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A STUDY TO MEASURE THE EFFECTS OF COVID-19 ON THE TEXTILE INDUSTRY: COMPARATIVE EVIDENCE FROM BURSA AND GAZIANTEP

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IN

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Kasım 2022

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Melike BULUR

ABSTRACT

A STUDY TO MEASURE THE EFFECTS OF COVID-19 ON THE TEXTILE INDUSTRY: COMPARATIVE EVIDENCE FROM BURSA AND GAZIANTEP

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For years, many disasters, diseases, territory attacks, and governmental decisions have affected world and business life. At the end of the year 2019, the world has been faced with the COVID-19 Pandemic and its effects on public health, economy, environment, and business life. Countries and businesses have been making efforts to reduce negative effects and to turn crises into opportunities since the virus appeared. The textile sector, which has an important share of Turkey, is one of the affected sectors during the pandemic. This study aims to measure the effects of the pandemic and yearly based comparison analyses on the textile sector in Turkey. In this study, questionnaires and comparative questions for years were applied to 422 participants in Bursa and Gaziantep. Data were analyzed with IBM SPSS (Statistical Package for Social Sciences) Statistics 25.0 software. Different hypotheses are developed to analyze the effects of the pandemic. Most of the participants had negative opinions, and economic worries for post-COVID-19 but participants in Gaziantep had more negative opinions about COVID-19 effect on the sustainability of economic activities. Hypotheses also revealed the significant differences between operation year, legal status, businesses' market, and companies' monthly turnover and how they were affected by COVID-19. Participants in both cities pointed out increased lead time of raw material and delivery time in 2021 compared to 2019.

Key Words: COVID-19, Pandemic, Questionnaire, Supply Chain, Textile Sector

ÖZET

COVİD-19 PANDEMİSİNİN TEKSTİL SEKTÖRÜNE ETKİLERİNİ ÖLÇMEK İÇİN BİR ÇALIŞMA: BURSA VE GAZİANTEP İÇİN KARŞILAŞTIRMALI BİR ÇALIŞMA

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Yıllardır meydana gelen doğal afetler, salgınlar, terör olayları, hükümet kararları Dünya'yı ve iş hayatlarını etkilemiştir. 2019 yılının sonunda ise Dünya, COVID-19 Pandemisi ve pandeminin toplum sağlığı, ekonomi, çevre ve iş yaşamına etkileriyle karşılaşmıştır. Ülkeler ve firmalar virüs ortaya çıktığından beri negatif etkilerini azaltmak ve krizi fırsata çevirmek için çalışmalar yapmaktadır. Türkiye için önemli bir paya sahip olan tektil sektörü de pandemiden etkilenen sektörlerden olmuştur. Bu çalışmanın amacı pandeminin Türkiye'deki tekstil sektörüne etkilerini incelemek ve yıllara göre karşılaştırmalı bir analiz yapmaktır. Bu çalışmada, anketler ve yıllara göre karşılaştırmalı sorular Bursa ve Gaziantep illerindeki 422 katılımcıya uygulanmıştır. Veriler IBM SPSS (Statistical Package for Social Sciences) Statictics 25.0 programı ile analiz edilmiştir. Farklı hipotezler oluşturularak pandeminin etkileri analiz edilmiştir. Katılımcıların çoğunluğu pandeminin etkileriyle ilgili negatif fikirlere sahiptir ve COVID-19 sonrası için ekonomik endişeler taşımaktadır fakat Gaziantep'deki katılımcıların COVID-19'un ekonomik faaliyetlerin sürdürülebilirliğine etkilerine yönelik daha olumsuz fikirlere sahip olduğu tespit edilmiştir. Hipotezler işletmenin faaliyet yılı, hukuki statüsü,pazar boyutu ve aylık cirosu ile COVID-19 dan nasıl etkilendikleri arasında anlamlı ilişki olduğunu göstermektedir. İki şehirdeki katılımcılar da hammadde tedarik süreleri ve ürün teslimat sürelerinin 2019 yılına göre 2021 yılında arttığını belirtmiştir.

Anahtar Kelimeler: COVID-19, Pandemi, Anket, Tedarik Zinciri, Tekstil Sektörü

“To My Family’’

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LIST OFABBREVIATIONS

COVID-19	Coronavirus Disease
KMO	Kaiser-Meyer-Olkin
SCM	Supply Chain Management
SME	Small and Medium Sized Enterprises
SPSS	Statistical Package for Social Sciences
SWOT	Strengths, Weaknesses, Opportunities, and Threats
WHO	World Health Organization

CHAPTER I

INTRODUCTION

For many years, textile goods and productions, export, and import activities were made in Turkey and enhanced financial contribution to the government. A large variety of textile products are being produced and served in Turkey, especially cotton yarn, polyester yarn, woven, and nonwoven fabrics, home textiles, and carpets. These important activities in textile businesses and other businesses have been disrupted due to disasters, territory attacks, and government crises in history. In history, different epidemics and pandemics emerged in the world. In the past one hundred years, following pandemics Spanish flu (1918), Asian flu (1957), Hong Kong flu (1968), and swine flu (2009) have emerged in the World [1]. In recent years, the World struggled with COVID-19 and its effects on people and businesses.

"On 31 December 2019, the World Health Organization (WHO) China Country Office was informed of cases of pneumonia with unknown etiology (unknown cause) detected in Wuhan City, Hubei Province of China" [2]. On March 11, 2020, the WHO determined "coronavirus disease 2019" (COVID-19) as a global pandemic. This pandemic affected more than 200 countries around the world [3]. Unfortunately, 6,577,874 million people have lost their lives in the cases of 631,714,515 up to the 20th of October in 2022. Countries with the highest number of deaths in the world are as follows: the USA, Brazil, India, Russia, Mexico, Peru, and the UK. Turkey is the nineteenth country in terms of the total number of deaths [4]. On the date October 2022, there are some different vaccinations are used. The virus's effect is greatly diminished, but it continues to affect the world, people, and business life. Table 1.1 shows the timeline of important stages of COVID-19 in the World and Turkey [5-6].

Table 1.1 Timeline of important stages of COVID-19 in the World and Turkey

Dates	Events
December 31, 2019	WHO China Country Office informed pneumonia with unknown etiology was detected in Wuhan, China.
January 10, 2020	The Ministry of Health set up the Coronavirus Scientific Advisory Board in Turkey.
January 11, 2020	The first fatal case was reported in the World.
March 11, 2020	The Health Minister of Turkey announced the first case in Turkey.
March 17, 2020	The first fatal case was reported in Turkey.
June 1, 2020	164,769 cases, with 4,563 death reported in Turkey in total.
January 1, 2022	9,850,488 cases, 83,388 death reported in Turkey in total.
October 2, 2022	16,919,638 cases, 101,203 death reported in Turkey total.

Because of the contagious nature of the pandemic, governments took different precautions. Home restrictions and social distance rules were applied and people have changed their life habits. They adopted social distance terms and go out less, meet people less, and work from home. Taskmasters and plants have started to change the working styles and shift patterns of employees to decrease people's interaction during work. As a result of decreased production volume, and disrupted and delayed transportation activities, supply chain phases, and different sectors are affected.

While almost all manufacturing firms across various industries have been affected by COVID-19, the specific nature of the effects varies depending on the nature of the products, e.g., high-demand items or low-demand items [7]. During the pandemic, the demand for some products such as food items, toilet paper, hand sanitizers, and medicines increased expressively, while the demand for some other products such as garments and sports items fall drastically [8]. Demand for information technologies, food, and hygiene increased due to the protection from the virus. So, these sectors are affected positively but, tourism, production, finance, petroleum-oil, construction-real

estate, automotive, and aviation are affected negatively because production and services have come to a standstill due to the taken precautions to reduce the number of virus cases [9].

In addition to the effects of the supply chain processes, there were also economic effects of the pandemic. The recent pandemics have started to become more effective, especially in the world economy due to globalization. The disappearance of space constraints in production and consumption, and the increase in the relation of countries with each other in export, import, and supply chain areas, have caused pandemics to become a more serious problem for the world [10]. With the virus increasing its effectiveness in 2020, negative economic growth happened globally. In the year 2019, 2.8% growth was achieved, but negative growth of -3.1% happened in 2020. Especially, developed economies are the groups which affected most negatively in 2020. While negative economic growth happened in England and Italy, China and Turkey achieved the biggest economic growth in 2020. As of 2021, the economy revived, and 5.9% growth was achieved in the world. The pandemic's negative impact on the economy in Turkey is less than in the world. Turkey felt the negative effects of the pandemic in the second quarter of 2020, especially on the export volume. In the year 2020, Turkey achieved 1.7% growth with the second growth rate in the world after China. In the year 2021, Turkey achieved the biggest growth rate in the world, with 8.9% growth [11].

In the competitive world, the textile sector is one of the prior sectors in the global markets [12]. In Turkey, the textile sector has huge importance for Turkey's economy both in import and export activities. But during the pandemic, Turkey's textile sector faced many challenges, including lockdown, material shortage, changing shift patterns, and decreased number of employees due to the restrictions and social distance rule. Results showed that Turkey's textile and raw materials export remained at $12.32 billion in the year 2020, comparing $12.51 billion in export in the year 2019 [13].

In this thesis, the COVID-19 pandemic effect was examined in Textile Sector in Bursa and Gaziantep cities. By taking into consideration of effects on the same sector, two different cities were researched by using two different questionnaires with three sections.

1.2 Contribution of the thesis

This study related to the COVID-19 pandemic, which is a current and new subject in literature these days, disrupting the world, people, and businesses. After it emerged in the world, many effects occurred in sectors, especially in the textile sector, which is one of the biggest sectors in the world and has a large share in Turkey. There are studies in the literature that explain the effects of COVID-19 in the textile sector, but no studies examine the effects on the textile sector in Bursa and Gaziantep by using questionnaires and comparative studies for different years. Therefore, it is thought that this study will make an outstanding contribution to the literature on the textile sector by analyzing participants' opinions and making yearly based comparisons of two important industrial cities.

1.3 Purpose of the thesis

This thesis purposed to analyze and compare the impacts of COVID-19 on textile sectors in Bursa and Gaziantep by using two different questionnaires and deeply analyzing the effects of the pandemic. In the first questionnaire, the impacts of COVID-19 on the textile business were analyzed with three subsets. This part would try to analyze opinions on these titles. Q1: How was the sustainability of economic activities affected, Q2: What are the opinions on economic policies implemented in COVID-19, and Q3: What are the opinions on economic forecasts for Post COVID-19? In this study, eight different hypotheses were also analyzed, such as H1: There is a significant difference between the gender of participants and how companies are affected by COVID-19. H8: There is a significant difference between the average number of monthly employees of companies and how they are affected by COVID-19. In the second questionnaire, yearly based comparisons were made for both cities, such as monthly export average, monthly turnover, number of monthly employees, average lead time, and delivery time in comparing 2019 and 2021.

1.4 Organization of the thesis

This thesis is structured as follows. The introduction and purpose of the thesis have been described in chapter 1. Chapter 2 includes information about the literature survey on the COVID-19 pandemic's effects on the textile sector and other businesses. In chapter 3, material and method are mentioned and information about the textile industry in Turkey, Bursa, and Gaziantep industries are included. Chapter

4 provides information about questionnaire comparisons and evaluation of questionnaire results. The final chapter consists of the conclusion of the research and recommendations for future works.

