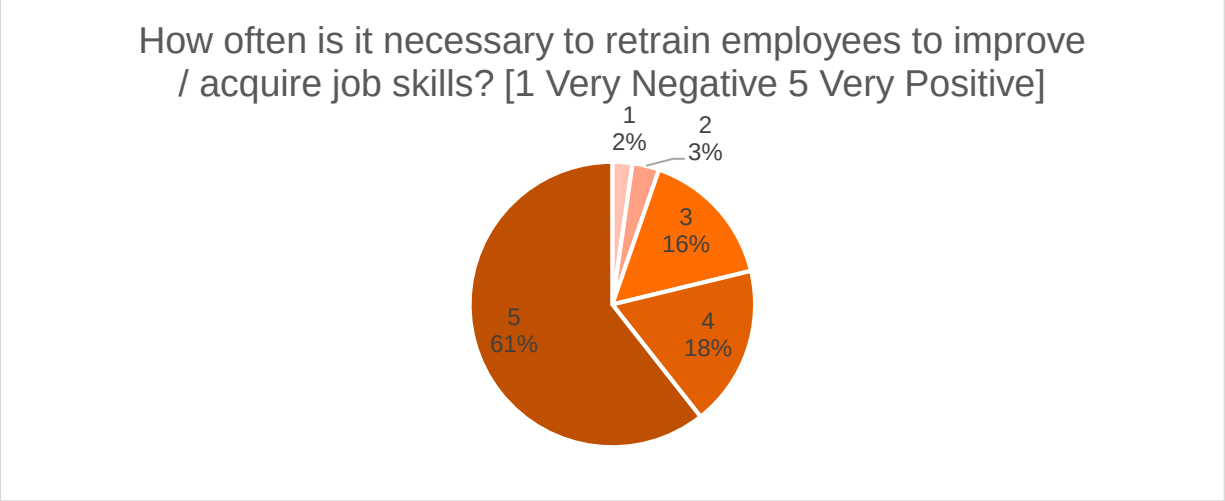


Chart 28 Source Author survey

In regards to the question regarding the impact of the pandemic, 56% of companies rated it the effect as rather positive and only 8% as very negative (vizualized on chart 29):

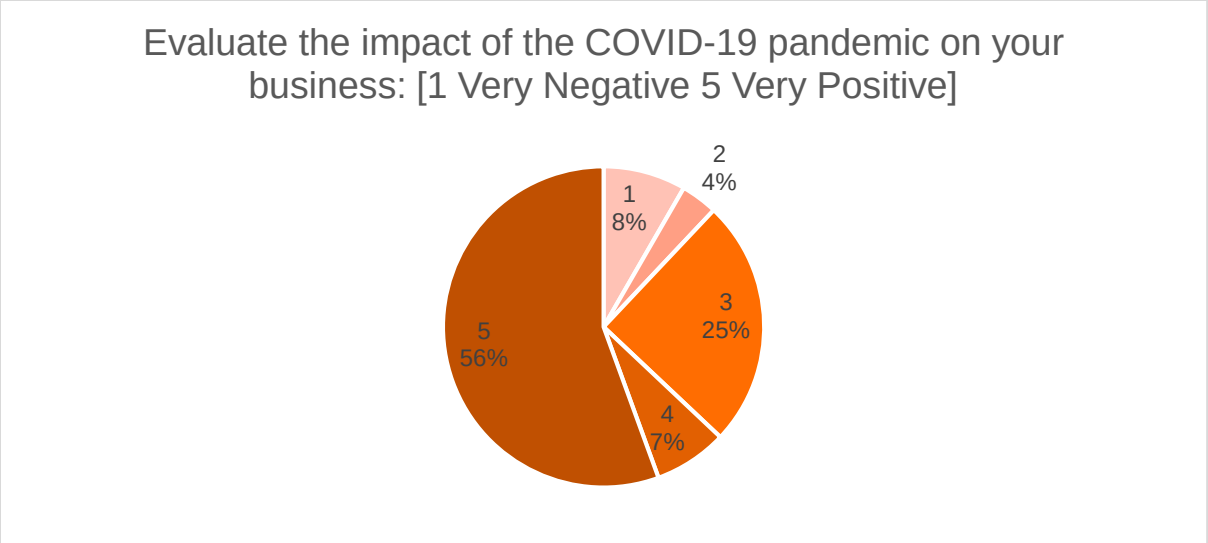


**Chart 29 Source Author survey*

The majority of respondents named the emergence of additional costs as part of the survey as a major pandemic challenge, which in turn was caused by COVID-19 regulations. This amounted to 56%.
61% of respondents said that the company overcame the difficulties caused by the pandemic by optimizing costs, 28% by reducing staff, 3% said that the company's activities did not create difficulties, while the rest of the companies stated that they did not create difficulties (8%).

68% of respondents make sales through the involvement or relationship of local distributors, 6% through partnerships with exporting companies, 23% through online channels, and 3% through personal contacts.

As for the question regarding the impact of COVID-19 on the creation of new sales channels, 33% of respondents recorded ,rather positive answers, 20% chose the answer category 3 and only 7% clarified it as very negative as indicated in Chart 30:

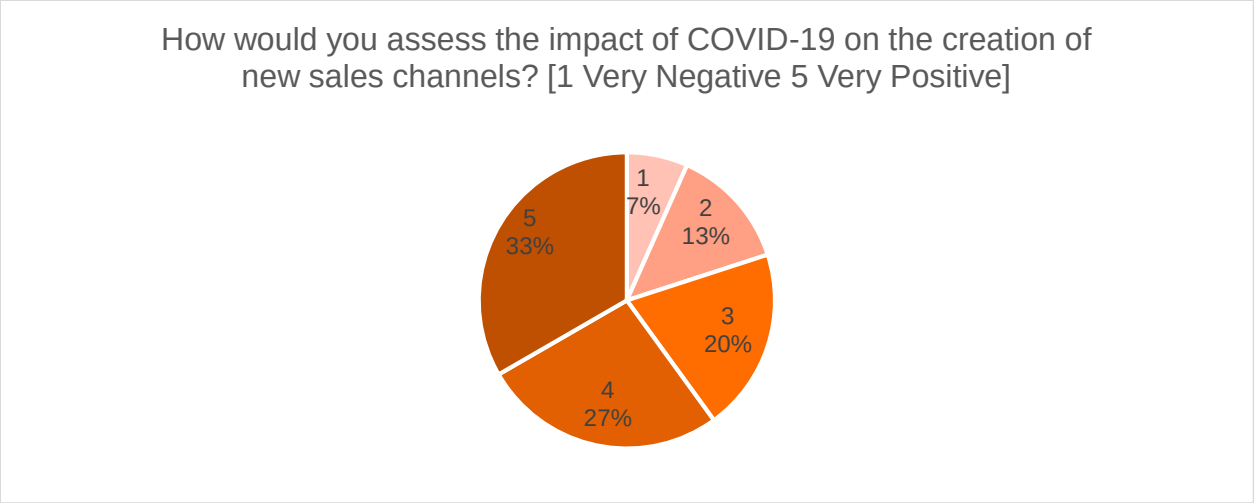


*Chart 30 Source Author survey

62% of company representatives surveyed specified usage of online channels for sales, while 38% chose negative response. 45% explained that after the pandemic, they became more active in online sales channels as presented on chart 31:

*Chart 31 Source Author survey

53% of respondents recorded a very high level of production process automation, 15% chose answer category 3 and only 2% very low level. 73% of respondents considered the automation to be very important for the production process within their companies, while 1% regarded it very insignificant aspresented on Chart 32:

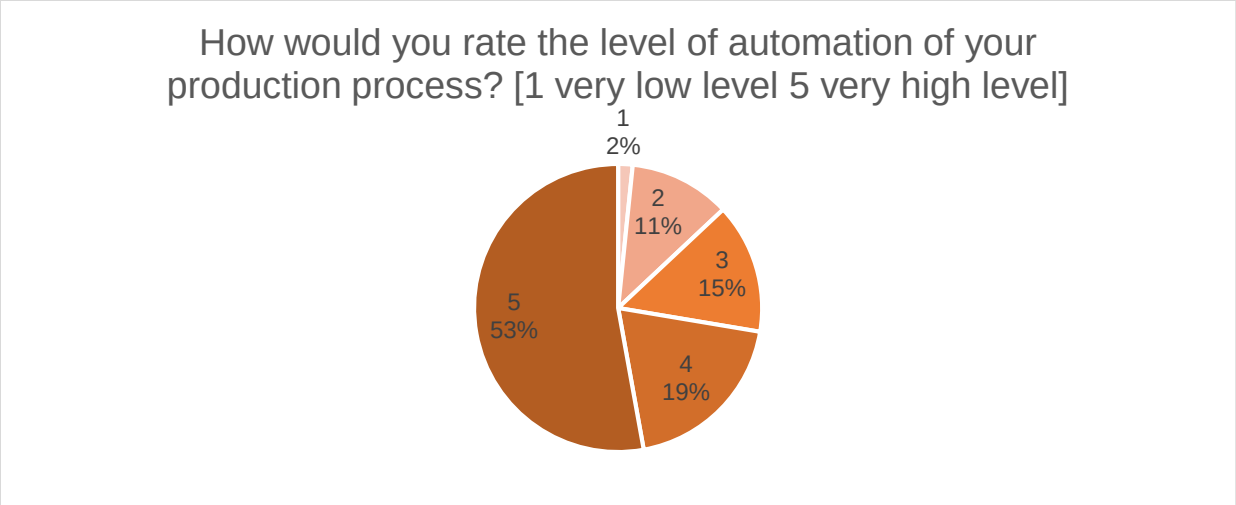


Chart 32 Source Author survey

45% of company representatives reported using online sales channels more actively after the pandemic asvizualised on Chart 32.

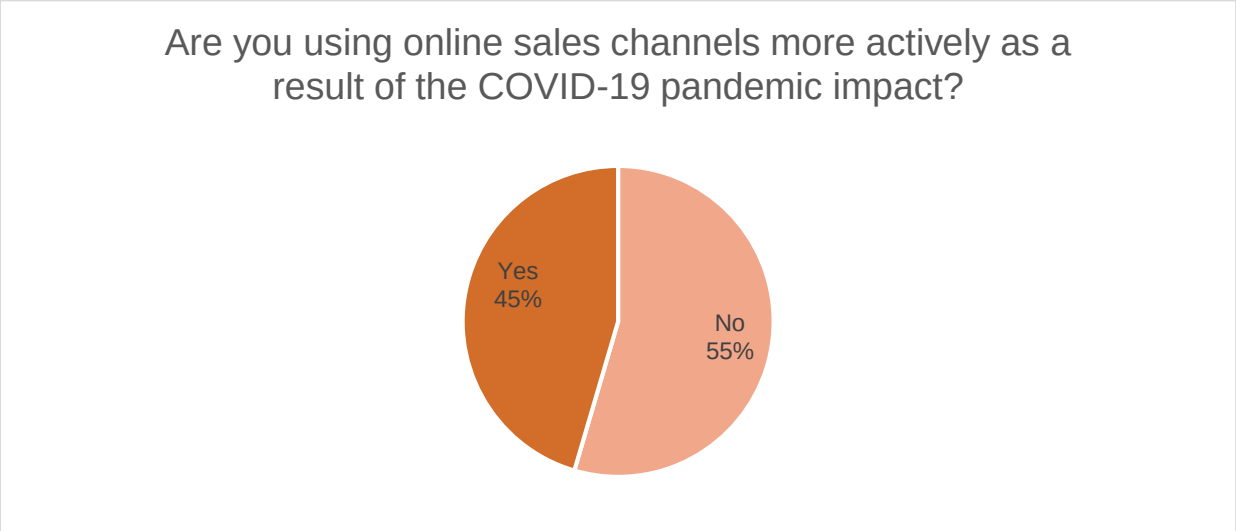


Chart 33 Source Author survey

It is an interesting fact that 47% of the surveyed companies prepare a budget once every 12 months, 12% once every 6 months, 26% once every 3 months, 6% once every 2 years and around 9% do not do budget at all as presented on Chart 33:

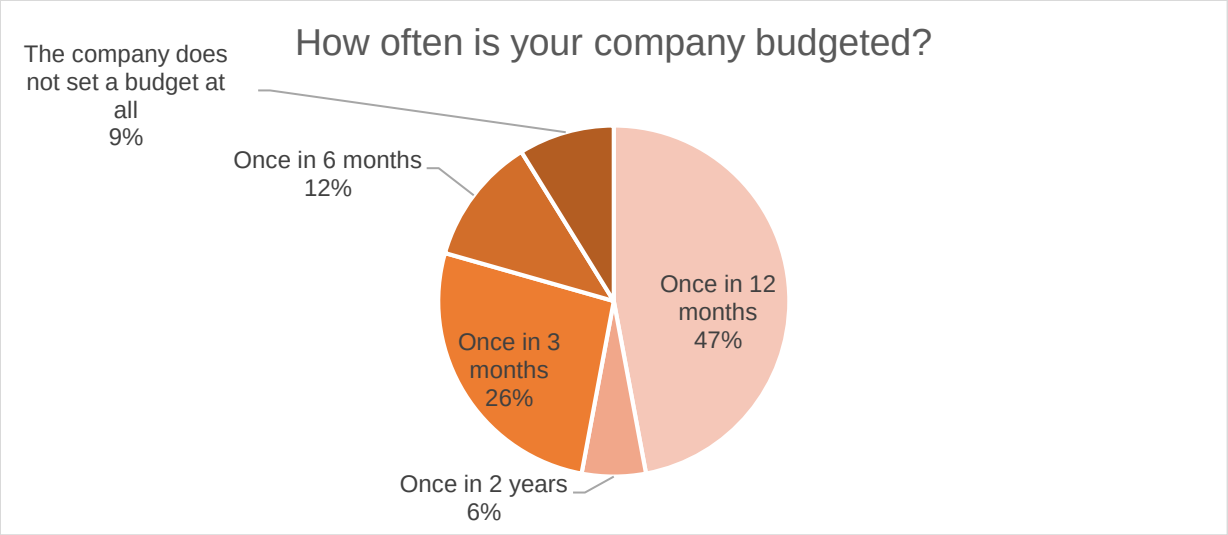


**Chart 34 Source Author survey*

71% of respondents indicated that they had a defined optimal working capital level, while 29% ticked the negative answer category. 85% of respondents planed inventory levels in advance. In addition, 79% of companies also planned the company's capacity level beforehand as illustrated on Chart 35 and 36:

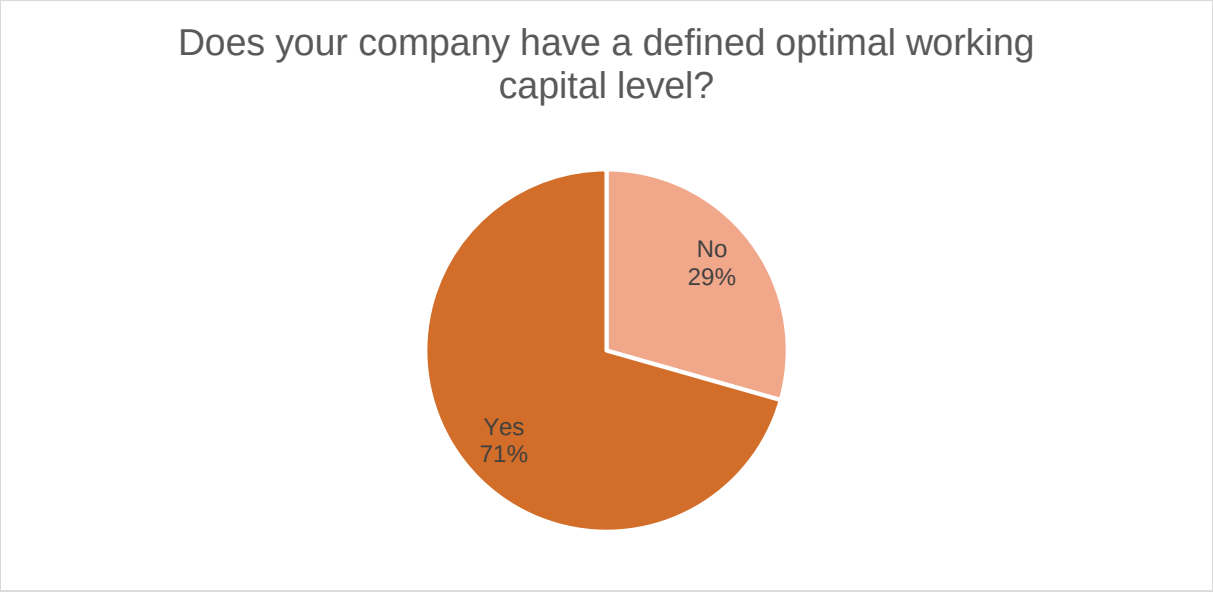


**Chart 35 Source Author survey*

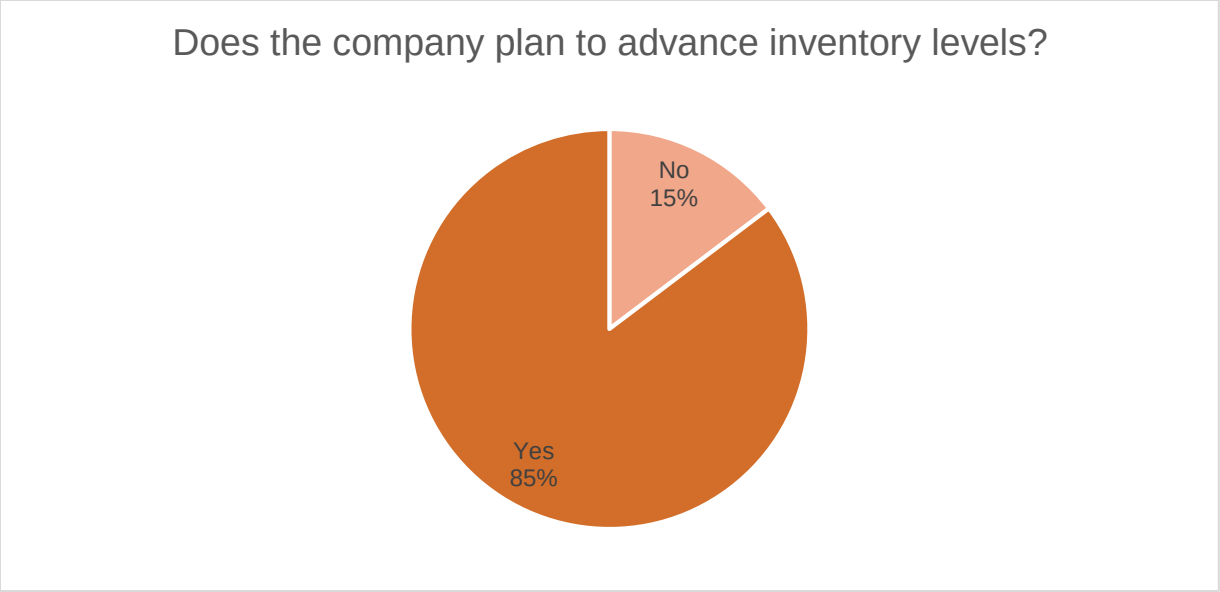


Chart 36 Source Author survey

Majority of respondent (65%) had problems with receiving cash from receivables as vizualised on Chart 37:

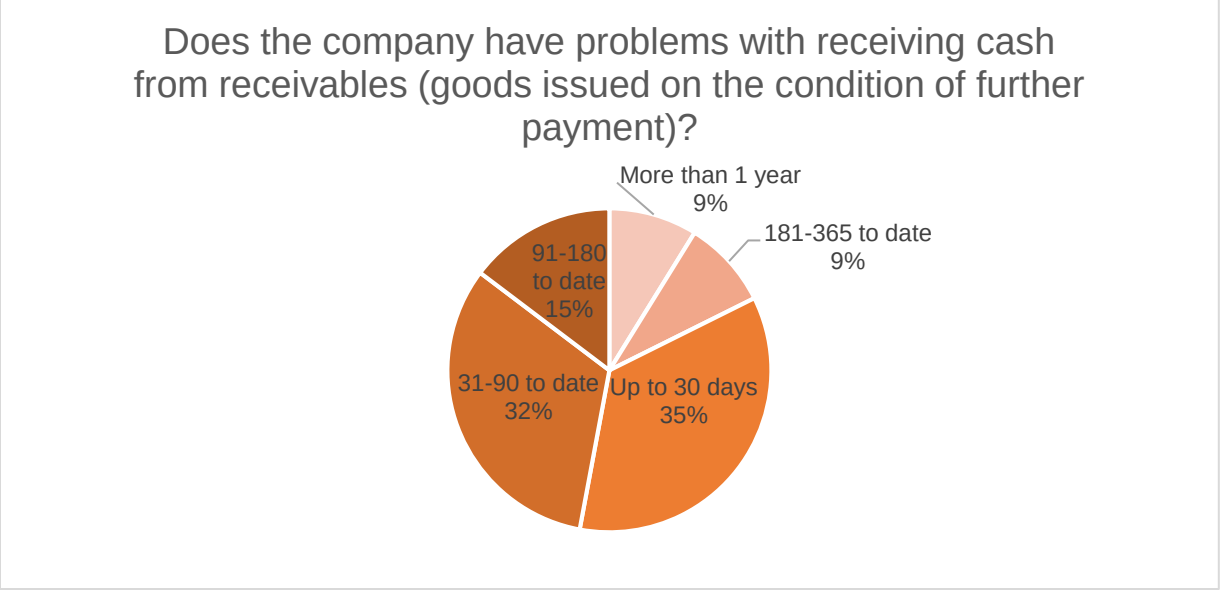


Chart 37 Source Author survey

To the following question - "Do you have the terms of payment with your suppliers in the future" 88% of respondents answered in the affirmative, and 12% - in the negative. These data are presented in Chart 38.

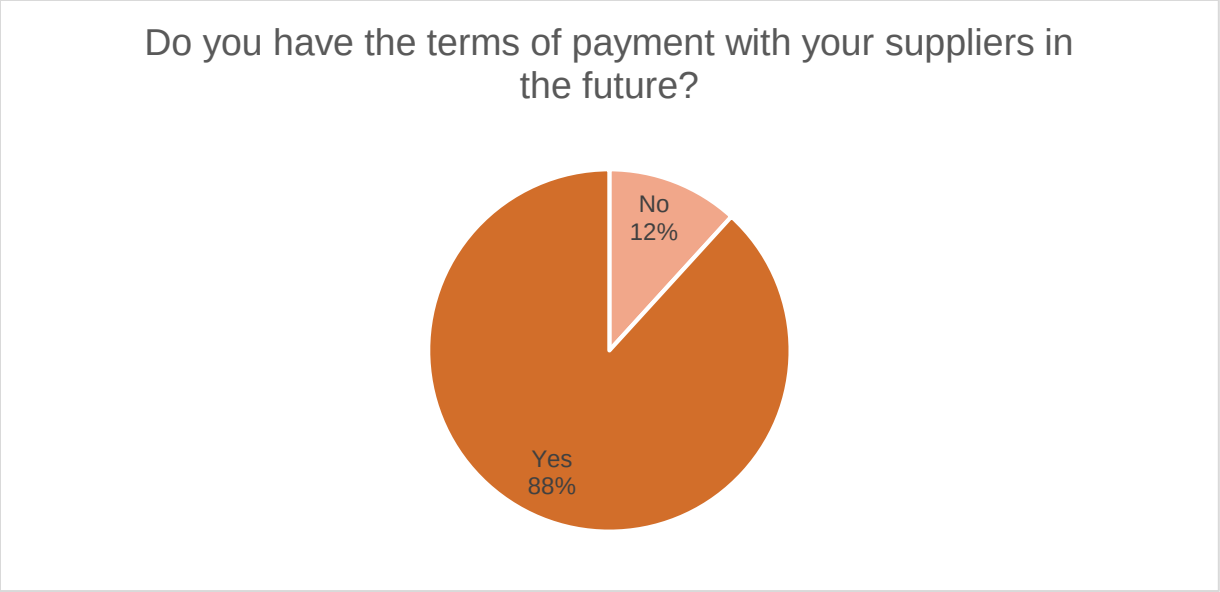


Chart 38 Source Author survey

The next question asked in the study was "on average, how long does it take for your company to pay off its debt?" Most of the respondents n amed a period of up to 30 days, which was represented by 47%. And a minimum of 6% named a period of more than 1 year. These data is presented in Chart 39.

