ÇUKUROVA UNIVERSITY
INSTITUTE OF NATURAL AND APPLIED SCIENCE

MSc. THESIS

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EVALUATION OF TURKISH CEMENT EXPORTS IN TERMS OF PESTEL ANALYSIS BETWEEN 1999-2020

DEPARTMENT OF CIVIL ENGINEERING

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ABSTRACT

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In this study, the export case of the Turkish cement industry between 1999-2020 has been examined and the macro-environment of the sector has been evaluated with the PESTEL analysis approach. Within the scope of PESTEL analysis, the Turkish cement industry has been examined under political, economic, social, technological, environmental, and legal sub-headings. In addition, the criteria affecting export of cement from the industry to global markets were investigated. While the Turkish cement industry is assessed within the scope of PESTEL analysis; the literature, publications of official institutions and unions, statistics about the sector, and the publications of press organs were examined. In addition, expert academicians and industry stakeholders were consulted with the help of a survey prepared. The data obtained as a result of the work were presented by comparing with each other and determinations were made regarding the past and present situation of the Turkish cement industry. In line with the findings, recommendations were made for the future of Turkish cement exports.

Keywords: Turkish Cement Industry, Macro Environment Analysis, Turkish Cement Export, PESTEL Analysis

ÖZ

YÜKSEK LİSANS TEZİ

TÜRK ÇİMENTO İHRACATININ 1999-2020 YILLARI ARASINDA PESTEL ANALİZİ AÇIDAN DEĞERLENDİRİLMESİ

Yahya Ayoob Muqdad SARKHOSH

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Bu çalışmada, Türk çimento sektörünün 1999-2020 yılları arasındaki ihracat durumu incelenmiştir ve sektörün makro-çevresi PESTEL analiz yaklaşımı ile değerlendirilmiştir. PESTEL analizi kapsamında Türk çimento sektörü, politik, ekonomik, sosyal, teknolojik, çevresel, yasal alt başlıkları altında incelenmiştir. Ayrıca sektörden küresel pazarlara çimento ihracatını etkileyen kriterler araştırılmıştır. Türk çimento sektörü PESTEL analizi kapsamında değerlendirilirken; literatür, resmi kurum ve birliklerin yayınları, sektör ile ilgili istatistikler ve basın organlarının yayınları taranarak incelenmiştir. Ayrıca, hazırlanan bir anket yardımı ile uzman akademisyen ve sektör paydaşlarının görüşlerine başvurulmuştur. Çalışma sonucunda elde edilen veriler birbirleri ile karşılaştırılarak sunulmuş ve Türk çimento sektörünün geçmiş ve şimdiki durumu ile ilgili tespitler yapılmıştır. Elde edilen bulgular doğrultusunda Türk çimento ihracatının geleceğine yönelik öneriler sunulmuştur.

Anahtar Kelimeler: Türkiye Çimento Sektörü, Makro Çevre Analizi, Çimento İhracatı, PESTEL Analizi

EXPANDED ABSTRACT

In Turkey, the cement sector is one of the important sub-sectors of the construction industry. The Turkish cement industry is distinguished by its highly competitive market due to government support, R&D studies, and high product quality (Bağrıaçık et al., 2013).

The cement industry has witnessed a remarkable development in terms of production capacity over the past two decades, which shows how much the construction industry has grown since the nineteens, as the total production of the sector was about 81 Mt, in 2017. Whereas in 1999, the total production of cement reached about 33 Mt only (TCMA, 2019).

In the scope of the research, when reviewing the indicators of cement exports from Turkey to the world between 1999-2020, Iraq, Syria, the United States, and Israel come to the top of countries that imported cement from Turkey, with total quantities of 26.22, 18.71, 15.35 and 13.20 Mt respectively, until the end of 2019 (TCMA, 2019).

Consequently, these four countries constituted profitable markets that benefited the Turkish economy in terms of cement exporting besides the political, strategic, and security importance that these countries represent for Turkey. From here, these four countries were addressed as a case for studying Turkish cement exports during the past two decades.

In order to study all external aspects that impact the flow of cement exports to these 4 countries besides assessing the current situation of the industry, there is a necessity to study the macro-environment of organizations both in the local market and the global market. One of the most prominent techniques used to study (including this work) the external environment for businesses is the PESTEL Analysis tool.

To achieve these aims, literature, publications of official institutions and unions, statistics about the sector, and the publications of press organs have been

examined, in addition, a questionnaire consisting of seven sections has been created and filled by 13 experts (academic and industry stakeholders) dealt with Turkish cement industry.

The study results showed that decisive political movements that involve direct anti-government action could affect the flow of exports as in the cement case in a significant manner in throughout time. But since cement industry is generally under the control of the private sector it is not completely stopped, in fact, there is only a decrease in the flow volume of commodities.

The security conflicts and civil wars experienced by the neighboring countries of Turkey had negatively affected their local industry due to the destruction of facilities, which made these countries rely on foreign imports to meet local demands and especially with the end of wars and reconstruction stage rising, affected positively on the Turkish cement industry.

The economic fluctuation that started in 2018 has affected local production and sales but this aspect had a positive effect on exports, as companies direct their focus abroad in the case of a downturn in the local market.

The Covid-19 epidemic affected the cement industry, while a decrease was observed in domestic sales in the first quarter, sales gradually increased in early June. Cement exports were not significantly affected by the pandemic throughout 2020.

The implementation of PESTEL approach is expected to carry many competitive advantages to the cement industry in Turkey by ensuring the sector's continued prosperity in all aspects. As a result of the PESTEL analysis, the recommendations given to enhance the export of cement in the future are presented as follows.

Work to sign trade agreements with markets of countries that largely consume cement will contribute to increasing Turkish cement exports.

The Turkish government's continuing practice of distinguishing between diplomatic and commercial relations and the continuation of this policy afterward will benefit the flow of goods such as cement to the countries concerned.

Considering and implementing the laws of the international markets and not violating them (through dumping them with cheap commodities) contributes to the continued flow of cement exports.

Continuous study of population growth in neighboring countries to the possibility that, in the short and long term, they will become profitable markets due to the high demand for housing. Cement companies are recommended to develop their strategies accordingly.

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ABBREVIATIONS AND ACRONYMS

AA	: Anadolu Agency
BIT	: Bilateral Investment Treaty
Bt	: Billion tons
CBPP	: Center on Budget and Policy Priorities
CE	: Conformité Européenne
COVID-19	: Corona Virus Disease of 2019.
CPC	: Inspection Test Certificate
DAC	: Democratic Arab Center
EC	: European Conformity
FTA	: Free Trade Agreement
GDP	: Gross Domestic Product
ISO	: International Organization for Standardization
ITC	: International Trade Center
KPMG	: Klynveld Peat Marwick Goerdeler
MENAFN	: Middle East North Africa Financial Network
Mt	: Million tons
PESTEL	: Political, Economic, Social, Technological, Environmental, Legal
QEC	: Quality and Environment Council
QIZ	: Qualified Industrial Zone
TCMA	: Turkish Cement Manufacturers' Association
TIPs	: Treaties with Investment Provisions
TSE	: Türk Standardları Enstitüsü (Turkish Standards Institution)
TS-EN	: Turkish Standards - Europen Norm
TÜİK	: Türkiye İstatistik Kurumu (Turkish Statistical Institute)
USGS	: United States Geological Survey
WHR	: Waste Heat Recovery
WTO	: World Trade Organization

1. INTRODUCTION

In light of the population growth witnessed by several countries of the world, which has accompanied the need to build housing units and mega-projects such as bridges and dams. The material used in general construction projects is cement. Cement is one of the building materials with the highest consumption in the international arena. This makes the cement industry one of the most important sub-sectors of the construction industry.

The cement sector observed enormous development in terms of production capacity during the last two decades, which shows how much the construction industry has grown since the nineteens, as the total quantity of cement production worldwide reached about 4.1 Bt (Billion tons) in 2020. Whereas in 1999, the total global production of cement reached about 1.6 Bt only (USGS,1999a; USGS, 2020b).

In Turkey, the cement sector is one of the important sub-sectors of the construction industry. The Turkish cement industry is characterized by the presence of a highly competitive market due to government support, R&D studies, and high product quality (Bağrıaçık et al., 2013). Consequently, there is a constant requirement to study the macro-environment of organizations both in the local market and the global market. One of the most prominent techniques used to study the external environment for companies is the PESTEL Analysis tool.

The aim of this study is to investigate the status of the exports of the Turkish cement industry between 1999-2020 and to evaluate the sector using the PESTEL approach to analyze the macro-environment of the sector, including political, economic, social, technological, environmental and legal factors. In addition to determining the factors affecting the flow of cement exports to the global market. To achieve these aims, literature, publications of official institutions and unions, statistics about the sector, and the publications of press organs have been investigated, in addition, a questionnaire consisting of seven sections has been

created and filled by experts (academic and industry stakeholders) dealt with Turkish cement industry.

This thesis consists of five chapters. In the first chapter, "Introduction", the aims and the importance of the study are summarized. In the second chapter, "Previous Studies", the status and importance of the cement industry in Turkey, factors affecting imports and exports in international trade, PESTEL Analysis approach, PESTEL Analysis factors, PESTEL Analysis pros and cons, are explained. Then, previous studies on PESTEL Analysis and its applications in the construction industry, previous studies on Turkish cement industry are summarized. In the third chapter “Material and Method”, within the scope of the study, the sources on which the research relied, including literature, publications of official institutions and unions, statistics about the sector, and publications of press organs, within the scope of PESTEL analysis, information was given about the questionnaire applied to experts (academicians, cement companies, TCMA), are mentioned. Then, the methodology used for data gathering and analysis, and finally the study limitations are explained. The fourth part of the study is "Findings and Discussion". In this chapter, indicators of cement sector export from Turkey to United States, Israel, Syria, and Iraq during 1999-2020, the effect of PESTEL macro-environment factors on cement exports, and criteria affecting cement exports are given and discussed. In the last and fifth chapter, "Conclusions and Recommendations", the conclusions obtained from conducting this work are summarized. In line with all the inferences, recommendations were made to the cement industry.

2. PREVIOUS STUDIES

In this chapter firstly, the general situation of the Turkish Cement Sector is summarized, and then information is given about the PESTEL analysis framework used within the scope of the study. Subsequently, studies on the PESTEL analysis technique and the Turkish cement industry, which were examined within the scope of the study, were summarized.

2.1. Status and Importance of the Cement Industry in Turkey

The construction sector in Turkey is one of the most important sectors that support economic growth. It contributes to the development of many sub-sectors that provide income and have a significant impact on the ability to create jobs in the country and the gross domestic product. One of the most important sub-sectors with which the construction sector interacts intensively is the cement industry, which is the most important primary material in the construction of buildings and giant structures.

Turkey has 55 integrated cement facilities (51 of them are TCMA members) and 22 grinding facilities (17 of them are TCMA members) with 19 thousand sector employees, distributed in most regions of the country as shown in Figure 2.1..



Figure 2.1.The map of distribution of cement plants in Turkey According TCMA report in 2019 (TCMA, 2019)

In 2015, according to the Turkish Ministry of Economy report, Turkey was the largest producer of cement in Europe and the fifth-largest producer in the world and ranked sixth in the world market in exports (Turkish Ministry of Economy, 2016). Where the value of Turkish cement exports amounted to $ 550 million and ranked 5.7% of the total world exports.

In 2017, the installed capacity of cement in Turkey reached 80.55 Mt (Million tons). The total exported quantity for the same year was 7.46 Mt and the residual was consumed domestically as shown in Figure 2.2..

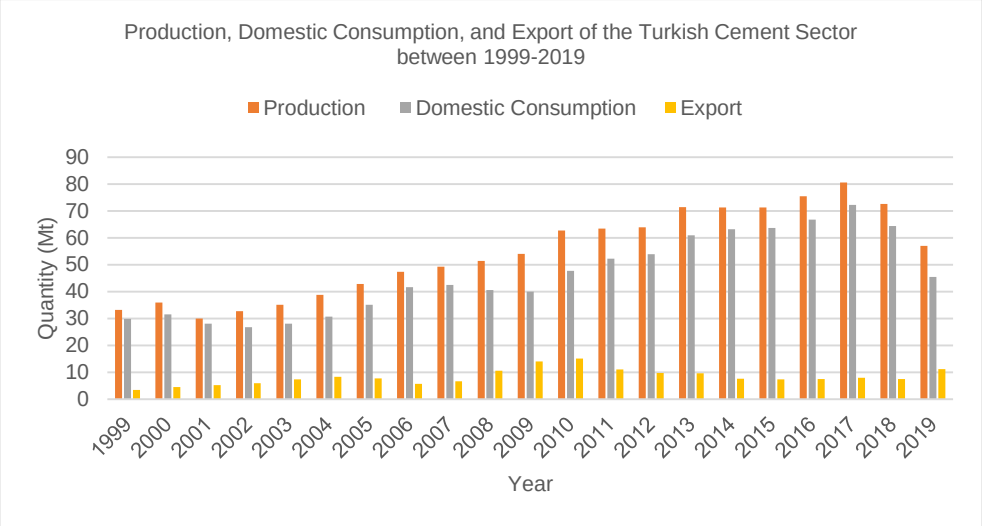

Figure 2.2. Production, Domestic Consumption, and Export of the Turkish Cement Sector between 1999-2019 (TCMA, 2019; ITC, 2019)

In 2019, the production capacity of clinker and cement reached 91.6 and 143.7 Mt/yr. respectively as The Turkish Cement Manufacturers' Association (TCMA) statistics stated (TCMA, 2019). Turkey ranked second in the list of 15 countries that exported cement with the highest dollar value in the global market (ITC, 2019). As the value of Turkish cement exports reached $ 876.5 million and exported 8.6% of the total world exports as shown in Figure 2.3..

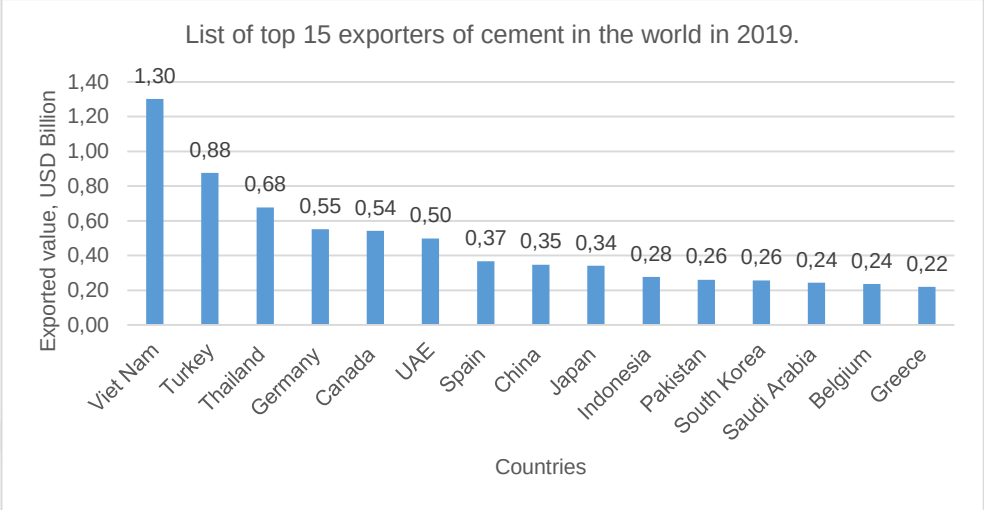

Figure 2.3. List of top 15 exporters of cement in the world in 2019 according to ITC Data (ITC, 2019)

Considering the list of global importing markets that imported cement from Turkey in 2019, the United States of America market ranked first with $ 179.5 million and 4.2 Mt of cement followed by the Israel market, which in turn imported nearly $ 93 million and 2.5 Mt of cement from Turkey as shown in Figure 2.4..

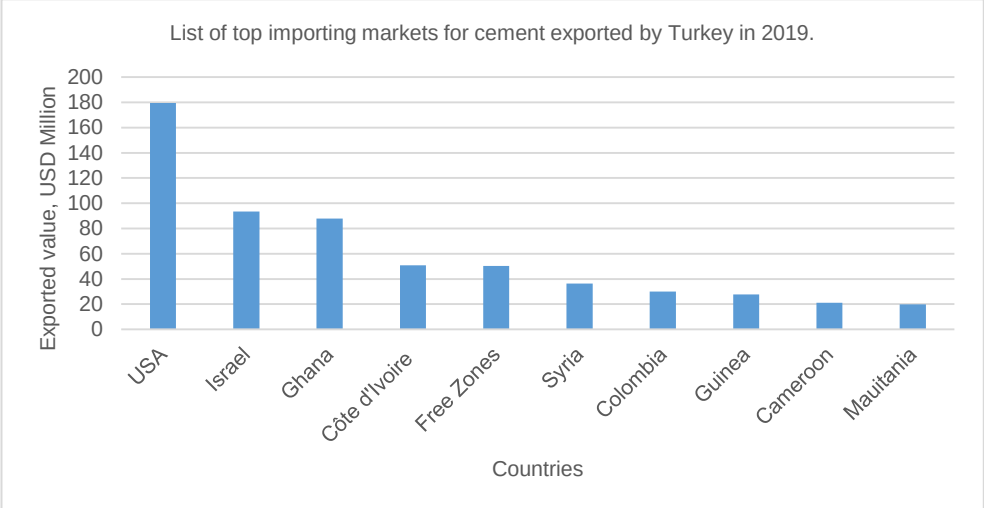

Figure 2.4. List of importing markets for cement exported by Turkey in 2019 according to ITC Data (ITC, 2019)

It should be referred that Turkey's cement imports represent 0.1% of world imports for cement products, it's ranking in world imports is 150. Considering the list of cement supply markets imported by Turkey in 2019, France ranks first with a value of $ 2.1 million and 2627 tons of cement, followed by the United Kingdom, which in turn exported nearly $ 1.2 million and 1184 tons of cement to Turkey as shown in Figure 2.5..

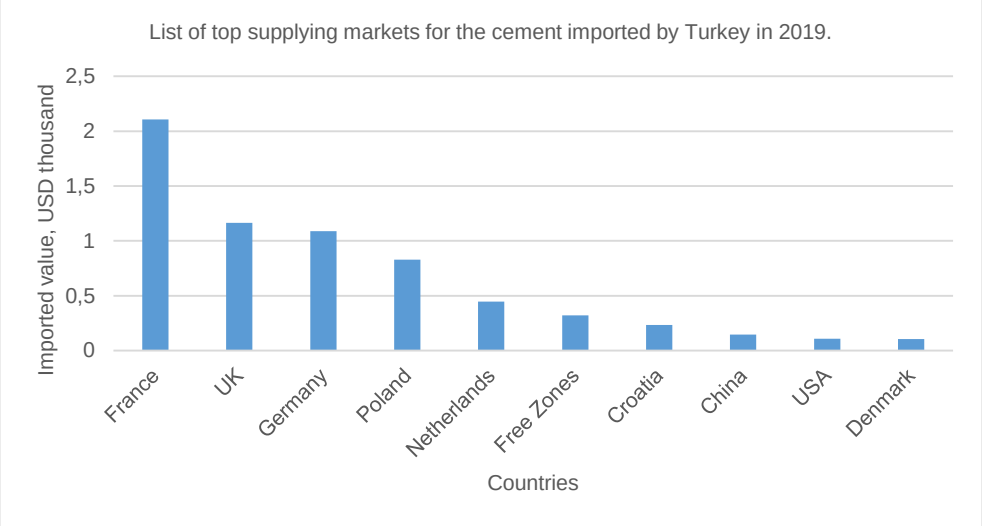

Figure 2.5. List of supplying markets for the cement imported by Turkey in 2019 according to ITC Data (ITC, 2019)

Due to the infrastructure and construction activities continue to increase, cement demand is expected to reach 99.8 Mt in 2023 as it will increase the demand for cement. Moreover, within the scope of the Turkey Exporters Assembly 2023 Export Strategy, the 2023 export target of the Turkish cement sector is one billion dollars (Turkish Ministry of Economy, 2016).

Besides the contribution of the Turkish cement industry to the country's economy, with its large exports, the sector provides an average of 125 MW (Mega Watt) out of 270 MW generated from the waste heat during the manufacturing process by WHR systems. As the cement sector meets the electricity needs of

520,000 families in this way without any state's support. Also, several cement factories have initiatives on recycling municipal waste and producing fuel from it. There is a potential to produce 7 Mt of fuel from 33 Mt of waste collected annually. This step could prevent the import of nearly 3 Mt of petrochemicals annually (Alpan, 2013; Conexio Consulting, 2019).