CHAPTER II

LITERATURE SURVEY

This section analyzed the impacts of COVID-19 on the textile sector and the other sectors. Studies that used questionnaire methodology are analyzed. Both this study's differences from others and others' differences from this study are mentioned.

2.1. COVID-19 Impacts on the Textile Sector

This section aimed to examine questionnaire studies in literature related to COVID-19 effects on the textile sector. Examples of conducted questionnaire studies are shown in Table 2.1. If the cities are stated in the study, it is also shown in the table.

Table 2.1 Questionnaire studies analyzed the impact of COVID-19 on the textile sector

Author	**Number of participants**	**City and Country of Research**	**Aim**
Kimemia[14]	160 participants	Kenya, Nairobi	Textile market responses to COVID-19.
Bharali and Akoijam [15]	80 participants	Assam, India	COVID-19 effect on the silk industry.
Eskin [16]	9 participants	Denizli, Turkey	Financial view of small-medium enterprises (SME) during COVID-19.
Uzay [17]	113 participants	Turkey	Textile sector and effects of COVID-19.
Kaur [18]	123 participants	Punjab, India	Impact of COVID-19 on the textile industry and entrepreneurs.

Table 2.1 Questionnaire studies analyzed the impact of COVID-19 on the textile sector *(Cont.)*

Author	Number of participants	City and Country of Research	Aim
Mehta and Kaur [19]	50 participants	Ludhiana, India	Challenges of COVID-19 on the woolen knitwear industry.
Mondal et al. [20]	162 participants	Dhaka and Chittagong, Bangladesh	Physiological health condition and socioeconomic crises of textile sector workers.
Kanat and Atılgan [21]]	391 participants	İstanbul, İzmir, Denizli and Bursa, Turkey	Effects of COVID-19 on supply chain management (SCM) in the clothing sector.
Bulur et al.	422 participants	Bursa and Gaziantep, Turkey	Economic effects of COVID-19 and yearly based comparison on the textile industries.

In the literature, some studies analyzed COVID-19's effects on the textile sector. One of the questionnaires made by Kimemia [14] showed the significant relationship between COVID-19 precautions and textile trading and production. In the study, the importance of government funding support and providing a large market to manufacturers is emphasized. Bharali and Akoijam [15] made a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis and qualitative analysis by conducting a questionnaire with the depth-interview method. They stated the problems faced by the silk industry and pointed out that the pandemic has affected the silk industry in Assam, India severely. Results showed the whole supply chain of silk was affected; foreign orders were canceled, silk prices rose, and transportation disruption occurred cause of the nature of silk as a luxury item. They also emphasized the importance of government financial support and different methods to revive the sector again.

In Turkey, an online interview conducted by Eskin [16] for different branches of textile productions such as home, and technical textiles in Denizli, Turkey stated that

the companies' influence degree varies depending on production area and business model. The study showed that most of the participants faced serious income losses during the pandemic due to increased collection time, disrupted business activities, and increased raw material expenses. But, companies that mostly sell via e-commerce and started to produce masks, and antibacterial medical textile products haven't been affected as much as others. One of the questionnaires that Uzay [17] applied in Turkey to analyze the textile sector, the effects of COVID-19 during the pandemic, and opinions for post-COVID-19. In the study, different branches of textile production were analyzed and SWOT analysis was also used. The region includes Aydın, and Denizli cities compared to Turkey. In the questionnaire, financial situation, production, sales and marketing, export, and competitiveness performances are analyzed. 25% of the companies thought that their turnover decreased between 26-50% and 19% of the companies thought that their turnover decreased more than 13% in 2020, compared to 2019. Only 3% of companies thought their turnover increased by 51% and more in 2020, compared to 2019. Most of the companies also had an opinion as their export decreased by 51% and more in 2020 compared to 2019.

Kaur [18] made a questionnaire with textile entrepreneurs in India and identified issues faced by textile entrepreneurs due to COVID-19. The survey pointed out the importance of digitalization, digital systems, and digital SCM to survive better and mitigate the negative effects of the pandemic. Finding a new production area for textile producers can be a good option to survive better. N95 masks and personal protective equipment can be a good opportunity for them. Mehta and Kaur [19] stated in their study, in the woolen industry, orders have been canceled or postponed due to lockdown. Some of the firms started to produce protective personal equipment kits and masks. One of the questionnaire studies related to textile sector workers in Bangladesh, conducted by Mondal et al. [20], stated in the results that textile sector employees were negatively affected during the pandemic. 76.54% of 162 participants stated they had been laid off due to the pandemic, and 79.40% stated their workload increased due to the laid-off workers.

Kanat and Atılgan [21] conducted questionnaires on the clothing sector and developed hypotheses. Results showed that SMEs depending on their number of employees and turnovers were affected more negatively in terms of sales and

finance. 80% of participants stated that given support from the government was not adequate in terms of export and finance. During the pandemic, online sales, investment, and financial support, labor support, sectoral cooperation, institutionalization gained importance.

The bottom row of Table 2.1 contains this study. In this study, a questionnaire methodology was used and applied to 422 participants in Bursa and Gaziantep to analyze the COVID-19 economic impact on the textile industry. In literature, studies used questionnaire methodology and some of them developed hypotheses, but this study used both questionnaire and yearly based comparison and tested hypotheses for Bursa and Gaziantep cities. Yearly based comparison is enhanced to compare some criteria before the pandemic and during the pandemic. In literature, no study has analyzed the COVID-19 economic impact on both Bursa and Gaziantep by using questionnaires and yearly based comparisons. This study was conducted on general managers, senior managers, or high-level officers and the sample size is larger than in analyzed studies according to Table 2.1.

Unlike this study in the literature, surveys were conducted for entrepreneurs and textile employees in a single city, more than one city, a region, or the whole country. Although, this study hasn't examined the production branches of the surveyed companies such as knitwear, home textile, technical textile, and thread production, some of the studies analyzed the production branches of surveyed companies or focused on a single textile branch such as the silk industry or clothing sector. Some studies also made SWOT analyses to identify their weakness for post-COVID-19 and advised companies to improve their weakness and turn their strengths into more opportunities.

2.2. COVID-19 Impacts in the Other Sectors

In the literature, different sectors in different countries measured the effects of the pandemic and also pointed out negative and positive impacts. New opportunity areas, and suggestions made to mitigate negative effects. Examples of conducted questionnaire studies are shown in Table 2.2 and studies are grouped by sector and analyzed accordingly. If the cities are stated in the study, it is also shown in the table.

Table 2.2 Questionnaire studies analyzed impact of COVID-19 in the other sectors

Author	Sector	Number of participants	Country of Research	Aim
Sürme [22]	Tourism	240 participants	Turkey	Effects of COVID-19 on people's intentions to purchase a vacation.
Aracı and Ergen [23]	Tourism	9 participants	Muğla, Turkey	Effects of COVID-19 on technological innovations of the hotel business.
Şen [24]	Catering firm	14 participants	Marmara Region, Turkey	COVID-19 effects on catering firms.
Kansiime et al. [25]	Food Sector	442 participants	Kenya and Uganda	COVID-19 impacts of household income and food security.
Khan and Ponce [26]	Food Sector	298 participants	Ecuador	Effects of COVID-19 on the perishable food supply chain.
Öztürk [27]	Advertising Sector	356 participants	Turkey	Effects of COVID-19 on the advertising sector.
Ruhan [28]	E-Commerce	331 participants	Nigde region, Turkey	COVID-19 effects on the internet purchasing behavior of consumers.
García-Salirrosas et al. [29]	E-Commerce	330 participants	Mexico, Peru, and Colombia	Purchase intention and satisfaction of online users during COVID-19.
Zou et al. [30]	Multisectorial	524 participants	Guangdong Province, China	COVID-19 effects on firms.

Table 2.2 Questionnaire studies analyzed impact of COVID-19 in the other sectors *(Cont.)*

Author	Sector	Number of participants	Country of Research	Aim
Pan and Yue [31]	Multisectorial	1015 participants	Bangladesh, China, France, India, Malaysia, Mauritius, Nigeria, Pakistan, Qatar, Thailand, and the US	Effect of COVID-19 on the economy.
Nakıboglu and Işık [32]	Multisectorial	894 participants	Turkey	Economic effects of COVID-19 for companies.
Lisaniler and Bhatti [33]	Multisectorial	128 participants	North Cyprus	COVID-19 effects on business.
Xu and Abbasov [34]	Multisectorial	75 participants	Azerbaijan	Impact of COVID-19 on SME.
Öztürk [35]	Multisectorial	56 participants	Turkey	Impacts of COVID-19 on technokent companies
Akar [36]	Multisectorial	42 participants	Turkey	Impacts of COVID-19 on SMEs
Keshavarzi et al. [37]	Multisectorial	379 participants	Malaysian	Impacts of COVID-19 on firms' operation.
Raghunathan et al. [38]	Multisectorial	80 participants	Kerala, India	Identifying and analyzing the challenges faced by micro-enterprises during COVID-19.

Table 2.2 Questionnaire studies analyzed impact of COVID-19 in the other sectors *(Cont.)*

Author	Sector	Number of participants	Country of Research	Aim
Husen and Nusrat [39]	Multisectorial	46 participants	Dhaka, Bangladesh	Most important supply chain challenges during recovery.
Konyalılar [40]	Aviation sector	566 participants	Turkey	Organizational commitment of employees and turnover intention during the COVID-19.
Kochovska [41]	Automotive	8 participants	Macedonia	Impacts of COVID-19 on the automotive industry.
Tuna and Çelen [42]	Human Resources	51 participants	Turkey	Impacts of COVID-19 on human resources
Kırılmaz [43]	Human Resource Management	240 participants	Turkey	COVID-19 effects on human resource management.
Aksoy et al. [44]	Human Resources	227 participants	Turkey	Analyze the impacts of the home office.

In the literature, questionnaire studies analyzed the effects of COVID-19 on different sectors. Sürme [22] stated that one of the severely affected sectors is tourism due to restrictions during the pandemic. He surveyed about effects of COVID-19 on the tourism sector in Turkey and examined the behaviors of people to purchase vacations during the pandemic. Results showed that perceptions of COVID-19 risks in the tourism sector were so high and the average vacation purchase intention decreased during the pandemic. Aracı and Ergen [23] made a questionnaire in the tourism sector with the manager of hotels in Turkey and participants stated pandemics had a great impact on the use of technology. They stated that using technology during the

pandemic reduced contact, decreased personal expenses with remote working, increased service quality, and provided an opportunity to do work with fewer employees.

There are questionnaire studies conducted in the catering and food sectors. Şen [24] surveyed for COVID-19 effect on catering firms in Turkey and pointed out the decreased capacity of catering firms during COVID-19. Kansiime [25] surveyed in Kenya and Uganda revealed food security worsened, consumption of nutritionally rich foods decreased, regular consumption of fruits reduced by 30% compared to the before the pandemic, and 41% of participants had food security problems during the pandemic. In Ecuador, Khan and Ponce [26] conducted the first study related to the perishable food supply chain to investigate COVID-19 effects. In the study, increased home delivery service is pointed out. Thus, digital skills and information technologies played an important role in reducing delivery time and enhancing better service during the pandemic.

