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Analysis of International Competitiveness of the Turkish Contracting Services†

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ABSTRACT

The competitiveness of the construction industry steadily increases. Turkish contractors have gained considerable success in the international markets especially over the last ten years. In this study, the international competitiveness of Turkish contracting services is investigated based on the experiences gained in the international markets over the last forty years. Following an extensive literature survey, in-depth interviews have been conducted with medium-to-large contractors operating in overseas markets, all of which are the members of the Turkish Contractors Association. Factors that create competitive advantage are analyzed based on Porter's Diamond Framework. Within this context, the strengths and weaknesses of the sector as well as opportunities and threats that the sector has been exposed to are examined. In the light of the findings of the study, various strategies are developed for the Turkish contractors to sustain their competitive advantage in international markets.

***Keywords**: International construction, competitiveness analysis, SWOT analysis, strategic planning.*

1. INTRODUCTION

Construction firms operate in the international markets for several reasons such as stagnant domestic market, spreading the risk by diversification into new markets, use of resources in a competitive environment and taking advantage of the opportunities in the global market [1]. Despite their benefits, international projects are highly risky for the contractors. In order to succeed in international projects, engineering and construction firms should combine several firm-specific factors and home-specific factors [2]. Global competitiveness increases every year because of the changes in the construction market. To sustain growth, the sources of the competitive advantage should be analyzed and the contractors should adapt to changing needs in the market.

Engineering News Record (ENR) publishes the Top 225 International Contractors list every year. ENR lists the firms based on their annual contracting revenue for projects outside their home countries. Appearance in this list with a high number of firms might be considered as an indicator of international success. In 2012, Turkey has been ranked the

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second with 33 construction companies operating abroad after China, which has 55 construction companies operating abroad. Although the number of firms is quite high, the volume of the work undertaken by Turkish contractors is around 4%, which is relatively low [3]. It is clear that Turkish contractors have a substantial presence in the international markets; however the project volumes need to be improved. The major objective of this study was to identify the sources of competitive advantage of Turkish contractors in the international markets and to propose strategies for sustainable growth. In this scope, the forty years of international experience of Turkish contractors have been analyzed using Porter's Diamond Framework (DF) which consists of factor conditions, demand conditions, firm strategies and rivalry, supporting and related industries, government, and chance. These factors have been examined based on an extensive literature review and in-depth interviews conducted with 27 firms, all of which are the members of Turkish Contractors Association (TCA).

The analysis reveals the strengths, weaknesses, opportunities and threats (SWOT) of the Turkish contracting services abroad. Based on the SWOT analysis, several strategies are proposed to sustain competitive advantage in international projects. The findings of this study are expected to help Turkish contractors and policy makers reflect on their strategic planning.

2. INTERNATIONAL COMPETITIVENESS IN CONSTRUCTION

There have been various studies focusing on international success of construction firms. For example, Ofori [4] determined that a firm's track record, corporate knowledge, communication structures, resources and risk management capability are the drivers of success in international markets. In a similar study, Günhan and Arditi [5] reported that track record, specialist expertise, project management capability, international network, financial strength, equipment, material, and labor support are the essential factors for global success. Özorhon et al. [6] investigated competitiveness in international markets and found that it is highly associated with the intensity of competition between bidders, attitude of the host government, experience of the company in similar works, and cultural similarity between the two countries. Korkmaz and Messner [7] examined the competitive positioning and continuity in international markets and concluded that construction firms tend to pursue consistent strategies in international markets while they adjust these strategies according to market demands and global tendencies.

In another group of studies, competitiveness at industry level has been explored. For example, Momaya and Selby [8] have conducted research about the competitiveness of the construction industry in different countries including Canada, USA and Japan by providing a comparison of those. They emphasized the importance of competitive assets and process and concluded that technological and managerial capabilities and long-term network relationship between the companies are the major components of success. Flanagan et al. [9] have also conducted a similar study, which investigated the competitiveness of the construction industry in UK, Sweden, and Finland. The study revealed that the sources of competitive advantage have been staff training at all levels, industry-wide commitment to performance improvement, and risk management skills for the UK; sophisticated procurement methods and innovative construction methods for Sweden; and extensive

R&D, information technology use, and openness to change for Finland. Öz [10] analyzed the sources of competitive advantage of Turkish construction firms in international markets. She concluded that competitiveness mainly depends on the labor cost advantages and geographic and cultural proximity. The study also emphasized that the existence of a dynamic home market, favorable entrepreneurial variables, and pressures to upgrade because of intense domestic rivalry are the other important factors that affect international competitiveness. Zhao et al. [11] investigated the sources of competitive advantage of Chinese contractors in the global construction market. Their study reported that low costs of workforce, materials, machinery and equipment; specialty expertise; government's strong support and promotion are the major strengths of Chinese international contractors, whereas lack of R&D capacity and commitment; inadequate design capacity; lack of highly skilled labor and comparatively low productivity; and comparatively weak financing capacity are among the main weaknesses.