2.2. Factors Affecting Imports and Exports in International Trade

International trade is one of the basic pillars on which a country's economic development depends. Countries that have the potential for success and prosperity in terms of foreign trade will likewise witness economic growth. Hence, a need to study and develop sectors of international trade in order to achieve stability and economic prosperity.

While applying to the opinions of the experts, which is one of the sub-steps of the PESTEL analysis that was carried out within the scope of the study, questions of the main factors affecting international trade imports and exports were created within the questionnaire form (WTO, 2013; Dubravska and Sira, 2015; Investopedia, 2020). Detailed information on the survey phase is given in Chapter 3. The main factors affecting imports and exports are summarized below.

2.2.1. Exchange Rate

A low exchange rate in a country will drop the export price and raise import prices. This is likely to increases the value of exports and reduces the amount spent on imports.

2.2.2. Inflation Rate

If the inflation rate increases in a country, companies will face some difficulties in exporting. On the contrary, the low inflation rate would increase the country's international competitiveness and would likely boost exports and reduce imports.

2.2.3. Productivity

The increase in productivity of manpower in a country will lead to a decrease in labor costs and the price of products in general, so imports are expected to decrease when productivity increases.

2.2.4. Quality

Quality is one of the most important features of competition in international markets, as the low quality of a country's products compared to the products of other countries will have a negative impact on the country's trade balance in goods and services.

2.2.5. Trade Restrictions

Facilitating trade restrictions abroad will make it easier for local companies to sell their products in the global markets.

2.2.6. Marketing

Effective marketing greatly influences the purchase decision. Therefore, companies must provide various marketing channels to ensure reaching the largest possible number of customers.

2.2.7. Gross Domestic Product

If the income rises in a country, then more imports may be purchased. Firms are likely to buy more raw materials and capital goods from abroad. The increase in domestic demand may also encourage some local companies to switch from the foreign market to the domestic market, which may lead to exports decline.

2.2.8. Foreign Gross Domestic Product

If incomes abroad rise, foreigners will buy more products. This country may be able to export more.

2.3. PESTEL Analysis

PESTEL is a precondition analysis widely used to explore macro-environmental factors that can be used in strategic planning and to detect the effects of these factors. PESTEL is an acronym of Political, Economic, Social, Technological, Environment, and Legal factors.

The literature showed that PESTEL analysis went through several stages from the definition aspect. In 1967, Aguilar included a scanning tool called ETPS (economic, technical, political, and social) in his book, "Scanning the Business Environment" the name was later tweaked to create current acronyms. Arnold Brown for the Institute of Life Insurance reorganized it as "STEP". Later, PEST analysis was improved to assess the macro analysis of the external environment and was redefined as STEPE. In the eighties, PEST analysis was modified and the legal aspect was added to its approach (Richardson, 2006). It could be said, due to its comprehensive approach in evaluating the macro-environment, PESTEL analysis began to be applied in different fields (Richardson, 2006; Issa, 2010; Song et al, 2017; Pan et al, 2019).

PESTEL analysis discovers the macro-environment within which an organization functions and provides the necessary data and knowledge that will allow an organization to predict circumstances that it might encounter in the future which makes it a useful precondition strategic management tool (Dinçer, 2004).

2.3.1. PESTEL Analysis Factors

2.3.1.1. Political Factors

These factors are all about how and to what degree a government intervenes in the economy or a certain industry. This can include government policy, political stability or instability, corruption, foreign trade policy, tax policy, labor law, environmental law, and trade restrictions.

2.3.1.2. Economic Factors

Include economic growth, exchange rates, inflation rates, interest rates, disposable income of consumers, and unemployment rates. These factors may have a direct or indirect long term impact on an organization since it affects the purchasing power of consumers and could possibly change demand/supply models in the economy. Consequently, it also affects the way organizations price their products and services.

2.3.1.3. Social Factors

Includes population trends such as the population growth rate, age distribution, income distribution, career attitudes, safety emphasis, health consciousness, lifestyle attitudes, and cultural barriers.

2.3.1.4. Technological Factors

These factors pertain to innovations in technology that may affect the operations of the industry and the market favorably or unfavorably. This refers to technology incentives, the level of innovation, automation, research, and development (R&D) activity, technological change, and the amount of technological awareness that a market possesses. These factors may influence decisions to enter or not enter certain industries, to launch or not launch certain products, or to outsource production activities abroad.

2.3.1.5. Environmental Factors

Include ecological and environmental aspects such as weather, climate, environmental offsets and climate change which may especially affect industries such as tourism, agriculture, and insurance. Furthermore, growing awareness of the potential impacts of climate change is affecting how companies operate and the products they offer. This has led to many companies getting more and more

involved in practices such as corporate social responsibility (CSR) and sustainability.

2.3.1.6. Legal Factors

Include more specific laws such as discrimination laws, antitrust laws, employment laws, consumer protection laws, copyright and patent laws, and health and safety laws. If an organization trades globally this becomes especially tricky since each country has its own set of rules and regulations. In addition, an organization wants to be aware of any potential changes in legislation and the impact it may have on their business in the future.

2.3.2. Advantages of PESTEL Analysis

The advantages of PESTEL analysis are summarized below.

- Cost-effectiveness, since the only cost of PESTEL analysis, is time.
- Deeper understanding, where it provides a mechanism that enables an organization to identify and exploit the direct and indirect effect of the external environment on business.
- Reduce the impacts of potential threats on an organization.
- Supports and encourages the development of strategic thinking within an organization.
- Enables to assess the implications of entering new markets both nationally and globally.

2.3.3. Disadvantages of PESTEL Analysis

The disadvantages of PESTEL analysis are summarized below.

- Over-simplifying the information used to make decisions.
- Negligence in conducting the operation regularly leads to effectiveness loss.
- Due to time and cost considerations organizations often restrict who will participate in the analysis process which affects negatively decision making.
- Access to quality external information is often restricted because of the cost and time needed to collate it as well as a legal restriction.
- Assumptions often form the basis for most of the data used, making any decision made based on such data subjective.

2.4. Previous Studies on PESTEL Analysis and Its Applications in The Construction Industry

Žvirblis et al. (2009), investigated the external environment assessment of new construction companies in Lithuania both qualitatively and quantitatively using a PESTEL analysis approach. The study showed that qualitative studies in the external environmental analysis are frequently used in the literature, but quantitative studies should be carried out simultaneously in order to evaluate the market correctly. It was stated in the results that the most positive effect of new construction companies in the sector on the marketing environment was in terms of politics and the most negative effect was in terms of the social environment, while technological, legal, and economic factors had a moderate effect.

Pulaj and Kume (2013), studied the effect of external environmental factors on the construction industry in Albania utilizing PEST analysis. the study was including a literature review of the external environment of the organization, PEST analysis for each of Albania, and the construction industry in Albania. The

results reported that the country has made steady progress in the structural reforms after EU membership in political terms and foreign investments in the country increased, but there was a slowdown in the economy due to the economic recession in 2009. Furthermore, the socio-cultural behavior affected positively because of economic and political changes, reliability of construction companies, the use of new products and services, but there were technological problems arising from the inadequacy and cost of communication tools.

Rastogi and Trivedi (2016), introduced an approach based on PESTLE and SWOT analysis to identify external and internal risks associated with the success of any construction project. During the study, it was presented the most important subfactors should be taken into account when the Multi-criteria analysis applied, as well as the strengths and weaknesses of PESTLE analysis. They have concluded that a company should use PESTLE analysis on a regular basis to maximize the benefit of it, as well as, this technique should be used in conjunction with other tools such as SWOT and other strategy tools.

Kazancı (2017), introduced a questionnaire based on key factors for PESTEL analysis and 30 sub-factors for LEED-approved industrial practitioners to determine the level of significance and current impact level of adapting the application of external assessment systems, especially LEED and BREEAM for green buildings in Turkey. The Relative Importance Index (RII) method was applied to the responses provided to the questionnaire. According to the survey results, the environmental factors have the highest level of importance and were followed by technological, legal, political, social, and economic factors, respectively.

Cengiz (2018), proposed the development of models based on the Porter (1980) five-power model and PEST aimed at identifying the relationship between competition and investment in the Turkish construction industry and the overall environmental factors affecting this relationship and forming a guiding model for contractor companies. In the analyzed models, it is found that the threat of entry

and bargaining power of the customer and supplier had a positive and significant impact on competition.

Bayraktar (2018), developed a revenue-sharing model to support the requirements of the construction sector and give a new approach to the sector in the frame of continuing and finished samples in the scope of land assessment in Turkey. SWOT and PESTEL analysis were used to analyzing the cost-applicable level of the model with an examination of the economic contribution of the model. According to the results of the research, the revenue-sharing model gives the best solution to land valuation in the construction sector for both constructor and landowner. In addition, the model gives trust to both stakeholders, reduces time cost-effective, and increases the level of innovation in the construction sector.

Ulubeyli and Kazancı (2018), have structured an evaluation approach consists of a fuzzy model of the macro-environmental assessment, and PESTLE analysis method in the scope of the green building industry in Turkey. According to obtained findings, macro-environmental conditions impact was medium-to-high. The technological factor played the main role according to PESTEL analysis followed by environmental, economic, legal, political, and social factors, respectively.

Khalid et al. (2020), utilized Structural Equation Modeling to search the effect of the external-factors on the Iraqi construction industry's performance in terms of time, quality, and cost by an approach based on the PESTLE technique and survey questionnaire. The study found that the Structural Equation Model is reliable as well as, PESTLE factors contribute more than half of the performance based on time, quality, and cost to the construction industry's performance in Iraq.

Dalirazar and Sabzi (2020), studied the obstacles that prevent the development of sustainable buildings and optimum suggestions to solve them. PESTLE technique has been considered to be a framework for analyzing this purpose and questionnaires have been distributed to the industry professionals to assess the situation. The output of the study indicated that the social and economic

factors such as long payback period and investment risks, high initial costs, and lack of demand affect in the first place the development of sustainable buildings in developed countries. Besides, using BIM system in projects could help minimize obstacles.

2.5. Previous Studies on Turkish Cement Industry

The studies carried out in the Turkish cement sector are summarized below according to the main headings of PESTEL.

2.5.1. Economic Aspect

Gerek et al. (2012), evaluated the efficiency of the financial performance of the cement companies in Turkey in the period of 1998-2009 using the Data Envelopment Analysis (DEA) method. During the analysis, it was observed that the activities of 16 companies operating in the cement sector varied significantly over the 12 years, and the increasing trend in the average of the financial efficiency of the companies after the 2001 crisis was indicating a positive growth. As a result, it was understood that there were no companies that were continuously active during 1998-2009.

Bağrıaçık et al. (2013), analyzed the competitive forces influencing the Turkish Cement Industry by a methodology based on surveying data from Turkish Cement Manufacturers' Association members and evaluate it according to Porter's Five-factor model. The results showed that there is intense competition between companies operating in the cement sector due to government support, research and development studies, and high product quality. Besides, new companies will need substantial capital to maintain their ability to compete in the market. While the absence of an alternative product against cement negatively affects the R & D in the sector.

Topçuoğlu (2016), investigated the reflection of privatization on the efficiency and productivity of resources in the Turkish Cement Industry during

1984-2012 by Data Envelopment Analysis and Malmquist Total Factor Productivity Index. As a result, the variables of production capacity, capacity using rate, and privatization were had a negative impact on efficiency, while the variables of production per capita and total sales were had a positive impact.

Ulubeyli (2017), by using a five-force framework developed a fuzzy force assessment model to measuring competition conditions of the Turkish cement sector. The results demonstrated that competitive conditions in the cement sector are medium-to-high, and pressure from substitutes is the most influential force, followed by the intensity of competition, negotiation power of purchasers, negotiation power of suppliers, and the threat of new competitors.

Güleç and Özkan (2018), utilized a Grey Relational Analysis (GRA) as a multi-criteria decision-making approach to investigate the financial performances of 16 companies in the cement industry in Borsa İstanbul between the years of 2005 and 2016. The study outputs illustrated that companies are making high profits and have generally profitable stock returns. However, the relationship between cement companies' GRA values and stock returns is not strong. Besides, the classification collected from the Grey Relational Analysis method and the stock returns differ significantly from each other.

Saygılı and Şahin (2018), evaluated the financial performances of 21 cement companies of Borsa İstanbul (BIST) sector between the 2009-2016 fiscal years according to the TOPSIS method which based on multi-criteria decision-making techniques and stock prices. As a result of the research, it has been observed that there is no relationship between the financial performance of companies and stock prices in the BIST cement industry. Furthermore, the investors do not take the financial ratios of the companies into consideration as much as they take the environmental factors affecting the investment status.

Çanakçıoğlu (2019), analyzed the performance of 15 cement firms that publicly-traded in the Istanbul Stock Market through developing a hybrid model based on the Entropy and EATWIOS (Efficiency Analysis Technique with Input-

Output Satisficing) methods. The output demonstrated that Adana Cement Company has the highest performance comparing with other companies.

Adigüzel (2020), investigated the impact of Covid-19 on economic activities in Turkey and the development of proposals for the reduction of adverse effects. As a result, production, Employment, Exports, Current Account Deficit, Budget Deficit and Central Government Total Debt affected negatively by the pandemic, where it causes a loss of approximately 600 billion TL in GDP. Furthermore, the contraction of foreign and domestic demand and the decrease in production will increase the already high unemployment.

Soylu (2020), examined the macroeconomic of Turkey in the existing of Covid-19. Under the assumption that there will not be a second outbreak of Covid-19, Turkey will have to train in a V-shaped growth of the economy (the same rapid recovery of the sharp and rapid decline in economic data).

Akyıldız (2020), assessed the effect range of COVID-19 crises on the employment of Turkish citizens and Syrians and how their financial status changed after the breakout by a questionnaire in which nearly 3,000 people participated. According to the data obtained, with regard to the construction sector, 11.1% of employees in the sector were laid off, while the rate of those on unpaid leave was 13.7%. In general, 85.2% of the workers in the sector reported a loss of income due to the pandemic.

In the literature, there are several studies dealing with the economic aspect of Turkey's Cement Industry (Eleren, 2007; Dumanoğlu, 2010; Cenger, 2011; Özden Et Al., 2012; Akbulut And Rençber, 2015; Koçyiğit, 2016; Orman, 2017; Gümüş, 2017; Atukalp, 2019; Uyar and Çağlak, 2019).

2.5.2. Environmental Aspect

Kartal (2012), used wheat and barley as model organisms to investigate the oxidative stress parameters effect of cement dust filter waste on seedling germination, plant growth parameters, biochemical and physiological variations in

leaves and roots. the research had shown that wheat has a wide tolerance to cement dust pollution comparing to barley, where germination rates were delayed in barley.

Doğan (2015), developed a gravity model to assess the effect of climate change policies on bilateral cement export flow between Turkey and 118 countries for the years 2001-2012. According to quantitative analysis outputs, it has been confirmed the existence of carbon leakage in the Turkish cement industry. Furthermore, the result indicates that climate change policies applied by only a few countries are not functioning well.

Öztürk (2016), assessed the utilization of alternative fuels and alternative raw materials and the expected environmental benefits from their use in the cement industry in Turkey. As a conclusion, the alternative raw materials, and alternative fuels were very useful and an important application in terms of preventing environmental pollution and reducing the use of natural resources, besides decreasing cost for the facility.

Demir and Atlı (2017), examined environmental costs and environmental impacts of Altınova Cement Factory in Elazig province. The research outputs demonstrated that although factory offers industrialization and socio-economic development opportunities in the city, it causes pollution to soil, air, water, and negatively affects the nature of the city. Where the production process threatens growing conditions of crops therefore various campaigns and studies are carried out to move this factory to another location.

Güler (2018), developed a model using the C# programming language to calculate the CO_2 emissions that could arise from the Cement Industry in Turkey during 2018-2027. The outputs of the study demonstrated that the Best Available Techniques specified in the 2006 IPCC guidelines and fuel consumption improvements could reduce approximately 27% in CO_2 emissions if it took into consideration.

2.5.3. Health Aspect

Tokdemir (2019), evaluated noise pollution within the scope of occupational health and safety in Sivas Votorantim Çimento using a dosimeter measurement device and area measurement device. Based on the approach of measurement of noise that has been considered, the results were within the allowed limits; 61,4 – 86,9 dB (A) and Ppeak (Sound pressure) values 95,5 – 111,1 dB (C).

Uysal (2019), surveyed 110 workers at AS Çimento A.Ş. to investigate the occupational health and safety awareness and perceptions of the employees in the Cement Industry. According to the obtained data, the employees who work for periods exceeding working hours or with a shift system have absent-mindedness and lack of attention. As well as, the lack of necessary warning signs in the workplace poses a great risk in terms of worker health and safety.

Gezer (2020), used, "Personal Information Form" and "Turkish Health Literacy Scale (TSOY-32)" to examine the health literacy of workers working in a cement factory. According to the study; organizing training for individuals on health literacy, occupational health, and the duties of the workplace doctor and nurse and organizing training on what individuals should do in case of health problems in the workplace has been recommended.

2.5.4. Technological aspect

Yıldırım (2012), developed a model based on mobile technology and software agents' system to plan cement production for purpose of reducing energy costs and meet some constraints. The suggested framework gave the competitive pros to the company by decreasing the energy cost, besides that automation minimized the workload of crew significantly.

Atmaca (2014) developed a program in EES (Engineering Equation Solver) based on thermodynamic and exergoeconomic methods to assess all performance parameters for the cement production process in Gaziantep Cement Factory. The study found that the rotary kiln was consuming 60 % of the total

exergy consumed in the plant. Moreover, technologies that could reduce energy consumption and emissions are not used because of the deficiency of technical knowledge of the crew about the energy-efficiency standards, authority policies, high initial capital costs, and investors' choices.

Demir (2016), found a correlation between employee's time management skills and operational efficiency in the workplace through a questionnaire survey conducted on the staff of Aşkale Çimento A.Ş. The study suggested training programs in time management to the employees in order to increase their efficiency and to help them plan their time.

Polat and Altan (2018), presented a framework combining the transportation model based on WinQSB software and destination programming model together to treat distribution problems between cement plants and demand points in Turkey. The suggested model achieved the work goals which represented in the optimum distribution, minimizing the total cost, and equalizing the total demand between suppliers and consumers.

Aslan (2020), evolved a simulation model to examine the production line from raw material extraction to packaging in Aşkale Çimento A.Ş. As a result, the simulated model showed that the production line could be more efficient if used as an alternative system instead of the existing one, where it saved energy and decreased maintenance and operating costs.

2.5.5. Legal Aspect

Ciba (2007), investigated the competition limitations in the cement sector of Turkey according to the fundamental concepts found in the competition law and the relevant decisions of the Competition Authority. It was observed that mergers and acquisitions in the cement sector frequently occurred due to the fact that large groups operating in the cement sector acquire smaller enterprises compared to themselves, besides the investments of foreign enterprises and high privatization.

Gürsel (2018), researched practices that restrict competition in the cement industry in Turkey. The study indicated that despite the fines imposed on the violating parties, the recurrence of competition violations in the cement industry reveals that the fines are far from a deterrent.

3. MATERIAL AND METHOD

3.1. Material

This study aims to provide information about macro-environmental factors (PESTEL) that affect Cement Industry exports during the period 1999-2020 in Turkey. The necessary literature review was conducted on several issues including scientific works dealt with the Turkish cement industry from political, economic, social, technological, environmental, and legal aspects, PESTEL analysis and its applications in the construction industry, and Covid-19 impact on the sector. Finally, archives of recent years of reliable presses have been taken into consideration.

Obtained information from the following references in Table 3.1. has been used to prepare the questionnaires that aimed to investigate the current state of the cement sector from the point of view of companies, TCMA, and academics, using Google Forms (Questionnaire forms are given in appendix A,B,C,and D).

Table 3.1. References used in the formation of the survey

Publication Category	Reference
Literature	Ciba, 2007; Gerek et al., 2012; Kartal, 2012; Yıldırım, 2012; Bağrıaçık et al., 2013; Atmaca, 2014; Doğan, 2015; Demir, 2016; Öztürk, 2016; Topçuoğlu, 2016; Demir and Atlı, 2017; Ulubeyli, 2017; Güleç and Özkan, 2018; Güler, 2018; Gürsel, 2018; Polat and Altan, 2018; Shakir, 2018; Saygılı and Şahin, 2018; Çanakçıoğlu, 2019; Tokdemir, 2019; Uysal, 2019; Adigüzel, 2020; Akyıldız, 2020; Aslan, 2020; Gezer, 2020; Soylu, 2020
Government Departments	Turkish Ministry of Economy report, Turkish Ministry of Trade, TCMA, TÜİK
Global Organizations	Global Cement report, ITC

In order to establish an objective scientific base for the research, four questionnaires were prepared in different formats Table 3.2.. The first questionnaire, which included 7 open-ended questions and 16 questions according to the Likert scale, was sent to 15 academics who have scientific contributions in the field of economy in Turkey. The second questionnaire, which included 6 open-ended questions, was sent to 20 academics who have scientific contributions in the field of environment in Turkey. The third questionnaire, which included 28 open-ended questions and 16 questions according to the Likert scale, was sent to 30 cement factories that are members of TCMA. While the fourth and final questionnaire containing 25 open-ended questions was sent to the TCMA. The participants were reached by calling them, clarifying the title and purpose of the research. After taking their approval the questionnaire forms were sent to them by e-mail. Data collection took place between September and December 2020. In total, 13 questionnaires were found suitable for evaluation as shown in Table 3.2..