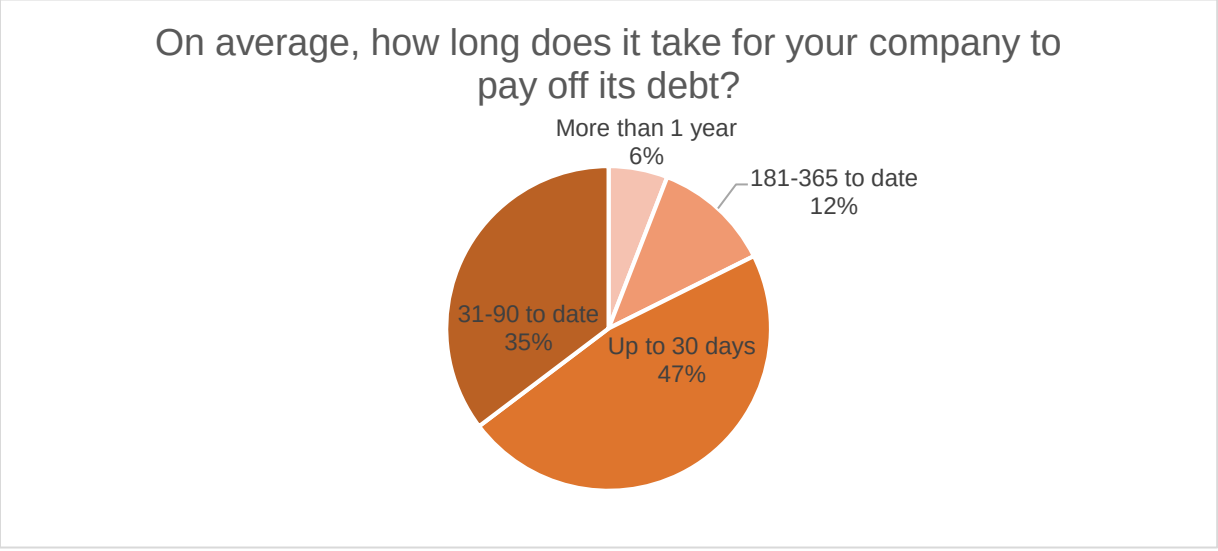


Chart 39 Source Author survey

71% of the surveyed companies are financed by loans, while 39% are not, which is shown in chart 40.

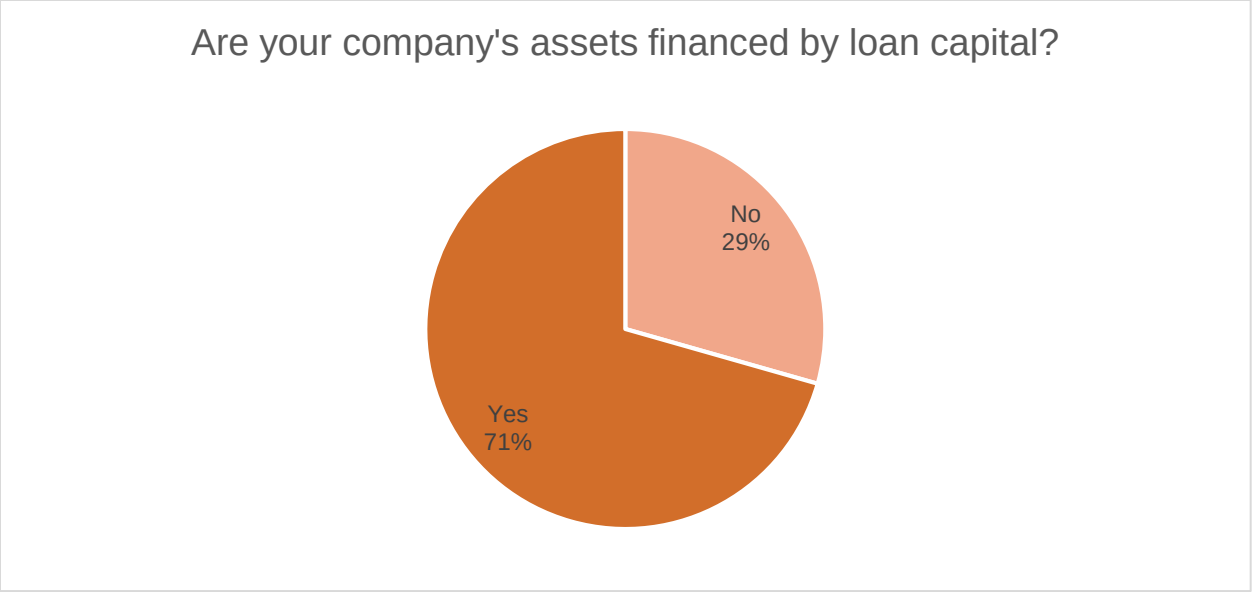


Chart 40 Source Author survey

According to Chart 41, 66% of respondents describe the impact of loan capital as very positive, while 1% as very negative.*Chart 41 Source Author survey.

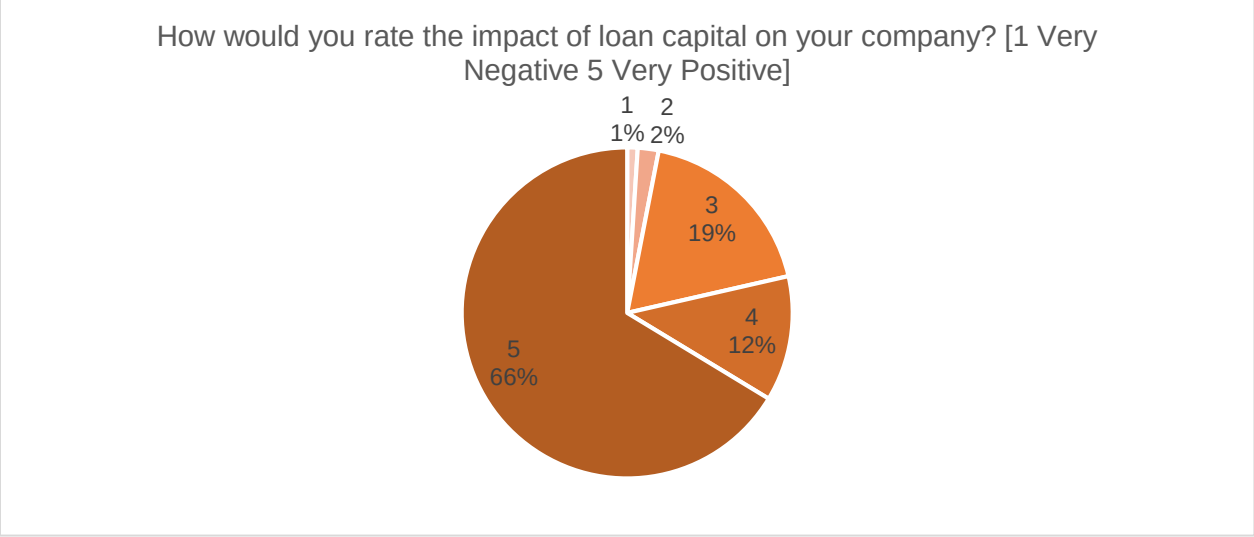


Chart 41 Source Author survey

According to Chart 42, 50% of respondents had problems with borrowing capital, while 50% did not.

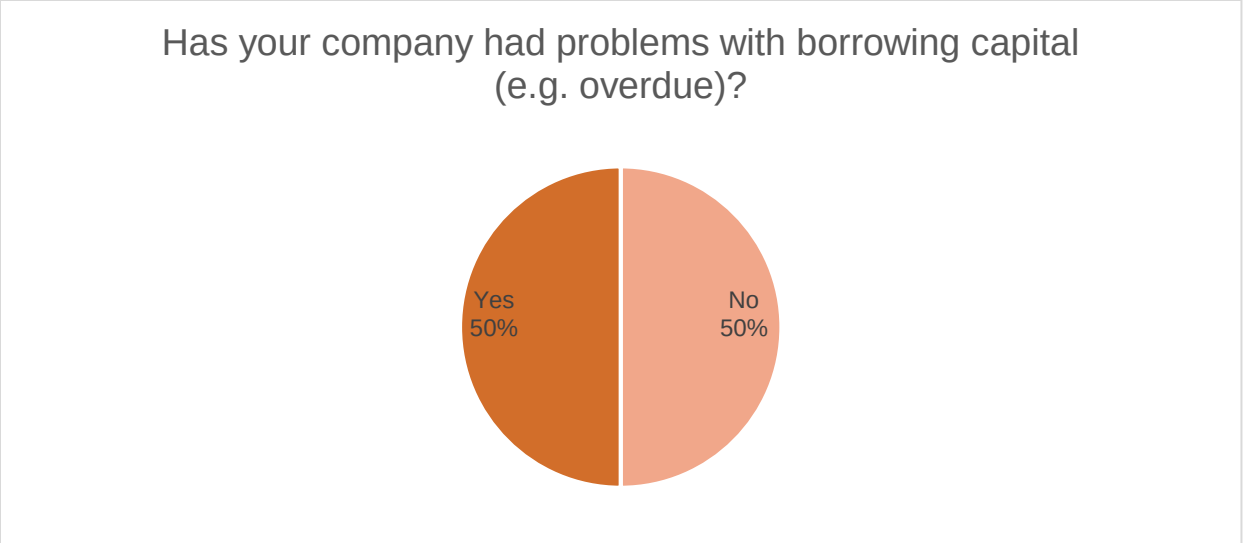


Chart 42 Source Author survey

The visualization presented on Chart 43 shows that 100% of respondents think loan capital helps my company grow in development.