Ozturk [27] applied a questionnaire to analyze the effects of COVID-19 on the advertisement sector in Turkey. In the study, most of the participants pointed out that advertisements will be positively affected and advertisement investments will increase during the pandemic. Ruhan's questionnaire [28] related to e-commerce results showed that consumers tended to purchase their basic needs (food, health, hygiene, personal care) during a pandemic through online shopping during the pandemic and started to spend more time on social media and digital platforms. García-Salirrosas et al. [29] advised small fashion businesses about the positive relation between trust, and satisfaction with online purchase intention and improve their ability for better competition in the market.

One of the multi-sectoral studies by Zou et al. [30] questionnaire results from China revealed that the pandemic kept light on turning crises into occasion by investigating new industries and business opportunities. The study by Pan and Yue [31] with data from eleven countries was made to analyze the multidimensional effects of COVID-19 on the economy. Results showed that businesses, the travel industry, and the tourism sector are affected the most with 40% of respondents. 30% of the respondents considered COVID-19 hurts the sectors like the production/ manufacturing, textile, agriculture, services, international trade, employment, and

global value chain. For SME, Nakıboglu and Işık [32] applied a questionnaire in Turkey to analyze how firms were economically affected during COVID-19 and opinions for Post COVID-19. Most of the participants thought COVID-19 affected the economy severely, and participants worried about Post COVID-19. Lisaniler and Bhatti [33] applied a questionnaire in Cyprus, and 81% of participants stated that they were affected severely by COVID-19. Xu and Abbasov [34] made a study in Azerbaijan with 75 firms and revealed more than ninety percent of the enterprises participating have either extremely negatively or negatively impacted the business's operations. From sectoral perspective tourism (26.60%), restaurants and cafes (22.10%), and the education sector (13.60%) are among the most negatively affected while pharmacies (0.2%), insurance (0.8%) and agriculture (1.2%) are among the least affected by COVID-19 pandemic. Öztürk [35] aimed to analyze the situation of technokent companies operating in Malatya, Turkey. In particular, it has resulted that the companies which provide services in software could produce solutions against pandemics and provide income better than other companies. In addition, the study stated that relationships with suppliers and key partners have importance in the sustainability of a company. Akar [36] revealed in the study, SMEs operating in Batman were affected negatively due to COVID-19. A decrease in turnover and cash flow has been observed. 76.2% of employees stated they were highly affected. While the interaction of companies that produce food and health products has increased, the hotel, accommodation, and real estate sectors have been affected the most. The questionnaire results of Keshavarzi et al. [37] showed that Malaysian firms pointed out there are some positive effects of the pandemic despite the negative effect on the economy and the result revealed that the pandemic affected firms' information and digital construction positively and enhanced firms to realize their shortcomings and develop problem-solving skills. Raghunathan et al. [38] made interviews in Kerala, India, and stated micro-enterprises were vulnerable to COVID-19. Researchers made suggestions about the importance of technological investments, financial support, and a strong supply chain network during the pandemic. After disasters or diseases, important points and challenges in the recovery should be determined well for supply chain processes. Husen and Nusrat [39] made a questionnaire for multi sectors to analyze challenges that can be faced during the recovery period after COVID-19. Making improvements according to analysis will be helpful to start improvements from the right points.

There are also surveys related to other different sectors. Konyalılar [40] made a questionnaire to employees in aviation in Turkey to analyze the organizational commitment of employees during COVID-19.

Kochovska [41] made a study in the automotive sector and stated in the study, the supply and procurement department was severely affected due to its dependence on third entities. To have resilience in the supply chain, strong relations with suppliers gained importance. Companies should analyze the potential effects of new threats in their supply chains constantly

In the human resources area, Tuna and Çelen [42] stated that with the increase in working from home, the duties and responsibilities of the employees have changed. The importance of occupational health and safety has increased among companies. In the process of interviews, usage of the internet and online methodologies increased. Kırılmaz [43] made a questionnaire with Human resource managers in Turkey and pointed out that COVID-19 caused changes in business life such as performance, career management, and training, employee selection, and transition to remote or flexible working styles. Aksoy et al. [44] mentioned that working from home will take an important place in our lives after the pandemic. Due to advantages and disadvantages, taking steps to increase employee satisfaction have importance while reducing disadvantages.

CHAPTER III

MATERIAL AND METHOD

In this section, the textile industry in Turkey is mentioned. In terms of textile branches, the importance of Bursa and Gaziantep is explained. Then, used methods and materials are mentioned.

3.1 Textile Industry in Turkey

Textile, which means knitting or weaving, was formed in the concept of "texere" which comes from Latin. Textile is a process based on the transformation of fiber, first into yarn and then into clothing. Since clothing and textile goods are among the most basic needs for people, this sector has huge importance to humanity [45].

For 3000 years, textile and apparel goods have been produced in Anatolia. Anatolia was most of the important trade centers after India in terms of the textile production, silk, and cotton industry until the industrial revolution. The industrial revolution caused to start low-cost and quality products offered by Europe. Therefore, the Republic of Turkey has given special importance to the textile industry to regain its former power in world trade [46]. As the years progressed, increased state-funded factories and the private sector enhanced Turkey's improved textile industry. Especially, in the provinces of Gaziantep, Bursa, İstanbul, Kahramanmaraş, Adana, Kayseri, and Denizli, the biggest volume of production in many sub-sectors such as fiber, yarn, woven-knitted fabric, nonwoven surface take place [47].

The advantages of the textile industry in Turkey can be listed as follows.

- Wealth in terms of basic raw materials.
- Proximity to markets
- Labor force
- Shipping times

- Free trade agreements

In Turkey, as basic raw materials, cotton and synthetic fiber are produced. With proximity to European markets and a qualified, educated young population, the attractiveness of short shipping times provides advantages. Many vocational schools continue to train employees. Free trade agreements and giving importance to quality, environment, and human health in the textile industry enhance advantages to this sector [48].

Since the end of 2019, the world has been faced with COVID-19 and struggling with negative effects in many ways. As many industries were affected, all branches of textile products such as garments, footwear, home textile, thread, and carpet have been affected because of government restrictions, lockdowns, reduced working hours, and closed factories and shopping centers. COVID-19 has impacted the sales, production, trade, and employment of the textile industry. The Table 3.1 shows how sales, trade, production, and employment are affected during COVID-19 [49].

Table 3.1 Effects of COVID-19 on the textile industry

Sales	During COVID-19, people tended to purchase first their basic needs. Because of the closure of shopping centers, and home restrictions textile sector demand decreased. Major brands closed their stores in some countries.
Trade	Demand decrease affected the textile trade in the world.
Production	Closure of companies, decreased demand, orders cancellation, and raw material shortage caused a decrease in the production volume.
Employment	Decreased production volume and sales affected the number of employees at the companies.

Due to the pandemic, textile and raw material export decreased in many countries in the year 2020, compared to 2019. In Turkey, export decreased in 2020 compared to 2019. In 2021, with the diminishing effect of the virus, and as a result of using vaccination, some countries started to improve their trade, textile, and raw material export. In 2021, Turkey's export increased again and reached a higher value than in 2019. In 2021, Turkey has a 4.2% export share in the textile and raw materials in the world. China has the major export value in terms of textiles and raw materials in the

world. The Table 3.2 shows the top ten textile and raw materials exporting countries in the world.

Table 3.2 Textile and raw materials exporting countries in the world

Country	**2019** (1,000.00 $)	**2020** (1,000.00 $)	**2021** (1,000.00 $)	**Export Share in 2021**
China	122,335,115.00	156,072,263.00	133,589,050.00	35%
India	19,243,533.00	17,381,028.00	26,264,324.00	6.9%
USA	20,910,426.00	18,660,071.00	20,382,708.00	5.3%
Turkey	12,511,407.00	12,342,286.00	16,163,088.00	4.2%
Germany	14,374,630.00	14,389,755.00	15,580,284.00	4.1%
Italy	12,226,264.00	10,079,343.00	12,482,309.00	3.3%
Vietnam	9,386,232.00	10,069,052.00	11,218,390.00	2.9%
South Korea	10,737,486.00	9,096,027.00	10,264,387.00	2.7%
Pakistan	7,853,099.00	7,420,051.00	9,615,399.00	2.5%
Taiwan	8,711,037.00	7,154,869.00	8,576,975.00	2.2%

Because of the pandemic, textile and raw material imports decreased in many countries in the year 2020, compared to 2019. As export decreased in Turkey, imports decreased in 2020. But in 2021, increased again and reached a higher value than in 2019. According to the textile and raw material importing countries, Turkey was the 7th country with the 2.8% import share in the world. The USA has the major import value in terms of textiles and raw materials in the world. Table 3.3 shows the top ten textile and raw materials importing countries in the world.

Table 3.3 Textile and raw materials importing countries in the world

Country	**2019** (1,000.00 $)	**2020** (1,000.00 $)	**2021** (1,000.00 $)	**Import Share in 2021**
USA	32,051,665.00	46,094,966.00	40,568,034.00	11.4%
Vietnam	20,337,183.00	18,202,195.00	24,766,178.00	7.0%
China	24,052,815.00	21,081,146.00	22,712,746.00	6.4%
Germany	14,301,272.00	20,533,130.00	17,108,716.00	4.8%
Bangladesh	12,668,934.00	10,639,566.00	15,730,739.00	4.4%
Italy	9,409,241.00	10,940,574.00	10,335,292.00	2.9%
Turkey	9,034,703.00	7,771,921.00	9,982,322.00	2.8%
Japan	9,166,469.00	11,994,637.00	9,513,368.00	2.7%
Indonesia	8,530,390.00	6,573,187.00	8,788,629.00	2.5%

In 2021, Turkey exported most of the textile and raw materials to countries like the USA (12.9%), Germany (7.7%), and Italy (7.2%). On import bases, in 2021, China (17.7%), India (6.8%), and the USA (6.2%) are the countries with the highest import value in terms of textiles and raw materials [50].

Turkey has many competitive companies and labor force in the different branches of the textile sector. İstanbul, Gaziantep, and Bursa are outstanding cities in terms of textile and raw material export. Gaziantep, İstanbul, and Uşak are outstanding cities in terms of carpet export.

Bursa and Gaziantep are one of the leader cities in terms of production volume, export, import, labor force, and the number of companies in the textile sector in Turkey. Between 1st January 2021 and 31st December 2021, Bursa had 1.19 billion $ export in the textile and raw materials sector, and Gaziantep had 1.85 billion $ export in the textile and raw materials sector. They also increased their export volume by 32.2% and 36.7% respectively in 2021 compared to 2020 [51]. With the advantage of Bursa and Gaziantep having high export value, the labor force, and the number of companies in the textile sector, this study aimed to analyze the COVID-19 economic impact on Bursa and Gaziantep cities.

It is important to examine a sector that is of such importance for Turkey and the world. As Gaziantep and Bursa are the cities in which many textile companies operate, and clustered these two cities are selected as sample cities, considering the findings obtained from the collected data will give a significant idea for the researched subject.

3.2. Gaziantep Industry

At the end of 1980, Gaziantep Industry had a certain volume and manufacturing sectors. In the years 1989, the number of manufacturing companies increased and the Gaziantep Chamber of Industry was established [52]. The city has the advantage of the power of employment, export and import potential, regional capacity, and sectoral diversity. In the year 2021, Gaziantep's population was 2,130,432 people, which means the ninth most crowded city in Turkey [53]. This city is included in the TRC1 region (Gaziantep, Adıyaman, Kilis) with a labor participation rate of 50.0% and an employment rate of 45.0% [54]. Many sectoral companies are operating, and national& international fairs organize and support productivity in Gaziantep. Figure

3.1 shows the textile, food industry, chemical, plastics, and machinery-metal have the most considerable portion among sectoral distribution in Gaziantep.