Table 3.2. Questionnaire distributions according to areas of expertise

Expert	Number of survey questions		No. of surveys sent	No. of surveys eligible for evaluation
	Open ended question	Likert		
Economy scholars	7	16	15	5
Environment scholars	6	0	20	4
Cement companies	28	16	30	3
TCMA	25	0	1	1
Total			66	13

3.2. Method

The literature, government body reports, global organization reports, and archives of the local and global press were examined by considering the main headings of the PESTEL analysis in order to investigate the general situation and

fluctuations in Turkish cement exports' indicators in the past 20 years as shown in Table 3.3..

Table 3.3. In the scope of PESTEL analysis, references used in the investigation of general situation and fluctuation in Turkish cement exports' indicators in the past 20 years.

Publication Category	Reference
Literature	Ciba, 2007; Gerek et al., 2012; Yıldırım, 2012; Kartal, 2012; Bağrıaçık et al., 2013; Atmaca, 2014; Doğan, 2015; Topçuoğlu, 2016; Öztürk, 2016; Demir, 2016; Ulubeyli, 2017; Demir and Atlı, 2017; Aita, 2017; Shakir, 2018; Abuamer, 2018; Güleç and Özkan, 2018; Saygılı and Şahin, 2018; Polat and Altan, 2018; Güler, 2018; Gürsel, 2018; Çanakçıoğlu, 2019; Adigüzel, 2020; Akyıldız, 2020; Soylu, 2020; Aslan, 2020
Government Departments	Turkish Ministry of Economy, Turkish Ministry of Trade, The Center on Budget and Policy Priorities, The General Secretariat of the Council of Ministers Iraq, Iraqi State Company of Cement, TÜİK
Global Organizations	TCMA statistics and reports, Global Cement statistics and reports, ITC statistics, KPMG report, World Trade Organization, World Cement, GLOBAL TRADE ALERT, Democratic Arab Center (DAC)
Local and Global Press Organs	Ekonomist, Hürriyet Daily News, Aljazeera, The New Arab (Alaraby), Globes, DailySabah, Iraqi News Agency, Anadolu Agency, MENAFN, XEBER24, BBC, Enabbaladi

In the scope of PESTEL analysis, the general situation of the Turkish cement industry has been investigated in detail from the sources specified in Table 3.3.. In addition, for the evaluation of the Turkish cement industry, expert opinions of academicians, TCMA members, and company authorities were consulted. In the

survey; PESTEL analysis has been prepared according to its scope (political, economic, social, technological, environmental, legal) and main topics determined as a result of the literature review. These questionnaires consist of open-ended questions and Likert scaled questions. Firstly, open-ended questions answers were evaluated and presented. In Likert scaled questions, participants on this scale were asked to determine the most appropriate categories for their opinions. The Likert scale consisting of seven categories was used in the study, and the scale was ranked from least important (1) to most important (7) as shown in Table 3.4..

Table 3.4. Standard Intervals used in evaluating the criteria affecting cement exports.

Likert scale		score interval	evaluation criteria
1	absolutely not important	1.00 – 1.86	very insignificant
2	To some extent not important	1.87 – 2.71	To some extent insignificant
3	not important	2.72 – 3.57	insignificant
4	uncertain	3.58 – 4.43	moderately significant
5	important	4.44 – 5.29	Significant
6	To some extent important	5.30 – 6.14	To some extent significant
7	absolutely very important	6.15 – 7.00	very significant

The criteria affecting cement exports assessed according to the Likert scale, and their averages are calculated with Excel 2016 program and described. From expert opinions gathered from cement companies, academics, and TCMA, the current situation of the cement industry was assessed by examining earlier data and comparing it with data collected from the literature, publications of official institutions and unions, statistics about the sector, and the publications of press organs. As a result of the multi-faceted analysis, the current situation of the Turkish cement industry was explained, with making predictions about the future of the sector taking into account the suggestions of companies and investors.

3.3. Limitations of the Study

The research faced several limitations during the data collection stage. Among the most prominent of these restrictions is the cost and time in addition to the lockdown due to the Covid-19 pandemic, as a large number of cement factories had directed their employees to work at home, and the same for academics in universities, which made the process of reaching the individuals concerned with the subject of study too difficult.

Most of the individuals from the cement sector were reluctant to participate in filling out the questionnaire due to the work policy followed by the companies in which they work as they clarified, as some participants answered only a part of the questionnaire and skipped other parts. The assumption that participants provide correct and honest answers is another limitation of the research. In addition, it is it is assumed that the chosen sample is adequately representative of the population and generalization can be made to the main populations through the sample.

4. FINDINGS AND DISCUSSION

In this work, PESTEL Analysis was applied with aiming to investigate Turkish cement exports. Literature, publications of official institutions and unions, statistics, and search results of press have been reviewed and expert opinions of academic and industry stakeholders have been considered. The findings obtained within the scope of the study are presented and discussed in this chapter.

In the first section of this chapter, fluctuations of cement sector export indicators from Turkey to the United States, Israel, Syria, and Iraq, respectively during 1999-2020 as shown in the graphs are discussed.

In the second section, the answers given to the questions contained in the questionnaire are grouped under the political, economic, social, technological, environmental, and legal titles, which together form PESTEL model factors.

In the third and final section of this chapter, statistical analysis of the data collected in the questionnaire was conducted on the importance of the criteria that affect cement exports, and the average of them was found.

4.1. Indicators of Cement Sector Export from Turkey to the United States, Israel, Syria, and Iraq during 1999-2020

In the scope of the research, when reviewing the indicators of cement exports from Turkey to the world between 1999-2020, Iraq, Syria, the United States, and Israel come to the top of countries that imported cement from Turkey, with total quantities of 26.22, 18.71, 15.35 and 13.20 Mt respectively, until the end of 2019 as shown in Figure 4.1. (TCMA, 2019).

Consequently, these four countries constitute profitable markets that benefit the Turkish economy in terms of cement exporting besides the political, strategic, and security importance that these countries represent for Turkey. From here, these four countries were addressed as a case for studying Turkish cement exports during the past two decades.

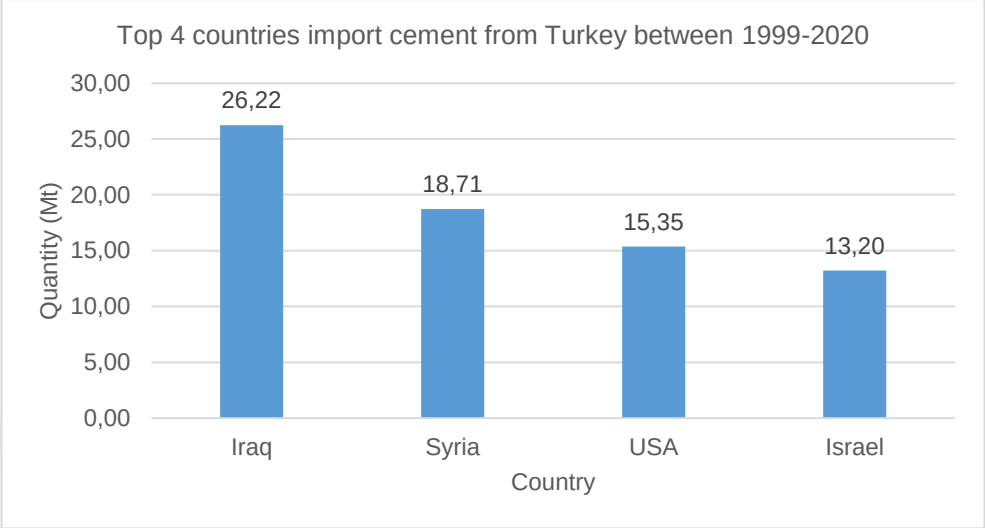

Figure 4.1. Top 4 countries import cement from Turkey between 1999-2020 (TCMA, 2019).

4.1.1. Case of United States

United States of America ranks first in importing cement products in the world with 11 percent. The average distance of the exporter's countries is 5496 km and the market concentration is 0.21 (ITC, 2019).

Statistics for the past 20 years indicate that Canada dominated the cement supply market for cement imported by the United States, with a quantity reaches approximately 75 Mt as shown in Figure 4.2.. While Turkey ranks fifth in the same category with a quantity reaches approximately 13Mt (ITC, 2019)

Cement is shipping to the United States via shipping vessels. As the average sea freight distance between the ports of Turkey and the United States is estimated at 5280 km. According to the statements of Kerim Erben, a member of the Directors Board of Cement, Glass, Ceramics and Soil Products Exporters' Association in Turkey, shipping costs have decreased significantly because ships destined for the United States can carry products with high added value during the return (Ekonomist, 2017).

Turkish exporters focus on selling most of the cement in the east part of the United States, especially in New York due to investment in the United States since 2017 is growing faster in the east of the country. In addition, China, India, and Taiwan have significant cement supply loads in the western part of the country (Ekonomist, 2017). Hereabouts, it has been observed that although China produces the most cement in the world, it has no control over the cement market in US due to its lack of marine terminals for plants and focus on the domestic market (Global Cement, 18 July 2018).

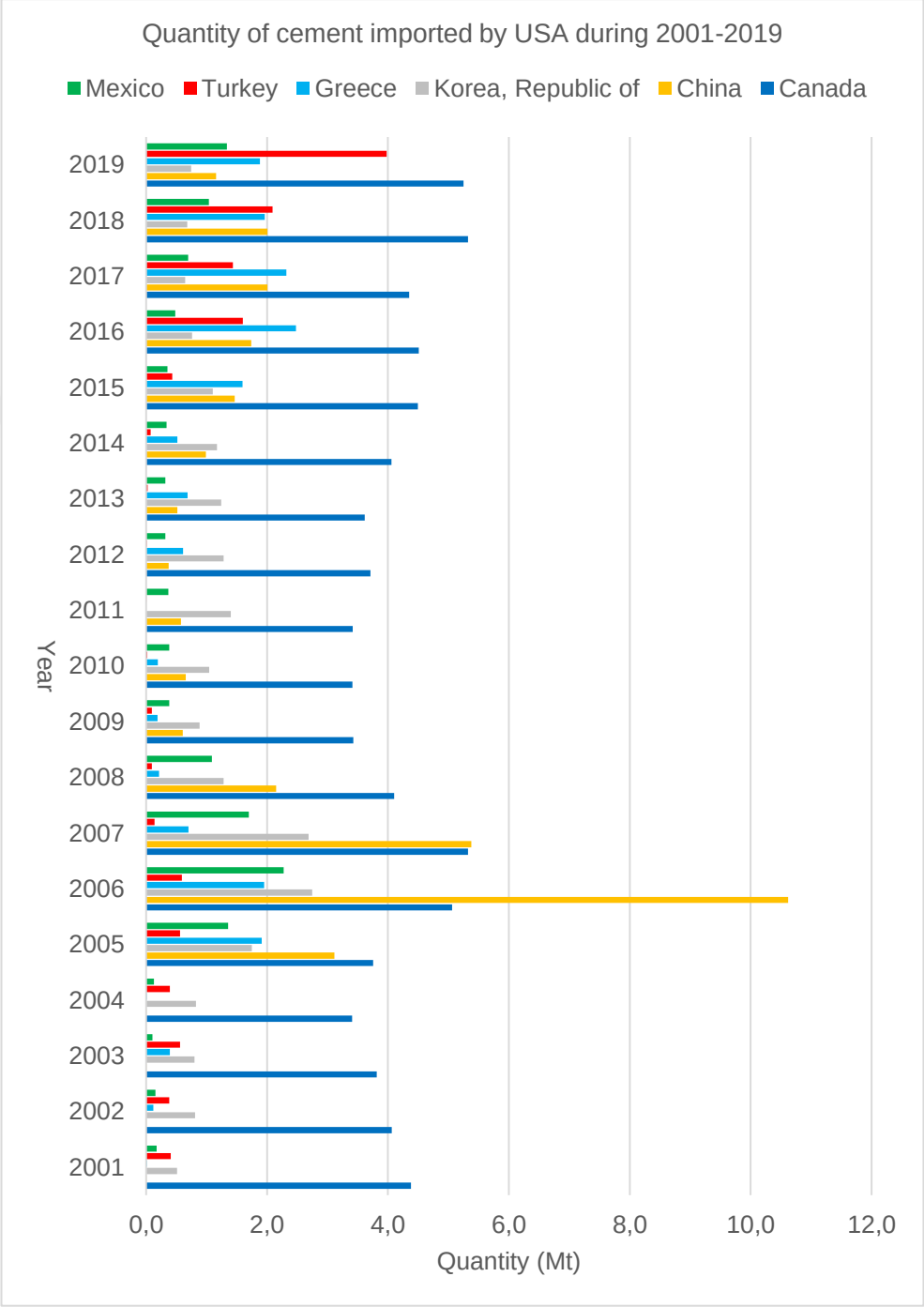

Figure 4.2 Quantity of cement imported by USA during 2001-2019 (ITC, 2020).

There are several factors that can be taken into consideration when importing any product from out of the border. In the Turkey-US case, perhaps the most important of these factors is the cost per unit, the time it takes for the goods to arrive, the quality of the product, the political, strategical, and economical relations between the two countries, trade agreements, value of customs taxes.

It may be difficult to determine and interpret the effects of political events between the two countries on trade relations. Because, political events have many indirect effects besides their direct effects on commercial flow, and even different variables can have mediating effects. The spread of the effects of political events over time can also make it difficult to establish this logical and scientific relationship.

Although the US-Turkish relations have witnessed tension in the post-9/11 period (the post-September 11, 2001), the nature of the base on which the partnership was founded formed a safety valve to protect it, which is confirmed by both sides and indicating that any dispute that occurs cannot negatively affect this partnership. The relations established between the two countries have a strategic structure that can tolerate the difficulties resulting from political events (Shakir, 2018). In other words, despite the possibility for political tensions between countries, long-term trade relationships generally under the control of the private sector are unaffected by political events.

In 2001, US was interested in strengthening its economic relations with Turkey through the International Monetary Fund by lending Ankara $ 7.5 billion to save Turkey from the economic recession. In 2002, a Qualified Industrial Zone was formed between US and Turkey, which gave Turkish products competitive advantages within US market, and tax exemptions have contributed to increasing trade relations between them (Shakir, 2018).

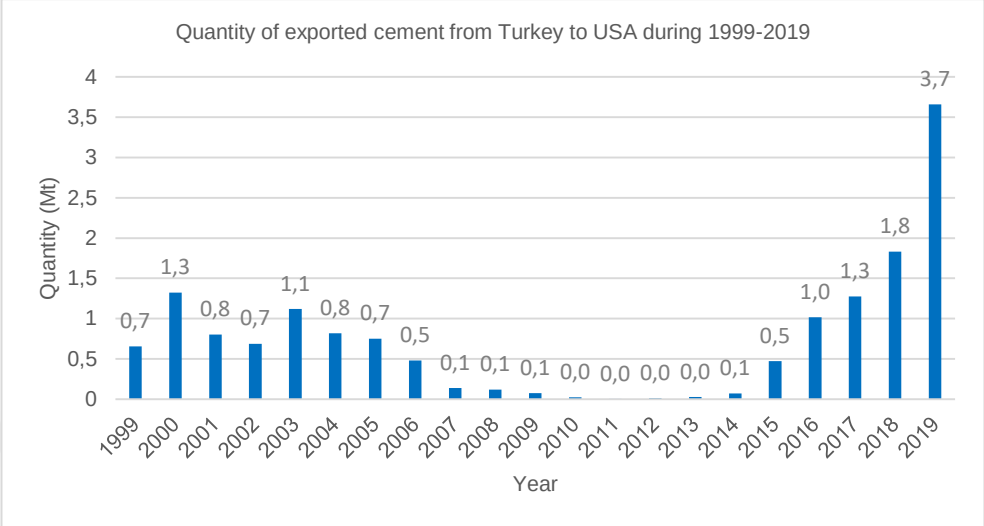

Figure 4.3. Quantity of exported cement from Turkey to USA during 1999-2019 (TCMA, 2019)

After 2003, cement exports from Turkey to the United States began to gradually decline as shown in Figure 4.3.. This can be attributed to two main reasons.

First, in the aftermath of the US-Iraq war, Turkey turned its attention to the neighbor, where trade agreements could be concluded with the new Iraqi government. Iraq has been come out from a period of devastation strike its infrastructure, as the United Nations has estimated that rebuilding Iraq will cost billions of dollars. Hence, Turkey took the first step and started investing in Iraq (Hürriyet Daily News, 2014a; 2014b). Therefore; It was normal to notice the post-2003 declines in cement exports from Turkey to the United States as well as other countries. As, in parallel with this decline, cement exports from Turkey to Iraq were on the increase as shown in Figure 4.4.. Turkish construction companies concluded long-term contracts and implemented massive projects in Iraq. By the end of 2013, about 824 projects had been accomplished in Iraq, with a total value of about $ 19.5 billion (Hürriyet Daily News, 2014a).

Secondly, the Free Trade Agreement signed in 2004 between Syria and Turkey entered the active implementation stage in 2007 (Turkish Ministry of Trade, 2019).

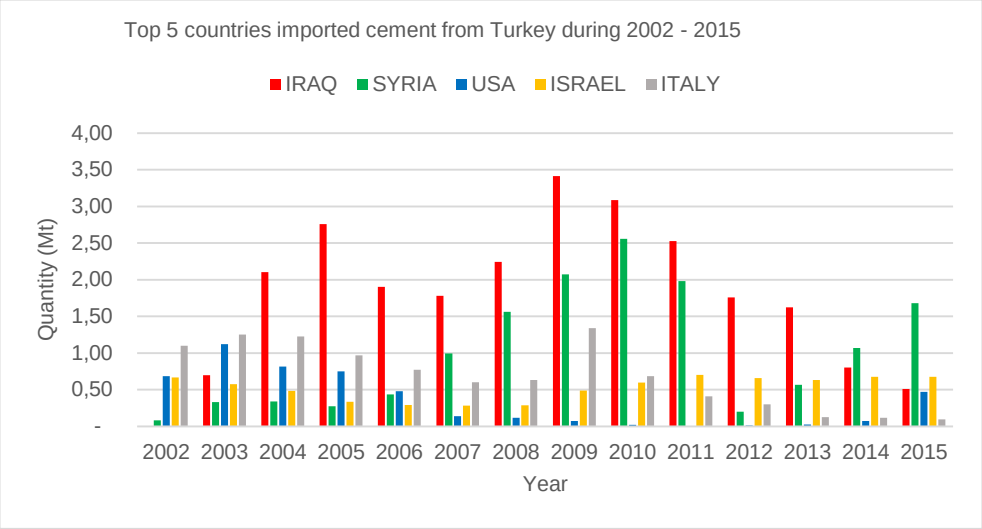

Figure 4.4. Top 5 countries imported cement from Turkey during 2002 – 2015 (TCMA, 2019)

In 2008, the financial crisis hits global and US markets. Lehman has declared bankruptcy due to the loss in the mortgage market. The bank's bankruptcy had negative effects on much of the world's markets. It is thought to have played a major role in the magnification of the financial crisis of 2007–2008 (Williams, 2010). By 2010, US cement imports had declined to about 7 Mt, and nearly all seaborne imports had ceased as shown in Figure 4.5.. Consequently, Turkish cement exports to US, which amounted to 118 thousand tons in 2008, decreased to one thousand tons by the end of 2011 as shown in Figure 4.3..