The investigation of the current situation of Turkish contracting services, determination of the factors, which create competitive advantage and SWOT analysis of the Turkish construction industry is expected to lead Turkish contractors to increase market share in international markets. Moreover, this research pictures the dynamics of the global construction markets and lays the foundation to develop strategies to adapt to the current competitive environment.

3. RESEARCH METHODOLOGY

This study analyzes the sources of competitive advantage of Turkish contractors in international markets for the last forty years based on the DF. The DF model is proposed by Porter [12] to analyze the competitiveness of an industry in a country. DF is found to be very explanatory and comprehensive since it consists of the important variables gathered in one single model by allowing the generation of national and international competitiveness [13, 14]. Flanagan et al. [9] mentioned Porter's DF as a useful model to analyze international competitiveness. DF was used in some similar past studies including Öz's [10] and Ofori's [4].

The framework consists of six factors, four of which are the major determinants while the other two are the exogenous ones. The four major determinants of DF are factor conditions, demand conditions, firm strategy and rivalry, related and supporting industries that interact with each other. Government and chance act as exogenous factors in this model. The components of DF are explained in detail below.

a) *Factor Conditions:* Factor conditions consist of all the production factors of a firm in each industry. Porter [12] categorized these factors into five sub-categories; human resources, physical resources, information resources, capital resources and infrastructure. Geographical conditions, efficiency, technological improvements, education level, standards, infrastructure resources and professional organizations are also considered to be important in the context of construction industry.

b) *Demand Conditions:* Demand conditions are defined as qualitative demand, export, and new market opportunities. In this context, the conditions, which are related to the construction industry, can be revealed as the wide spectrum of

construction industry and its improvement, clients' quality and service expectations, and the content of the contracts.

c) *Firm strategy and rivalry:* Strategy is defined as the market positioning of the firms in order to reach long term and middle term targets. Within this component, the main issues that are related to the construction industry can be listed as the competitiveness among firms, reliability, and expertise level of the contracting services, costs and industrial integration components.

d) *Related and supporting industries:* Related and supporting industries components consider the effect of all industries in the domestic market that are related to the industry in question. In this context, the main items that apply to the construction industry are the number of companies, volume of work, and the current situation of the related industries and the level of competitiveness among firms performing in the same industry.

e) *Government:* The role of government affects the four determinants stated above as an exogenous factor. Therefore, it also affects the competitive advantage indirectly. In this context, incentives provided by the countries for the construction industry, government policies supporting construction activities, and mutual business agreements between countries can be investigated.

f) *Chance:* Chance is also considered to be an exogenous factor in terms of affecting the competitive advantage of the countries. However, it can cause the industry to change its positioning in the economy. The components that are included in this context in terms of construction industry are wars, natural disasters, and national and global economic conditions.

In this study, the data is collected in two steps in order to analyze the strengths, weaknesses, opportunities, and threats (SWOT) of the industry within the DF. The first step was secondary data collection, which consisted of a detailed review of the past studies such as academic papers; reports of state authorities and professional organizations; newspapers and magazines; internet resources; firm catalogues; etc. Following the literature review phase, the second step was primary data collection that consisted of interviews with the members of TCA. These interviews are conducted with medium-to-large contractors operating in international markets. The respondents for interviews are chosen among TCA members since the volume of the work they have completed so far constitutes 70% of the domestic and 90% of the international projects of Turkish contractors [15]. A letter of invitation to the interview was sent to 152 TCA members. A total of 27 firms accepted to be interviewed, resulting in 18% response rate. Based on the components of the DF, a semi structured interview form was designed. Table 1 represents the main issues discussed during the interviews.

Table 2 shows the profile of the companies and respondents. The participants were mostly selected among company board members, business development directors, and senior managers. A total of 65 respondents were interviewed in 27 firms. They have at least 15 year experience in the sector and have been involved in many international projects. The firms are medium-to-large organizations with an average turnover of 987 million USD and they have been in construction business for 34 years in average. The main areas of expertise of the companies are industrial facilities, shopping malls, housing, power plants, etc.

Thirteen of the interviewed companies appear in ENR's Top 225 International Contractors list in 2011. These companies represent 42% of the 31 Turkish firms in the list and almost half of the interviewed firms. In this respect, it was possible to discuss the international experiences of Turkish contractors with those companies that actively operate and succeed in international markets. Based on the TCA records, these firms have operated in 9 different markets in average, with a minimum number of 5 and a maximum number of 32.