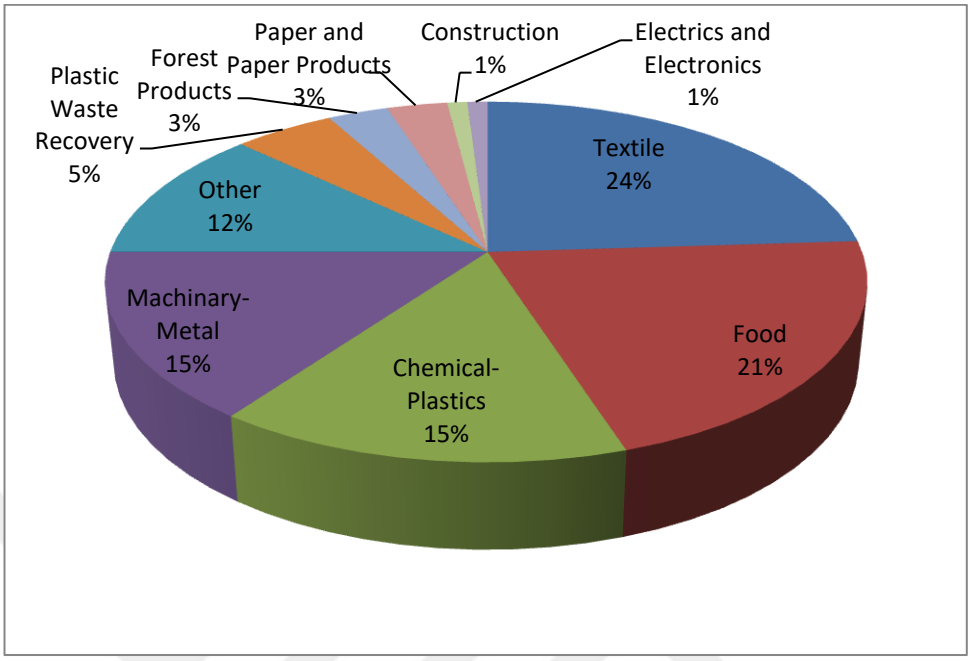

Figure 3.1 Sectoral distribution of manufacturing industries in Gaziantep,2022 [55]

Gaziantep Industry started manufacturing in the Textile industry and this sector has still the largest share among sectors in Gaziantep. Productions made in the areas of acrylic thread, polypropylene thread, polyester thread, machine-made carpet, tufting machine carpet, non-slip carpet, cotton yarn, garment, and clothing [52].

3.3. Bursa Industry

Bursa Chamber of Industry was established in 1889, Kozahan in Bursa. One year later, the Chamber of Commerce and Industry was established. In the past, due to its location on the route of the Silk Road, Bursa was one of the industrial cities and had an advantage due to its strategic location of itself [56]. In the year 2021, Bursa's population was 3,147,818 people, which means the fourth most crowded city in Turkey [53]. This city is included in the TR41 region (Bursa, Eskişehir, Bilecik) with a labor participation rate of 52.7% and an employment rate of 47.5% [54]. Different manufacturing companies are operating and national& international fairs organize. Figure 3.2 shows the main production industries are construction, service, textile, and automotive [57].

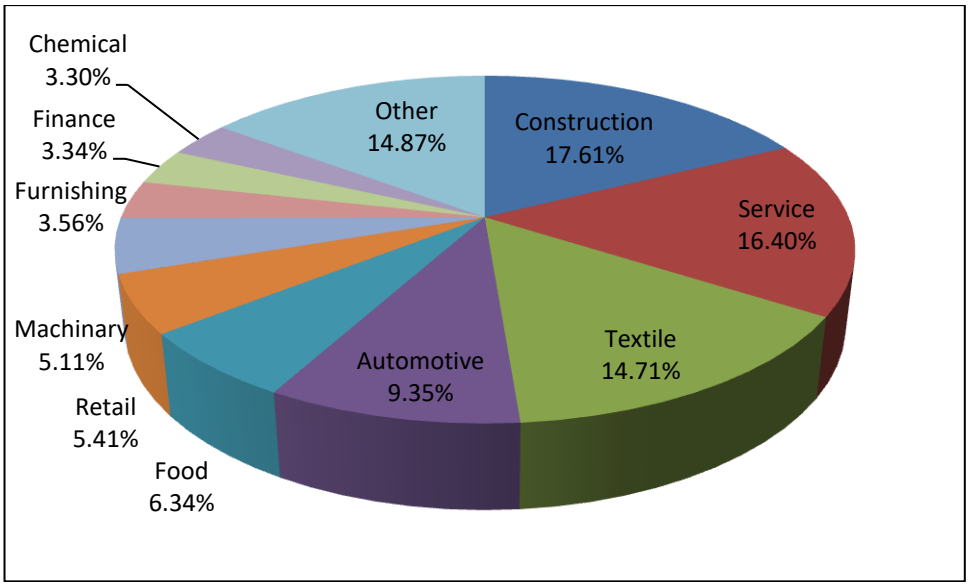

Figure 3.2 Sectoral distribution of manufacturing industries in Bursa, 2020

Cotton, one of the most precious raw materials of ancient times, was brought to Bursa and produced first outside of China. In the beginning, Bursa was one of the production centers of silk weaving. With developing technology, the city turned into the center for thread and cloth production by using chemical fibers. Many different companies are operating in the textile sector, such as woven fabric, nonwoven fabric, synthetic thread, knit fabric, and thread [58].

3.4 Material and Method

The questionnaire used as the material in this thesis was adapted from the study which applied to SMEs in Turkey [31]. Two questionnaires with three-section were used on online platforms by preparing a questionnaire form on the internet. (Note: The questionnaire that was used is provided in the appendix). Participants from Gaziantep and Bursa textile industries attended and replied to the questionnaires about which best fitted their companies with paperless by only using the internet. In the first questionnaire, there are descriptive questions part which enhance the descriptive information of participants. The second section, which includes twenty-four questions to analyze the economic impact of COVID-19 was applied with five scales from (1) Strongly Disagree to (5) Strongly Agree. The third part has eight criteria and a yearly based comparison. Both questionnaires are made for quantitative survey methods. Data were analyzed with IBM SPSS Statistics 25.0 software. Frequency, percentage, average, and standard deviations are used for data analyses.

T-tests and One Way ANOVA tests are used to analyze the COVID-19 effect on participants and textile industries. To analyze differences between the groups' Post Hoc Sidak test is used.

CHAPTER IV

QUESTIONNAIRE

4.1 Subset of the Study

This survey was applied to Bursa and Gaziantep textile industries. These two cities are selected because they are important industrial cities and have a big share of Turkey's production volume, and also have many companies in terms of the textile sector. The sample of the survey includes small-medium-large textile companies in Bursa and Gaziantep. There are 8,000 companies in Bursa, 6,000 companies in Gaziantep, and a total population of 14,000. By using a simple random sampling method, 385 companies were identified as sample size with a 95% confidence level and a 5% margin of error. The questionnaires were made the date between the 1st and 30th of December in 2021 on online platforms. The survey was forwarded to approximately 1700 companies. The approximate participation rate in the survey was 25%. A total of 422 textile companies participated in to survey. 241 companies from Bursa and 181 companies from Gaziantep participated and replied to questionnaires. General managers, senior managers, or high-level officers replied to the questionnaire.

4.2 Preparing Questions

This survey has three sections; the first one is prepared to analyze the demographic information of participants such as gender, age, education level, and features of the companies such as operation year, legal status, and market of business. The second part includes twenty-four questions to analyze the economic impact of COVID-19. In this survey validity and reliability tests and exploratory factor, analyzes were made to analyze the construction validity of scales and the reliability of the study. Cronbach's alpha has a value between 0 and 1. If its value is greater than 0.7, then it is considered satisfactory [59]. Cronbach's Alpha test was used in this survey to analyze reliability and the level was 0.96, which shows the survey was reliable. The reliability value of factors in the used questionnaire showed in Table 4.1. Barlett tests

were made and there were significant correlations between variables. Exploratory factor analysis was made and three factors were determined, such as the COVID-19 effect on the sustainability of economic activities, opinions on economic policies implemented in COVID-19, and economic forecasts for post-COVID-19. The Kaiser–Meyer–Olkin (KMO) statistic varies between 0 and 1. A value greater than 0.5 is considered as a satisfactory value [60]. KMO test resulted in 0.95, showing that the sample size was sufficient for analysis. The third part of the questionnaire is prepared to make a yearly based analysis for the years 2019 and 2021. In the study, different hypotheses were tested, and the results were analyzed.

Table 4.1 Reliability value of factors in the questionnaire

Factor	Number of expression	Reliability Value "Cronbach Alpha"
COVID-19 Effect on Sustainability of Economic Activities	10	0.89
Opinions on Economic Policies Implemented in COVID-19	7	0.92
Economic Forecasts for Post COVID-19	7	0.91

A correlation matrix was used to examine the relationship between the factors. Table 4.2 shows the relationship between the three factors.

Table 4.2 Relationship between the factors

		COVID-19 Effect on Sustainability of Economic Activities	Opinions on Economic Policies Implemented in COVID-19	Economic Forecasts for Post COVID-19
COVID-19 Effect on Sustainability of Economic Activities	r	1		
	p			
Opinions on Economic Policies Implemented in COVID-19	r	0.40*	1	
	p	0.01		
Economic Forecasts for Post COVID-19	r	-0,11*	0.03	1
	p	0.03	0.56	

**Correlation analysis was performed. *0.05 as a level of significance.

It has been determined that there is a positive, moderately strong, and significant relationship between the COVID-19 effect on the sustainability of economic activities and opinions on economic policies implemented in COVID-19. It can be stated that the increase in the attitudes of the participants towards the economic policies implemented in COVID-19 will cause an increase in the participants' opinions about the COVID-19 effect on the sustainability of economic activities. ($r=0.40$, $p=0.01$, $p<0.05$)

It has been determined that there is a negative, very weak strength, and significant relationship between the dimension of COVID-19 effect on the sustainability of economic activities and economic forecasts for post COVID-19. The increase in the attitudes of the participants towards the economic policies implemented in COVID-19 will cause a decrease in the level of economic forecasts for post COVID-19. ($r=-0.11$, $p=0.03$, $p<0.05$)

It has been determined that there is no significant relationship between the opinions on the economic policies implemented in COVID-19 and economic forecasts for post COVID-19. ($r= 0.03$, $p=0.56$, $p>0.05$)

4.3. Research Hypotheses

The following hypotheses have been developed to analyze firms' characteristics and participants' opinions, about the COVID-19 effect on the textile sector.

Hypothesis 1 (H1): There is a significant difference between the gender of participants and how companies are affected by COVID-19**.**

Hypothesis 2 (H2): There is a significant difference between the operation year of companies and how they are affected by COVID-19.

Hypothesis 3 (H3): There is a significant difference between the legal status of companies and how they are affected by COVID-19.

Hypothesis 4 (H4): There is a significant difference between the market of companies and how they are affected by COVID-19.