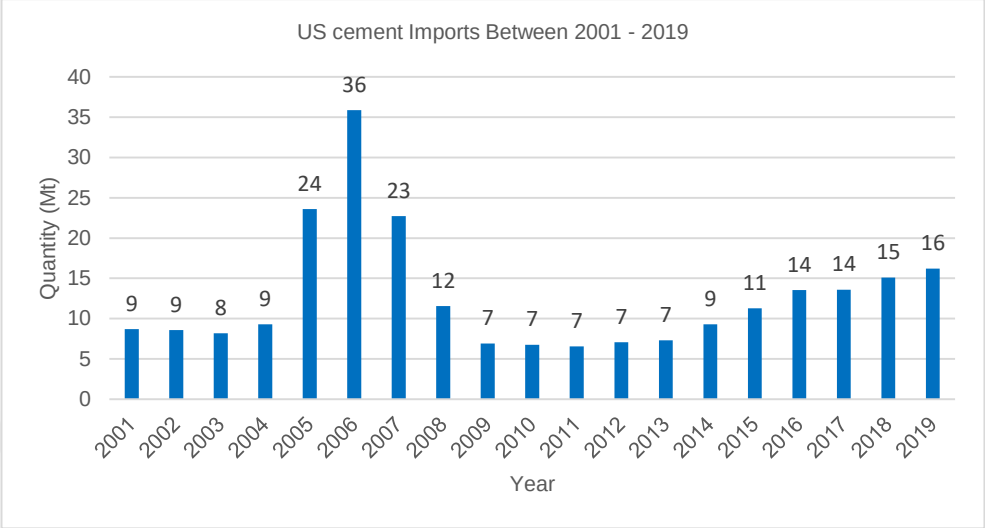

Figure 4.5. US cement Imports Between 2001 – 2019 (ITC, 2020)

By early 2014, US economy was starting to recover (CBPP, 2019). By 2015, Turkish cement companies met 3.5% of US cement needs. In the following year, the quantity of cement exports increased, reaching 11.8% of the US needs.

In 2016, the US election race had begun. The Republican candidate, Donald Trump, had made promises of more investments in infrastructure, and of revitalizing the US economy again. This declaration had a tangible contribution to the increase in cement demand in the United States of America.

Portland cement and white cement are among the most commonly used cement in the USA. The United States continued to import these two types, especially white cement from Turkey, even after the period following the economic crisis in 2008.

According to ITC data, Turkey's cement exports to the United States in 2017 were 1.4 Mt as shown in Figure 4.2, and the total revenue was $ 104 million. White cement accounted for about $ 25 million (23.37%) of total export revenues.

This leading to an important point. Depending on 2018 statistics, when comparing white cement with Portland cement, the price of one ton of white

cement is approximately equal to $ 140, which is equivalent to twice the price of regular Portland cement, $ 70. This matter calls for companies to focus on this type of cement and increase production in terms of quality and specifications.

By mid-2018, Turkey had witnessed fluctuation in the economy and the value of the Turkish lira against the US dollar decreased by 45% by the end of the year. The variation in financial situation affected the domestic demand for cement in a negative way, as local sales decreased by 11% (KPMG Türkiye, 2019). On the contrary, Turkish cement exports to the United States, increased to reach 4 Mt, with revenues of $ 286 million, as Turkey ranked second in cement exports to the United States by the end of 2019 as shown in Figure 4.2..

4.1.2. Case of Israel

Israel ranks 8th in importing cement products in the world with 1.8% percent. The average distance of the exporter's countries is 869 km and the market concentration is 0.56 (ITC, 2019).

When reviewing the cement markets that supplied Israel with the cement during the past 2 decades, it will be noted that Turkey tops the list, as Israel during that period imported about $1 billion cement from Turkey as shown in Figure 4.6. (ITC, 2019).

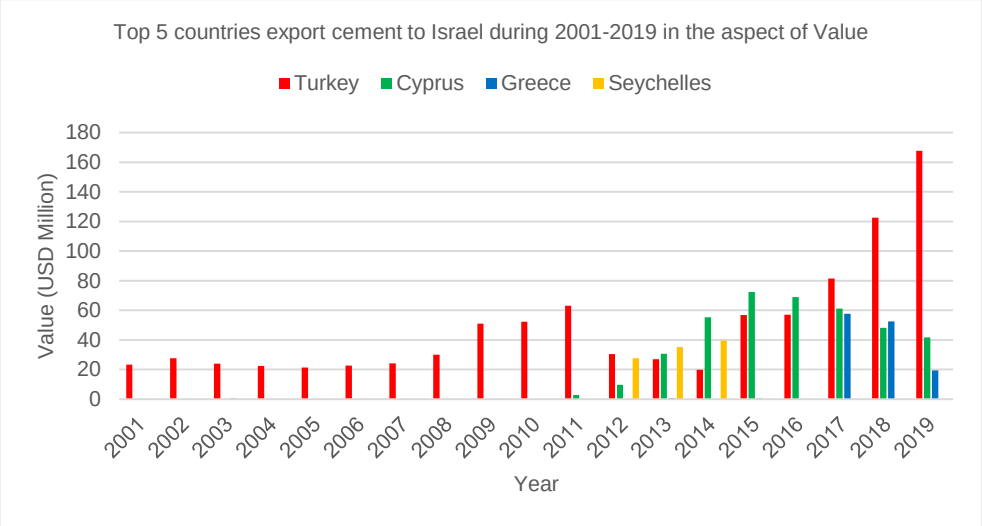

Figure 4.6. Top 5 countries export cement to Israel during 2001-2019 in the aspect of Value (ITC, 2019)

The Trade relation between Turkey and Israel started in the late 1990s. A number of trade agreements were concluded between the two countries. Most notably the Free Trade Agreement (FTA) in 1996 (For industrial products, all customs duties and fees of equivalent effect were abolished as of 2000), Treaties with investment provisions (TIPs) in 1998, the Double Tax Avoidance Agreement in 1997, and the Bilateral Investment Treaty (BIT) in 1998. These agreements contributed to the flowing of different products between the two sides as shown in Figure 4.7. (Cagaptay and Evans, 2012; Abuamer, 2018; Turkish Ministry of Trade, 2019).

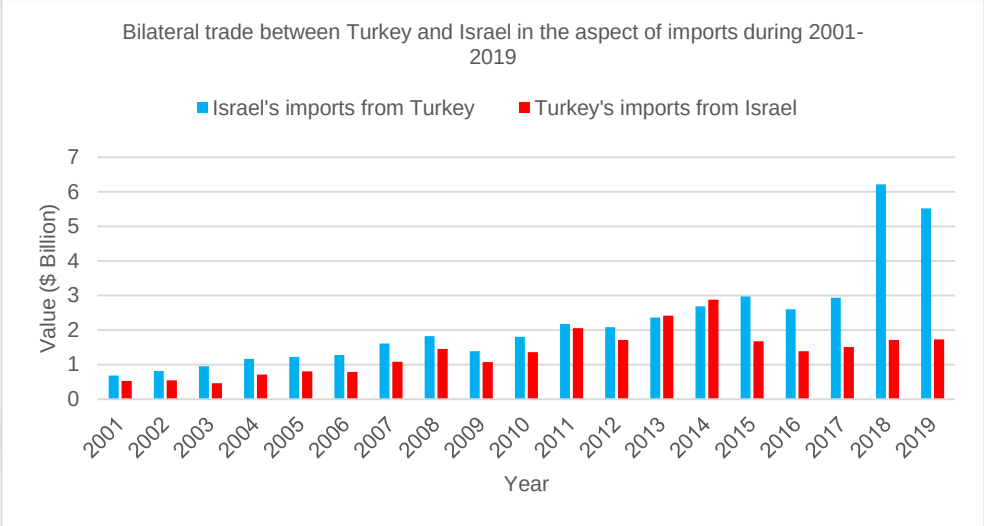

Figure 4.7. Bilateral trade between Turkey and Israel in the aspect of imports during 2001-2019 (ITC, 2020)

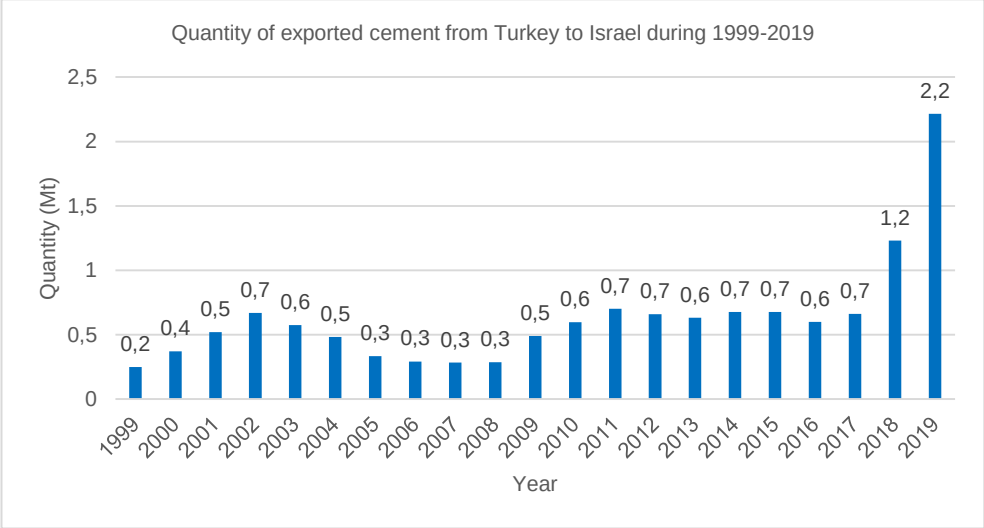

Figure 4.8. Quantity of exported cement from Turkey to Israel during 1999-2019 (TCMA, 2019)

In 2000, in light of the trade agreements signed between the two countries, the quantity of cement exported from Turkey to Israel has been increased by 50%

as shown in Figure 4.8.. Due to the high quality and reasonable price, Turkish cement exporters were able to establish a strong competitive base for cement products in the Israel market, and this matter became obvious in the years following 2001.

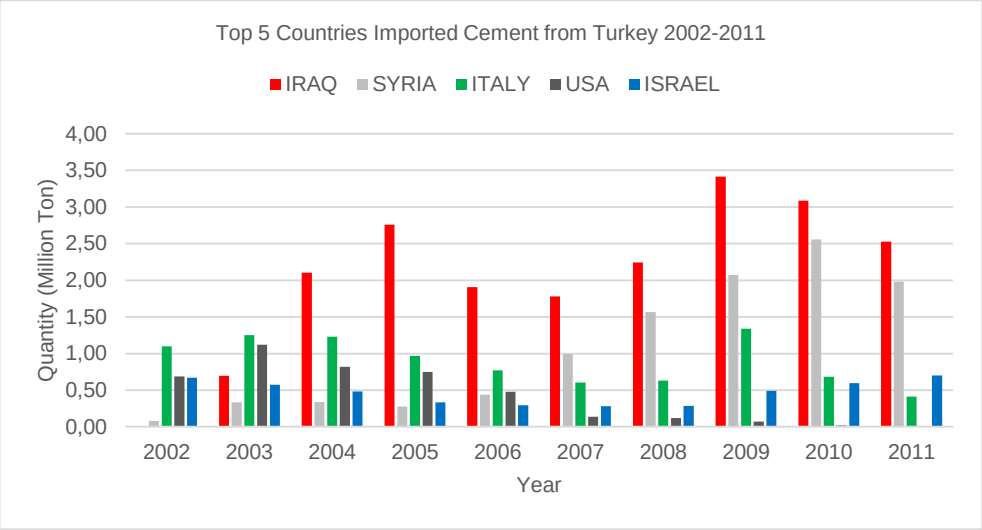

Figure 4.9. Top 5 Countries Imported Cement from Turkey 2002-2011 (ITC, 2020)

The American-Iraqi war in 2003 had an impact on Turkish cement exports to many markets such as Israel, as Turkish exporters turned their focus to the Iraqi market, which has imported 35% of the quantity of Turkish cement exports by the end of 2005 as shown in Figure 4.9..

By 2005, a drop in the quantity of cement exports from Turkey to Israel could be observed as shown in Figure 4.9.. This can be attributed to Israel's implementation of a definitive anti-dumping measure on imports of gray Portland cement from Turkey ($ 5.85 per ton) (WTO, 2005).

The value of trade exchange between Israel and Turkey reached $ 3.5 billion in 2008 but declined by 26% in 2009 during the global financial crisis (Lehman Brothers collapse) as shown in Figure 4.7.. However, this did not affect

cement exports from Turkey to Israel but rather recorded a remarkable increase in the quantity of nearly 70% as shown in Figure 4.8..

During the past two decades, Turkish-Israeli relations witnessed a number of political, diplomatic, security, and strategic deteriorations, but this did not affect in any way or another the nature of the economic relationship between the two countries.

Among the most prominent of these issues is the Gaza Flotilla Incident in 2010, which was followed by tensions on the political, diplomatic, and military levels, but the trade side was not affected at all. On the contrary, the value of trade exchange between the two countries increased by 34%, achieving a value of 4.23 billion in 2011 as shown in Figure 4.7.. Cement products were among those commodities whose export rates increased, as the value of cement exports increased by 21% to reach about $ 63 million.

Here it should be noted that there is a need to differentiate between the private relations of Turkish and Israeli companies and the official commercial relations between the two countries, as the volume of continuous trade with the Israeli private sector has not been affected during the period of weak diplomatic relations between the two countries. This is because it is within the free trade relations and not within governmental relations, also because the Turkish government distinguishes between governmental relations and trade relations between civil companies (Al-jazeera, 2014).

Perhaps the most prominent example of this matter is Turkish contracting companies were able to complete 104 construction projects with a total value of $ 580 million during the years extending between 2002 and 2014 in Israel (Alaraby, 2014).

During 2016 and 2017, the continued flow of cement from the Mediterranean Basin spesifically Turkey and Greece to Israel at a cheap price has dumped the market, according to allegations by the cement manufacturers in Israel, Nesher and Millet Har Tuv (World Cement, 2017).

The domination of cheap cement imports from Turkey and Greece reduced the market share of cement companies in Israel. In November 2018, Due to reduced production, Nesher laid off 20 (about 1/3) of its personnel in its Haifa site. According to statements by Nesher CEO Moshe Kaplinsky, the company's market share has fallen to 60%.

Thus, in April 2017, Nesher supported the complaint of Millet Har Tuv submitted it to the Trades Levies Commission in which it complained about dumping the market with Turkish and Greek cement imported by Ciment I.S. of the Israel Shipyards Group, Rabia Noufi, and Lev Baron Commodities (World Cement, 2017). He asked the Ministry of Economy and Industry to impose a ben anti-dumping duty (Anti-dumping duty is a tariff imposed by government on imports manufactured abroad that are priced below the fair market value of similar merchandises in the local market) to protect domestic production from cheap cement imports (Globes, 2018).

Consequently, an antidumping investigation on imports of portland cement from Turkey and Greece initiated by the Israeli Authorities in May 2017.

By mid-2018, Turkey had witnessed fluctuation in the economy and the value of the Turkish lira against the dollar decreased by 45% by the end of the year. The variation in the financial situation affected the domestic demand for cement in a negative way, as local sales decreased by 11% (World Cement, 2017). This led to a surplus in the quantity of cement produced, which prompted Turkish companies to export cement at cheap prices to Israel (Globes, 2019), with an export volume of 2 Mt, and revenues of $ 160 million, as Israel ranked second in the list of countries that imported cement from Turkey by 2019 as shown in Figure 4.6..

On 7 April 2019, as a result of the anti-dumping investigations that were begun by the Israeli authorities in 2017, a decision was issued to impose a definitive anti-dumping duty on imports of Portland cement from Turkey (0% - 25%) and Greece (0.25%) until 6 October 2021 (Global Trade Alert, 2019).

4.1.3. Case of Iraq

Iraq ranks 121 in importing cement products in the world with 0.1 percent. The average distance of the exporter's countries is 1324 km and the market concentration is 0.71 (ITC, 2019).

Before 2003, political relations between the Turkish government and the former Iraqi regime were not good due to problems mainly related to Turkey's special relations with the United States and Israel, in addition to issues related to water conflict (Originate from Tigris and Euphrates rivers) between the two countries (Al-Jazeera, 2004).

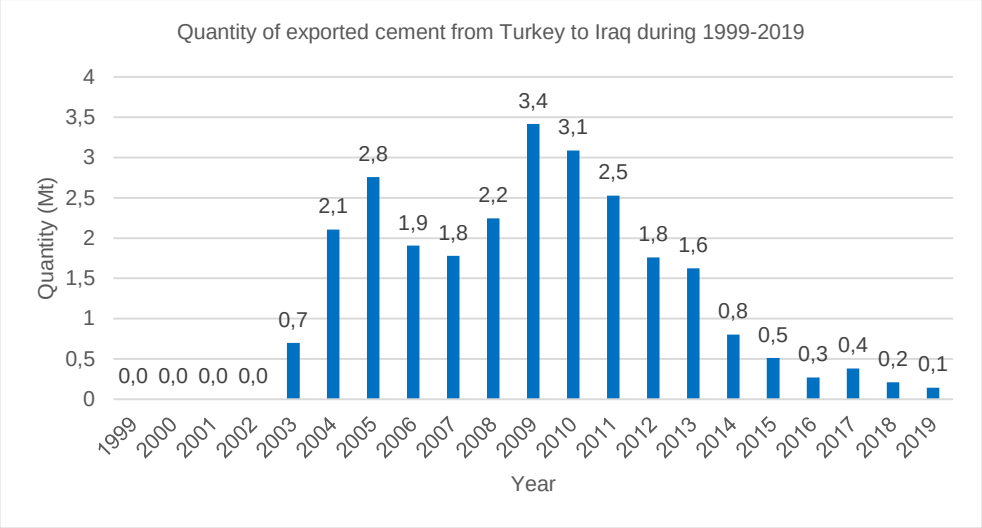

Figure 4.10. Quantity of exported cement from Turkey to Iraq during 1999-2019 (TCMA, 2019)

After 2003, economic relations between Iraq and Turkey began to gradually grow, Turkish cement began to flow into the Iraqi market as shown in Figure 4.10., simultaneously with many commodities, especially with the stage of rebuilding Iraq, which followed the American invasion.

Iraq turned into one of the preferred markets of Turkish investors; It opened its branches in Iraq, connected with Iraqi companies with long-term

contracts, executed massive projects; as a result, the number of Turkish companies operating or linked to the Iraqi market was about 1500 (Hürriyet Daily News, 2014a), the majority of which are connected to the construction and contracting sector; which, until the end of 2013, carried out about 824 projects in Iraq with a total value of about $ 19.5 billion (Hürriyet Daily News, 2014b).

In 2014, the Islamic State of Iraq and the Levant (ISIS) seized control of the northern Iraqi city of Mosul after the withdrawal of the Iraqi army (Al-Jazeera, 2015).

According to the Turkish Exporters' Association, the volume of Turkish exports to Iraq decreased by 21% in June 2014 compared to the previous year. Turkish exports fell again by 46% in July as shown in Figure 4.10., bringing Iraq down to fifth in the list of the largest importers of Turkish exports (DailySabah, 2014).

Foreign Economic Relations Board of Turkey (DEİK), Turkish-Iraqi Business Council Head Ercüment Aksoy said a continuation of this situation would cost Turkey’s exports to Iraq to plunge by around $9 billion as the Kurdish-controlled northern Iraq will remain the only market (Hürriyet Daily News, 2014a). This is one of the most important turning points in the path of economic relations between Iraq and Turkey. In normal conditions, Mosul route that trucks used was taking about 5-6 days. However, with ISIS controlling the northern gates in Mosul, trucks had to change routes and began to took Jalawla Road. Consequently, the new route was taking about 10-11 days and the cost of the truck increased by about $ 3,000 as it was explained by Emin Taha, the general manager of Istanbul-based import-export Taha Cargo and Foreign Trade company (AA, 2014).

In 2016 and based on Resolution No. (409) issued by the General Secretariat of the Iraqi Council of Ministers, the import of cement to Iraq was suspended except in very exceptional cases in order to support the national product (The General Secretariat of the Council of Ministers Iraq, 2013)

The Iraqi cement production was increased by 60% - 65% after the invasion to cover 70% of the local consumption need in 2017 due to the entry of the private sector into the Iraqi market. In early 2018, the annual production of cement in the country reached 21 Mt from 25 government and investment factories, with the possibility of increasing production to double (Iraqi News Agency, 2018).

In 2019, Iraqi government suspended the importing of cement from Iran through the northern border because there are 6 cement plants existing in the north of Iraq with producing a value equal to 10 Mt / year. The entire cement need of the northern provinces in Iraq equal to 6 Mt / year which means the residual quantity could be consumed in other provinces of the country (XEBER24, 2019).

In 2020, Turkey's Ministry of Trade declared, the export of cement from Turkey to Iraq dropped by 11.60 percent from January through May 2020 compared to the same period of 2019, amounting $37.3 million (MENAFN, 2020).

4.1.4. Case of Syria

Syria ranks 77 in importing cement products in the world with 0.3 percent. The average distance of the exporter’s countries is 587 km and the market concentration is 0.88 (ITC, 2019).