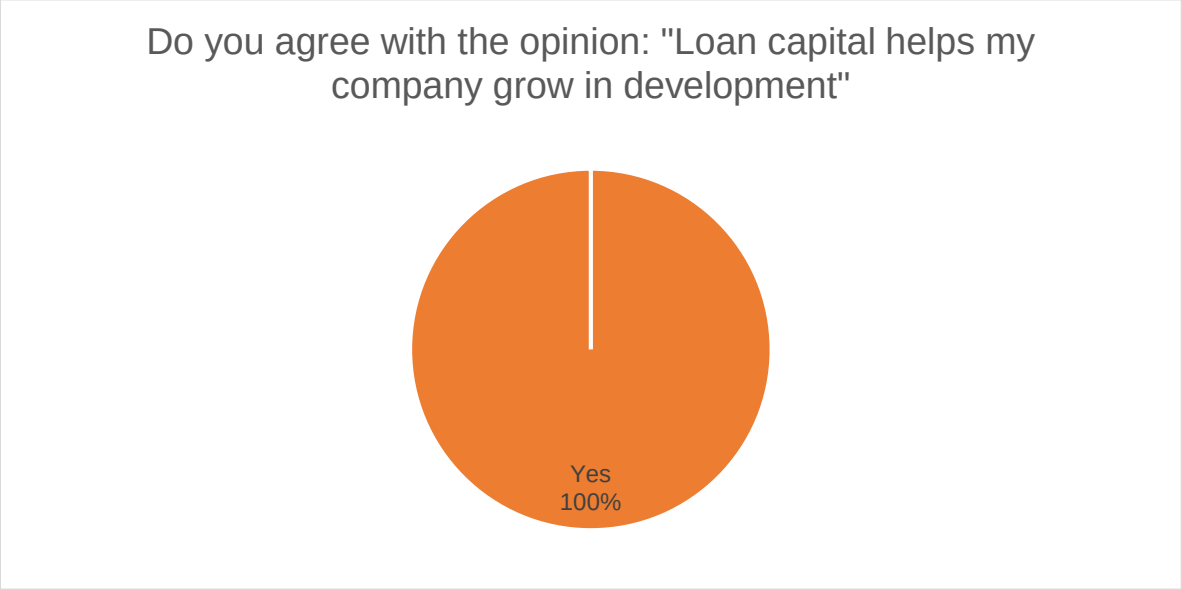


Chart 43 Source Author survey

It is noteworthy that all of the respondents have heard about grant, subsidy projects relevant to your industry allocated by the state or other organizations. This data clearly indicates the effective dissemination of information by relevant structures or organizations.

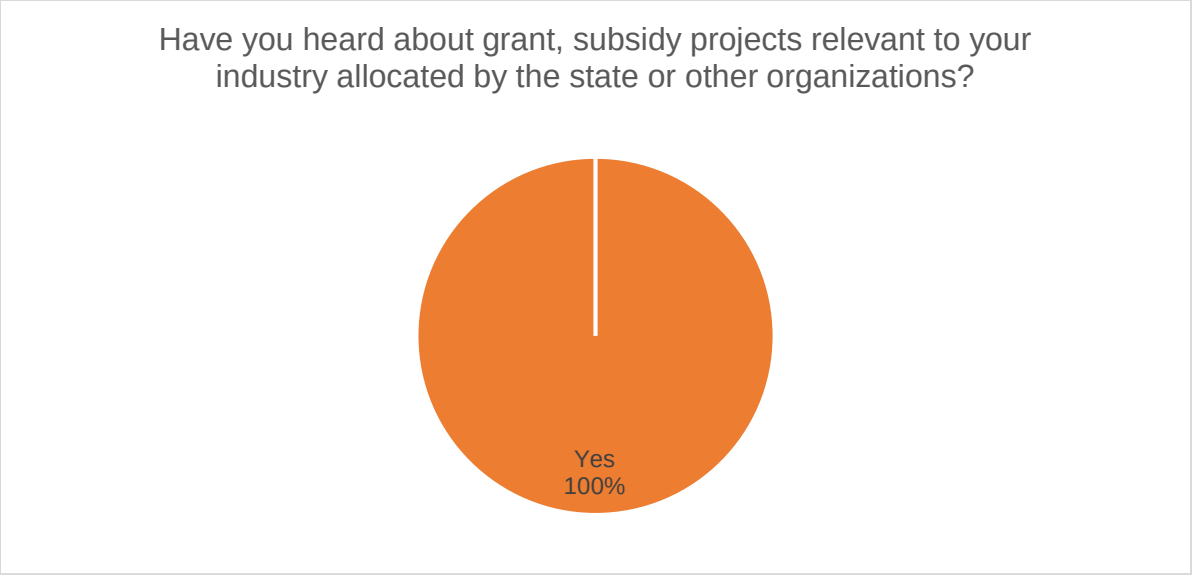


*Chart 44 Source Author survey

It should be noted that 88% of respondents rate the effect of the grant-subsidy on their company as very positive, while 2% very negatively. That is all presented on Chart 45

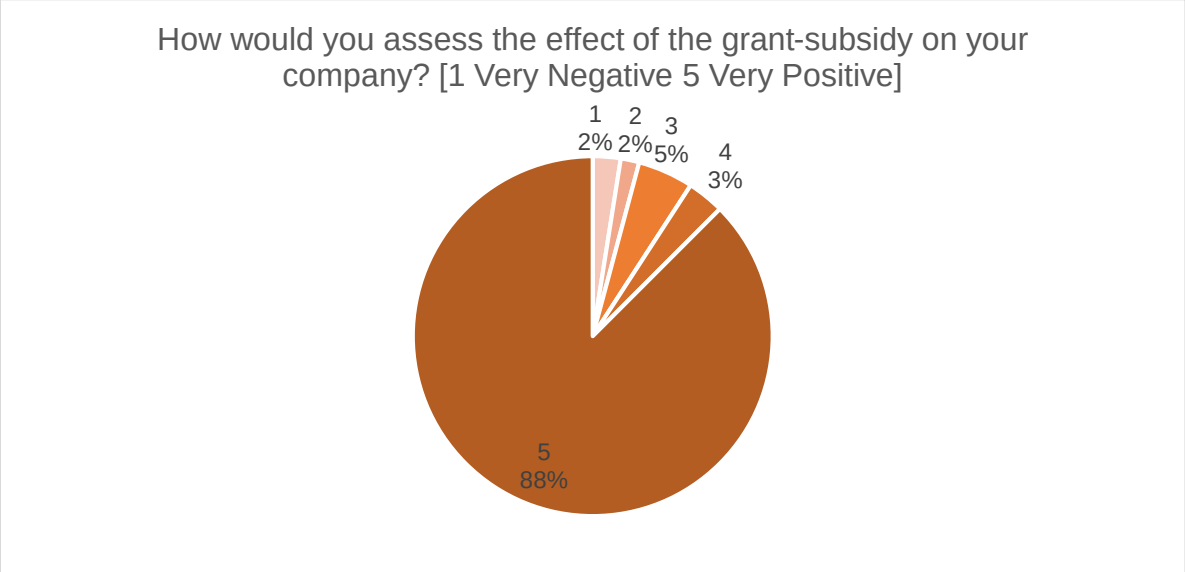


Chart 45 Source Author survey

According to our question - "Would you benefit from any grant subsidy program over and over again?" According to Chart 46, 86% of respondents answered positively, while 14% of companies answered negatively.