Table 1. Components of Diamond Framework

Factor Conditions	• Advantages/disadvantages of the firms in the international markets in terms of human, capital, and infrastructure resources (employment problems, education level of staff, turnover rates, wages, quality of communication, etc.) • The contribution of past projects to international competitiveness • Lessons learnt based on the main problems and difficulties encountered in international projects
Demand Conditions	• Type and amount of work undertaken in the domestic market • The quality of work undertaken by the contracting firms • Client expectations in domestic projects • The effect of external factors (global political instabilities, natural disasters, economic conditions, etc.) on the domestic market • The competitiveness of the firms among themselves in international projects • The risk taking attitude of the firms in international projects
Firm Strategy and Rivalry	• The effect of organizational structure and culture of the firms in international projects • The quality of relationships with the clients in host markets
Related and Supporting Industries	• The types and quality of the sub-sectors that enhance the competitive advantage of the construction industry • The experience and expertise in design services
Government	• The support of government to the construction industry • Problems in terms of bureaucracy in the procurement phase
Chance	• The effect of geographical and cultural proximity to the host markets • The effect of natural disasters • The effect of global economic crisis • The construction demand in potential markets

Table 2. Company and Respondent Profile

Number of companies interviewed	27
Average firm age	34 years
Average company turnover	987 million USD
Markets of operation	An average of 9 international markets
Type of works undertaken	Industrial facilities, shopping malls, business centers, housing, dams, refinery facilities and power plants
Number of respondents	65
Position of respondents	Chairman (2), General Coordinator (10), General Manager (8), Business Development Manager (13), Technical Office Manager (7), Civil Engineer (25)
Average respondent age	37 years

Each interview was completed in 1.5-2 hours. To ensure the accuracy of the responses and prevent any bias, the interviews were conducted with two to three managers/engineers in each firm. Respondent companies shared some company and project specific data as well. In addition, the answers were compared with the industry and government data and reports. The research team transcribed recorded interviews and used the company documents and previous reports to identify the components of the DF.

4. RESEARCH FINDINGS

Construction industry strongly contributes to Turkey's economic growth due to the increasing amount of both domestic and overseas projects. Turkish contracting services have attracted a lot of attention for the last decade due to success in international markets. Turkish contractors completed 6442 projects worth a total of 206 billion USD in 93 countries from 1972 to 2011 [15]. Internationalization of Turkish contracting services began in 1972 with the opening of the Libyan market to Turkish contractors. During the period 1972-2011, Turkish contracting services were mostly performed in four regions as follows; Russian Federation, Libya, Turkmenistan and Kazakhstan. Following these regions, the Middle East has been another market where Turkish contractors have undertaken high budgeted projects.

Based on the literature review and the interviews, components of DF are presented below.

a) *Factor Conditions:* The low cost advantage is considered to be the main strength during the period 1972-2012. In this period, Turkish contractors managed to undertake a high number of projects abroad mainly due to their competitive bid prices. This has been mainly due to much lower employment costs compared to those of the competitors. Thomas [16] states that lower workforce cost is an important parameter in the selection

process of the contractors especially in newly developing countries. Zhao et al. [11] also explain that Chinese contractors expanded their business in the international market mainly because of their low workforce costs in developing countries. High efficiency of the construction workers also appeared as a strength in this period. The education level of the engineers was observed to be high. The ease of communication between the executives and workers has contributed to the progress of the projects. Günhan ve Arditi [5] also stated that the capability of project managers in international projects is a key indicator for success.

Besides positive factor conditions that contributed to international success, there have been some challenges as well. One of the weaknesses was related to the inexperience in international markets. Due to lack of experience in the earlier years of internationalization, Turkish contractors have faced difficulties in terms of mobilization, customs, visa, and letters of guarantee. Despite high productivity and good communication, some of the staff had adaptation problems and some had lack of language skills. This issue made the employment of Turkish executives and workers difficult for the foreign projects and as a consequence non-Turkish workers were hired in some projects. These are treated as the weaknesses of the industry that affected the competitiveness negatively. Unfamiliarity with the conditions in the host markets has been reported to be among the disadvantages [17]. A similar study conducted by Chan and Tse [18] also revealed that most of the disputes in international projects stem from the cultural differences.

b) *Demand Conditions:* There was a recession in the Turkish construction market in 1970s. The construction industry was negatively affected by the economic problems and coup d'état within this period. Therefore, there have been no major projects in the domestic market and as a result of this, Turkish contractors decided to expand their business to the foreign markets. However, the Libyan market had serious problems in the 1980s, where they had the majority of their international activities. Therefore, in the 1980s domestic projects became more attractive for them and big infrastructure investments were realized within this period.

The learning process in the 1980s that was achieved as a result of joint ventures in international projects and partnerships with foreign investors in domestic infrastructure projects has been helpful for them. The experiences gained from the partners encouraged the contractors to bid for international projects and contributed to their competitiveness considerably. The Turkish construction industry gathered a lot of experience from the high budgeted and prestigious projects completed in the 2000's. The problems in the method of statement, application defects of the projects and the ways to solve those problems are treated as the lessons learnt within this period. The 'reverse knowledge transfer' from international markets to the domestic construction market allowed the Turkish contractors to improve their managerial, technological, and multinational communication skills [19]. Additionally, the quality of work has increased in the domestic market and clients' expectations about the quality of services and resources have been met. There have been some unfavorable conditions over the years that caused changes in the domestic construction market. For example, Izmit earthquake in 1999 caused Turkish contractors to lose their confidence. In addition, the economic crisis in 2001 caused the contractors to hesitate to undertake new projects

abroad. As a consequence, they were motivated to take higher measures in terms of promoting the quality of domestic market [10]. The early 2000's can be considered as a difficult period for the Turkish construction industry.