Hypothesis 5 (H5): Participants in Bursa have more negative opinions than Gaziantep about the effects of COVID-19**.**

Hypothesis 6 (H6): There is a significant difference between the monthly export average of companies and how they are affected by COVID-19.

Hypothesis 7 (H7): There is a significant difference between the monthly turnover of companies and how they are affected by COVID-19.

Hypothesis 8 (H8): There is a significant difference between the average number of monthly employees of companies and how they are affected by COVID-19.

4.4. Analyses of Data

IBM SPSS (Statistical Package for Social Sciences) Statistics 25.0 packaged software is used for the statistical analysis of the study. "p" value is a level of significance accepted under 0.05. Cronbach's Alpha test was used for reliability tests, and KMO was used for sample size sufficiency. Frequency, percentage, average, and standard deviations are used for data analyses. T-tests, and One Way ANOVA tests were used to analyze the COVID-19 effect on participants and textile industries.

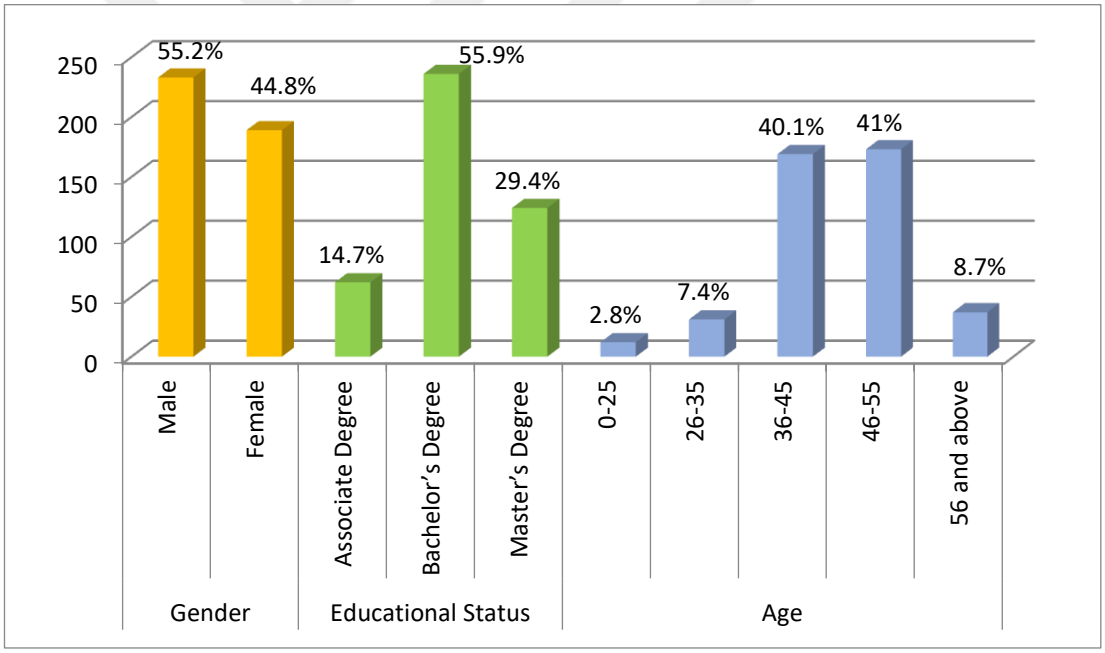

Figure 4.1 Demographic information of participants

In this survey, 233 males and 189 females took part. Figure 4.1 shows that most of them graduated with a Bachelor's Degree with 55.9 percent, 124 participants graduated with Master's Degree with 29.4 percent, and 62 participants graduated with Associate Degree with 14.7 percent. 12 participants (2.8%) age were between 0-25, 31 participants (7.4%) age 26-35, 169 participants (40.1%) age 36-45, 173

participants (41.0%) age between 46-55 and 37 participants (8.7%) age were above 56.

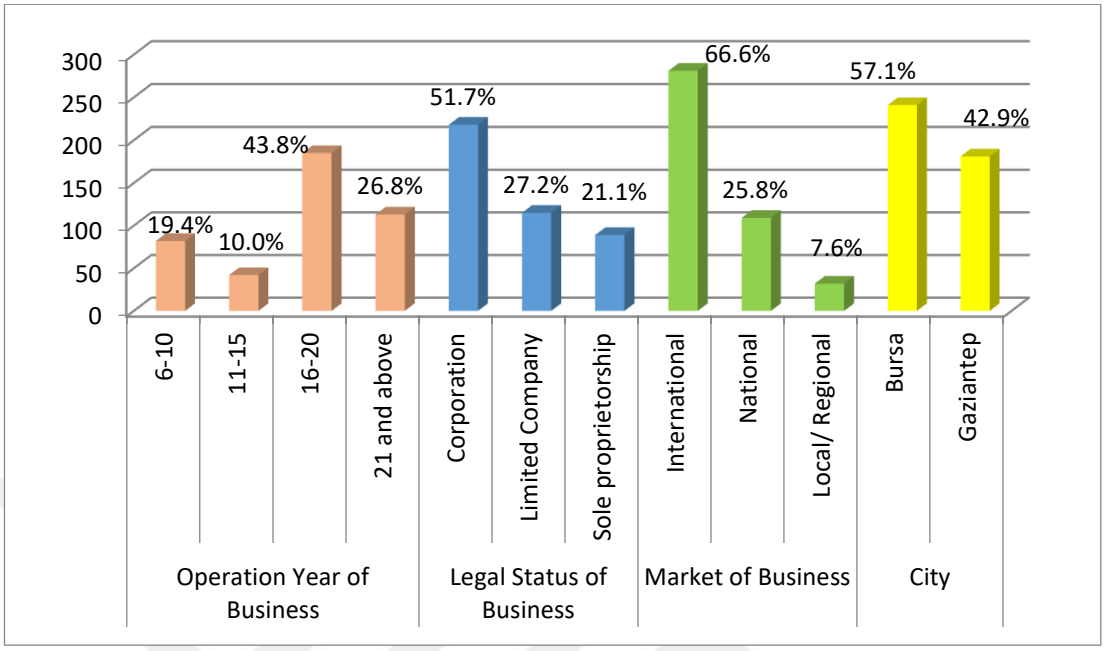

Figure 4.2 Companies' Information

As shown in Figure 4.2, 82 participants (19.4%) were working in companies operating for 6-10 years, 42 participants (10.0%) were working in companies operating for 11-15 years, 185 participants (43.8%) were working in companies operating for 16-20 years, 113 participants (26.8%) were working in companies operating 21 and above years. 218 participants (51.7%) were working in corporation companies, 115 participants (27.2%) were working in limited companies, and 89 participants (21.1%) were working in a sole proprietorship. 281 participants (66.6%) were working in international companies, 109 participants (25.8%) were working in national companies, and 32 participants (7.6%) were working in local companies. 241 participants (57.1%) were working in Bursa, and 181 participants (42.9%) were working in Gaziantep.

In the questionnaire, the higher the dimension scores show, the higher level of impact. Opinions on COVID-19 effect on the sustainability of economic activities show negative opinions of participants. As shown in Table 4.3, most participants thought they had to decrease the number of employees working at the company, they worried about being unable to take care of their families and children, and they thought they will have trouble with banks cause of the loan payments.

Table 4.3 Opinions on COVID-19 effect on the sustainability of economic activities

COVID-19 Effect on Sustainability of Economic Activities	X± s .d.	Factor load	Explained Variance
I think I have to decrease the number of employees who work at the company.	4.16±0.56	0.62	
I think I will not be able to pay the collateral.	3.59±0.60	0.65	
I believe, there will be no demand for the products and services we offer as before.	3.90±0.76	0.64	
I am worried about not being able to take care of my family and children.	4.08±0.78	0.56	
I think I will have trouble with banks cause of the loan payments.	3.99±0.68	0.61	24%
I think I will lose a significant job loss.	3.41±0.84	0.62	
I am scared of shutting down my business.	3.85±0.73	0.62	
I think I will not tend to do new entrepreneurship activities.	3.31±0.61	0.63	
I think I will not collect my debts.	3.78±0.77	0.65	
I think, applied economic policies cannot recover the damage which I have seen caused by the COVID-19.	3.66±0.68	0.66	

High scores for the opinions on economic policies implemented in COVID-19 show that precautions were not enough in COVID-19. Table 4.4 shows the opinions of the participants. The outstanding opinions are followed as: participants thought they couldn't profit from the benefits given, economic incentives are insufficient and they have economic worries for the future.

Table 4.4 Opinions on economic policies implemented in COVID-19

Opinions on Economic Policies Implemented in COVID-19	X± s. d.	Factor load	Explained Variance
I think economic precautions are insufficient.	3.99±0.42	0.66	
I think, given economic incentives are insufficient.	4.08±0.27	0.67	
I have economic worries for the future.	4.05±0.61	0.68	26%
I think, economic recessions these days will cause economic troubles in the future.	3.88±0.48	0.63	

Table 4.4 Opinions on economic policies implemented in COVID-19 *(Cont.)*

Opinions on Economic Policies Implemented in COVID-19	X± s. d.	Factor load	Explained Variance
I feel myself, economically insufficient.	3.76±0.83	0.64	
I don't believe that economy will not easily return to the old state from now on.	3.90±0.44	0.62	26%
I can't profit from the benefits which are given.	4.25±0.64	0.63	

The economic forecast for post-COVID-19 shows the participants' opinions on how they feel negatively about the future. High scores show the participant's perception that it will be economically worse in the future. Table 4.5 shows that most participants thought the economy's recovery would take a long time and inflation and unemployment would, increase and small businesses are at risk of shutting down.

Table 4.5 Opinions on economic forecasts for post-COVID-19

Economic Forecasts for Post COVID-19	X±s.d.	Factor load	Explained Variance
I think, all the sectors are affected negatively in terms of economy.	4.13±0.43	0.65	
I think competition will be more and profitability will be less.	3.87±0.53	0.65	
I think inflation will increase significantly.	4.14±0.56	0.66	
I think, there will be a rapid transition from the general economy to the digital economy.	4.01±0.63	0.67	25%
I think small businesses are at risk of shutting down.	4.14±0.50	0.68	
I think unemployment will increase.	4.14±0.65	0.69	
I think the recovery of the economy will take a long time.	4.20±0.68	0.70	

According to the results, the outstanding opinions of participants in terms of all factors are as follows: they thought they couldn't profit from the benefits given, recovery of the economy will take a long time and they had to decrease the number of employees working at the company.

Table 4.6 Opinions based on participants and business characteristic

		COVID-19 Effect on Sustainability of Economic Activities		**Opinions on Economic Policies Implemented in COVID-19**		**Economic Forecasts for Post COVID-19**	
		X± s. d.	p	X± s. d.	p	X± s. d.	p
Gender	Male	3.77±0.50	0.86	3.97±0.29	0.55	4.10±0.33	0.62
	Female	3.78±0.50		4.01±0.28		4.07±0.3	
Operation Year of Business	6-10	3.98±0.48	0.01*	4.12±0.21	0.13	4.05±0.29	0.18
	11-15	3.64±0.38		3.82±0.32		4.15±0.36	
	16-20	3.83±0.49		4.02±0.28		4.11±0.29	
	21 and above	3.58±0.50		3.90±0.28		4.05±0.35	
Legal Status of Business	Corporation	3.68±0.48	0.01*	3.92±0.29	0.03*	4.13±0.3	0.22
	Limited	3.63±0.48		3.94±0.28		4.06±0.35	
	Sole proprietorship	4.19±0.32		4.22±0.15		4.02±0.29	
Market of Business	International	3.65±0.45	0.01*	3.92±0.29	0.04*	4.12±0.32	0.49
	National	4.03±0.48		4.11±0.24		4.01±0.28	
	Local	3.99±0.55		4.20±0.15		4.06±0.36	
City	Bursa	3.70±0.51	0.04*	3.99±0.28	0.81	4.03±0.31	0.05
	Gaziantep	3.88±0.47		3.98±0.30		4.16±0.31	

* 0.05 as level of significance

Developed hypotheses were tested to analyze the relationship between criteria and COVID-19 effects. Results are shown in Table 4.6. For Hypothesis 1, t-test was used, and for the rest of the hypotheses, One Way ANOVA was used. To analyze differences between the groups' Post Hoc Sidak test was used.