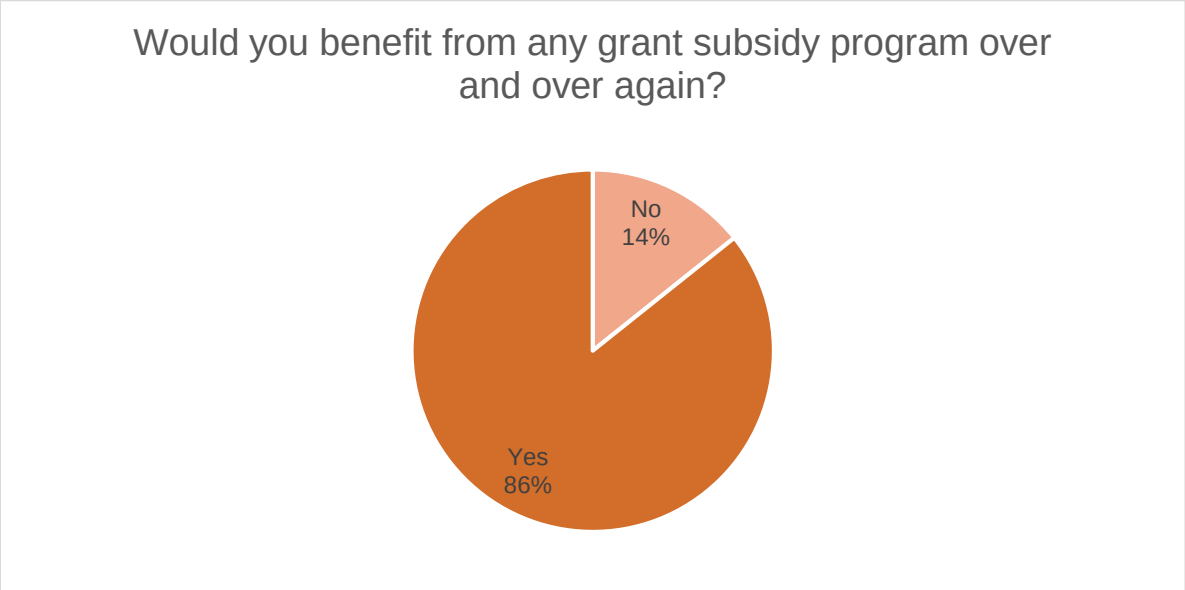


**Chart 46 Source Author survey*

The maximum number of respondents is not eligible for the Georgia Loan Subsidy component, and the minimum is 7% with an EBRD grant. Respondents also used loan subsidy projects from the Rural Development Agency. This data was recorded by 11% of respondents.

To summarize, it should be noted that the size of the company, the number of employees, and the organizational form significantly impact the company's performance. However, research has shown that the pandemic has had the most negative impact on the industry, although this has increased the role of e-commerce in business. At the same time, the issue of access to significant funding for food processing companies, in which direction the effectiveness of the study is evident.

5 Conclusion and Recommendations

5.1 Companies financial analysis and recommendations

This research project evaluated the financial performance of the companies representing the Food Processing industry to identify factors contributing to their financial success and stability. Manufacturing is one of the major contributing sectors to the Georgian GDP. As discussed in the Introduction, the manufacturing sector is the third by size in the total contribution of Gross Domestic Product, which conditioned the rationale to study this industry. The food-related category represents one of the importunes contributors to GDP. Access to sufficient and safe food is an integral part of human's everyday life; it is, therefore, interesting to examine such strategically important facilities as the food processing sector functions and what challenges it encounters. This master thesis includes a financial analysis of the publicly available secondary data(financial statements/ reports of food processing companies) and an online questionnaire disseminated to the representatives of food processing companies. Both data draw on quantitative analysis. DuPont Analysis was used to analyze financial astringents based on ROE three. The Source of financial data was retrieved from Reportal.ge Financial Reports of companies covering the years 2018-2020. Based on an adjusted ROE, Food Processing Sector, in General, appear profitable. Industry median adjusted ROE was 9.3% in 2018, 7.2% in 2019, and 5.2% in 2020. 2020 was when the COVID-19 pandemic started, introducing several restricting regulations and triggering severe problems for many businesses and enterprises. Despite strict rules, this sector can generate profit. For a more comprehensive analysis, the Food Processing industry was evaluated through the lenses of four main categories, including:

- Processing of agricultural products;
- Processing of meat and meat products;
- Processing of milk and dairy products;
- Production of ready-made food products and dishes.

Based on an adjusted Trimmed Average ROE by categories, food processing companies had top categories in terms of Profitability (ROE), represented by ready-made food products processing and milk and dairy products processing categories. Ready-made food processing products trimmed average adjusted ROE was 18.1% in 2018, 14.2% in 2019, and -1.3% in the 2020 Year Dairy Products processing products 'trimmed adjusted ROE appeared 13.7% in 2018, -28,4% in 2019, 15,4% in 2020. Not rather profitable, but promising financial indicators had the category of meat

processing products, Having -1.5%, -2% and 27% respectively by years. Analyzed data allows postulating that the chosen sector is capable of achieving financial success in the future. Agricultural food processing categories appeared to have the worst performance-based average trimmed adjusted ROE, demonstrated by -4.2% in 2018, -6.7% in 2019, -13.7% in 2020. Since this master thesis strived to evaluate and analyze financial success factors for the chosen industry, the ROE metric was determined to measure financial performance. Since DuPont analysis allows decomposing ROE and identifying the main characteristics from a financial perspective affecting the ROE ratio. DuPont analysis postulates that financial leverage represents one of the drivers of ROE and financial leverage constitutes one of the solvency ratios.

$$ROE = Financial\ Leverage * Asset\ Turnover * Net\ Profit\ Margin$$

Based on this study's findings, the lowest financial leverage ratio was detected in the ready-made food products processing companies with the lowest financial leverage. Companies representing other categories had an approximate similar financial leverage coefficient. As for financial leverage coefficients, this category varies from 1.74 to 1.61. this measurement should be a bit tricky because, in some cases, it will demonstrate a low level in terms of industry; the reason for that is, Equity is negative, and that's why besides financial leverage is taken Debt to assets ratio. The debt to Assets Ratio should assist a better understanding of the companies' capital structure representing the chosen four categories. The Debt to Assets ratio was analyzed into categories and Demonstrated the median capital structure of food processing industry Companies. Based on the median debt to asset ratios, the highest debt to asset ratio was identified in agricultural food processing products, ranging from 68% to 77%; as we remember, agricultural food processing categories don't have the highest financial leverage, but they are in top in terms of debt to assets ratio. Meat products processing categories' Debt to Assets varied from 61%-76%, and Dairy products processing companies' Debt to assets from 54%-66%. Ready-made food-process categories' Debt to asset median ratio ranged from 40% to 63%. Vuković (2019), in his work, emphasizes the importance of capital structure. Optimal capital structure has a positive effect on the profitability of companies. Solvency is just one part of DuPont's analysis. Besides the company's solvency, it was also essential to calculate turnover and profitability ratios. According to the DuPont analysis, turnover ratios demonstrate asset turnover, whereas profitability ratios indicate the Net Profit margin.