c) *Firm Strategy and Rivalry:* Turkish contractors have started to compete with each other for the international contracts after their experience gained in the 1990's. They have become competitors not only in domestic but also in international markets. This has clearly enhanced Turkey's competitiveness. When the markets of operation are investigated, it is observed that most of them are high-risk countries. However, unfamiliarity and risk levels have not stopped them from entering those markets. This risk-taking attitude has been rewarded in most cases, however when unexpected events occurred in some markets it has caused several problems. For example, Turkish contractors lost most of their shares in the Libyan market because they ignored political risks in that region. This risk-loving attitude has resulted in serious cash flow problems in all companies that had projects in Libya. Organizational structure, strategies and culture of family owned companies did not help in such circumstances. One of the firm executives interviewed said that '…we consider that the companies that are willing to sustain their growth in the industry should adopt an organized firm structure in accordance with their firm's policies'. Lack of risk management practices, inexperience with international standards, and not being able to establish partnerships and joint ventures resulted in failure. Another interviewee stated that '…I think Turkish contractors have a lack of risk management skills. Therefore, they behave more unconsciously about risk taking compared to the European and American firms. Consequently, Turkish contractors complete projects more successfully or the projects cause the firms to collapse.'

   The Turkish contractors have set up strong relationships with the clients in international projects. This has resulted in good references for future projects. One of the interviewees said that '…opening a branch office in the host country provides several benefits such as becoming more familiar with the local standards, setting up close relationships with the clients and increasing competitiveness in that region'. Another interviewee also stated that '…firm strategy is very important in forming positive feedbacks from the host country and this allows the contractors to better use their resources and have time savings in the interpretation of local standards and regulatory issues'.

   A similar study conducted by Zhao et al. [20] also concluded that the supportive firm structure results in several advantages such as quick access to resources and local standards and good relations with clients. Another issue is about being adaptive to new markets and new partners. This is important as far as the changing market conditions are concerned. Turkish contractors have been highly adaptive to their markets.

d) *Related and Supporting Industries:* There are various subsectors of construction that might positively or negatively affect competitiveness. Turkey has a strong building materials sector, producing steel and cement in vast amounts and also exports these materials. For the last forty years of internationalization of contracting services, success of these sectors has contributed to the construction industry in a positive manner. In contrast to a strong building materials sector, engineering design and project management services have not been as competent as desired. As far as the

complexity of international projects is concerned, Turkish firms have not been able to provide all the services that are required to complete a project. They offer low-cost construction and create competitive advantage in this way, however lack of engineering design expertise results in not being able to engage in all phases of big scale projects. In this respect, foreign firms that provide engineering design services have larger control over the projects. Such firms also perform project management for those projects. They prepare the specifications and impose their own standards on the projects, so in most cases Turkish firms cannot use Turkish building materials that do not comply with those specifications. This creates a big problem for the contractors. Turkey does not have any Engineering Procurement Construction (EPC) firm that could be competitive enough to undertake more complex projects.

e) Government: Political stability, economic conditions, governmental support schemes, and mutual agreements with foreign countries have an influence on the success of construction industry to a certain extent. Orr and Kennedy [21] implied in their study that project sponsors have to have a close relationship with government entities to understand dynamics and political situation of the host country. Therefore, government support is crucial in foreign investments. In this respect, the Turkish government seems to have supported the contractors, especially through signing mutual agreements with host countries. However, during the 1970s, contractors experienced problems related to employment of Turkish workers for international projects. Furthermore, the coup d'état in those years affected the construction industry in a negative manner resulting in decreasing volume of work. The support of the government became clear in the 1980s, when they signed a trade agreement with Soviet Union. This agreement helped the contractors reinforce their competitiveness in Russia. Even though the government's support has been continuous until 1990s, letter of guarantee and bureaucratic problems during employment have persisted. The government sustains its active role in supporting the construction industry by introducing some additional funds for those companies that intend to establish business in foreign markets. As Han et al. [22] suggest developing countries need to support their domestic construction firms through government policies, and provide education and training programs since this will eventually enable contractors to enjoy a competitive advantage in overseas markets.

f) Chance: Chance events might affect the competitiveness of construction industry both in a negative or positive manner. During the period 1972-2012, one of the main sources of competitive advantages has been the geographical, religious, and cultural proximity to the host markets. Familiarity with the host country is among the critical success factors in international construction as reported in previous research [23]. Yet this advantage may not be sufficient on its own. In this respect, one of the interviewees stated that '…geographical, cultural, and religious proximity allows us to have better relationships with the clients. However, this proximity only brings a good start for that relationship. It is impossible to be successful in construction industry without having the experience, expertise, and appropriate strategies'. Although cultural and historical proximity plays an important role at the awarding phase of the contracts, the long-term success of the projects mainly depends on the firm's management and structure.