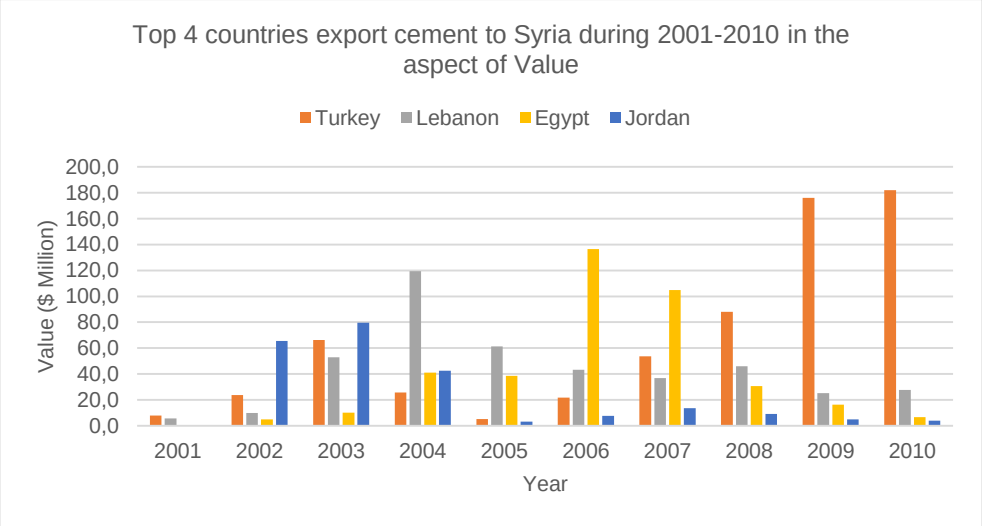

Figure 4.11. Top 4 countries export cement to Syria during 2001-2010 in the aspect of Value (ITC, 2019)

When reviewing the cement markets that supplied Syria with the cement during the past 2001-2010 years, it will be noted that Turkey tops the list, as Syria during that period imported about $650 million cement from Turkey as shown in Figure 4.11. (ITC, 2019).

Before 2004, the political relationship between Syria and Turkey could be described as tense due to the 1998 crisis. In 2004, a free trade agreement was signed between the two countries, which allows the flow of goods in both directions and the establishment of joint projects between them, which was implemented in 2007 (Turkish Ministry of Trade, 2019). Therefore, an increase in cement flow could be observed after 2004 as shown in Figure 4.12..

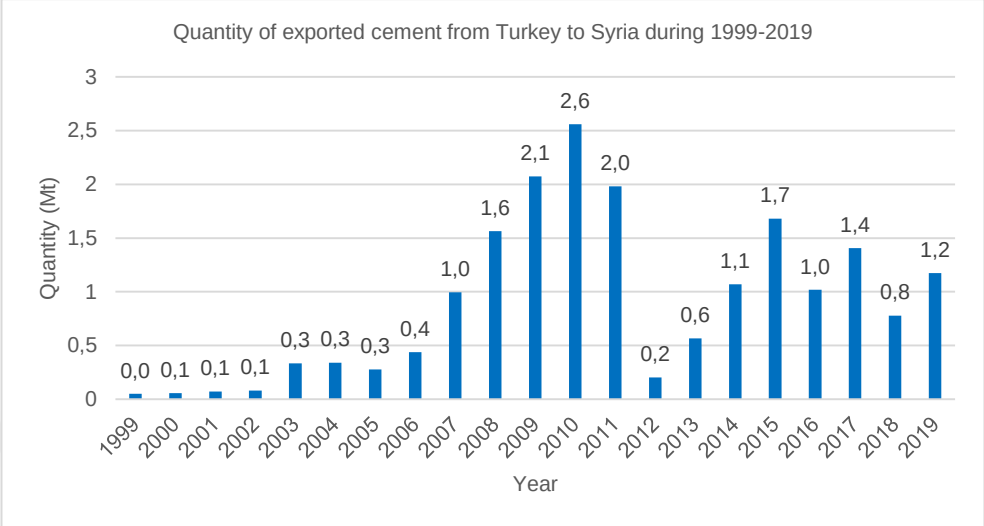

Figure 4.12. Quantity of exported cement from Turkey to Syria during 1999-2019 (TCMA, 2019)

By the end of 2011, Turkish-Syrian relations entered a crossroads. This year witnessed the start of the popular opposition movement against the Syrian regime. The Turkish government stood with the Syrian popular revolution and announced a list of economic sanctions against the Syrian government, and the latter responded likewise and raised the customs tax by 30% on Turkish goods (D.A.C, 2017). Consequently, the FTA (Free Trade Agreement) between Turkey and Syria was suspended on 6 December 2011 (Turkish Ministry of Trade, 2019).

In 2012, the relationship between the two countries worsened, as the Syrian National Council organized a conference of the Syrian opposition forces in Turkey to agree on a unified plan to overthrow Syrian President Bashar al-Assad (BBC, 2016). Consequently, the cement's flow from Turkey to Syria dropped to 0.2 Mt by end of the same year as shown in Figure 4.12.. In other word, decisive political movements that involve direct anti-government action as in case of Turkey and Syria could affect flow of exports in a significant manner.

Although diplomatic relations took an unstable direction between Turkey and the Syrian regime after the outbreak of the internal crisis, this did not affect the commercial relations between them. After 2012, the indicators of Turkish exports to Syria began to gradually rise by 2013, 2014, and 2015, as many attributed the reason for this to the internal war in Syrian cities, which caused the destruction and closure of an important part of the cement production sector (Aita, 2017).

By late 2016 and early 2017, The Turkish government has participated in launching infrastructure development projects in the northern regions of Syria. Where, Turkish private companies, such as PTT, Türk Telekom, the Association of Independent Industrialists and Entrepreneurs, and ET Energy have launched projects in the region such as dams, electricity, telecommunication, service facilities, and roads (Enabbaladi, 2018).

By the end of 2018, the reconstruction process began in Syria, at an estimated financial cost of $ 400 billion. The Turkish president had met with Russians, French, and Germans in Istanbul to discuss the future of Syria, including reconstruction in particular (Al-jazeera, 2018). Consequently, the reconstruction process positively affects cement exports.

4.2. PESTEL Macro-Environment Factors Affecting Cement Exports

The findings of the PESTEL analysis of the Turkish cement industry are presented below under the political, economic, social, technological, environmental, and legal headings. The results of the analysis are presented by comparing the data obtained from the review of the literature, statistics and data of official institutions and unions, and search results of press with expert opinions collected through questionnaires.

4.2.1. Political Factor

As a result of the literature review (Aita, 2017; Shakir, 2018; Abuamer, 2018), government departments (Turkish Ministry of Economy, Turkish Ministry

of Trade, TCMA, The Center on Budget and Policy Priorities, The General Secretariat of the Council of Ministers Iraq, Iraqi State Company of Cement), global organizations (ITC, Democratic Arab Center, Global Trade Alert, World Trade Organization, World Cement), search results of local and global press (Hürriyet Daily News, Anadolu Agency, DailySabah, Globes, Aljazeera, BBC, The Ekonomist, The New Arab (Alaraby), Iraqi News Agency, MENAFN, XEBER24, Enabbaladi), the cement sector was assessed under the following main topics from the political side. Survey questions were also created in the same context.

(1) Turkey's foreign policy effect on cement exports.

Findings regarding the political factor are summarized below.

(1) Turkey's foreign policy effect on cement exports.

- The findings of the literature reviews, government departments, global organizations, search results of local and global press which related to Turkey's foreign policy effect on cement exports are presented in detail in the section “4.1. Indicators of Cement Sector Export from Turkey to the United States, Israel, Syria, and Iraq during 1999-2020”.
- According to the opinions of the participants from cement companies and TCMA in the survey, the impact of the political factor on the cement export decision is almost insignificant. Most of Turkey's exports of clinker are going to African and Asian countries. Cement is also essentially exported to America, Africa, Asia, and a small number of European countries. The participants favored the effect of the economic factor over the political factor, in particular the local market condition and the exchange rate, on the export decision. As stated by their responses, some assumed that if the political factor affected exports, this would include,

perhaps, additional customs tariffs. According to the opinions of economic academics who participated in the survey, the political dimension always casts a shadow on economic progress. As the political aspect significantly influences the export channel for each commodity from a theoretical perspective. Some participants predicted that Syria would become a lucrative market if peace was to be concluded in the near future. However, the fact that firms are a determining factor in the production of exported goods also plays an important role in controlling exports.

4.2.2. Economic Factor

As a result of the literature review (Gerek et al., 2012; Bağrıaçık et al., 2013; Topçuoğlu, 2016; Ulubeyli, 2017; Güleç and Özkan; Saygılı and Şahin, 2018; Çanakçıoğlu, 2019; Adigüzel,2020; Soylu, 2020; Akyıldız, 2020), government departments (Turkish Ministry of Economy, Turkish Ministry of Trade, TCMA, TÜİK), global organizations (Global Cement statistics and reports, ITC statistics, KPMG report, World Trade Organization, World Cement, GLOBAL TRADE ALERT), search results of local and global press (The Ekonomist), the cement sector was assessed under the following main topics from the economic side. Survey questions were also created in the same context.

(1) The impact of the cement industry on the construction industry.
(2) The impact of the economic fluctuations that began in 2018 on the local production and consumption of cement.
(3) The reason for foreign investors prefers the Turkish cement sector.
(4) Forecasts of investment and export indicators for the cement industry.

Findings regarding the economic factor are summarized below.

(1) The impact of the cement industry on the construction industry.

- While the construction industry is a major indicator of the overall economy, cement production is defined as a major indicator of the construction industry (KPMG, 2019). This can be clearly understood in the Figure 4.13., as with the decline in the construction confidence index, the production and local sales of cement decreased in parallel after 2017 (TCMA,2019; TÜİK 2021).

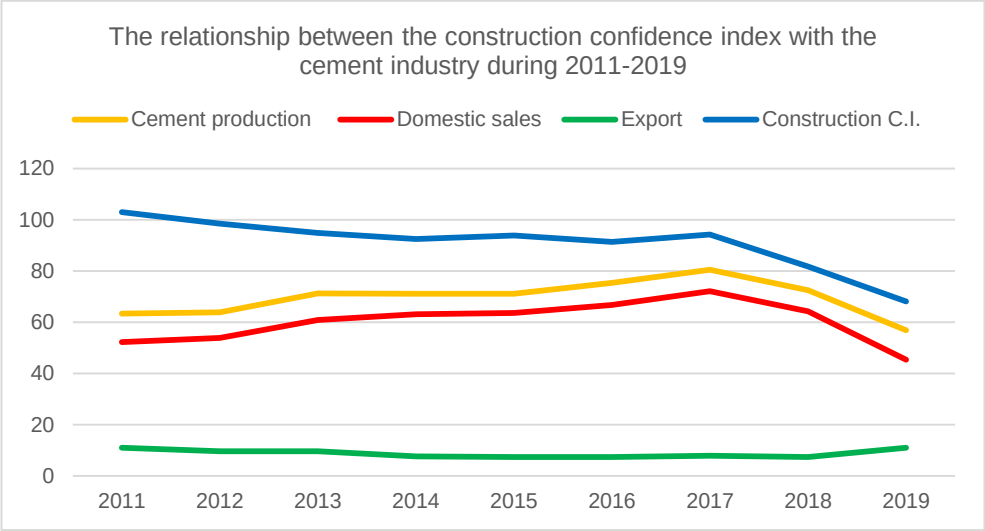

Figure 4.13. The relationship between the construction confidence index with the cement industry (TCMA, 2019; TÜİK, 2021)

- According to the opinions of the participants from cement companies and TCMA in the survey, the growth or contraction of the cement industry is directly related to the construction industry since cement is the main element for the latter, as it is obvious that cement sales are changing in parallel with the construction sector.

(2) The impact of the economic fluctuations that began in 2018 on the local production and consumption of cement.

- The economic fluctuation that started in 2018 had a significant impact on local cement production and consumption. Domestic production, which was 80.5 Mt in 2017, decreased to 72.5 Mt in 2018. While domestic consumption, which was 72.2 Mt in 2017, decreased to 64.3 Mt in 2018, but this aspect had a positive impact on exports (TCMA, 2019; ITC, 2019).
- According to the opinions of the participants from cement companies, academics, and TCMA in the survey, although some constructions such as public facilities and hospitals that must be built have not been affected by the economic fluctuation, the construction sector in which cement is the main raw material has been affected indirectly. It has witnessed a decrease in the demand for housing due to the high costs, especially in the large cities. As cement is a product with a specific expiration date, production continued to decline during 2019 to decrease by %21.5 due to lower domestic demand which decreased by 30% compared to 2018. According to the view of the majority of cement producers, the rate of production and consumption of cement began to improve with the beginning of 2020, attributing this to the government's reduction of interest rates on housing loans.

(3) The reason for foreign investors prefers the Turkish cement sector.

- Regardless of the local contraction in cement sales, Turkey ranked second in the world in terms of cement exports, as the value of Turkish cement exports reached $ 876.5 million and represented 8.6% of the total global exports (ITC, 2019). This feature can attract foreign investors to run their

money in the Turkish cement industry. In addition to the fact that the sector is characterized by the presence of the workforce, proximity to export markets, the majority of its plants have quality and environmental management systems (ISO 9001 and ISO 14000 certificates) (Kolanci, 2013). Therefore; foreign investors take environmental factors that affect the investment situation more than the financial ratios of companies into consideration (Saygılı and Şahin, 2018).

- According to the opinions of the participants from cement companies, academics, and TCMA in the survey, foreign investors prefer to invest in the Turkish cement sector for several reasons, the most important of which is the belief that local demand on a small and large scale is high and that the decline in demand will not occur often. Due to its geopolitical location, it is close to the construction markets that will grow in the future and because they are institutional firms. In addition to young manpower, cheap raw materials, ease of export, high product quality, and proximity to international markets.

(4) Forecasts of investment and export indicators for the cement industry.

- Regarding forecasts of investment and export indicators for the cement industry; literature, government departments, global organizations, press has been researched but sufficient and reliable resources could not be reached. Therefore, only participant expert opinions were taken into account.
- Most of the survey respondents from cement factories, academics, and TCMA predict that cement exports will be positive for the future. As of January 2020, it is observed that cement exports have increased by 38% according to TCMA data. A number of cement plants in Europe are

expected to be closed to prevent air pollution from cement emissions. The growth projections of the world population also show that the African continent will be in dire need of housing in the future due to an increase in population, therefore these factors will be positive for cement companies that have export and sale channels in those countries. Due to the existence of adequate production facilities to meet domestic demand, cement companies are expected to focus on foreign investment. Whereas, in the next five years, there is only one cement factory that has a request to increase production capacity and no further investment is expected according to TCMA.

4.2.3. Social Factor

As a result of the literature review (Demir and Atlı, 2017; Tokdemir, 2019; Uysal, 2019; Gezer,2020) the cement sector was assessed under the following main topics from the social side. Survey questions were also created in the same context.

(1) Cement sector's contribution to social life and the development of the regions in which it is located in Turkey.

Findings regarding the social factor are summarized below.

(1) Cement sector's contribution to social life and the development of the regions in which it is located in Turkey.

- Demir and Atlı (2017) have noted that Cement factory located in Elazig provides opportunities for industrialization and socio-economic development.
- Cement factories, academics, and TCMA respondents agreed on the positive role of the cement sector in social life and the development of the

areas in which it is located. Where, it contributes to providing job opportunities, material and moral support in the social field. In addition, it shows the necessary sensitivity in environmental issues such as carbon sequestration and climate change by contributing to sustainability studies and establishing sustainable structures.

4.2.4. Technologic Factor

As a result of the literature review (Yıldırım, 2012; Atmaca, 2014; Demir, 2016; Polat and Altan, 2018; Aslan, 2020) the cement sector was assessed under the following main topics from the technology side. Survey questions were also created in the same context.

(1) Production capacity of cement factories and the ability to use the total capacity.
(2) Origin and supply of machinery and spare parts used in cement factories.
(3) Energy sources used in cement factories.
(4) Technology development in terms of production methods (R&D Units).
(5) Green cement manufacturing.
(6) Raw material supply and causes of its deficiency.

Findings regarding the technological factor are summarized below.

(1) Production capacity of cement factories and the ability to use the total capacity.

- The cement industry has witnessed a remarkable development in terms of production capacity over the past two decades. In 2019, the total capacity and real production of the sector were about 144 and 57 Mt, respectively as shown in Figure 4.14. (TCMA, 2019).

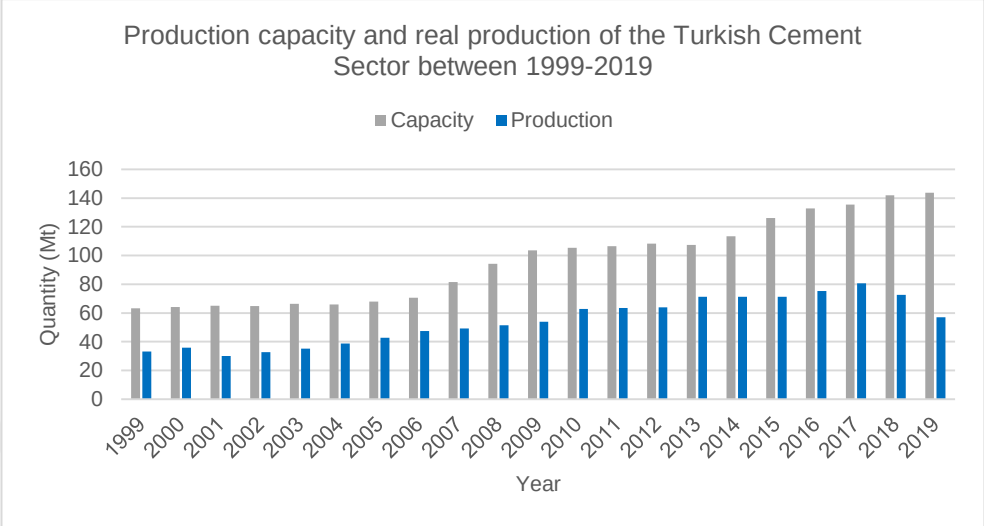

Figure 4.14. Production capacity and real production of the Turkish Cement Sector between 1999-2019 (TCMA, 2019)

- According to cement plants respondents, in general, cement factories do not have functional problems that may prevent access to their total production capacity.

(2) Origin and supply of machinery and spare parts used in cement factories.

- Regarding the origin of machinery and spare parts used in cement plants; literature, government departments, global organizations, search results of press have been researched but sufficient and reliable resources could not be reached. Therefore, only participant expert opinions were taken into account.
- According to cement plants and TCMA respondents, machinery and equipment usually found in cement plants are supplied locally and from abroad. In some cases, spare parts could be supplied from abroad, if not

provided locally. In other words, there is no a significant problem both in machine supply during the establishment phase and spare parts during the production phase.

(3) Energy sources used in cement factories.

- In Turkey; Lignite, petcoke, coal, natural gas and oil electricity, are commonly used in cement industry as energy resources. Alternative fuels are also widely used such as, municipal and industrial sludge, oily waste, waste tire, textile waste and biomass, and refuse-derived fuel (Doğan, 2015; Rende et al., 2018).
- According to cement plants and TCMA respondents, cement plants depend on electricity, coke, lignite, waste heat, and natural gas as energy sources. There are also some factories that use alternative energy sources such as, waste, wood, textile materials.

(4) Technology development in terms of production methods (R&D Units).

- Regarding technology development in terms of production methods (R&D Units) in cement plants; literature, government departments, global organizations, search results of press have been researched but sufficient and reliable resources could not be reached. Therefore, only participant expert opinions were taken into account.
- According to cement plants, academics, and TCMA respondents, there are R&D units in most of the central cement factories. Studies are being carried out in those units on new production methods. Furthermore, some

factories even have R&D units supported by the Scientific and Technological Research Council of Turkey.

(5) Green cement manufacturing.

- Regarding green cement manufacturing in Turkey; literature, government departments, global organizations, search results of press have been researched but sufficient and reliable resources could not be reached. Therefore, only participant expert opinions were taken into account.
- According to cement plants, academics, and TCMA respondents, there is a significant potential to manufacture green cement by some cement companies especially CIMSA, which has been started producing green cement. Moreover, some cement factories use ash, which is waste from thermal power plants, as an additive in the production of some types of mixed cement. There are other factories that using waste to meet their requirement for energy with keeping all fuel emissions below the standard limitation.

(6) Raw material supply and causes of its deficiency

- Regarding sources of raw materials used in cement manufacturing and obstacles that causing lack; literature, government departments, global organizations, search results of press have been researched but sufficient and reliable resources could not be reached. Therefore, only participant expert opinions were taken into account.
- According to respondents from cement plants and TCMA, the sector supply the raw materials used in cement production locally without facing significant obstacles.

