



IMPROVING COMPETITIVENESS IN INTERNATIONAL CONSTRUCTION

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Historically, U.S. contractors have a successful track record in international markets. They built that track record by bringing advanced technologies and applying efficient project management methodologies to projects. According to ENR data from the early 1980s to early 2008, U.S. contractors led the international construction arena. However, starting from 2009, Chinese construction firms lead the international construction with increasing revenue volume. The study analyzes the U.S. construction firms' competitiveness in international markets between 1980 and 2017. The results of the analysis indicate that the U.S. contractors need to be competitive in creative financing. Creating joint ventures from companies that are active in Middle East, and Asia can improve the U.S. activities in those markets. To improve capabilities in delivering full-cycle services, U.S. construction companies can acquire facilities management companies. Involvement in emerging delivery methods and contracts such as build-operate-transfer, design-build-finance-maintain-operate, and public-private-partnerships can improve the competitiveness of U.S. contractors in international markets.

Keywords: Build-operate-transfer, Public-private-partnership, Mergers and acquisitions, Design-build-finance-operate-maintain, Chinese contractors, U.S. contractors.

1 INTRODUCTION

The competitiveness of construction companies in international markets is affected by many factors. Historically, U.S. contractors have had a successful track record in international markets. They built that track record by bringing advanced technologies and applying efficient project management methodologies to projects (Strassman and Wells 1988). However, since 2009, Chinese contractors lead the international construction arena in terms of revenue volume. This paper analyzes the Engineering News Record (ENR) data on international construction over the period of 1982-2017 to explore the factors that affected the competitiveness of U.S. international contractors. The study has identified the strengths and weaknesses that affected the performance of U.S. contractors in international markets.

According to Mahalingam *et al.* (2005), partnerships, contracting practices, knowledge of regional standards, and knowledge of the existing market conditions affect the performance of international contractors. The global monetary policies affect the perception of owners. Starting from the early 2000s, the market trends indicate that construction entities are expected to include financing in their bids. Recently, contractors are expected to assume responsibilities for the full cycle services to become competitive. This requires contractors to provide design, procure, build

and manage facilities (Han *et al.* 2010). The paper provides an insight into the U.S. contractors' journey in international markets and explores how U.S. contractors should position themselves to be surrounded by the new market dynamics. The findings of the review provide strategic options to restore U.S. leadership in the international construction arena.

The existing literature in international construction related to positioning of U.S. construction companies mainly concentrates on the analysis of periods where U.S. contractors had superior competitive advantages. There is a gap in literature analyzing the periods where U.S. contractors are experiencing difficulties in maintaining the leadership status. The findings of this study are expected to identify major factors affecting the competitiveness of U.S. international contractors in the last two decades.

2 THE REVIEW OF THE FACTORS AFFECTING COMPETITIVENESS

The technological skills and project management expertise of U.S. contractors made them the most competitive international contractors between 1980 and 1993. The ENR Magazine publishes the Top International 225/250 contractors annually. The annual list is highly recognized by international construction researchers. The findings of Lu (2014) indicate that the ENR data can be used with a high degree of confidence. The ENR ranked the international contractors based on their new contract amounts in international markets until 1993. The average percentage of new international contract amounts won by U.S. contractors is approximately 35% (annually) of all international contract amounts from 1982 to 1993. This is a successful period for U.S. contractors as they led the international construction arena with substantially high percentage new contract ratios. Despite the fact that U.S. contractors had disadvantages on the tax issues and export financing, their technological advantage such as expertise on petro-chemical projects and project management provided major advantages to secure projects in oil and gas producing nations. The only decline of the market share by U.S. contractors took place from 1986 to 1989, and this can be attributed to the decline in oil prices. Despite the decline, U.S. contractors continued to have the largest share (in terms of revenue volume) in international construction markets during that time frame (1986-1989). The market share of U.S. contractors declined after 2003; since 2009, Chinese contractors lead the international construction arena (Zilke and Taylor 2014). The data starting from 1994 provides rankings of international construction revenues annually (Figure 1).

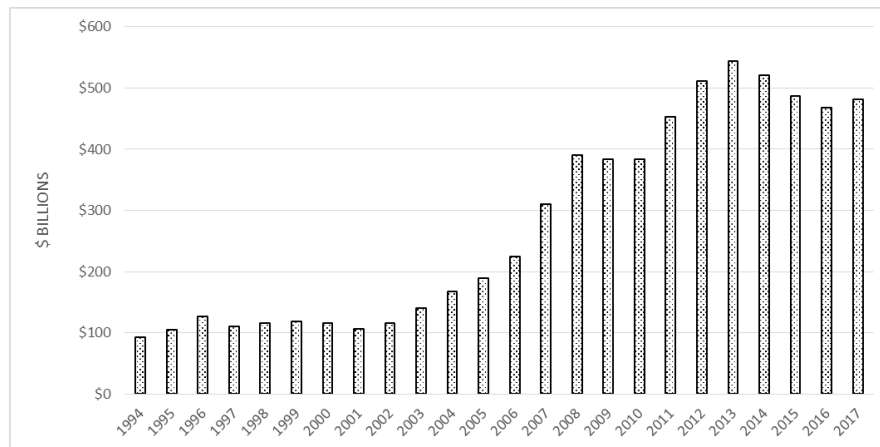


Figure 1. The total international construction revenues between 1994 and 2017.