According to the DuPont analysis framework measurement of a company, efficiency is Asset Turnover Ratio. As discoursed in the methodological chapter, it shows how the company deploys its assets to produce revenue. As discoursed above, agricultural food products processing companies, on average, have the worst indicator of Profitability Ratio (ROE) and highest Debt to asset ratios; in terms of efficiency, this sub-category indicates Trimmed Average Asset turnover in the 2018 year - 1.54 in the 2019 year - 1.65 and the 2020 year - 1.49. Agricultural food processing companies' average trimmed asset turnover is relatively small compared to other categories and indicates that companies in these categories have problems with efficiency. Problems with effectively using assets might be one of the reasons for the low level of ROE; companies in this category, on average, have negative ROE metrics. From that might assume that in this category, companies aren't able to use assets' full potential to generate more revenue. Utilizing assets plays a key role in a company's profitability; the low asset turnover ratio is a relatively low level of revenue (sales) regarding assets (invested capital). Processing of meat and meat products categories companies have a 2018- 2.28, 2019- 2.53, 2020- 2.86 asset turnover ratio on average. It is the highest ratio related to other categories. Companies in this category have a growth trend in asset turnover, which might explain the growth in net sales (revenue) or a decrease in assets. Still, sales growth is more expected from this category than a decline in assets. Companies in this category demonstrate the highest asset turnover ratio is 2020, known as the COVID-19 pandemic year. Still, despite the systematic crisis, companies in these categories could reach the highest efficiency in using assets. processing of milk and dairy products processing companies, on average, have a 2.25 asset turnover ratio in 2018, 1.86 in 2019, and 2.11 in 2020. As the data shows, the lowest asset turnover ratio in this category is in 2019. If we recall the ROE indicators, we will see that in 2019 this sector had negative indicators. One of the main indicators of ROE decline could be played by sales decline. The reason for the decline could have been caused by many factors, which research at this stage cannot provide. Ready-made foods and dishes processing categories company in average have 2018 - 2.68, 2019 2.39 and in 2020 2.11 of asset turnover ratios. This category shows the highest rate after the meat processing categories. Moreover, even higher in 2018 than in the meat processing category. A high level of sales about its assets can be a key indicator for determining the financial success of this category, which is reflected in a high level of ROE. Another explanatory variable for ROE and one of the most important Profit margins. as discoursed in the Methodological chapter, the net profit margin

indicates Company's profitability in the current financial year. How effectively a company can cover all expenses and receive net income from sales. Readymade Food and dishes processing Companies have the lowest Net Profit margin, 2018 -2%, 2019 -4%, and 2020 – 11%, as shown. This Categories company, on average, has a decline in the trend of Net Profit margin and has the worst indicator of net profit margin. We can say that there is a direct relationship between the average trimmed net profit margin and the average time ROE, and the trend of both are coming in a downward direction. From the above discourse, we can assume that this category has problems with sales, which is evidenced by a relatively low rate of return on assets, as well as problems with profitability margins; the category fails to account for a variable (cost costs, although may not be directly related) and fixed costs net profit From an average perspective. One of the most important determinants of additional net profit is the gross profit margin. as expected, this category of companies has the lowest Gross profit margin and deviates from 19% to 22%. A similar total profit margin is quite low. Under these conditions, it will be difficult for these category companies to generate a positive net profit as the cost minus the cost is only about 20% of the company left, which means 0.8 GEL for every 1 GEL of products sold represents the cost of goods scolds. from the asset turnover ratio, it is known that this category has problems related to sales, and from the profit margins ratio, we can assume that companies sell at low prices. it would be appropriate if companies try to add more value to their products and sell at higher prices or achieve economy of scale and try to sell more, it should be the only way to achieve financial success. The average net profit margin in the meat processing category in 2018 was 3%, in 2019 1.4%, and 2020 0.6%. Despite the pandemic year, the meat processing category's representatives can still generate a positive net profit on average. as discoursed above, this sector has a relatively high asset turnover ratio. It is interesting to determine this category's gross profit margin. this category's gross profit margin deviates from 28 to 33 % annually. This indicator is close to other representatives of the industry. Based on the effective use of assets and profit margins, companies in the recycling category of products can effectively use the assets and generate a positive net profit. This category also uses debt leverage. The net profit margin of the dairy and dairy processing category is 7.6% in 2018, 2019 -2%, 2020, -0.5%. Except for 2018, this category has negative profitability margins. While ROE addresses this category of companies in 2020 will show a profit and, in 201,8, a big loss. It seems that companies in this category have low profitability margins, ROE other determinants that help generate high profitability. Accordingly, it is also interesting to consider

the overall gross profit margin for this category. The gross profit margin in this category ranges from 30-33%, which is almost top in terms of addressing industry indicators. Allowing us to say that the industry has the opportunity to generate a high net profit margin in the case of properly managed operating expenses, gross profit margin provides the opportunity to cover other costs, including interest costs. It enables companies to be profitable in this category. Added to this is the high asset utilization rate (asset turnover), which also positively affects the company's overall profitability. Based on the literature review, it is known that there is an increased demand for dairy products in Georgia, which is mainly due to the low level of local production. Consequently, increasing production by companies, attracting additional investment technological refinement will lead to even higher profitability ratios. Based on ROE, the ready-to-eat and food processing category is the most stable at maintaining positive profitability ratios. Companies in this category have an average of 5.7% in 2018, 3.1% in 2019, and 0.1% in 2020, with a net profit margin. The net profit margin is also the highest compared to other categories, considering almost yearly. Consequently, the Gross profit margin of this category is interesting. According to the average Gross profit margin, this category occupies the top position, and its total profit margin ranges from 33% to 35%, which is quite high for this industry compared to other categories. Suppose we recall the effectiveness ratio of asset usage and sum it up with a net profit margin. In that case, we can conclude that this sector can manage its assets and expenses as efficiently as possible. According to the Debt to assets ratio, this category is in the last place. Accordingly, we can conclude that investing equity and effective management of assets and expenses help the category achieve financial success.

The research aims to identify the working capital impact on profitability; it also discoursed this industry's profitability by categories and analyzed adequately; now, in the same way, the usability of working capital will also be explored in this research. First, it is interesting to see how each category can meet short-term liabilities by supporting short-term assets, for that would be used Current ratio. Based on the median analysis of the current ratio, the processing category of agricultural products has a ratio of 1.35 in 2018, 1.97 in 2019, and 2.10 in 2020. As it is known, if the current ratio is higher than 1, then the company can easily meet short-term obligations quickly. Which, at first glance, looks like a good sign. The current median ratio of

meat and meat products processing companies in 2018 is - 1.13, in 2019 - 1.29, and in 2020 - 1.4, which is relatively low selectivity in connection with other catalogers. The milk and dairy products processing category has a current median ratio close to the meat processing category, namely -1.48 in 2018, 1.53 in 2019, and 1.31 in 2020. The processing category of ready-made meals has relatively the highest indicators, namely 2.98 in 2018, 2.67 in 2019, and 2.63 in 2020. However, it would not be correct to consider a simple ratio at a glance. It is necessary to analyze it more deeply because it is difficult to identify how well the working capital is managed by category in the mentioned industry. In addition, the Current ratio is essential for calculating the Quick ratio. As discoursed in the methodological chapter, a Quick ratio calculates liquid without considering Inventories; in some cases, inventory isn't liquid and doesn't help the company meet short-term liabilities because it's a kind of frozen money. Based on the quick ratio, the results of the agricultural food processing category according to the quick median ratio are 0.74 in 2018, 0.92 in 2019, and 1.03 in 2020. This, in combination with the current ratio, shows that companies in this category have a problem with the shortage of supplies, which is subsequently related to the freezing of cash. However, it should be noted that this represents industry specificity, as agricultural products are primarily seasonal. Nevertheless, companies in this category manage well to maintain the liquidity ratio. Also, the meat products processing category had a quick median ratio of 0.76 in 2018, 0.7 in 2019, and 0.86 in 2020. In reconciliation with the current ratio, it could be assumed that inventories don't play a role in this sector. The milk and milk products processing category has a quick median ratio of 1.18 in 2018, 1.02 in 2019, and 0.82 in 2020. In the processing category of meat products, stocks for this category do not play a decisive role, and the category is ready to overcome the upcoming liabilities. The food and finished products processing sector has a quick ratio of 1.75 in 2018, 1.46 in 2019, and 1.18 in 2020. despite a decline in trend, this category has the highest Quick ratio. That indicates this category has all abilities to meet short-term liabilities, but there should be a question related to the practical usage of assets. Kasmir (2012) argues that the current ratio does not impact the profitability of companies in the food