In the earlier years of internationalization, opening of the Libyan market to Turkish contractors in 1972 was the most important factor for the construction industry. The

competitive advantage in Middle Eastern countries stemmed from the cultural proximity to those countries. The excess exchange in foreign markets after the increase in oil prices transformed construction investments and this created a huge opportunity. This opportunity then motivated Turkish contractors to operate in other neighboring countries where there was a demand for construction investments. The Iran – Iraq war in 1980s affected them positively in terms of reconstruction activities after the war. The volume of work in Iraq increased considerably. However, the earthquakes and political instability in those countries acted as threats and the volume of work decreased in the remaining years.

There have been certain breaking points in the domestic construction industry starting from the end of the 1990s. Izmit earthquake that occurred in 1999 can be considered as the most important event. This earthquake had disastrous consequences with thousands of deaths and collapsed buildings. Apart from the financial and emotional damages caused by this earthquake, the construction industry's image was affected adversely in the domestic market. In this respect, one of the firm executives interviewed said that '…because of their damages to people and life conditions, natural disasters are very dangerous. However, their possibility of occurrence should not be disregarded. Although a natural disaster brings up reconstruction activities for the construction industry, its damages are serious and therefore, it should not be considered as an opportunity'. Moreover, the economic crisis in 2001 also damaged the construction industry. Most of the domestic investments were cancelled and the construction industry experienced a deep recession. Turkish contractors have undertaken many projects in the Middle East and North Africa after 2000. Due to the geographical proximity to those countries, there have been several logistical advantages. However, since local workers were cheaper and the conditions were not favorable, turnover rates of Turkish workers were very high.

Another major event occurred in 2011 when a civil war started in Libya. This has been significant for several reasons. First of all, due to the rebellion, the Libyan market was no longer safe to perform any work therefore Turkish contractors immediately left the Libyan market. Since most of the projects in Libya were very big investments, the contractors lost a huge volume of work and money. Secondly, this issue has taught many lessons to the contractors, especially in terms of risk management. Libya is among those markets where the political risks are very high. Turkish contractors were not prepared for such risks; they struggled to assure security of their workforce and construction site, which resulted in losing time and money. Figure 1 represents the components of the DF and illustrates the negative and positive factors contributing to international competitiveness.

Table 3 shows the SWOT matrix for the Turkish construction industry based on their international experiences in the period 1972-2011. The strengths, weaknesses, opportunities and threats of this period are explained in bullet points in accordance with the components of the DF analyzed above.

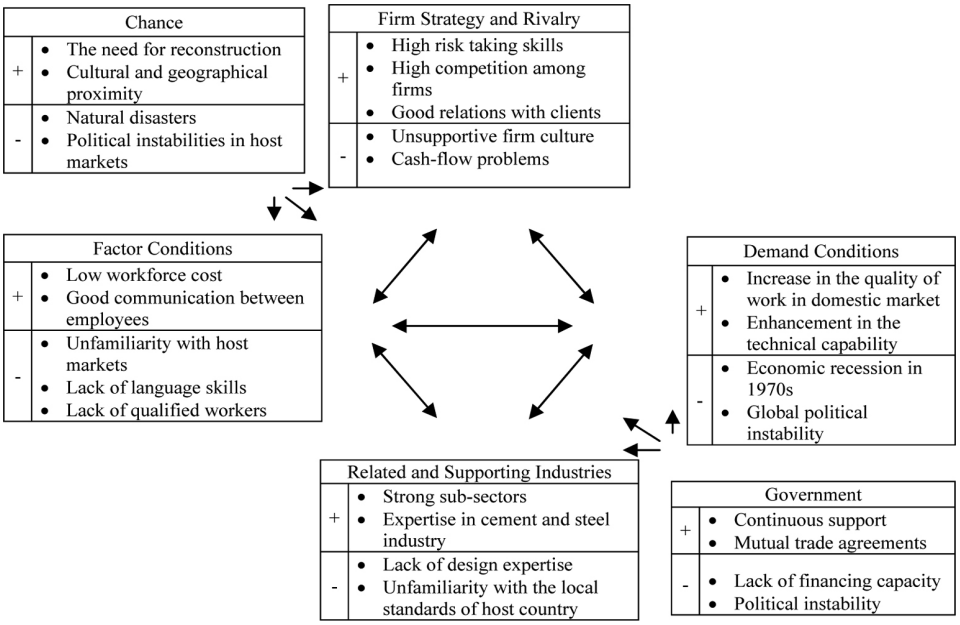

Figure 1. Components of the Diamond Framework

Table 3. SWOT analysis of Turkish construction services (1972-2011)

Strengths	**Weaknesses**
• Low costs • High productivity of workers • The ease of communication among Turkish employees • The learning process of the industry based on experience • Good client relations and high customer satisfaction • The risk taking attitude in some markets • Strong sub-sectors such as steel and cement sector	• Lack of risk management practices in high-risk markets • High turnover rates among employees • Lack of language skills of workers • Infrequency of partnerships • Lack of supportive organizational structure and culture • Lack of engineering design expertise • Lack of qualified workers
Opportunities	**Threats**
• Support of government for domestic and international projects • Mutual trade agreements with host countries • The geographical and cultural proximity to host countries • The need for construction investments in neighbor countries	• Problems in project finance • Earthquakes, natural disasters, and wars • Political instability in key markets • Incompatibility of Turkish building materials with international specifications