The Japanese contractors had the largest revenues from 1994 to 1996 followed by U.S. contractors. However, U.S. contractors took the lead back in 1997 and continued to have the major share until 2008. The peak years with top percentage ratios were 1998 and 1999. The U.S. leadership continued until 2008 with a decreasing percentage ratio (Figure 2). The weakening dominance of U.S. contractors in international construction, starting from 1999, can be attributed to the trend that the contractors in developing countries started to deliver technology driven projects. During the early 2000s, more and more Chinese companies became competitive in international construction. According to Reina and Tulacz (2002), cultural issues also play a role in international construction; eastern culture can be more appealing to developing countries. The declining trend is not aligned with the growing international revenues within the same time period (Figure 1). Despite the decline, U.S. contractors were still the leading contractors until 2008 in international markets. At the same time period, the domestic construction markets in the U.S. were very active; this could be one of the reasons that contractors concentrated in domestic projects (Reina *et al.* 2000).

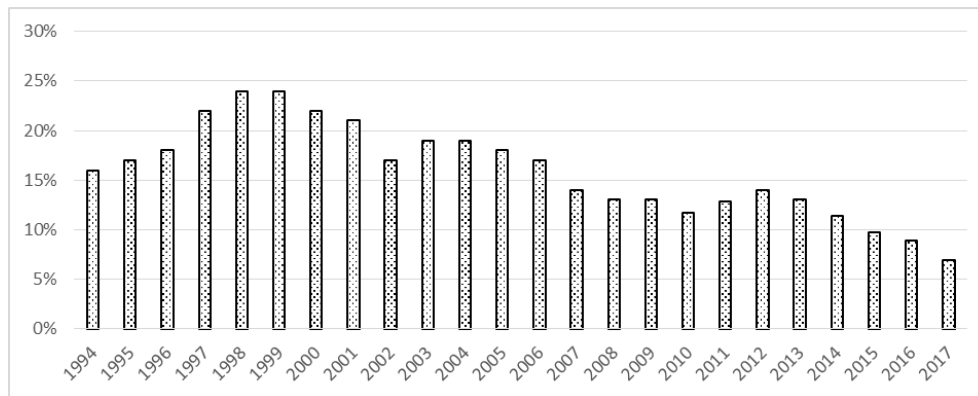


Figure 2. The percentage ratio of the revenues by U.S. construction companies to the total revenues in international markets between 1994 and 2016.

Even though the leadership of U.S. contractors continued, some factors did not favor U.S. contractors, such as relatively less support from U.S. government compared to the other nations' governments. More and more sophisticated firms from developing countries joined international construction. The advancements in communication technologies started to make an impact on the pace and effectiveness of projects in the beginning of this period (Reina and Tulacz, 1995). Being able to bring financing also became more critical in this period and the build-operate-transfer (BOT) method was highly effective in getting new contracts. Mergers and acquisitions (M&A) also became an important trend, especially as a method of entry into established markets such as the U.S. (Reina *et al.* 2000). BOT became a very natural process for some European contractors, and it became a competitive advantage against U.S. contractors. In addition to BOT and M&A, facilities management (FM) became a trend used by some large international contractors. FM, especially in the airport segment, became an alternative venue stream for European contractors (Reina and Tulacz 2001, 2002). In 2001, Spain's *Dragados Obras y Proyectos SA* reported that 40-45% of their international work account was BOT. French Bouygues also reported that in addition to BOT, design-build (DB) constituted large portion of their international work (Reina and Tulacz 2001). Political factors are always critical (Ashley

and Bonner 1987). Some western companies (excluding the U.S.) had some advantages in Northern Africa and in some parts of the Middle East (Reina *et al.* 2000).