Hypothesis 1 (H1): There is a significant difference between the gender of participants and how companies are affected by the COVID-19. According to the participant's gender, survey results don't show a difference in COVID-19 effect on the sustainability of economic activities, opinions on economic policies implemented in COVID-19, and economic forecasts for post-COVID-19 ($p > 0.05$). H1 hypothesis was rejected for all subsets.

Hypothesis 2 (H2): There is a significant difference between the operation year of companies and how they are affected by the COVID-19. COVID-19 effect on the sustainability of economic activities shows a difference in terms of the operation year of business. According to the Sidak test, 6-10 years and 16-20 years operationally businesses were affected worse than others ($p< 0.05$). There are no differences in opinions for economic policies implemented in COVID-19 and economic forecasts for post-COVID-19 in terms of operation year. ($p> 0.05$) The H2 hypothesis was accepted for the sustainability of economic activities but rejected for other subsets.

Hypothesis 3 (H3): There is a significant difference between the legal status of companies and how they are affected by the COVID-19. Results show that, according to the legal status of the business, opinions show the difference in terms of COVID-19's effect on the sustainability of economic activities, and opinions on economic policies implemented in COVID-19. According to the Sidak test, sole proprietorship seems affected worse than other legal statuses ($p< 0.05$). Being institutional has gained more importance and became advantageous during the pandemic. H3 hypothesis was accepted for the sustainability of economic activities and opinions on economic policies implemented in COVID-19 but rejected for other subset.

Hypothesis 4 (H4): There is a significant difference between the market of companies and how they are affected by the COVID-19. According to the market of business, opinions show the difference in terms of COVID-19's effect on the sustainability of economic activities, and opinions on economic policies implemented in COVID-19. According to the Sidak test, international businesses have less negative opinions of economic policies implemented on COVID-19 ($p< 0.05$). There is no difference in opinions on economic forecasts for post-COVID-19 ($p> 0.05$). H4 hypothesis was accepted for the sustainability of economic activities and opinions on economic policies implemented in COVID-19 but rejected for other subset.

Hypothesis 5 (H5): Participants in Bursa have more negative opinions than Gaziantep about the effects of COVID-19. Negative opinions on COVID-19 effect on the sustainability of economic activities are different in terms of cities and the result shows that business in Gaziantep was affected worse than in Bursa ($p< 0.05$)

Opinions on economic policies implemented in COVID-19 and economic forecasts for post-COVID-19 don't differ in Bursa and Gaziantep. H5 hypothesis was rejected for other subsets.

Table 4.7 Comparison of monthly export average

		COVID-19 Effect on Sustainability of Economic Activities		**Opinions on Economic Policies Implemented ın COVID-19**		**Economic Forecasts for Post COVID-19**	
		X±s.d.	p	X±s.d.	p	X±s.d.	p
Monthly Export Average 2019	1,000,000 TL and less	4.09±0.51	0.01*	4.12±0.24	0.01*	4.08±0.33	0.23
	1,000,001 - 15,000,000 TL	3.75±0.38		3.77±0.34		4.06±0.41	
	15,000,001 - 30,000,000 TL	3.57±0.47		3.96±0.25		4.08±0.25	
	30,000,001 - 45,000,000 TL	3.70±0.03		4.00±0.15		4.18±0.14	
Monthly Export Average 2021	1,000,000 TL and less	4.02±0.51	0.01*	4.12±0.24	0.01*	4.08±0.33	0.26
	1,000,001 - 15,000,000 TL	3.75±0.38		3.77±0.34		4.06±0.41	
	15,000,001 - 30,000,000 TL	3.66±0.27		4.02±0.23		4.15±0.16	
	30,000,001 - 45,000,000 TL	3.65±0.48		3.96±0.21		4.08±0.25	

* 0.05 as level of significance

Hypothesis 6 (H6): There is a significant difference between the monthly export average of companies and how they are affected by the COVID-19. Table 4.7 shows the results. According to results for the year 2019, the Sidak test result shows the firms whose monthly export average is 1,000,000 or less have been affected negatively in terms of the COVID-19 effect on the sustainability of economic activities ($p < 0.05$). Firms whose monthly export average is 1,000,000 or less, have been affected worse in terms of opinions on economic policies implemented in COVID-19 ($p < 0.05$). There is no foresight difference in economic forecasts for post-COVID-19 ($p > 0.05$). According to the results of 2019, the H6 hypothesis was accepted for the sustainability of economic activities and opinions on economic policies implemented in COVID-19 but rejected for other subset.

According to results for the year 2021, the Sidak test result shows the monthly export average of 1,000,000 or fewer ones again affected more negatively in terms of the COVID-19 effect on the sustainability of economic activities. ($p< 0.05$) firms whose monthly export average of 1,000,001- 15,000,000 TL have more positive opinions in terms of opinions on economic policies implemented on COVID-19. ($p< 0.05$) There is no foresight difference in economic forecasts for the post-COVID-19. ($p> 0.05$) According to the results of 2021, the H6 hypothesis was accepted for the sustainability of economic activities and opinions on economic policies implemented in COVID-19 but rejected for other subsets.

Table 4.8 Comparison of monthly turnover

		COVID-19 Effect on Sustainability of Economic Activities		**Opinions on Economic Policies Implemented ın COVID-19**		**Economic Forecasts for Post COVID-19**	
		X±s.d.	p	X±s.d.	p	X±s.d.	p
Monthly turnover 2019	1,000,000 TL and less	4.31±0.17	0.01*	4.14±0.12	0.08	3.90±0.26	0.11
	1,000,001 - 15,000,000 TL	3.84±0.52		4.02±0.33		4.07±0.34	
	15,000,001 - 30,000,000 TL	3.41±0.22		3.76±0.34		4.18±0.41	
	30,000,001 - 45,000,000 TL	3.56±0.58		4.01±0.21		4.13±0.21	
	45,000,001 – 60,000,000 TL	3.77±0.16		3.98±0.10		4.19±0.15	
	60,000,001 - 75,000,000 TL	3.6±0.43		4.07±0.07		3.92±0.20	
Monthly turnover 2021	1,000,000 TL and less	4.31±0.17	0.01*	4.14±0.12	0.19	3.90±0.26	0.10
	1,000,001 - 15,000,000 TL	3.84±0.52		4.02±0.34		4.07±0.34	
	15,000,001 - 30,000,000 TL	3.47±0.27		4.10±0.25		4.17±0.10	
	30,000,001 - 45,000,000 TL	3.40±0.19		3.64±0.27		4.16±0.48	
	45,000,001 – 60,000,000 TL	3.51±0.58		3.98±0.22		4.18±0.21	
	60,000,001 - 75,000,000 TL	3.80±0.20		4.03±0.08		4.10±0.18	

* 0.05 as level of significance

Hypothesis 7 (H7): There is a significant difference between the monthly turnover of companies and how they are affected by the COVID-19. Table 4.8 shows the results. According to results for the year 2019, the Sidak test shows the firms whose monthly export average is between 15,000,001- 60,000,000 TL has affected less in terms of the COVID-19 effect on the sustainability of economic activities. ($p< 0.05$). The monthly export average was 1,000,000 TL and fewer ones were affected more negatively. There is no foresight difference in terms of opinions on economic policies implemented in COVID-19 ($p> 0.05$) and economic forecasts for post-COVID-19 ($p> 0.05$) According to the results of 2019, the H7 hypothesis was accepted for the sustainability of economic activities but rejected for other subsets.

According to the results for the year 2021, the same effects are seen in 2019. Sidak test shows the firms whose monthly export average is between 15,000,001-60,000,000 TL have been affected less in terms of the COVID-19 effect on the sustainability of economic activities. ($p< 0.05$) And no foresight difference was seen in terms of opinions on economic policies implemented in COVID-19 ($p> 0.05$) and economic forecasts for post-COVID-19 ($p> 0.05$) According to the results of 2021, the H7 hypothesis was accepted for the sustainability of economic activities but rejected for other subsets.

Table 4.9 Comparison of the number of monthly employees

		COVID-19 Effect on Sustainability of Economic Activities		**Opinions on Economic Policies Implemented ın COVID-19**		**Economic Forecasts for Post COVID-19**	
		X±s.d.	p	X±s.d.	p	X±s.d.	p
Average Number of Monthly Employee 2019	200 and less	4.15±0.55	0.01*	4.16±0.23	0.13	4.01±0.34	0.15
	201-400	3.67±0.38		3.94±0.22		4.19±0.17	
	401-600	3.55±0.28		3.88±0.30		4.09±0.30	
	601-800	3.63±0.43		3.89±0.30		4.13±0.35	
	801-1000	3.62±0.48		3.95±0.25		4.15±0.25	
	1001-1200	3.40±0.46		3.91±0.19		4.06±0.13	
Average Number of Monthly Employee 2021	200 and less	4.14±0.52	0.01*	4.14±0.21	0.01*	4.12±0.31	0.01*
	201-400	3.67±0.38		3.94±0.22		4.19±0.17	
	401-600	3.47±0.27		4.10±0.25		4.17±0.10	
	601-800	3.57±0.12		3.65±0.31		4.12±0.48	
	801-1000	3.41±0.33		3.76±0.28		3.75±0.21	
	1001-1200	3.64±0.47		3.97±0.21		4.18±0.24	

* 0.05 as level of significance

Hypothesis 8 (H8): There is a significant difference between the average number of monthly employees of companies and how they are affected by the COVID-19. Table 4.9 shows the results. According to the results for the year 2019, the Sidak test shows the number of employees is 200 and fewer ones were affected more negatively in terms of the COVID-19 effect on the sustainability of economic activities. ($p< 0.05$). There is no foresight difference in terms of opinions on economic policies implemented in COVID-19 ($p> 0.05$) and economic forecasts for post-COVID-19 ($p> 0.05$) According to the results of 2019, the H8 hypothesis was accepted for the sustainability of economic activities but rejected for other subsets.

According to results for the year 2021, firms whose monthly employee average is 200 or less were affected more negatively in terms of the COVID-19 effect on the sustainability of economic activities. ($p< 0.05$). Sidak test shows the number of employees is between 601-1000 which has more positive effects than others in terms of opinions on economic policies implemented in COVID-19. ($p< 0.05$) Firms whose monthly employee average is between 201 and 1000 have more positive economic forecasts for post-COVID-19 ($p< 0.05$). According to the results of 2021, the H8 hypothesis was accepted for all subsets.