5. STRATEGIES FOR SUSTAINABLE GROWTH

In order to sustain growth in international markets, strengths and weaknesses as well as opportunities and threats for the contractors should be carefully analyzed and appropriate strategies should be formulated. As Flanagan et al. [24] stated measuring competitiveness is not the ultimate purpose; improving it and achieving long-term performance is. Based on the research findings, it can be stated that Turkish contractors have undertaken a high number of projects mainly in those markets to which they have cultural and geographical proximity. Low-cost, productivity, and good client relations have been the main strengths; whereas lacks of engineering design expertise, unsupportive organizational culture of firms, and employment problems have been the major weaknesses.

Despite the number of firms operating abroad, as far as the volume of the projects is concerned, Turkey's share in the global construction market is limited and needs to be improved. There have been several attempts to enhance international competitiveness. The central objective is to increase the project volume. For the next ten years, 100 billion USD export is expected from construction services and the market share, which is currently around 4%, is expected to rise up to 10% [25]. "Turkish Construction Industry – Vision 2023" report published by TCA suggests that construction firms should invest more on R&D, EPC contractors should be established, and increase the number of firms in the international markets [26].

In addition to discussing the DF components, the interviewees were also asked to provide their opinions on how to improve competitiveness and enter new markets. Based on their opinions and relevant reports, seven main areas are identified including technology and innovation; partnerships; firm structure; engineering design services; government support; risk management; and human resources.

- *Technology and innovation*: The wider use of technology and implementation of innovation is considered to be an important source of competitiveness. Innovation has long been recognized as one of the key factors contributing to national economic growth, competitiveness, and higher living standards [27]. Effective management of complex projects requires special expertise and application of new products and processes. For example, energy efficient design and construction is one of the challenges that the construction industry has been facing recently. Greenhouse emissions caused by construction needs to be reduced by low-carbon technologies. Such solutions involve innovation in building materials, equipment, and construction processes. In the current situation, due to the problems in North Africa and the Middle East, Turkish firms have been seeking new markets. Low-cost strategy therefore may not be pursued any longer, rather the latest technological advancements should be carefully followed and engineering design should be improved to create the required competitive edge. Therefore, construction firms need to integrate technology and innovation management as a part of their business and invest more in R&D. Besides, the fragmented nature of the industry requires knowledge sharing and innovation [28]. However, innovation is not an easy task, benefits may only be achieved in the long term; hence firms need to create an environment conducive to creativity, support their employees, learn from their partners and even competitors, and fully commit to the innovation process.

- *Partnerships:* Companies should offer the best value to be competitive in international markets. This can only be achieved with a combination of strong technical and managerial competency. When the resources of a single company may not be sufficient to undertake a project, partnerships are a good way of combining strengths of different firms. For continuous expansion, international collaboration seems to be a suitable strategy. Birgönül et al. [19] stated that the partnerships and collaborations in international projects are the efficient ways of reducing risks and gaining competitive advantage. The small size firms usually offer contracting services as subcontractors and gain experience in this way. However, acting as a general contractor requires a strong record of work. In case of lack of experience and expertise, companies should establish joint ventures to exploit business opportunities abroad. Such partnerships may be formed with either local companies that are familiar with the host country or another foreign company that has the complimentary resources and skills. Partnerships with those companies that have experience in technology-intense projects are also an effective mechanism for technology transfer and learning. Mathews [29] suggested that competitive advantage is gained by the global integration and can be best achieved by the joint ventures and collaborative partnerships.

- *Firm structure:* Proper organizational structure and supportive culture are essential ingredients of success in construction. The firms operating in international markets must support the flow of knowledge among project participants, individuals and groups [30]. Birgönül et al. [19] also emphasized the importance of organizational learning for international success. As a result of effective learning, firms can develop dynamic capabilities and increase their competitive advantage. Another key strategy to sustain growth in international markets is to become more innovative. One of the main weaknesses of Turkish construction industry currently is that the majority of companies are family-owned enterprises. Such firms are short-term rather than long-term oriented. Accordingly, they do not tend to invest much in innovation. Therefore, companies are advised to restructure their organizations and create a positive environment to cultivate an innovation culture.

- *Engineering design services*: Based on the ENR lists, Turkey is represented with a high number of firms; however, the volume of work is much lower relative to other countries. The main reason for this is not getting involved in big scale projects. The interviewees suggested that this is caused by lack of engineering design expertise. To improve engineering design services, Turkish contractors should engage with large-scale and technology intense projects. Involvement in EPC projects will also help the contractors acquire the necessary experience.

- *Government support*: Turkish contractors have benefited extensively from the government support and good relations with host countries. However, there has been recently political instability in some of the host markets where they have widely operated. Continuous support is necessary to act upon changes and challenges in those markets. Establishing good relations in potential markets is a strategy that should be pursued by the Turkish government. The government has being arranging visits to several countries to sign mutual agreements to enhance cooperation in current and new construction markets. In addition, there have been serious efforts to solve letter of guarantee problems and financial issues especially for the high budgeted projects [31].