and beverage sector. Still, in the case of Georgia, the picture is mainly different, as liquidity ratios significantly impact profitability. The quick ratio has a more significant influence on the quick ratio. But this category doesn't have problems with effectiveness (Recall on asset turnover ratio). The cash conversion cycle (CCC) ratio is vital for working capital use and management. The mentioned ratio in the account section combines receivables, inventory, and credit turnovers and reflects in full days. CCC of the agricultural products processing category is 43.27 in 2018, 69.44 in 2019, and 78.59 in 2020. This indicator is relatively high compared to all other categories. The primary filtering factor is based on the specificity of the category, which refers to stockpiling. It should be noted that the CCC of the category is increasing yearly, reaching its maximum in 2020. In the 2020 pandemic year, the mentioned category had a problem related to sales (reduction in asset turnover ratio) and excess inventory (reduction of inventory turnover ratio), which ultimately had the most severe impact on the average profitability of companies. The meat and meat products processing category has 6.55 in 2018, -2.36 in 2019, and 13.10 in 2020. It should be noted that these indicators are the smallest, which indicates the well-managed working capital of the category. In some cases, the asset turnover side is shorter than the liability turnover side, which positively affects the profitability of the category. The milk and dairy products processing category has 13.05 in 2018, 16.98 in 2019, and reaches the category maximum mark of 46.57 in 2020. Based on the data, it can be said that the mentioned category quite effectively manages working capital. 11.7 in 2018, 18.02 in 2019, and 32.51 in 2020 for the finished product and food processing category. After the processing category of agricultural products, this longest CCC, however, does not represent a critically high benchmark. Moreover, the data are close to those showing the category of milk and milk product processing. As you may recall, 2020 was the year the Covid-19 pandemic was detected. Therefore, there was a big misunderstanding in the market at this time. As the data shows, most companies are facing losses at this time, and in this case, an increased CCC, which is primarily related to a decrease in inventory and accounts receivable turnover, as well as a decrease in sales, which ultimately affects the profitability of the

company negatively. Bieniasz and Gołaś (2011), in their paper, argue that CCC has an extensive mutual understanding of profitability. The regression analysis in it has dramatically increased our profitability. It will also be possible to generalize the same assumption to the food industry of Georgia. Although the processing category of agricultural products shows the worst performance based on the ODEC forecast, Georgia has the potential to produce and export quality agricultural products. Based on world trends, the demand for quality agro-products is increasing daily, and the processing companies of farm products can add additional value to the products. As a result of the financial analysis and the research conducted with the companies, it was determined that the COVID-19 pandemic created problems for most of the companies. Both in the survey and as a result of the financial analysis, it was proven that debt capital has a positive effect on the financial profitability of companies. However, based on research and analysis, companies have problems adequately managing working capital, which ultimately negatively impacts profitability.

5.2 Limitations and future research Ideas

This research does not include many explanatory variables which should affect a Company's profitability, For example, Customers' tastes and behavior, company branding and marketing, location of companies, etc. Because there are no studies on the food processing industry in Georgian reality, which would create at least a minimal idea about this industry, it isn't easy to draw generalized conclusions. Although it provides excellent potential for future research, it would be interesting to conduct a broader survey in the form of face-to-face interviews with the Georgian food processing sector and then financial analysis of the same companies. However, such research involves a large number of resources. It's also worth noting that most companies don't have corporate email addresses that can be contacted, making research even more difficult.

It should be incessant to research customers' behavior and explain it through Financial statements.

6 Annotated Bibliography

Collier, H. W., C. B. McGowan, and J. Muhammad. "Financial analysis of financial institutions in an involving environment. University of Wollongong. Faculty of Business Research Online." (2006).

Doorasamy, Mishelle. "Using DuPont analysis to assess the financial performance of the top 3 JSE listed companies in the food industry." *Investment Management and Financial Innovations* 13, Iss. 2 (2016): 29-44. Financial Reporting and analysis (CFA Program Curriculum 2020 LEVEL I VOLUME 3)

Reportal, Georgian Financial and Managerial Reports National Web-Site, Georgian Company's Financial Statements Year: 2018, 2019, 2020, retrieved from https://reportal.ge/en

Liesz, Thomas J., and Steven J. Maranville. "Ratio Analysis featuring the Dupont Method: an overlooked topic in the finance module of small business management and entrepreneurship courses." *Small Business Institute Journal* 1, no. 1 (2008): 26283.

National Statistics Office of Georgia, GDP statistics, https://www.geostat.ge/en

Penman, Stephen H., and Stephen H. Penman. *Financial statement analysis and security valuation*. New York: McGraw-Hill/Irwin, 2010.

Sheela, S. Christina, and K. Karthikeyan. "Financial performance of the pharmaceutical industry in India using DuPont analysis." *European Journal of Business and Management* 4, no. 14 (2012): 84-91.Proquest. "Global challenges and trends in agriculture: impacts on Russia and possible strategies foradaptation"..https://www.proquest.com/docview/1895242302/fulltextPDF/41D8AA6C65BD4405PQ/5?accountid=143042&fbclid=IwAR1rbkhsldH_3JBX_p-t_gY5YxX8i8wtdAu7zhr-qqj5BGB_XTjXURfcRjk&forcedol=true

University of Johannesburg. Digital Industrial Policy Brief 4. https://www.competition.org.za/ccred-blog-digital-industrial-policy/2020/4/20/practical-implications-for-the-south-african-food-processing-industry

Invest in Georgia. Agriculture & Food Processecing. Georgian National Investment Agency. https://www.investingeorgia.org/ru/ajax/downloadFile/521/Investment_Opportunities_in_Agriculture

FAO. Animal Production And Health. Good Practices For The Meat Industry. https://www.fao.org/3/y5454e/y5454e.pdf

Geostat. Agriculturahttps://www.geostat.ge/media/38833/soflis_meurneoba_2020.pdf\

Transparency International Georgia. Georgia's Agriculture Sector. Key Trends For 2012-2019. https://transparency.ge/sites/default/files/georgias_agriculture_sector.pdf

OECD iLibrary. OECD Investment Policy Reviews. Promoting sustainable investment in Georgia's agri-food value chain. https://www.oecd-ilibrary.org/sites/5e266bee-en/index.html?itemId=/content/component/5e266bee-en

BDO United States, Food Processing, https://www.bdo.com/insights/industries/manufacturing-distribution/2017-bdo-manufacturing-riskfactor-report/infographic-food-processing

ScienceDirect, Food Processing, Ensuring Global Food safety. https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/food-processing

https://www.marketentry.ge/food-processing-in-Georgia

7 Annex 1

1. The legal form of your company:

2. In which sector does your company operate?

3. Your company size:

4. How many employees are employed in your company?

5. What is the average salary of the employees in your company (taking into account all the existing taxes provided by the legislation of Georgia)?

6. How important is it to employ qualified staff in your company? [1 Very insignificant - 5 Very Important]

7. What is the average length of time an employee works in a company?

8. How difficult is it for your company to find qualified staff for a key position? [1 is very difficult - 5 is very easy]

9. How often is it necessary to retrain employees to improve / acquire job skills? [1 Very Negative 5 Very Positive]

10. Evaluate the impact of the COVID-19 pandemic on your business: [1 Very Negative 5 Very Positive]

11. What challenges did your company face during the COVID-19 pandemic?

12. How has your company overcome the difficulties caused by the COVID-19 pandemic?

13. Which channels does the company use to sell its products?

14. How would you assess the impact of COVID-19 on the creation of new sales channels? [1 Very Negative 5 Very Positive]

15. Do you use online sales channels to sell your products?

16. Are you using online sales channels more actively as a result of the COVID-19 pandemic impact?

17. How would you rate the level of automation of your production process? [1 very low level 5 very high level]

18. How important do you think the level of production process automation is for your company? [1 Very Important 5 Very Important]

19. How would you rate the level of automation of your administrative processes (finances, procurement, inventory accounting, etc.)? [1 very low level 5 very high level]

20. How important do you think it is for your company to automate administrative processes (finances, procurement, inventory accounting, etc.)? [1 Very insignificant 5 Very Important]

21. How often is your company budgeted?

22. Does your company have a defined optimal working capital level?

23. Does the company plan to advance inventory levels?

24. Does the company plan in advance capacity level of the company?

25. Does the company have problems with receiving cash from receivables (goods issued on the condition of further payment)?

26. What is the average period required for your company to recover its receivables?

27. Do you have payment terms with your suppliers in the future?

28. On average, how long does it take for your company to pay off its debt?

29. Are your company assets financed by loan capital?

1. How would you assess the impact of loan capital on your company? [1 Very Negative 5 Very Positive]

2. Has your company had problems with borrowing capital (eg overdue)?

3. Do you agree with the opinion: "Loan capital helps my company grow in development"

1. Have you heard about grant, subsidy projects relevant to your industry allocated by the state or other organizations?

1. Have you benefited from grant-subsidy projects approved by the state or other organizations?

2. Please indicate what type of grant-subsidy project you have used

3. How would you assess the effect of the grant-subsidy on your company? [1 Very Negative 5 Very Positive]

4. Would you benefit from any grant subsidy program over and over again?