Table 4.10 Comparison of monthly export, domestic sales and turnover

		2019 January- November				**2021 January- November**			
		Bursa		Gaziantep		Bursa		Gaziantep	
		n	%	n	%	n	%	n	%
Monthly Export Average	1,000,000 TL and less	91	37.8%	72	39.8%	91	37.8 %	72	39.8%
	1,000,001 - 15,000,000 TL	38	15.8%	51	28.2%	38	15.8 %	51	28.2%
	15,000,001 - 30,000,000 TL	83	34.4%	46	25.4%	25	10.4 %	17	9.4%
	30,000,001 - 45,000,000 TL	29	12.0%	12	6.6%	87	36.1 %	41	22.7%
Monthly Domestic Sales Average	1,000,000 TL and less	25	10.4%	33	18.2%	25	10.4 %	33	18.2%
	1,000,001 - 15,000,000 TL	107	44.4%	72	39.8%	144	59.8 %	90	49.7%
	15,000,001 - 30,000,000 TL	97	40.2%	64	35.4%	22	9.1%	27	14.9%
	30,000,001 - 45,000,000 TL	12	5.0%	12	6.6%	50	20.7 %	31	17.1%

Table 4.10 Comparison of monthly export, domestic sales and turnover *(Cont.)*

		2019 January- November				2021 January- November			
		Bursa n	%	Gaziantep n	%	Bursa n	%	Gaziantep n	%
Monthly Turnover	1,000,000 TL and less	25	10.4%	33	18.2%	25	10.4 %	33	18.2%
	1,000,001 - 15,000,000 TL	94	39.0%	63	34.8%	93	38.6 %	62	34.3%
	15.000,001 - 30,000,000 TL	32	13.3%	36	19.9%	16	6.6%	6	3.3%
	30,000,001 - 45,000,000 TL	49	20.3%	25	13.8%	20	8.3%	31	17.1%
	45,000,001 - 60,000,000 TL	34	14.1%	23	12.7%	42	17.4 %	29	16.0%
	60,000,001 - 75,000,000 TL	7	2.9%	1	0.6%	45	18.7 %	20	11.0%

In both cities, the number of firms significantly increased in 2021, which is a monthly export average between 30,000,001 TL and 45,000,000 TL in 2019. The number of firms whose monthly export average is between 15,000,001-30,000,000 TL in 2019, decreased in 2021. Table 4.10 shows that the export average increased in both cities despite the pandemic. No difference was seen in companies in both cities for a monthly export average of less than 15,000,000 TL. Results are shown in Table 4.10.

From 2019 to 2021, the number of firms whose monthly domestic sales average was between 15,000,001-30,000,000 TL differed in both cities. Some of the firms whose monthly domestic sales average between 15,000,001-30,000,000 TL in 2019, leveled up to 30,000,000- 45,000,000 TL in 2021, but some of them went down to 1,000,001 -15,000,000 TL. According to the results, no difference is seen for companies in both cities with a monthly domestic sales average is less than 1,000,000 TL.

From 2019 to 2021, the number of firms which monthly turnover between 60,000,001 TL -75,000,000 TL is increased in both cities. Firms whose turnover was between 30,000,001-60,000,000 TL in 2019, leveled up to 60,000,001 - 75,000,000 TL in 2021. Results show that the monthly turnover of the companies increased in both cities despite the pandemic.

Table 4.11 Comparison of monthly operating capacity, number of exporting countries, number of monthly employees

		2019 January- November				2021 January- November			
		Bursa		Gaziantep		Bursa		Gaziantep	
		n	%	n	%	n	%	n	%
Monthly Operating Capacity	40% and less	9	3.7%	9	5.0%	13	5.4%	27	14.9%
	51%- 60% capacity	26	10.8%	44	24.3%	39	16.2%	43	23.8%
	61%- 70% capacity	64	26.6%	57	31.5%	52	21.6%	36	19.9%
	71%- 80% capacity	104	43.2%	60	33.1%	72	29.9%	51	28.2%
	81% -90% capacity	38	15.8%	11	6.1%	63	26.1%	22	12.2%
	91% and more	2	0.8%	2	1.1%	2	0.8%	2	1.1%
Average Number of Exporting Countries	10 and less	101	41.9%	104	57.5%	93	38.6%	104	57.5%
	11- 30 country	124	51.5%	71	39.2%	83	34.4%	51	28.2%
	31- 50 country	16	6.6%	6	3.3%	65	27.0%	26	14.4%
Average Number of Monthly Employee	200 and less	71	29.5%	68	37.6%	89	36.9%	82	45.3%
	201-400 employee	7	2.9%	11	6.1%	7	2.9%	11	6.1%
	401-600 employee	47	19.5%	38	21.0%	16	6.6%	6	3.3%
	601-800 employee	63	26.1%	31	17.1%	23	9.5%	33	18.2%
	801-1000 employee	48	19.9%	33	18.2%	19	7.9%	10	5.5%
	1001-1200 employee	5	2.1%	0	0.0%	87	36.1%	39	21.5%

Monthly operation capacity and the average number of monthly employees increased in both cities from 2019 to 2021, as shown in Table 4.11. The number of exporting countries also increased in both cities. Especially in 2021, firms that export between 30-50 countries are increased. These can be related to the increased number of factories in both cities because both cities are industrial cities, and every year new factories are starting to operate there due to the advantage of location and being close to other factories, and their suppliers.

Table 4.12 Comparison of an average lead time of raw material and average delivery time

		2019 January- November				2021 January- November			
		Bursa		Gaziantep		Bursa		Gaziantep	
		n	%	n	%	n	%	n	%
Average Lead time of Raw Metariel	0-10 day	81	33.6%	43	23.8%	30	12.4%	24	13.3%
	11-20 day	159	66.0%	138	76.2%	126	52.3%	81	44.8%
	21- 30 day	1	0.4%	0	0.0%	85	35.3%	76	42.0%
Average Delivery Time	0-10 day	43	17.8%	35	19.3%	17	7.1%	23	12.7%
	11-20 day	48	19.9%	47	26.0%	43	17.8%	16	8.8%
	21- 30 day	109	45.2%	57	31.5%	70	29.0%	71	39.2%
	31- 40 day	41	17.0%	42	23.2%	111	46.1%	71	39.2%

Average delivery time significantly increased in the year 2021. Most of the participants preferred a 31-40 day average delivery time in 2021 with 46.1% in Bursa and 39.2% in Gaziantep. That is probably related to failed or delayed logistics and transportation activities during COVID-19. Results are shown in Table 4.12.

Most of the results for the average lead time of raw material is 11-20 days in 2019 and 2021. But the number of participants increased who think their average lead time of raw material is 21-30 days in 2021. That is probably the result of temporarily or permanently closed factories and also, delayed or failed transportation activities.

4.5 Evaluation of Results

The textile sector is one of the affected sectors in the world and Turkey because of COVID-19. This study analyzed the impacts of COVID-19 on the two important textile cities in Turkey. To analyze the COVID-19 effects on the textile industry, Bursa and Gaziantep were selected as research cities. 422 textile companies participated in the questionnaire survey. 241 companies from Bursa and 182 companies from Gaziantep replied to questionnaires. Eight different hypotheses were tested and yearly based comparisons were made for the years 2019 and 2021. To obtain results, frequency, percentage, average, and standard deviations are used for data analyses. To analyze effects on the textile industries, T-tests and One Way

ANOVA tests are used. IBM SPSS Statistics 25.0 software is used for the statistical analysis of the questionnaire survey.

According to the study results, most of the participants had negative opinions on the COVID-19 effect on the sustainability of economic activities. Most of the participants thought they have to decrease the number of employees working at the company and they worried about not being able to take care of their families and children. Most of the participants had also negative opinions of economic policies implemented in COVID-19. The highlighted opinions are that taking precautions are not enough in COVID-19 and they thought they can't profit from the benefits which were given. Most of the participants had also negative opinions on economic forecasts for post-COVID-19. The highlighted opinions are that the recovery of the economy will take a long time and small businesses are at risk of shutting down. These opinions revealed that most of the participants have negative opinions about the economy during COVID-19 and post-COVID-19.

In this study, different hypotheses are tested. The Table 4.13 shows the results of the developed hypotheses.

Table 4.13 Hypotheses results

Hypotehis 1 (H1): There is a significant difference between the gender of participants and how companies are affected by COVID-19.	H1 hypothesis was rejected for all subsets.
Hypotehis 2 (H2): There is a significant difference between the operation year of companies and how they are affected by COVID-19.	The H2 hypothesis was accepted for the sustainability of economic activities but rejected for other subsets.
Hypotehis 3 (H3): There is a significant difference between the legal status of companies and how they are affected by COVID-19.	H3 hypothesis was accepted for the sustainability of economic activities and opinions on economic policies implemented in COVID-19 but rejected for other subset.
Hypotehis 4 (H4): There is a significant difference between the market of companies and how they are affected by COVID-19.	H4 hypothesis was accepted for the sustainability of economic activities and opinions on economic policies implemented in COVID-19 but rejected for other subset.
Hypotehis 5 (H5): Participants in Bursa have more negative opinions than Gaziantep about the effects of COVID-19.	H5 hypothesis was rejected for all subsets.

Table 4.13 Hypotheses results *(Cont.)*

Hypotehis 6 (H6): There is a significant difference between the monthly export average of companies and how they are affected by COVID-19.	H6 hypothesis was accepted for the sustainability of economic activities and opinions on economic policies implemented in COVID-19 but rejected for other subset. According to the results of 2021, the H6 hypothesis was accepted for the sustainability of economic activities and opinions on economic policies implemented in COVID-19 but rejected for other subset.
Hypotehis 7 (H7): There is a significant difference between the monthly turnover of companies and how they are affected by COVID-19.	According to the results of 2019, the H7 hypothesis was accepted for the sustainability of economic activities but rejected for other subsets. According to the results of 2021, the H7 hypothesis was accepted for the sustainability of economic activities but rejected for other subsets.
Hypotehis 8 (H8): There is a significant difference between the average number of monthly employees of companies and how they are affected by COVID-19.	According to the results of 2019, the H8 hypothesis was accepted for the sustainability of economic activities but rejected for other subsets. According to the results of 2021, the H8 hypothesis was accepted for all subsets.

Hypotheses results showed that companies' operation year, legal status, market, monthly export average, turnover, and the number of employees can be important factors for opinions on the effects of COVID-19. Companies with more operation year have fewer negative opinions than others. That can be related to companies' experiences to manage crises better than newly operating ones. According to the results, having more operation years, being a corporation or limited company, serving national or international rather than local, and having high turnover seems an advantage for most of the subsets.

The average delivery time and the average lead time significantly increased in the year 2021. Participants in Bursa revealed a 30-40 days average delivery time in 2021 with 46.1% and 39.2% in Gaziantep and 20- 30 days the average lead time of raw in 2021 with 35.3% in Bursa and 42.0% in Gaziantep. Despite the increased lead times, delivery times, and negative opinions on the economic effects of Covid-19, compared to 2019, in 2021 monthly operation capacity, export average, turnover, and the average number of monthly employees increased in both cities.