4.2.5. Environmental Factor

As a result of the literature review (Kartal, 2012; Doğan, 2015; Öztürk, 2016; Demir and Atlı, 2017; Güler, 2018) the cement sector was assessed under the following main topics from the environmental side. Survey questions were also created in the same context.

(1) Waste management and R&D studies for waste recycling.
(2) Impact of cement plant emissions on health and environment.

Findings regarding the environmental factor are summarized below.

(1) Waste management and R&D studies for waste recycling.

- Bağrıaçık et al. (2013), has indicated that the absence of an alternative product against cement negatively affects the R&D in the sector. Öztürk (2016), has indicated that the alternative raw materials and alternative fuels were very useful and an important application in the cement industry in Turkey in terms of preventing environmental pollution and reducing the use of natural resources, besides decreasing cost for the facility. Rende et al. (2018), have found that energy consumption levels and the technology used in the cement sector are in a good state in Turkey. In addition, there is an important reduction potential of CO_2 emissions essentially by rising waste WHR and alternative fuel and raw material utilization rates.
- Most cement companies have recycling units and implement waste management in their factories. As 35 factories generate energy from waste according to TCMA. There are serious R&D studies on the recycling and utilization of cement manufacturing emissions in the field of power generation. As in some factories, the waste heat from the chimney is converted into electrical energy.

(2) Impact of cement plant emissions on health and environment

- Despite the direct and indirect benefits that the cement industry contributes to the economic situation, it is included in the industries that threaten the health and environment. Within the scope of occupational health and safety of the manpower of the cement industry; Uysal (2019), has indicated that employees who work for periods exceeding working hours or with a shift system have absent-mindedness and lack of attention. As well as, the lack of necessary warning signs in the workplace poses a great risk in terms of worker health and safety in the examined cement plant. Gezer (2020), has stated the importance of training for individuals on health literacy, occupational health, the duties of the doctor and nurse in the cement factory, and organizing training on what individuals should do in the case of health problems in the workplace. Within the scope of the location of the cement factories; Kartal (2012), has indicated a delay in germination rates in barley crops due to the oxidative stress factors of cement dust filter residues of the examined cement plant. Doğan (2015), has indicated the existence of carbon leakage in the Turkish cement industry. Demir and Atlı (2017) have noted that although the examined cement Factory provides opportunities for industrialization and socio-economic development in Elazig, it causes soil, air, and water pollution and threatens the conditions for growing crops.
- Both cement factories and TCMA affirmed that all factory emissions are subject to environmental safety standards. Cement factories comply with all the rules applied by the Ministry of Environment and their emissions are constantly monitored by the ministry. However, academics think that despite the possibility of pollution of the environment and air by emissions of cement factories, taking precautions in waste management and

environmental protection such as filtering systems will contribute to reducing damage to a minimum.

4.2.6. Legal Factor

As a result of the literature review (Ciba, 2007; Gürsel, 2018) and global organization (Global Trade Alert), the cement sector was assessed under the following main topics from the legal side. Survey questions were also created in the same context.

(1) Legal restrictions on cement production.
(2) Legal restrictions applied on Turkish cement in foreign markets.
(3) Periodic inspection of cement factories and the supervision authorities that carry it out.
(4) Required export standards to ship cement to the United States
(5) International standards applied in cement manufacturing plants.

Findings regarding the legal factor are summarized below.

(1) Legal Restrictions on Cement Production.

- The legal restrictions in the cement industry aim to create a fair and competitive market not to limit or impact production in Turkey. However, the sector has witnessed a number of issues related to monopoly and repeated mergers. Ciba (2007) has indicated that mergers and acquisitions in the cement sector occur frequently due to the fact that large groups operating in the cement sector acquire smaller enterprises compared to them. Gürsel (2018) has indicated that despite the fines imposed on the violating parties, the recurrence of competition violations in the cement industry reveals that the fines are far from a deterrent.

- According to the answers of the Cement Companies and TCMA participants in the survey, there are no legal constraints on cement production, and existing restrictions are only to ensure production without damaging the environment, society, and the completion market.

(2) Legal restrictions applied on Turkish cement in foreign markets.

- Cement goods exported abroad, like other merchandise, are subject to the laws of the imported markets. In other words, foreign commodities are required to adhere to all the laws of the national markets in which they are sold, such as custom tax, non-monopoly rules, and anti-dumping duty. As was mentioned in detail in the previous section "4.1", Turkish cement was exposed to several issues in this context especially in the Israeli market. In 2005, Israel's authority imposed anti-dumping duties on imports of gray Portland cement from Turkey ($ 5.85 per ton) (WTO, 2005). In 2017, Israeli authorities reinitiated anti-dumping investigations about cement imported from Turkey and Greece. As a result, in 2019 decision was issued to impose anti-dumping duty on imports of Portland cement from Turkey (0% - 25%) and Greece (0.25%) until 6 October 2021 (Global Trade Alert, 2019).
- Regarding Legal restrictions applied on Turkish cement in foreign markets, it has not benefited from expert opinions.

(3) Periodic inspection of cement factories and the supervision authorities that carry it out.

- Regarding periodic inspection of cement factories and the supervision authorities that conducted it out; literature, government departments, global

organizations, search results of press have been researched but sufficient and reliable resources could not be reached. Therefore, only participant expert opinions were taken into account.

- Internal and external inspections of cement plants are implemented by the official organizations like QEC (Quality and Environment Council) and TCMA. Quality management systems and greenhouse gas examinations are implemented annually by CPC (Inspection Test Certificate).

(4) Required export standards to ship cement to the United States

- Regarding required export standards to ship cement to the United States; literature, government departments, global organizations, search results of press have been researched but sufficient and reliable resources could not be reached. Therefore, only participant expert opinions were taken into account.
- Cement is shipping by vessel and containers from Turkey to United States. ASTM (American Society for Testing and Materials) standard is required for export.

(5) International standards applied in cement manufacturing plants.

- With the continuous development that the world has witnessed in terms of protecting the ecosystem, Industries (including cement sector) are required to achieve international standards that ensure that both the manufacturing processes they run and products do not threaten health and nature. In other words, in order to ensure the continuous flow of cement companies goods to global markets, they must meet international standards, such as ISO and CE certificate, which not only represents quality but is a very important

sign symbolizing health and safety that was created to ensure the free movement of goods especially in the European Union (TSE, 2014). In the same context, Hiçyorulmaz (2015), has found that 89.2% of cement plants have TSE certificate and 89.2% with ISO 9001 certificate, 91.9% have ISO 14001 certificate, 56.8% with CE certificate and 73% with EC certificate among 37 enterprises ran in the cement industry in Turkey. So, these features are expected to support the cement export flow from turkey to the international markets.

- Cement factories in Turkey produce cement according to international standards such as TS-EN standards. As TCMA mentioned, all cement products have the CE marking.

4.2.7. Other Factors Affecting the Turkish Cement Industry

As a result of literature review (Akyıldız, 2020); data and statistics of government departments (TCMA, TÜİK); and global organizations (ITC Database, World Trade Organization, World Cement), other factors affecting the Turkish cement industry are evaluated under the following main headings. Survey questions were also created in the same context.

(1) Impact of Covid-19 on domestic consumption and international export of cement in Turkey.
(2) Cement usage in non- building construction fields.
(3) Shipping method of cement to the United States (Specific procedures if it exists).
(4) Uses of alumina cement and the reasons for importing it from abroad.

Findings regarding the general factor are summarized below.

(1) Impact of Covid-19 on domestic consumption and international export of cement in Turkey.

- The COVID-19 pandemic has spread worldwide in a quick manner, infecting millions and impact economic activity due to countries imposed tight restrictions on movement to prevent the spread of the disease. With the increase in human losses, the economic damage is becoming apparent as it represents the largest economic shock in the world in decades (The World Bank, 2020). The pandemic has negatively impacted the construction sector as much as they have affected other industries in Turkey. The seasonal construction confidence index, which had recovered at the beginning of 2020, witnessed a significant decline in April to reach (50.9), which is less than the lowest decline recorded during the period of economic fluctuations since 2018 about (60.7) as shown in Figure 4.15. (TÜİK, 2021). Akyıldız (2020), has indicated that 11.1% of employees in the construction sector were laid off, while the rate of those on unpaid leave was 13.7%. In general, 85.2% of the workers in the sector reported a loss of income due to the pandemic. The Covid-19 epidemic has affected the construction industry and the cement industry in parallel. In the cement industry, a decline in domestic sales is observed in the first quarter of 2020, reaching the lowest quantity in May by 3.6 Mt, but when the statistics for the whole year are considered, the situation is not critical while the cement export was not significantly affected throughout the year as shown in Figure 4.16. (TCMA, 2020).

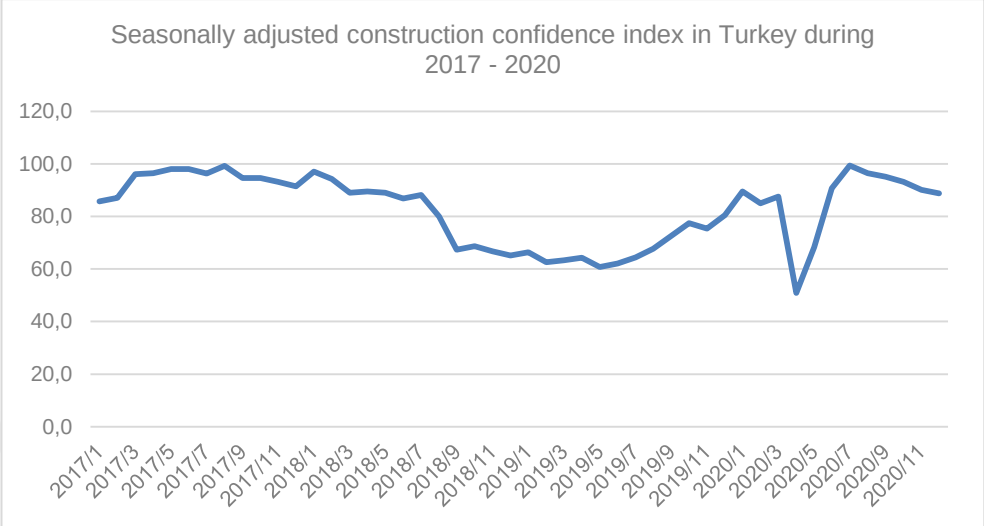

Figure 4.15. Seasonally adjusted construction confidence index in Turkey during 2017 – 2020 (TÜİK, 2021)

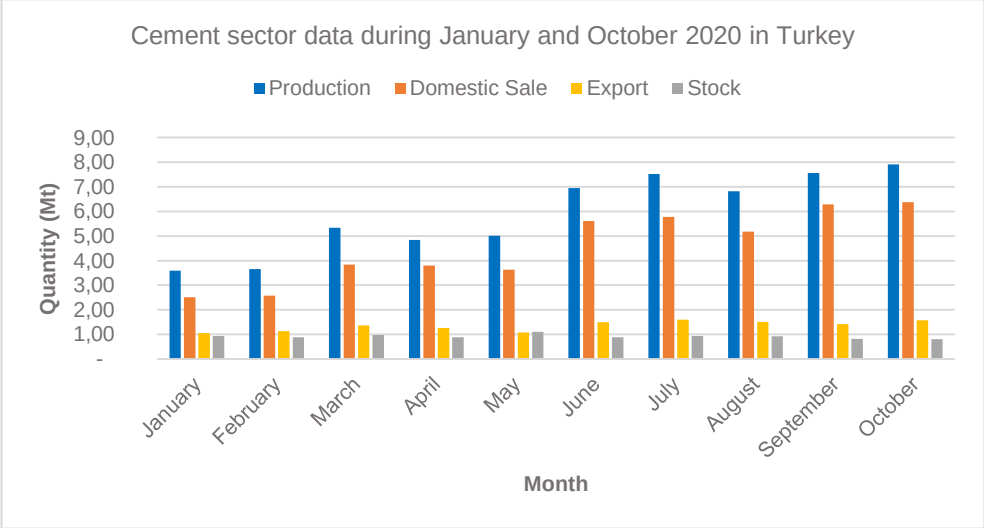

Figure 4.16. Cement sector data during January and October 2020 in Turkey (TCMA, 2020)

- According to cement plants, academics, and TCMA respondents, the measures taken and restrictions applied to prevent the transmission of the

virus in sales offices and construction sites during the pandemic caused the suspension of the construction sector on a global scale. In a parallel way, quarantine and curfews have negatively affected the cement industry as much as they have affected other sectors. It has created an environment of economic stagnation. Although in early 2020 the cement sector witnessed a remarkable recovery, during the period of the epidemic, there was a contraction in cement sales through the first half of the same year. Starting in June, domestic demand for cement started to gradually increase. Although many countries closed their borders for a certain period of time to secure them from the pandemic, this did not negatively affect cement exports.

(2) Cement usage in non-building construction fields.

- Regarding cement usage in non-building construction fields; literature, government departments, global organizations, search results of press have been researched but sufficient and reliable resources could not be reached. Therefore, only participant expert opinions were taken into account.
- According to cement plants and TCMA, cement used in projects such as highway construction, dams, and maintenance of city facilities. It is also used in the production of construction chemicals, and ready-mixed concrete.

(3) (Shipping method of cement to the United States (Specific procedures if it exists).

- The findings of the literature reviews, government departments, global organizations, search results of local and global press which related to are

cement shipping from Turkey to the United States presented in detail in the section "4.1.1. Case of United States".

- Cement is shipping by vessel and containers from Turkey to United States. ASTM standard is required for export.

(4) Uses of alumina cement and the reasons for importing it from abroad.

- Turkey is a self-sufficient sector in cement production, as Its cement imports represent 0.1% of world imports for cement products, besides its ranking in world imports is 150. However, Turkey imports some types of cement, especially aluminous cement, which constitutes 70% of total cement imports. Considering the list of alumina cement supply markets imported by Turkey in 2019, France ranks first with a value of $ 1.8 million and 2309 tons of cement, followed by the United Kingdom, which in turn exported nearly $ 1.152 million and 1159 tons of cement to Turkey as shown in Figure 4.17. (ITC, 2019).

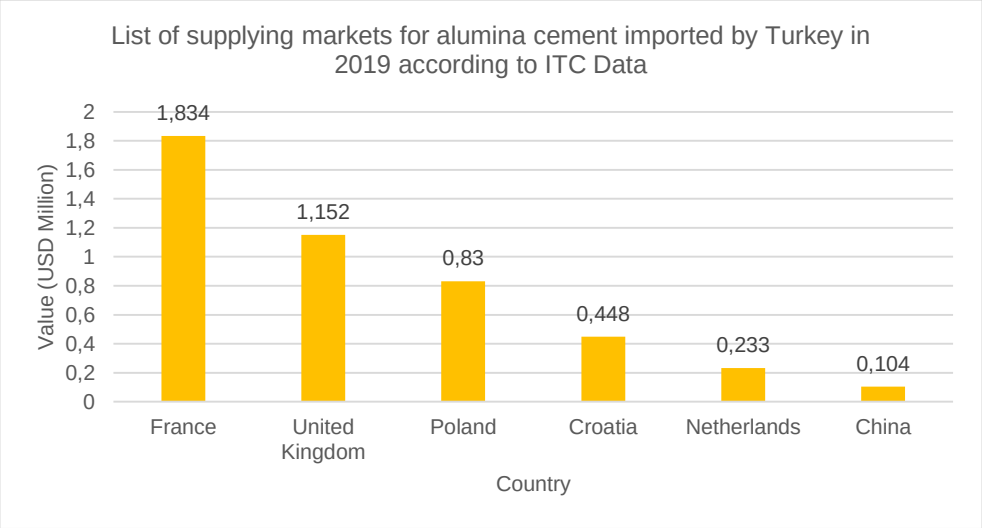

Figure 4.17. List of supplying markets for alumina cement imported by Turkey in 2019 according to ITC Data (ITC, 2019)

- According to cement plants, alumina cement is often used in the production of construction chemicals and refractories resistant to high temperatures. In Turkey, CIMSA occupies a prominent position in the manufacture of various types of alumina cement. However, domestic production is not sufficient to meet demand, consequently, it is imported from abroad.

4.3. Criteria Affecting Cement Exports

In Table 4.1., the criteria affecting cement exports are shown according to the opinion of academics and cement companies. It should be referred that the ratio of cement factories that filled the table to academics is 3:5.

The average criteria affecting cement exports are respectively; Country's exchange rate about 6.38, Price about 6.38, Company credibility about 6.13, Quality about 6.00, Past purchasing experiences about 6.00, Distance about 5.88, International relations about 5.88, Trade restrictions about 5.75, Speed of supply about 5.75, Company awareness about 5.75, Productivity about 5.63, Ease of communication with the company about 5.50, Country's inflation rate about 5.25, Marketing about 5.25, GDP abroad about 4.63, Domestic GDP about 4.50.

Table 4.1. Criteria affecting cement exports

Criteria	Abs. Not Imp. (1)	2	3	4	5	6	Abs. Imp. (7)	Avg.
Country's exchange rate	0.0%	12.5%	0.0%	0.0%	0.0%	0.0%	87.5%	6.38
Price	0.0%	0.0%	12.5%	0.0%	0.0%	12.5%	75.0%	6.38
Company credibility	0.0%	0.0%	12.5%	0.0%	0.0%	37.5%	50.0%	6.13
Quality	0.0%	0.0%	12.5%	0.0%	12.5%	25.0%	50.0%	6.00
Past purchasing experiences	0.0%	0.0%	12.5%	0.0%	12.5%	25.0%	50.0%	6.00
Distance	0.0%	12.5%	0.0%	0.0%	0.0%	50.0%	37.5%	5.88
international relations	0.0%	12.5%	0.0%	0.0%	12.5%	25.0%	50.0%	5.88
Trade restrictions	0.0%	12.5%	0.0%	0.0%	25.0%	12.5%	50.0%	5.75
Speed of supply	0.0%	12.5%	0.0%	0.0%	12.5%	37.5%	37.5%	5.75
Company awareness	0.0%	0.0%	12.5%	0.0%	12.5%	50.0%	25.0%	5.75
Productivity	0.0%	12.5%	0.0%	12.5%	0.0%	37.5%	37.5%	5.63
Ease of communication with the company	0.0%	12.5%	0.0%	12.5%	12.5%	25.0%	37.5%	5.50
Country's inflation rate	0.0%	12.5%	12.5%	12.5%	12.5%	0.0%	50.0%	5.25
Marketing	0.0%	0.0%	25.0%	0.0%	25.0%	25.0%	25.0%	5.25
GDP abroad	12.5%	0.0%	12.5%	12.5%	25.0%	25.0%	12.5%	4.63
Domestic GDP	12.5%	0.0%	12.5%	25.0%	12.5%	25.0%	12.5%	4.50

When considering standard Intervals used in evaluating the criteria affecting cement exports as shown in Table 3.4., the criteria that affect cement exports could be arranged in term of importance as follow.

(1) The country's exchange rate and price have a very significant effect on cement exporting.
(2) Company credibility, quality, past purchasing experiences, distance, international relations, trade restrictions, speed of supply, company awareness, productivity, ease of communication with the company have to some extent a significant effect on cement exporting.
(3) Country's inflation rate, marketing, GDP abroad, domestic GDP have a significant effect on cement exporting.

5. CONCLUSIONS AND RECOMMENDATIONS

The main purpose of this study was to examine the status of the exports of the Turkish cement industry between 1999-2020 and to assess the sector using the PESTEL framework to analyze the macro-environment of the sector, including political, economic, social, technological, environmental, and legal factors. In addition to determining the factors affecting the flow of cement exports to the global market.

This chapter presents conclusions obtained from conducting this work and recommendations for improving Turkish cement industry exports to the world.

5.1. Conclusions

The study conclusions are summarized under the following main headings.

5.1.1. Political Aspect

The findings obtained as a result of political examination of the Turkish cement industry are summarized below.

- The signing of trade agreements between countries such as the Free Trade Agreement (FTA), Treaties with investment provisions (TIPs), the Double Tax Avoidance Agreement, and the Bilateral Investment Treaty (BIT) are contributing to the flow of different products between them as in the case of cement exports (as in the case of Syria and Israel).
- The Turkish government's efforts to distinguish between diplomatic relations between states and commercial relations between civil companies have had a positive effect on the flow of cement exports (as in the case of Israel and USA).
- Decisive political movements that involve direct anti-government action could affect the flow of exports as in the cement case in a significant

manner in the short term. But since cement industry is generally under the control of the private sector it is not completely stopped, in fact, there is only a decrease in the flow volume of commodities (as in the case of USA, Iraq and Syria).