Cultural and trade agreements contribute to the improvement of political or trading relationships between countries. Signing mutual agreements is helpful to eliminate bureaucratic problems and ease communication and coordination in the host markets. Project finance is another crucial issue. To increase the number of projects, both government and construction professionals should spend effort to find creditors.

- *Risk management:* Chance has significantly impressed the competitiveness of Turkish contractors in international markets. Although chance factors have acted in a positive manner most of the time, on a few occasions they have had detrimental effects both in the domestic and international construction market. As Han and Diekman [32] stated international projects have political, economic, and cultural risks. Therefore, these projects should be more carefully managed. Turkish contractors are known to have high risk taking skills. They have been involved in some high-risk markets, but disregarded the existing risks. For example, they did not have a risk response strategy in Libya. Following the civil war in 2011, since they were not prepared for such a force-majeure, they experienced a huge financial loss. To avoid such incidents, risks should be carefully managed; identification and analysis of risks should be performed properly and risk response strategies should be devised before entering such markets.

- *Human Resources:* Human resources are critical in terms of project success. As far as the Turkish workers employed in both domestic and international projects are concerned, it can be stated that the number of qualified workers is low. The contractors prefer to have cheap labor; however for complex projects unqualified workers cause some problems. Therefore a training program should be initiated to improve the quality of the labor. A Professional Engineer license is required to work as an engineering consultant or to offer engineering services to the public. In the USA, the National Council of Examiners for Engineering and Surveying (NCEES) licenses the engineering profession. The Turkish Chamber of Civil Engineers has issued a memorandum in 2004 for the detection and certification of civil engineers to be named Professional Engineers, and "Professional Engineer Regulation" has come into force on 1st of July in 2005. In this respect, a 'Fundamentals of Engineering' exam is given to the engineers to be licensed as professionals. Wider use of this license is expected to prevent incompetent and inexperienced engineers from carrying the responsibility of construction projects. This exam consists of two sections; section one is the written part, which is so called "Fundamentals of Engineering (FE)' and the second section is the oral part, which is so called 'Principles and Practice Engineering (PE)'. According to the results of the written part of the exam, qualified candidates are invited for the oral exam part [33]. FE exam has been first launched in 2012, and PE exam has been first launched in 2013 in Istanbul Technical University in Turkey.

6. CONCLUSIONS

The aim of this study was to investigate the sources of competitiveness in international construction market. Porter's DF is employed to analyze the sources of competitive advantage and determine the SWOT components. The analysis is based on the experiences of Turkish contractors who have been operating overseas for the last forty years. Based on

the findings of the research, the following are the main components of the SWOT analysis for Turkish contractors:

- The most important *strengths* that affect the competitiveness have been low costs; high productivity of workers; good communication among staff; the learning process of the industry based on experience; good client relations and high customer satisfaction; the risk taking attitude in some markets; and strong sub-sectors such as the steel and cement sector.
- The *weaknesses* of the industry have been the lack of proper risk management in high-risk markets; high turnover rates among employees; lack of language skills of workers; infrequency of partnerships; lack of supportive organizational structure and culture; lack of engineering design expertise; and lack of qualified workers.
- The *opportunities* for the industry have been a supportive government; mutual trade agreements with host countries; the geographical and cultural proximity to host markets; and the need for construction investments in neighboring countries.
- The *threats* for the industry have been problems in project finance; earthquakes, natural disasters, and wars; political instability in key markets; and incompatibility of domestic building materials with international specifications.

Global construction market has become more competitive; therefore strategies implemented so far may not guarantee success any more. Construction firms needs to better understand their capabilities, weaknesses and changing conditions in the international market and performs their strategic planning accordingly. Although the number of Turkish contractors operating overseas is high, the project volume is still limited. In order to enhance competitiveness and to increase share in international markets, several strategies are proposed in this study. These strategies include effective use of technology and innovation; engagement in partnerships; restructuring of organizations; enhancement of engineering design services; continuity of government support; appropriate risk management; and improvement of human resources. The proposed strategies are based on the Turkish case; however they will be helpful for those countries showing similar characteristics to Turkey and for those who have followed similar strategies so far.

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References

[1] Günhan, S., Arditi, D., International expansion decision for construction companies, Journal of Construction Engineering and Management, 131, 8, 928-937, 2005.

[2] Paek, J., Kim, J., Analyzing competitive position in the construction market of Eastern Europe, Journal of Management in Engineering, 9, 1, 38–51, 1993.

[3] Engineering News Record (ENR), The Top 225 International Contractors, ENR, New York, 2012.

[4] Ofori, G., Frameworks for analyzing international construction, Construction Management and Economics, 21, 4, 379-391, 2003.

[5] Günhan, S., Arditi, D., Factors affecting international construction. Journal of Construction Engineering and Management, 131, 3, 273-282, 2005.

[6] Özorhon, B., Dikmen, I., Birgönül, M.T., Case-based reasoning model for international market selection. Journal of Construction Engineering and Management, 132, 9, 940-948, 2006.