Fluctuating currency values can make an impact on competitiveness of international contractors (Gunhan and Arditi 2005). Japanese and European contractors increased their revenues because of the increasing value of yen and euro starting from early 2000s through late 2000s (Reina and Tulacz 2003). It is common to have companies from newly industrialized countries (NIC) that built power plant projects in developed countries with BOT capabilities. For example, the large Turkish firm GAMA built a power plant in Ireland with BOT method. The same company built a power plant in Jordan by joint venturing with Black and Veatch, an American firm (Reina and Tulacz 2004). Besides its technical expertise, BOT provided a competitive advantage to get a project in Europe, and the American firm benefited from the joint venture (JV) since the Turkish firm has cultural advantages that affect the project performance while operating in the Middle East. Chinese firms continued to increase their share not only by becoming competitive in technology intensive projects but also, they have continued to use their competitive labor rate labor advantages especially in Africa. Companies from NICs such as China, Korea, and Turkey, which were historically competitive in labor-intensive projects, became competitive in technology intensive projects. They developed expertise by establishing JVs with companies from the developed world. They brought cultural advantages and price competition with lower bids (Reina and Tulacz 2005). Another competitive advantage of Indian and Chinese contractors is that they developed a major technical expertise in their domestic markets, and they used it in international projects. They were transformed from labor exporters to engineer-procure-construct (EPC) and BOT exporters (Reina and Tulacz 2007). The market growth was significant, especially with petroleum production facilities and power plants, major infrastructure projects, and signature buildings in 2000s. Starting from 2009, Chinese companies had the largest share (excluding the years of 2012 and 2013 due to Spanish companies' leadership) until 2017. In this period, government supported contractors' competitive advantage continued. Chinese companies expanded their operations in African market, and they had great success with Chinese financial aid package (Reina and Tulacz 2015, 2017). They continue to increase their share in the Middle East. Similar to Chinese contractors, Korean contractors have increased their market share in the Middle East's oil- and gas-plant market. Projects in Central and South Africa are also emerging due to developments and natural resources (Reina and Tulacz 2010). According to some construction executives, government-supported methods may create political and financial unfairness during the bidding process. Starting from the mid-2010s, technology is not a pure competitive advantage anymore. According to Reina and Tulacz (2015), clients are in demand for PPP and BOTs. Risk transfer is the major trend by using emerging delivery methods such as Design-Build (DB), Design-Build-Finance (DBF), and Design-Build-Finance-Operate-Maintain (DBFOM). Companies are in an era where they need to consider revenue streams by considering the overall life cycle either with delivery methods (BOTs and PPP, DB, offering full life-cycle services) or FM. Public-private-partnership (PPP) is seen as a long-term revenue generating stream in a competitive construction industry (Reina and Tulacz 2011).

Companies invest through acquisitions to become more competitive and create new niche segments (Reina and Tulacz 2014). In order to minimize risks through diversification hence improve competitive strengths, firms acquire technically capable firms (Reina and Tulacz 2017). Cultural similarities clearly make a difference. One of the success factors to working in Commonwealth of Independent States and Russia is the ability to bring technical expertise but use local resources at the same time; understand how to operate, and find manpower (Reina and Tulacz 2014, 2015). The Middle East's oil and gas construction market was crowded in 2010s

with too many contractors. Many contractors took contracts with unreasonable prices. Companies with robust health and safety programs and quality standards often cannot afford to bid against these new competitors (Reina and Tulacz 2015). This can be one of the major reasons why U.S. contractors have a declining ratio in the Middle East. Low cost mentality may cause an increase in the number of failed contracts in the near future.

3 CONCLUSIONS AND RECOMMENDATIONS

The study analyzed the factors affecting U.S. companies' competitiveness in international construction. U.S. companies have always been very competitive in international construction. U.S. leadership continued until 2008 with a declining ratio, and starting from 2009, mainly Chinese construction firms lead the international construction with increasing percent ratios to the total international construction volume. U.S. contractors dominated international construction in 1980 – 2000 period with their technical skills in petro-chemical, petroleum processing, and power plant projects accompanied with their project management expertise despite the high salaries of their employees. Contractors from developing nations were also involved in international construction at the same time period but they were building labor-intensive, low-technology projects. Starting from the mid-90s though, companies from developing nations started to build technically complex projects as well. Despite the continuing leadership of U.S. companies, their percent ratio to the overall international revenues continued to decline until 2008. Starting from the mid-90s, the companies from developing nations such as China, Korea and Turkey were able to build technically complex projects while still being competitive with labor costs. Owners in the international markets became more demanding on the financing side. Companies, which are backed by their governments that subsidize respective companies with export credits obtained competitive advantage against U.S. contractors. They developed expertise in BOT, PPP projects as well as DBFOM. During the period from 2009 to date, Chinese contractors continue to lead international construction markets. Government support especially for Chinese contractors continues. The major markets such as the Middle East, Asia, and Africa are with full of contractors from China, Korea, Turkey, and recently India (in the Middle East market). The major competitive advantage of those companies is that they all have eastern culture, which becomes a major competitive advantage to win contracts in developing countries. One reason, that the Middle East, Asia, and Africa became tough markets for U.S. contractors is that it is hard to compete with robust health and safety standards. Owners continue to be demanding, and companies that can offer full life-cycle services obtain competitive advantage. In order to stay competitive, most non- U.S. companies were active in acquisitions.

U.S. contractors need financial backing from their government to be competitive in an arena where creative financing is crucial for success. Creating joint ventures with companies that are active in Middle East, and Asia can improve the U.S. involvement in those markets. FM is a niche market for U.S. contractors, but more U.S. construction companies can acquire FM companies to improve their competitiveness in international construction. Involvement in emerging delivery methods and contracts such as BOT, DBFMO, and PPPs is crucial to succeed in international markets.

For future studies, the rise of construction firms from the NICs in international construction should be analyzed. There are many studies on Chinese contractors analyzing their competitiveness, however the companies from the NICs other than China such as India, South Korea, and Turkey should also be analyzed to explore their strengths contributing to their competitiveness in the last two decades. The future research should also focus on the additional success strategies other than the recommended ones for U.S. construction firms in this paper. The

future research should contribute to the exploration of unique and innovative ways of improving U.S. competitiveness in international construction.

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