- It may be difficult to determine and interpret the effects of political events between the two countries on trade relations. Because, political events have many indirect effects besides their direct effects on trade exchange, and even different variables can have mediating effects (as in the case of USA, Israel, Iraq, and Syria). The majority of stakeholders in cement companies and TCMA who participating in the survey agreed that the impact of the political factor on the cement export decision is negligible. The majority of economic academics participating in the survey agreed that the political dimension always casts a shadow over economic progress, as the political aspect significantly influences the export channel for each commodity from a theoretical perspective.
- The security conflicts and internal wars that some countries suffer from impact the local industry in a negative manner because of the destruction of the facilities, which forces the country to rely on foreign imports to meet the local demands. Especially with the end of these wars and the start of the reconstruction stage (as in the case of Iraq and Syria). As a result, the events in Turkey's neighboring countries have a positive impact on the Turkish cement exports.
- As a result of the researchers, Turkish cement exports are not affected much by political events as they are under the control of private companies.

5.1.2. Economic Aspect

The findings obtained as a result of economic examination of the Turkish cement industry are summarized below.

- The growth or contraction of the cement industry is directly related to the construction industry since cement is the main element for the latter. This could observe by examining the relationship between the construction confidence index and cement production.
- The economic fluctuation that started in 2018 has affected local production and sales. However, this aspect had a positive effect on exports, as companies direct their focus abroad in the case of a downturn in the local market.
- The Turkish government's resolution to reduce interest rates on housing loans contributed to the recovery of local sales of the cement sector at the beginning of 2020.
- Due to its geopolitical location, young workforce, cheap raw materials, ease of export, high product quality, and proximity to global markets, and its institutional firms, foreign investors prefer to invest in the Turkish cement sector.
- Most of the experts participating in the survey predicted that cement exports will be positive for the future. As of January 2020, it is observed that cement exports have increased by 38% according to TCMA data.

5.1.3. Social Aspect

The findings obtained as a result of social examination of the Turkish cement industry are summarized below.

- Cement firms contributed to providing job opportunities, material and incorporeal support in the social field in the areas in which it is located.

5.1.4. Technological Aspect

The findings obtained as a result of technological examination of the Turkish cement industry are summarized below.

- The cement industry has witnessed a remarkable development in terms of production capacity over the past two decades. In 2019, the total capacity and real production of the sector were about 144 and 57 Mt, respectively.
- The cement sector depends mainly on the local industry in providing machinery and equipment used in plants. In some cases, spare parts could be supplied from abroad, if not provided locally. In general, there is not a significant problem with the supply of spare parts in cement plants.
- Turkish cement industry supplies the raw materials used in cement production locally without facing significant obstacles.
- Turkish cement industry depends on electricity, coke, lignite, waste heat, and natural gas as energy sources. There are also some firms that use alternative energy sources such as, municipal and industrial sludge, oily waste, waste tire, wood, textile materials and biomass.
- Some cement factories use ash, which is waste from thermal power plants, as an additive in the production of some types of mixed cement. There are other factories that using waste to meet their requirement for energy by keeping all fuel emissions below the standard limitation.
- There are R&D units in most of the central cement factories. Studies are being carried out in those units on new production methods. Furthermore, some factories even have R&D units supported by the Scientific and Technological Research Council of Turkey.
- There is a significant potential to manufacture green cement by some cement companies especially CIMSA, which has been started producing green cement. This indicates that Turkey is following global trends in

implementing sustainable environmental systems. It is predicted that this contribution will positively affect exports in the long term.

5.1.5. Environmental Aspect

The findings obtained as a result of environmental examination of the Turkish cement industry are summarized below.

- As a result of the research conducted, it was observed that energy consumption levels and the technology used in the cement sector are in a good condition in Turkey. However, in a different study, a carbon leakage has been detected in the industry. As well, emissions of some cement plants cause soil, air, and water pollution and threaten the conditions for growing crops in the areas in which it is located. It was observed that cement dust emissions causing a germination delay and reduce germination rates in barley crops.
- Most cement firms have recycling units and implement waste management in their factories, as 35 factories generate energy from waste.
- There are serious R&D studies on the recycling and utilization of cement manufacturing emissions in the field of energy generation. As in some factories, the waste heat from the chimney is converted into electrical energy. The alternative raw materials and alternative fuels were an important application to prevent environmental pollution and reducing the use of natural resources, besides decreasing costs for cement industry.

5.1.6. Legal Aspect

The findings obtained as a result of legal examination of the Turkish cement industry are summarized below.

- Mergers and acquisitions are frequent in the cement sector, as large groups operating in the industry acquire smaller enterprises.
- Turkish Competition Authority works to ensure a fair competition market in the Turkish cement industry by imposing penalties on those who violate laws such as monopoly and suspicious acquisitions. However, the recurrence of competition violations in the cement industry reveals that there is a need to re-examine the value of the fines imposed.
- The economies of developing or least developed countries are affected by the construction industry and its sub-sectors such as the cement sector. In such cases, the authorities may intervene when it notices that there is a kind of unfair competition between local goods and foreign goods (such as if local production is impacted by cheap imports). As a result, the state may issue resolutions to suspend the import of such goods (as in the case of Iraq) until the local market recovers its equilibrium or imposed anti-dumping duties (as in the case of Israel).
- The majority of cement firms in Turkey produce cement according to international standards such as TS-EN, ISO 9001, ISO 14001, CE.
- Internal and external inspections of cement plants are implemented by the official organizations like QEC and TCMA. Quality management systems and greenhouse gas examinations are implemented annually by CPC.
- ASTM standard is required for exporting from Turkey to USA.
- In Turkey, Regular inspections in cement factories and the implementation of required international standards for each of the conditions for exporting cement make Turkish cement one of the preferred products for its high-quality worldwide.

5.1.7. General Aspect

The general findings obtained as a result of examination of the Turkish cement industry are summarized below.

- Covid-19 has negatively impacted the construction sector as much as it has affected other industries in Turkey. The seasonal construction confidence index witnessed a noticeable decline in April to 50.9, but it recovered in V shape with early August.
- The Covid-19 epidemic affected the cement industry, while a decrease was observed in domestic sales in the first quarter, sales gradually increased in early June. Cement exports were not significantly affected by the pandemic throughout 2020.

5.1.8. Criteria Affecting Cement Exports

The importance levels of the criteria affecting the Turkish cement industry have been determined according to expert opinions. Factors affecting cement exports according to their importance level; the country's exchange rate and price have a very significant effect on cement exporting. Company credibility, quality, past purchasing experiences, distance, international relations, trade restrictions, speed of supply, company awareness, productivity, ease of communication with the company have to some extent a significant effect on cement exporting. Country's inflation rate, marketing, GDP abroad, domestic GDP have a significant effect on cement exporting.

5.2. Recommendations

The implementation of PESTEL approach is expected to carry many competitive advantages to the cement industry in Turkey by ensuring the sector's continued prosperity in all aspects. As a result of the PESTEL analysis, the

recommendations given to enhance the export of cement in the future are presented below.

- Work to sign trade agreements with markets of countries that largely consume cement will contribute to increasing Turkish cement exports.
- The Turkish government's continuing practice of distinguishing between diplomatic and commercial relations and the continuation of this policy afterward will benefit the flow of goods such as cement to the countries concerned.
- Considering and implementing the laws of the international markets and not violating them (through dumping them with cheap commodities) contributes to the continued flow of cement exports.
- Continuous study of population growth in neighboring countries to the possibility that, in the short and long term, they will become profitable markets due to the high demand for housing.
- Cement companies should focus on producing specific types of cement according to abroad market demand like white cement, as its exports have higher profit margins compared to regular cement in some countries' markets.
- Make greater efforts to increase the production of some types of cement that are not polluting the environment, such as green cement.
- Study the increase and development of ports in deep waters to be able to accommodate large cargo ships.

Other recommendations that will positively affect the general success of cement companies are presented below.

- The government's implementation of resolutions that support the economic situation, such as the resolution to reduce interest rates on housing loans, will contribute to the prosperity of the construction sector and thus the cement sector.
- Legislation and implementation of strict penalties for violations that occur in the cement industry will maintain the balance of the sector and protect it from repeated infringements such as monopoly.
- Urban planners, who prepare the master plans should consider the location of the existing factories with high gas emissions and the wind factor when planning residential areas.
- As the world moves towards sustainability systems, real efforts must be made to raise the efficiency of applying alternative energy sources in the cement industry, such as using alternative raw materials and MSW (municipal solid waste) as fuel, within limits that do not impact health and the environment.
- Continuous modernization of the application of air protection systems from emissions of the cement industry, such as fine particles and toxic gases, in order to protect the ecosystem.
- Conducting R&D studies on automation issues and using modern technologies in the cement industry in order to raise the efficiency of the manufacturing, packaging, storage, distribution, and shipping process.
- Regularly preparing occupational health courses for cement plant workers.
- Applying international working hours' systems in cement factories and avoiding working as much as possible with the shift system to minimize the cases of distraction and lack of attention for employees.

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CURRICULUM VITAE

He finished Primary, Middle, and High school in Kirkuk. In 2013, he enrolled in the University of Kirkuk/College of Engineering/Civil Engineering Department and graduated from there with a degree of 2nd. In 2017, he won a scholarship awarded by Turkey to study MSc. degree at the University of Cukurova/Faculty of Engineering/Department of Civil Engineering.

APPENDICES

Appendix (A): Turkish and English Version of Questionnaire Form that Sent to Academics in Economic Filed.

Appendix (A-1): Turkish Version of Questionnaire

Türk Çimento Üretimi ve İhracatı Hakkında Bir Araştırma

Sayın Katılımcı,

Çukurova Üniversitesi Fen Bilimleri Enstitüsü, İnşaat Mühendisliği Anabilim Dalı'nda, "Türk Çimento İhracatının 1999-2020 Yılları Arasında PESTEL Analizi Açısından Değerlendirilmesi" adı altında, Dr. Öğr. Üyesi Gözde (Tantekin) Çelik danışmanlığında bir Yüksek Lisans Tez Çalışması yürütülmektedir. Bu çalışmanın temel amacı, 1999 - 2018 yılları arasında Türkiye'deki çimento sektörünün ihracatını incelemeyi ve bu veriler arasında mantıksal ilişkileri kurmayı ve yorumlamayı hedeflemektedir.

Bütün katılımcıların kişisel bilgileri gizli tutulacaktır. Toplam cevaplama süresi yaklaşık 10 dakikadır.

Ayırdığınız zaman için şimdiden teşekkür ederiz.

Yahya Ayoob Muqdad Sarkhosh
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Yapı Anabilim Dalı

GENEL BİLGİLER

Yaşınız

◯ 25 yaş ve altı
◯ 26 - 30
◯ 31 - 35
◯ 36 - 40
◯ 41 - 45
◯ 46 ve üzeri

Cinsiyetiniz

◯ Erkek
◯ Kadın

Ünvanınız

Buraya yazınız …

EKONOMİK FAKTÖRLER

- Türk inşaat sektörü, çimento sektörünü nasıl etkiyor?

  Buraya yazınız …

- 2018 yılında başlayan ve halen devam eden, ülkede yaşanan ekonomik dalgalanmalar ülke içi çimento "tüketimini" etkiledi mi? Nasıl?

  Buraya yazınız …

- 2018 yılında başlayan ve halen devam eden, ülkede yaşanan ekonomik dalgalanmalar çimento "üretimini" etkiledi mi? Nasıl?

  Buraya yazınız …

- Dünyada gerçekleşen olaylar çimento sektörünü nasıl etkiliyor? Örneğin yakın zamanda dünya çapında yaşanan korona virüsü sebepli pandemi ilanı çimento sektörünü etkiledi mi? (İhracat ve yurt içi tüketim?)

  Buraya yazınız …

- Çimento yatırım ve ihracat göstergeleri gelecek için olumlu mu?

  Buraya yazınız …

- Yabancı yatırımcılar neden paralarını Türkiye'deki çimento fabrikalarına yatırmayı tercih ediyor?

  Buraya yazınız …

- Türkiye'nin dış politikası (siyasi) çimento ihracatını etkiliyor mu? Nasıl etkiliyor?

  Buraya yazınız …

Çimento İhracatını Etkileyen Kriterleri Önem Derecesine Göre Puanlayınız.

kriter	**Kesinlikle hiç önemli değil (1)**	**2**	**3**	**4**	**5**	**6**	**Kesinlikle çok önemli (7)**
Ülkenin enflasyon oranı							
Ülkenin döviz kuru							
Üretkenlik							
Kalite							
Pazarlama							
Yurtiçi GSYİH							
Yurtdışı GSYİH							
Ticaret kısıtlamaları							
Tedarik süresinin hızlı olması							
Firmanın kolay iletişim imkanları							
Geçmiş satın alma deneyimleri							
Mesafe							
Fiyat							
Firmanın bilinirliği							
Firmaya duyulan güven							
Uluslararası ilişkiler							

ÖNERİLER KISMI

Sayın Katılımcı, Konuyla ilgili eklemek istediğiniz veye önerilerinizi buraya yazabilirsiniz.

Buraya yazınız …

Sayın Katılımcı, Ayırdığınız Zaman İçin Çok Teşekkür Ederiz.

Appendix (A-2): English Version of Questionnaire

Research on The Production and Export of The Turkish Cement Industry

Dear Participant,

A master's thesis research entitled “Evaluation of Turkish Cement Exports in Terms of PESTEL Analysis Between 1999-2020” is being conducted at Çukurova University, Institute of Natural and Applied Science, Department of Civil Engineering under the supervision of Asst. Prof. Dr. Gözde Çelik. The main purpose of this study is to examine the cement sector exports in Turkey between 1999-2020 in order to find a logical relationship between the data throughout the past 20 decades.

The personal information of all participants will be kept confidential. The total response time is around 10 minutes.

Thank you for your time.

Yahya Ayoob Muqdad Sarkhosh
MSc. Civil Engineer
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Asst. Prof. Dr. Gözde (Tantekin) Çelik
Cukurova University
Faculty of Engineering
Civil engineering Department
Department of Construction

GENERAL INFORMATION

Age (year)

◯ 25 years and under
◯ 26 - 30
◯ 31 - 35
◯ 36 - 40
◯ 41 - 45
◯ 46 and over

Gender

◯ Male
◯ Woman

Title

Write here…

ECONOMIC FACTORS

- How does the Turkish construction industry affect the cement industry?

  Write here…

- Did the economic fluctuations in the country, which started in 2018 and still continue, have affected domestic cement "consumption"? How?

  Write here…

- Did the economic fluctuations in the country, which started in 2018 and still continue, have affected cement "production"? How?

  Write here…

- How do events taking place around the world affect the cement industry? For example, did the Covid-19 pandemic affect the cement industry? (Export and domestic sales?)

  Write here…

- Do cement investment and export indicators seeming positive for the future?

  Write here…

- Why foreign investors prefer to invest their money in the Turkish cement industry?

  Write here…

- How does Turkey's foreign policy affect cement exports?

  Write here…

Score Criteria Affecting Cement Exports according to their Importance.

Criteria	**Absolutely not important (1)**	**2**	**3**	**4**	**5**	**6**	**Absolutely important (7)**
Country's exchange rate							
Price							
Company credibility							
Quality							
Past purchasing experiences							
Distance							
international relations							
Trade restrictions							
Speed of supply							
Company awareness							
Productivity							
Ease of communication with the company							
Country's inflation rate							
Marketing							
GDP abroad							
Domestic GDP							

RECOMMENDATIONS

Dear Participant, You can write your recommendations on the subject here.

Write here…

Dear Participant, Thank You For Your Time.

Appendix (B): Turkish and English Version of Questionnaire Form that Sent to Academics in Environment Filed.

Appendix (B-1): Turkish Version of Questionnaire

Türk Çimento Üretimi ve İhracatı Hakkında Bir Araştırma

Sayın Katılımcı,

Çukurova Üniversitesi Fen Bilimleri Enstitüsü, İnşaat Mühendisliği Anabilim Dalı'nda, "Türk Çimento İhracatının 1999-2020 Yılları Arasında PESTEL Analizi Açısından Değerlendirilmesi" adı altında, Dr. Öğr. Üyesi Gözde (Tantekin) Çelik danışmanlığında bir Yüksek Lisans Tez Çalışması yürütülmektedir. Bu çalışmanın temel amacı, 1999 - 2020 yılları arasında Türkiye'deki çimento sektörünün ihracatını incelemeyi ve bu veriler arasında mantıksal ilişkileri kurmayı ve yorumlamayı hedeflemektedir. Bütün katılımcıların kişisel bilgileri gizli tutulacaktır. Toplam cevaplama süresi yaklaşık 10 dakikadır.

Ayırdığınız zaman için şimdiden teşekkür ederiz.

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Yapı Anabilim Dalı

GENEL BİLGİLER

Yaşınız

◯ 25 yaş ve altı
◯ 26 - 30
◯ 31 - 35
◯ 36 - 40
◯ 41 - 45
◯ 46 ve üzeri

Cinsiyetiniz

◯ Erkek
◯ Kadın

Ünvanınız

Buraya yazınız …

ÇEVRESEL FAKTÖRLER

- Türkiye'de yeşil çimento üreten firmalar var mı?

  Buraya yazınız …

- Çimento atıklarının geri dönüşümü ya da atık transferi (başka bir alanda kullanılabilirliği) ile ilgili AR-GE çalışmaları yapılıyor mu?

  Buraya yazınız …

- Türkiye kapsamında çimento sektörünün sosyal katkısını nasıl ifade edersiniz?

  Buraya yazınız …

- Çimento fabrikalarının bulundukları yörenin gelişmesine önemli katkıları bulunuyor mu?

  Buraya yazınız …

- Çimento fabrikalarında hangi enerji kaynakları kullanılmaktadır? Söz konusu enerji nereden temin edilmektedir?

  Buraya yazınız …

- Çimento fabrikalarının çevreye ve sağlığa zararları olduğu söyleniyor, bu konu hakkında ne düşünüyorsunuz?

  Buraya yazınız …

ÖNERİLER KISMI

Sayın Katılımcı, Konuyla ilgili eklemek istediğiniz veye önerilerinizi buraya yazabilirsiniz.

Buraya yazınız …

Sayın Katılımcı, Ayırdığınız Zaman İçin Çok Teşekkür Ederiz.

Appendix (B-2): English Version of Questionnaire

Research on The Production and Export of The Turkish Cement Industry

Dear Participant,

A master's thesis research entitled “Evaluation of Turkish Cement Exports in Terms of PESTEL Analysis Between 1999-2020” is being conducted at Çukurova University, Institute of Natural and Applied Science, Department of Civil Engineering under the supervision of Asst. Prof. Dr. Gözde Çelik. The main purpose of this study is to examine the cement sector exports in Turkey between 1999-2020 in order to find a logical relationship between the data throughout the past 20 decades.

The personal information of all participants will be kept confidential. The total response time is around 10 minutes.

Thank you for your time.

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Cukurova University
Faculty of Engineering
Civil engineering Department
Department of Construction

GENERAL INFORMATION

Age (year)

◯ 25 years and under
◯ 26 - 30
◯ 31 - 35
◯ 36 - 40
◯ 41 - 45
◯ 46 and over

Gender

◯ Male
◯ Woman

Title

Write here…

ENVIRONMENTAL FACTORS

- Is there a company that produces green cement in Turkey?
  Write here…
- Are there any R&D studies on recycling or waste transfer (usability in another field) of cement waste?
  Write here…
- How would you express the social contributions of the cement industry in Turkey?
  Write here…
- Do cement factories have significant contributions to the development of the region where they are located?
  Write here…
- What energy sources are used in cement factories? Where does this energy come from?
  Write here…

- It is said that cement factories are harmful to the environment and health, what do you think about this issue?

Write here…

RECOMMENDATIONS

Dear Participant, You can write your recommendations on the subject here.

Write here…

Dear Participant, Thank You For Your Time.

Appendix (C): Turkish and English Version of Questionnaire Form that Sent to Cement Plants.

Appendix (C-1): Turkish Version of Questionnaire

Türk Çimento Üretimi ve İhracatı Hakkında Bir Araştırma

Sayın Katılımcı,

Çukurova Üniversitesi Fen Bilimleri Enstitüsü, İnşaat Mühendisliği Anabilim Dalı'nda, "Türk Çimento İhracatının 1999-2020 Yılları Arasında PESTEL Analizi Açısından Değerlendirilmesi" adı altında, Dr. Öğr. Üyesi Gözde (Tantekin) Çelik danışmanlığında bir Yüksek Lisans Tez Çalışması yürütülmektedir. Bu çalışmanın temel amacı, 1999 - 2020 yılları arasında Türkiye'deki çimento sektörünün ihracatını incelemeyi ve bu veriler arasında mantıksal ilişkileri kurmayı ve yorumlamayı hedeflemektedir. Bütün katılımcıların kişisel bilgileri gizli tutulacaktır. Toplam cevaplama süresi yaklaşık 15 dakikadır.