[7] Korkmaz, S. and Messner, J. I., Competitive Positioning and Continuity of Construction Firms in International Markets, Journal of Management in Engineering, 24,4, 207-216, 2008.

[8] Momaya, K., Selby, K., International competitiveness of the Canadian construction industry: a comparison with Japan and the United States, Canadian Journal of Civil Engineering, 25,4, 640-652, 1998.

[9] Flanagan, R., Jewell, C., Ericsson, S., Henricsson, J.P.E., Measuring Construction Competitiveness in Selected Countries. http://wap.rdg.ac.uk/web/FILES/innovativeconstructionresearchcentre/icrc-25-d-Final_report.pdf, 2005.

[10] Öz, Ö., Sources of competitive advantage of Turkish construction companies in international markets, Construction Management and Economics, 19,2, 135-144, 2001.

[11] Zhao, Z., Shen, L., Zuo, J., Performance and Strategy of Chinese Contractors in the International Market, Journal of Construction Engineering and Management, 135, 2, 108-118, 2009.

[12] Porter, M.E., The Competitive Advantage of Nations, Free Press, MacMillan, New York, 1990.

[13] Ryan, R., A grand disunity. National Review, 9, 46–47, 1990.

[14] Thain, D.H., The war without bullets, Business Quarterly, 55(1) 13–19, 1990.

[15] Turkish Contractors Association (TCA), International Contracting Services, http://www.tmb.org.tr/genel.php?ID=2, 2012.

[16] Thomas, H. R., 2000 peurifoy lecture: Construction practices in developing countries. Journal of Construction Engineering and Management, 128, 1, 1–7, 2000.

[17] Ostler, C.H., Country analysis, its role in the international construction industry's strategic planning procedure: In: Peerce C, editor. Proceedings of First International Construction Marketing Conference, Construction Management Group, School of Civil Engineering, University of Leeds, Leeds, UK, 1998.

[18] Chan, E., and Tse, R., Cultural considerations in international construction contracts. Journal of Construction Engineering and Management, 129, 4, 375–381, 2003.

[19] Birgönül, M.T., Dikmen, I., Özorhon, B., The impact of reverse knowledge transfer on competitiveness: The Case of Turkish Contractors in Economics for the Modern Built Environment., Les Ruddock (ed.), Taylor and Francis: London, UK, 2009.

[20] Zhao, Z., Zuo, J., Zillante, G., Zhao, J.X., Foreign architectural and engineering design firms' competitiveness and strategies in China: A diamond model study, Habitat International, 36, 3612-370, 2012.

[21] Orr, R. J., and Kennedy, J.R., Highlights of Recent Trends in Global Infrastructure: New Players and Revised Game Rules, Transnational Corporations, 17, 1, 95-130, 2008.

[22] Han, S. H., Kim, D. Y., Jang, H. S., and Choi, S., Strategies for contractors to sustain growth in the global construction market. Habitat International, 34, 1, 1-10, 2008.

[23] Özorhon, B., Arditi, D., Dikmen, I., Birgönül, M.T., The performance of international joint ventures in construction. Journal of Management in Engineering, 26, 4, 209-222, 2010.

[24] Flanagan, R., Lu,W., Shen, L. Y. and Jewell, C., Competitiveness in construction: a critical review of research. Construction Management and Economics, 25, 9, 989-1000, 2007.

[25] Undersecretary of Foreign Trade (UFT), International Contracting Services, http://www.economy.gov.tr/index.cfm?sayfa=6FCC7802-FE1C-7ECF-E9C975B8EE928372, 2012.

[26] Turkish Contractors Association (TCA), Turkish Construction Industry– Vision 2023, http://www.tmb.org.tr/arastirma_yayinlar/TMB_insaat_sektoru_2023_vizyonu.pdf , 2011.

[27] Organization for Economic Co-operation and Development (OECD), Oslo Manual, 3rd edition, OECD Eurostat, Paris, Luxembourg, 2005.

[28] Taylor J., Levitt R., Innovation Alignment and Project Network Dynamics: An Integrative Model for Change, Project Management Journal, 38, 3, 22-35, 2007.

[29] Mathews, J.A., Dragon multinationals: New players in 21st century globalization. Asia Pacific Journal of Management, 23, 1, 5-27, 2006.

[30] Nissen, M. E., Harnessing knowledge dynamics: Principled organizational knowing and learning, IRM Press, Hershey, PA, 2006.

[31] Ministry of Economy, Construction Materials Sector, http://www.ibp.gov.tr/pg/sektorpdf/sanayi/insaat_malzemeleri_2012.pdf, 2012.

[32] Han, S., Diekmann, J.E., Approaches for making risk-based go/no-go decision for international projects, Journal of Construction Engineering and Management, 127, 4, 300-308, 2001.

[33] Chamber of Civil Engineers, IMO Istanbul General Board, http://imoistanbul.org/imoarsiv/ist-bulten/SAYI74/YetkinMuhYonTaslak.doc, 2004.