In literature, most of the studies in Turkey and around the world stated that textile industry turnover decreased, orders were canceled, and the sector was affected severely. Bursa and Gaziantep improved their performance despite COVID-19 in 2021 compared to 2019. That is also can be related to the high number of textile companies in these cities and the high cooperation and subcontracting between them. The ongoing production activities in these two cities have also enabled them to establish strong relations with their customer. According to the comparison results in 2021, positive increases show that these strong relations continue and increase. These cities also have the advantage of being close to their customer. In Bursa and nearby cities, many corporate automotive companies and sub-industries of automotive companies operate, and the Bursa textile sector close supplier of them. Additionally, many textile companies manufacture products for global knitwear brands. The existing agreements and mutual trust may have contributed to the continuation of relations and less operational impact there. In Gaziantep, the carpet and weaving industry developed, and Gaziantep textile companies are close suppliers to them. These cities have the advantage of operating corporational companies, years of operation experience, and proximity to customers.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Since the end of the year 2019, The World has been struggling against the massive impacts of the COVID-19 pandemic. Based on lockdowns, regulation changes disrupted transportation activities, and altered business and operations, countries and different sectors have felt the effects of the pandemic. So, impact analysis has gained importance to analyze the effects of the pandemic and to be prepared against similar disruptions.

The textile sector has a big share in Turkey's economy in terms of production volume, number of employees, and export volume. During the pandemic, lockdowns, shift changes caused by social distance in the production areas, and increased lead time of raw materials affected the textile sector. According to the economic impact analysis, most of the participants have negative opinions. In the literature, Kanat and Atılgan [21], Nakıboglu, and Işık [32], and Eroglu [10], stated that most of the participants thought given government support for finance was not adequate. This also coincides with this study's result. To mitigate negative effects during the pandemic and stimulate the economy post-COVID-19, economic support packages of states have gained importance and should be better prepared by considering the opinions of businesses. According to the results of this study, participants have fewer negative opinions if company size which depends on the monthly export average, turnover, and employee increase. Kanat and Atılgan [21] and The International Labor Organization [49] stated in their studies that small and medium-sized enterprises have been affected more negatively in terms of sales and finance. These also coincide with this study's result. Economic incentives, especially for small businesses, will be important during pandemics and for similar disruptions.

The study by Nakıboglu and Işık [32] stated that participants with younger ages, undergraduate degrees, and companies with lower monthly income, lower annual

turnover, and fewer operation years have more negative opinions on COVID-19 economic impact. They also stated female business owners have more negative opinions than males. Unlike the Nakıboglu and Işık [32] study, participants' opinions don't show significant differences according to gender, in this study. This study's results showed that companies were affected differently according to their operation year, legal status, market, and turnover. Companies with more operational years and corporations, internationally serving, have fewer negative opinions than others. Transitioning to institutionalization and using technology more will make businesses stronger for all difficulties in the future. Companies can develop these features to prepare better for similar disruptions in the future.

Nakıboglu and Işık [32] stated that most of the participants have quite negative opinions regarding COVID-19 impact on the economy in Turkey. This study stated that participants in Bursa and Gaziantep have also negative opinions regarding COVID-19 impact on the economy. But, despite participants' negative opinions on COVID-19 economic impact, a comparison study showed that both cities improved their monthly export average, domestic sales, turnover, operating capacity, employees, and the number of exporting countries in 2021 compared to 2019.

5.1. Recommendations for Future Works

In Turkey and around the world, different questionnaire studies revealed the impacts of the pandemic on the textile sector and in other sectors. Further studies can be used to analyze the COVID-19 impact in different sectors in different cities. In this study, a specific investigation was not conducted for the textile sub-branches. The survey, which includes branch selection for textile sector analysis, will be helpful to reveal which production branch is affected more or less than the other in the sector. For the textile industry, regional comparisons can be done for impact analysis regionally, and also SWOT analysis might be useful to obtain strengths and opportunities for post-COVID-19. Additionally, the economic and operational impacts of COVID-19, sales volume, and innovation studies during a pandemic can be analyzed for the textile sector or in other sectors. Yearly based comparisons, during COVID-19 years and post-COVID-19 years, can be studied and may be useful in preparing action plans to be ready in case of facing similar pandemics, diseases, or disasters. Comparison

studies may also be useful in comparing companies' suppliers' performance under pandemic situations and may enhance making alternative supplier studies.

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APPENDIX

Table A.1 Questionnaire Study

QUESTIONNAIRE STUDY
Dear participant, This questionnaire is research part of my Master's Degree Thesis which is conducted at the Industrial Engineering Department at the University of Gaziantep The study aims to analyze the economic effects of the COVID-19 Pandemic on the Textile business. This study has purely academic purposes and will use for scientific purposes. Your ınformation will not be shared with a third person and questionnaire results will be shared with you if desired. Thanks for your valuable time, participation, and your support of the scientific survey. **Study Advisor** **:** Assoc. Prof. Eren Özceylan/University of Gaziantep **Study Co-advisor** **:** Assoc. Prof. Cihan Çetinkaya/Adana A.T.S.T. University **Study Researcher** **:** Melike Bulur

Section 1: Demographic Information
Gender **:** ( ) Male ( ) Female
Educational Status **:** ( ) Secondary School ( ) High School ( ) Associate's Degree ( ) Bachelor's Degree ( ) Master's Degree ( )Doctor's Degree
Age **:** ( ) 0-25 ( ) 26-35 ( ) 36-45 ( ) 46-55 ( ) 56 and above
Operation Year of Business **:** ( ) 1-5 ( ) 6-10 ( ) 11-15 ( ) 16-20 ( ) 20 and above
Legal Status of Business : ( ) Sole proprietorship ( ) Corporation ( ) Limited Company ( ) Other
Market of Business **:** ( ) Local/Regional ( ) National ( ) International

NOTE: Choose the below scale in the right corner **(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree** for the following questions.

Q. N	Section 2: Questions	(1) Strongly Disagree	(2) Disagree	(3) Neutral	(4) Agree	(5) Strongly Agree
COVID-19 Effect on Sustainability of Economic Activities						
1.	I think I have to decrease the number of employees who work at the company.					
2.	I think I will not be able to pay the collateral.					
3.	I believe, there will be no demand for the products and services we offer as before.					
4.	I am worried about not being able to take care of my family and children.					
5.	I think I will have trouble with banks cause of the loan payments.					
6.	I think I will lose a significant job loss.					
7.	I am scared of shutting down my business.					
8.	I think I will not tend to do new entrepreneurship activities.					
9.	I think I will not collect my debts.					
10.	I think, applied economic policies cannot recover the damage which I have seen caused by the COVID-19.					
Opinions on Economic Policies Implemented in COVID-19						
11.	I think economic precautions are insufficient.					
12.	I think, given economic incentives are insufficient.					
13.	I have economic worries for the future.					
14.	I think, economic recessions these days will cause economic troubles in the future.					
15.	I feel myself, economically insufficient.					
16.	I don't believe that economy will not easily return to the old state from now on.					
17.	I cannot profit from the benefits which are given.					
Economic Forecasts for Post COVID-19						

18.	I think, all the sectors are affected negatively in terms of economy					
19.	I think competition will be more and profitability will be less.					
20.	I think inflation will increase significantly.					
21.	I think there will be a rapid transition from the general economy to the digital economy.					
22.	I think small businesses are at risk of shutting down.					
23.	I think unemployment will increase.					
24.	I think the recovery of the economy will take a long time.					

NOTE: Answer the following questions for 2019 January- December and 2021 January-December

SECTION 3: 2019 and 2021 Comparison			
Choose the proper scale for the monthly export average.			
2019 January-November		**2021 January- November**	
1,000,000 TL and less		1,000,000 TL and less	
1,000,001 -15,000,000 TL		1,000,001 -15,000.000 TL	
15,000,001 - 30,000,000 TL		15,000,001 - 30,000,000 TL	
30,000,001 - 45,000,000 TL		30,000,001 - 45,000,000 TL	
45,000,001 – 60,000,000 TL		45,000,001 – 60,000,000 TL	
60,000,001 - 75,000,000 TL		60,000,001 - 75,000,000 TL	
75,000,001 TL and above		75,000,001 TL and above	
Choose the proper scale for the monthly domestic sales average.			
2019 January- November		**2021 January- November**	
1,000,000 TL and less		1,000,000 TL and less	
1,000,001 -15,000,000 TL		1.000,001 -15,000,000 TL	
15,000,001 - 30,000.000 TL		15,000.001 - 30,000,000 TL	
30,000,001 - 45,000,000 TL		30,000,001 - 45,000,000 TL	
45,000,001 – 60,000,000 TL		45,000,001 – 60,000,000 TL	
60,000,001 - 75,000,000 TL		60,000,001 - 75,000,000 TL	
75,000,001 TL and above		75,000,001 TL and above	
Choose the proper scale for monthly turnover.			
2019 January- November		**2021 January- November**	
1,000,000 TL and less		1,000,000 TL and less	
1,000,001 -20,000,000 TL		1,000,001 -20,000,000 TL	
20,000,001 - 40,000,000 TL		20,000,001 - 40,000,000 TL	
40,000,001 - 60,000,000 TL		40,000,001 - 60,000,000 TL	
60,000,001 - 80,000,000 TL		60,000,001 - 80,000,000 TL	
80,000,001 - 100,000,000 TL		80,000,001 - 100,000,000 TL	
100,000,001 TL and above		100,000,001 TL and above	
Choose the proper scale for monthly operating capacity.			
2019 January- November		**2021 January- November**	
40% and less		40% and less	
41%-50% capacity		41%-50% capacity	

51%-60% capacity		51%-60% capacity	
61%-70% capacity		61%-70% capacity	
71%-80% capacity		71%-80% capacity	
81%-90% capacity		81%-90% capacity	
91% and above		91% and above	
Choose the proper scale for the average number of exporting countries.			
2019 January- November		**2021 January- November**	
10 and less		10 and less	
11- 30 country		11- 30 country	
31- 50 country		31- 50 country	
51- 70 country		51- 70 country	
71- 90 country		71- 90 country	
91-110 country		91-110 country	
111 and above		111 and above	
Choose the proper scale for average number of monthly employee.			
2019 January- November		**2021 January- November**	
200 and less		200 and less	
201-400 employee		201-400 employee	
401-600 employee		401-600 employee	
601-800 employee		601-800 employee	
801-1000 employee		801-1000 employee	
1001-1200 employee		1001-1200 employee	
1201 and above		1201 and above	
Choose the proper scale for raw material average lead time			
2019 January- November		**2021 January- November**	
0-10 days		0-10 days	
11-20 days		11-20 days	
21- 30 days		21- 30 days	
31- 40 days		31- 40 days	
41- 50 days		41- 50 days	
51- 60 days		51- 60 days	
61 days and above		61 days and above	

Choose the proper scale for average delivery time.			
2019 January- November		**2021 January- November**	
0-10 days		0-10 days	
11-20 days		11-20 days	
21- 30 days		21- 30 days	
31- 40 days		31- 40 days	
41- 50 days		41- 50 days	
51- 60 days		51- 60 days	
61 days and above		61 days and above	

CURRICULUM VITAE

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PUBLICATIONS / PRESENTATIONS

- Bulur M., Özceylan E., Çetinkaya C. (2022), A Study to Analyze The Impacts of COVID-19 on The Textile Industry: Evidence from Bursa,Turkey, IEOM 2022: Fifth European Conference on Industrial Engineering and Operations Management
- Bulur M., Özceylan E., Çetinkaya C. (2022), A Study to Analyze The Impacts of COVID-19 on The Textile Industry: Comparative Evidence from Bursa and Gaziantep, Turkey, *Journal of Turkish Operations Management* (Publication Process)