Ayırdığınız zaman için şimdiden teşekkür ederiz.

Yahya Ayoob Muqdad Sarkhosh
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ysarkhosh@student.cu.edu.tr

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Mühendislik Fakültesi
İnşaat Mühendisliği Bölümü
Yapı Anabilim Dalı

GENEL BİLGİLER

Yaşınız

◯ 25 yaş ve altı
◯ 26 - 30
◯ 31 - 35
◯ 36 - 40
◯ 41 - 45
◯ 46 ve üzeri

Cinsiyetiniz

◯ Erkek
◯ Kadın

Firmada Çalışma Süreniz

◯ 1 - 5
◯ 6 - 10
◯ 11 - 15
◯ 16 - 20
◯ 21 - 25
◯ 26 ve üstü

Sektörde Çalışma Süreniz

◯ 1 - 5
◯ 6 - 10
◯ 11 - 15
◯ 16 - 20
◯ 21 - 25
◯ 26 ve üstü

Mesleğiniz

◯ İnşaat Mühendisi
◯ Mimar
◯ İşletmeci
◯ Diğer

POLİTİK FAKTÖRLER

- Türkiye'nin dış politikası (siyasi) çimento ihracatını etkiliyor mu? Nasıl etkiliyor?

Buraya yazınız …

EKONOMİK FAKTÖRLER

- Türk inşaat sektörü, çimento sektörünü nasıl etkiyor?

  Buraya yazınız …

- 2018 yılında başlayan ve halen devam eden, ülkede yaşanan ekonomik dalgalanmalar ülke içi çimento "tüketimini" etkiledi mi? Nasıl?

  Buraya yazınız …

- 2018 yılında başlayan ve halen devam eden, ülkede yaşanan ekonomik dalgalanmalar çimento "üretimini" etkiledi mi? Nasıl?

  Buraya yazınız …

- Çimento yatırım ve ihracat göstergeleri gelecek için olumlu mu?

  Buraya yazınız …

SOSYAL FAKTÖRLER

- Türkiye kapsamında çimento sektörünün sosyal katkısını nasıl ifade edersiniz?

  Buraya yazınız …

- Firmanıza ait fabrikalar bulundukları yörenin gelişmesine katkıda bulunuyor mu?

  Buraya yazınız …

TEKNOLOJİ FAKTÖRLER

- Firmanız yeşil (ekolojik) çimento üretiyor mu?

  Buraya yazınız …

- Firmanız üretim yöntemleri açısından teknoloji geliştiriyor mu (AR-GE birimi var mı)?

  Buraya yazınız …

- Fabrikalarınızda kullanılan makineler yurt dışından mı temin ediliyor? (Yedek parça vs.)

  Buraya yazınız …

- Firmanızda üretilen çimento Avrupa Birliği'nde uygulanan standartları karşılıyor mu? Hangi standartlar?

  Buraya yazınız …

ÇEVRESEL FAKTÖRLER

- Firmanızda atık yönetimi var mı? Örneğin geri dönüşüm ünitesi hangi fabrikalarınızda var?

  Buraya yazınız …

- Firmanız tarafından, çimento atıklarının geri dönüşümü ya da atık transferi (başka bir alanda kullanılabilirliği) ile ilgili AR-GE çalışmaları yapılıyor mu?

  Buraya yazınız …

- Çimento fabrikalarının çevreye ve sağlığa zararları olduğu söyleniyor, bu konu hakkında ne düşünüyorsunuz?

  Buraya yazınız …

YASAL FAKTÖRLER

- Türkiye'de çimento üretimini engelleyen bazı yasal kısıtlamalar var mı?

  Buraya yazınız …

GENEL FAKTÖRLER

- Firmanız ABD'ye çimento ihracatı yapıyor mu? Türkiye'den ABD'ye çimento ihracatı hangi ulaşım yolu ile sağlanıyor (yük gemisi/kargo uçağı)? Belli bir ihracat prosedürü var mı?

  Buraya yazınız …

- Dünyada gerçekleşen olaylar çimento sektörünü nasıl etkiliyor? Örneğin yakın zamanda dünya çapında yaşanan korona virüsü sebepli pandemi ilanı çimento sektörünü etkiledi mi? (İhracat ve yurt içi tüketim?)

  Buraya yazınız …

- Yabancı yatırımcılar neden paralarını Türkiye'deki çimento fabrikalarına yatırmayı tercih ediyor?

  Buraya yazınız …

- Fabrikalarınızda periyodik olarak denetim yapılıyor mu? Hangi Kurum tarafından, ne kadar sürede bir denetleniyorsunuz?

  Buraya yazınız …

- Firmanızda alüminli çimento üretimi var mı? Aşağıdaki iki soruyu firmanız alüminli çimento üretiyorsa cevaplandırın lütfen.

◯ Evet
◯ Hayır

- Alüminli çimento gibi özel çimento türleri hangi alanlarda kullanılmaktadır?

Buraya yazınız …

- Türkiye, Alüminli Çimento gibi bazı çimento türlerini diğer ülkelerden ithal etmektedir. Yerli üretim talebi karşılamıyor mu?

Buraya yazınız …

- Firmanız çimento üretiminde kullandığı hammaddeleri yerel olarak mı tedarik ediyor ? Yoksa yurt dışından mı ithal ediyor? İthal ediyorsa, hangi ülkelerden?

Buraya yazınız …

- Firmanız tarafından üretilen çimento inşaat dışında başka alanlarda kullanmakta mıdır? Hangi alanlarda kullanılmaktadır?

Buraya yazınız …

- Çimento fabrikanızın üretim kapasitesi ne kadardır? Tüm kapasiteyi kullanabiliyor musunuz?

Buraya yazınız …

- Fabrikalarınızda hangi enerji kaynakları kullanılmaktadır? Söz konusu enerji nereden temin edilmektedir?

Buraya yazınız …

- Fabrikanızın en çok ihracat yaptığı ilk 3 ülkeyi yazar mısınız?

Buraya yazınız …

- Hammadde tedarikinde ne gibi engellerle karşılaşıyorsunuz?

Buraya yazınız …

Çimento İhracatını Etkileyen Kriterleri Önem Derecesine Göre Puanlayınız.

kriter	Kesinlikle hiç önemli değil (1)	2	3	4	5	6	Kesinlikle çok önemli (7)
Ülkenin enflasyon oranı							
Ülkenin döviz kuru							
Üretkenlik							
Kalite							
Pazarlama							
Yurtiçi GSYİH							
Yurtdışı GSYİH							
Ticaret kısıtlamaları							
Tedarik süresinin hızlı olması							
Firmanın kolay iletişim imkanları							
Geçmiş satın alma deneyimleri							
Mesafe							
Fiyat							
Firmanın bilinirliği							
Firmaya duyulan güven							
Uluslararası ilişkiler							

ÖNERİLER KISMI

Sayın Katılımcı, Konuyla ilgili eklemek istediğiniz veye önerilerinizi buraya yazabilirsiniz.

Buraya yazınız …

Sayın Katılımcı, Ayırdığınız Zaman İçin Çok Teşekkür Ederiz.

Appendix (C-2): English Version of Questionnaire

Research on The Production and Export of The Turkish Cement Industry

Dear Participant,

A master's thesis research entitled “Evaluation of Turkish Cement Exports in Terms of PESTEL Analysis Between 1999-2020” is being conducted at Çukurova University, Institute of Natural and Applied Science, Department of Civil Engineering under the supervision of Asst. Prof. Dr. Gözde Çelik. The main purpose of this study is to examine the cement sector exports in Turkey between 1999-2020 in order to find a logical relationship between the data throughout the past 20 decades.

The personal information of all participants will be kept confidential. The total response time is around 15 minutes.

Thank you for your time.

Yahya Ayoob Muqdad Sarkhosh
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Asst. Prof. Dr. Gözde (Tantekin) Çelik
Cukurova University
Faculty of Engineering
Civil engineering Department
Department of Construction

GENERAL INFORMATION

Age (year)

◯ 25 years and under
◯ 26 - 30
◯ 31 - 35
◯ 36 - 40
◯ 41 - 45
◯ 46 and over

Gender

◯ Male
◯ Woman

The Dration of Your Employment in the Company (year)

◯ 1 - 5
◯ 6 - 10
◯ 11 - 15
◯ 16 - 20
◯ 21 - 25
◯ 26 and above

The Dration of Your Employment in the Cement Industry (year)

◯ 1 - 5
◯ 6 - 10
◯ 11 - 15
◯ 16 - 20
◯ 21 - 25
◯ 26 and above

Your Expertise Field

◯ Civil Engineer
◯ Architect
◯ Operator
◯ Other

POLITICAL FACTORS

- How does Turkey's foreign policy affect cement exports?

Write here…

ECONOMIC FACTORS

- How does the Turkish construction industry affect the cement industry?

  Write here…

- Have the economic fluctuations experienced in the country, which started in 2018 and still continues, have affected domestic cement "consumption"? How?

  Write here…

- Have the economic fluctuations experienced in the country, which started in 2018 and still continues, have affected the "production" of cement? How?

  Write here…

- Do cement investment and export indicators seeming positive for the future?

  Write here…

SOCIAL FACTORS

- How would you express the social contributions of the cement industry in Turkey?

  Write here…

- Do your company's factories contribute to the development of the region where they are located?

  Write here…

TECHNOLOGY FACTORS

- Does your company produce green (ecological) cement?

  Write here…

- Does your company develop technology in terms of production methods (Does it have an R&D unit)?

  Write here…

- Are the machines used in your factories supplied from abroad? (Spare parts etc.)

  Write here…

- Does the cement production in your company meet the standards applied in the European Union? What standards?

  Write here…

ENVIRONMENTAL FACTORS

- Does your company have waste management units? For example, in which factories do you have recycling units?

  Write here…

- Are R&D studies carried out by your company regarding the recycling of cement wastes or waste transfer (usability in another area)?

  Write here…

- It is said that cement factories are harmful to the environment and health. What do you think about this issue?

  Write here…

LEGAL FACTORS

- Are there any legal constraints that restrict cement production in Turkey?

  Write here…

GENERAL FACTORS

- Does your company export cement to the United States? How is cement shipped from Turkey to the United States (cargo ship/cargo plane)? Are there specific export procedures?

  write here…

- How do events taking place around the world affect the cement industry? For example, did the Covid-19 pandemic affect the cement industry? (Export and domestic sales?)

  Write here…

- Why foreign investors prefer to invest their money in the Turkish cement industry?

  Write here…

- Are your factories inspected periodically? By which authorities, how often are you inspected?

  Write here…

- Does your company have an alumina cement production unit? Please answer the following two questions if your company produces aluminous cement.

◯ Yes
◯ No

- In which areas are special cement types such as aluminous cement used?

  Write here…

- Turkey is importing some types of cement, such as aluminous cement from other countries. Does the domestic production not meet the demand?

  Write here…

- Does your company supply the raw materials used in cement production locally? Or does it import from abroad? If it is importing, from which countries?

  Write here…

- Is the cement produced by your company used in areas other than building construction? In which areas is it used?

  Write here…

- What is the production capacity of your cement factory? Can you use the full capacity?

  Write here…

- What energy sources are used in your factories? Where does this energy come from?

  Write here…

- Could you please write the top 3 countries that your factory exports cement to them?

  Write here…

- What obstacles do you face in raw material securing?

  Write here…

Score Criteria Affecting Cement Exports according to their Importance.

Criteria	Absolutely not important (1)	2	3	4	5	6	Absolutely important (7)
Country's exchange rate							
Price							
Company credibility							
Quality							
Past purchasing experiences							
Distance							
international relations							
Trade restrictions							
Speed of supply							
Company awareness							
Productivity							
Ease of communication with the company							
Country's inflation rate							
Marketing							
GDP abroad							
Domestic GDP							

RECOMMENDATIONS

Dear Participant, You can write your recommendations on the subject here.

Write here…

Dear Participant, Thank You For Your Time.

Appendix (D): Turkish and English Version of Questionnaire Form that Sent to TCMA.

Appendix (D-1): Turkish Version of Questionnaire

Türk Çimento Üretimi ve İhracatı Hakkında Bir Araştırma

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Mühendislik Fakültesi
İnşaat Mühendisliği Bölümü
Yapı Anabilim Dalı

GENEL BİLGİLER

Yaşınız

◯ 25 yaş ve altı
◯ 26 - 30
◯ 31 - 35
◯ 36 - 40
◯ 41 - 45
◯ 46 ve üzeri

Cinsiyetiniz

◯ Erkek
◯ Kadın

Sektörde Çalışma Süreniz

◯ 1 - 5
◯ 6 - 10
◯ 11 - 15
◯ 16 - 20
◯ 21 - 25
◯ 26 ve üstü

Mesleğiniz

◯ İnşaat Mühendisi
◯ Mimar
◯ İşletmeci
◯ Diğer

POLİTİK FAKTÖRLER

- Türkiye'nin dış politikası (siyasi) çimento ihracatını etkiliyor mu? Nasıl etkiliyor?

Buraya yazınız …

EKONOMİK FAKTÖRLER

- Türk inşaat sektörü, çimento sektörünü nasıl etkiyor?

Buraya yazınız …

- 2018 yılında başlayan ve halen devam eden, ülkede yaşanan ekonomik dalgalanmalar ülke içi çimento "tüketimini" etkiledi mi? Nasıl?

Buraya yazınız …

- 2018 yılında başlayan ve halen devam eden, ülkede yaşanan ekonomik dalgalanmalar çimento "üretimini" etkiledi mi? Nasıl?

  Buraya yazınız …

- Çimento yatırım ve ihracat göstergeleri gelecek için olumlu mu?

  Buraya yazınız …

SOSYAL FAKTÖRLER

- Türkiye kapsamında çimento sektörünün sosyal katkısını nasıl ifade edersiniz?

  Buraya yazınız …

- Çimento fabrikalarının bulundukları yörenin gelişmesine önemli katkıları bulunuyor mu?

  Buraya yazınız …

TEKNOLOJİ FAKTÖRLER

- Türkiye'de yeşil (ekolojik) çimento üreten firmalar var mı?

  Buraya yazınız …

- Çimento fabrikaları üretim yöntemleri açısından teknoloji geliştiriyor mu (AR-GE birimi var mı)?

  Buraya yazınız …

- Fabrikalarda kullanılan makineler yurt dışından mı temin ediliyor? (Yedek parça vs.)

  Buraya yazınız …

- Türk çimento şirketleri, çimento üretiminde Avrupa Birliği'nde uygulanan standartları karşılıyor mu? Hangi standartlar?

  Buraya yazınız …

ÇEVRESEL FAKTÖRLER

- Çimento Şirketlerinde atık yönetimi var mı? Örneğin geri dönüşüm ünitesi hangi firmalarda var?

  Buraya yazınız …

- Çimento atıklarının geri dönüşümü ya da atık transferi (başka bir alanda kullanılabilirliği) ile ilgili bir AR-GE çalışması yapılıyor mu?

  Buraya yazınız …

- Çimento fabrikalarının çevreye ve sağlığa zararları olduğu söyleniyor, bu konu hakkında ne düşünüyorsunuz?

  Buraya yazınız …

YASAL FAKTÖRLER

- Türkiye'de çimento üretimini engelleyen bazı yasal kısıtlamalar var mı?

  Buraya yazınız …

GENEL FAKTÖRLER

- Dünyada gerçekleşen olaylar çimento sektörünü nasıl etkiliyor? Örneğin yakın zamanda dünya çapında yaşanan korona virüsü sebepli pandemi ilanı çimento sektörünü etkiledi mi? (İhracat ve yurt içi tüketim?)

  Buraya yazınız …

- Yabancı yatırımcılar neden paralarını Türkiye'deki çimento fabrikalarına yatırmayı tercih ediyor?

  Buraya yazınız …

- Çimento firmalarında periyodik olarak denetim yapılıyor mu?

  Buraya yazınız …

- Alüminli çimento gibi özel çimento türleri hangi alanlarda kullanılmaktadır?

  Buraya yazınız …

- Türkiye, Alüminli Çimento gibi bazı çimento türlerini diğer ülkelerden ithal etmektedir. Yerli üretim talebi karşılamıyor mu?

  Buraya yazınız …

- Çimento imalatında ve üretiminde kullanılan hammaddeler yerel olarak mı üretiliyor, yoksa yurt dışından mı ithal ediliyor? İthal ediliyorsa, hangi ülkelerden?

  Buraya yazınız …

- Türkiye'den ABD'ye çimento hangi ulaşım yolu ile sağlanıyor (yük gemisi/kargo uçağı)? Belli bir ihracat prosedürü var mı?

  Buraya yazınız …

- Üretilen çimento inşaat dışında başka alanlarda kullanmakta mıdır? Hangi alanlarda kullanılmaktadır?

  Buraya yazınız …

- Çimento fabrikalarında hangi enerji kaynakları kullanılmaktadır? Söz konusu enerji nereden tamin edilmektedir?

  Buraya yazınız …

ÖNERİLER KISMI

Sayın Katılımcı, Konuyla ilgili eklemek istediğiniz veye önerilerinizi buraya yazabilirsiniz.

Buraya yazınız …

Sayın Katılımcı, Ayırdığınız Zaman İçin Çok Teşekkür Ederiz.

Appendix (D-2): English Version of Questionnaire

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Dear Participant,

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Thank you for your time.

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GENERAL INFORMATION

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◯ 25 years and under
◯ 26 - 30
◯ 31 - 35
◯ 36 - 40
◯ 41 - 45
◯ 46 and over

Gender

◯ Male
◯ Woman

The Dration of Your Employment in the Cement Industry (year)

◯ 1 - 5
◯ 6 - 10
◯ 11 - 15
◯ 16 - 20
◯ 21 - 25
◯ 26 and above

Your Expertise Field

◯ Civil Engineer
◯ Architect
◯ Operator
◯ Other

POLITICAL FACTORS

- How does Turkey's foreign policy affect cement exports?

  Write here…

ECONOMIC FACTORS

- How does the Turkish construction industry affect the cement industry?

  Write here…

- Have the economic fluctuations experienced in the country, which started in 2018 and still continues, have affected domestic cement "consumption"? How?

  Write here…

- Have the economic fluctuations experienced in the country, which started in 2018 and still continues, have affected the "production" of cement? How?

  Write here…

- Do cement investment and export indicators seeming positive for the future?

  Write here…

SOCIAL FACTORS

- How would you express the social contributions of the cement industry in Turkey?

  Write here…

- Do cement factories have significant contributions to the development of the region where they are located?

  Write here…

TECHNOLOGY FACTORS

- Is there a company that produces green cement in Turkey?

  Write here…

- Do cement factories develop technology in terms of production methods (is there an R&D unit)?

  Write here…

- Are the machines used in your factories supplied from abroad? (Spare parts etc.)

  Write here…

- Do Turkish cement companies meet the standards applied in the European Union in cement production? What standards?

  Write here…

ENVIRONMENTAL FACTORS

- Do cement companies have waste management units? For example, which factories have recycling units?

  Write here…

- Are R&D studies carried out by cement companies regarding the recycling of cement wastes or waste transfer (usability in another area)?

  Write here…

- It is said that cement factories are harmful to the environment and health. What do you think about this issue?

Write here…

LEGAL FACTORS

- Are there any legal constraints that restrict cement production in Turkey?

Write here…

GENERAL FACTORS

- How do events taking place around the world affect the cement industry? For example, did the Covid-19 pandemic affect the cement industry? (Export and domestic sales?)

Write here…

- Why foreign investors prefer to invest their money in the Turkish cement industry?

Write here…

- Are cement factories inspected periodically? By which authorities, how often are inspected?

Write here…

- In which areas are special cement types such as aluminous cement used?

Write here…

- Turkey is importing some types of cement, such as aluminous cement from other countries. Does the domestic production not meet the demand?

Write here…

- Does cement company supply the raw materials used in cement production locally? Or does it import from abroad? If it is importing, from which countries?

Write here…

- How is cement shipped from Turkey to the United States (cargo ship/cargo plane)? Are there specific export procedures?

Write here…

- Is the cement produced by cement company used in areas other than building construction? In which areas is it used?

  Write here…

- What energy sources are used in cement factories? Where does this energy come from?

  Write here…

RECOMMENDATIONS

Dear Participant, You can write your recommendations on the subject here.

Write here…

Dear Participant, Thank You For Your Time.