

INTEGRATING SPECIAL TOPICS TO A PROJECT MANAGEMENT COURSE IN INTERNATIONAL CONSTRUCTION

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Due to credit-hour limitations, it is not always possible to create specialty courses on topics such as leadership, business development, and international construction. This paper covers the integration of international construction topics into a project management course. Each semester a considerable number of students mention they may consider working in international construction projects – indicating some awareness of the opportunities and advantages of having international work experience. A lecture given by the author included the definition, history, and reasons for international construction. It highlighted the global construction markets and their relationship with local construction industries, presenting trends affecting international construction are presented, and analyzing the characteristics of regions (types of projects, leading contractors etc). The students' perceptions were surveyed at the beginning and end of the course, with results indicating that students developed a clearer understanding of international construction topics.

Keywords: Construction, International, Undergraduate curriculum, Projects, Management, Globalization.

1 INTRODUCTION

Today's complex projects add many new participants that need to collaborate throughout the project process. Clients' expectations go beyond the construction process, therefore the skills required to lead projects are expanded. In addition, globalized economy necessitates that organizations think globally. Whether or not you consider international projects, your local business is still affected by globalization (Root 1994). Teaching this has been difficult. At higher-education institutions, due to credit-hour limitations, the majority of construction core courses can only cover fundamental technical content. Therefore, different teaching strategies have been put into place in order to cover leadership, business development, and international construction contents. This paper exemplifies the integration of international construction topic.

International construction can be defined as “a company, resident in one country, performs work in another country” (Mawhinney 2001). Another description is that “an international contractor is a contractor that works outside of the country in which the company is registered” (Seymour 1987). Engineering News Record Magazine (ENR) publishes a detailed analysis of international construction annually. According to Reina

and Tulacz (2014), U.S. firms are active in international markets, and their competitive advantage comes from specialist expertise especially technological, and project management. Even though the United States is one of the largest construction markets, international markets also offer opportunities for those who consider working outside their home country, such as income tax exemption and attractive benefits. U.S.-based firms have a major share of the power, industrial/petroleum, hazardous waste, and sewer/waste markets (Gunhan 2005). Their total revenue makes 12.8% of all the international construction projects' revenue, the highest percentage on a country basis (Reina and Tulacz 2014).

Despite this, no specific course is offered in International Construction in the Construction Science curriculum at the University of Texas at San Antonio. This paper covers the integration of International Construction into a core course, Project Management. Project Management covers a broad range of topics, such as the architecture-engineering-construction (AEC) industry, project participants, project delivery methods, contracts, project chronology, and specific phases of construction projects (i.e., preconstruction, construction, closeout, post-construction). By introducing this topic, students were given a global perspective to help them explore different career options.

This topic was designed at an introductory level, but included important knowledge about international construction. It started with the definition of international construction, highlighting the distinction between domestic and international construction, and explaining the additional challenges specific to international construction. The reasons for international construction, including increased openness and globalization, privatization in emerging economies, stagnant domestic markets, drive for growth, availability of large projects in developing countries, opportunities in international markets, and reputation, were covered. The role of multinational corporations in the internationalization of construction companies was explained in detail (Howes and Tah 2003). The company strength factors were also explained in detail, and the major threat factors in international construction were discussed.

One of the most important topics in international construction business is the decision on how to enter a foreign market, which is obviously important to the success of the venture. The applicable entry modes were briefly explained: strategic alliance, build-operate-transfer, joint-venture, representative office, licensing, local agent, (new establishment or mergers & acquisitions), sole venture company, branch office company, and sole venture (Chen 2005). Current trends affecting the markets during the last decade were also covered, such as acquisition and mergers of firms, facilities management, establishment of finance/construction consortia, potential in infrastructure projects, growth of Chinese contractors in Africa, and clients' expectations on innovative delivery methods (single source solutions).

Another important aspect of international construction is the analysis of world regions. This analysis introduced students to major markets that are active in international construction, in order to empower them to make better decisions if they desired to work in those markets. The students were briefly introduced to markets in the Middle East, Eastern Europe, Russian Federation, China, Australia, Africa, South America, Western Europe, and the U.S.

3 METHODOLOGY

To measure the effectiveness of the topic's integration, identical pre- and post-lecture survey questionnaires were conducted. There were 26 students in the classroom. The survey questionnaire included six questions. The first question asked students if they were considering working abroad. If their answer was yes, then they were requested to continue the survey. Twenty-two responded "yes", so they completed the survey with the following questions:

- How important is gaining experience in U.S. construction markets before you consider employment opportunities abroad?

The students were asked to indicate their level of interest by using a Likert Scale (1 to 5), where "1" indicates no importance, "2" indicates somewhat important, "3" indicates neutral, "4" indicates important, and "5" indicates very important. The intent of this question was to see if there is any change in their preferences after the lecture.

- What is the motivation for working abroad?

The students were given six different reasons to consider working abroad. These were:

- a. Good salary
- b. Good career opportunities abroad
- c. Believed to have better options when returning to home country
- d. Better benefits
- e. Location
- f. Exploring new cultures

The given reasons were rated by the students on a Likert Scale (1 to 5), to understand the students' perceptions before and after the lecture, and see if there was a significant change in their opinions.

- What part of the world would you like to work?

Students learned about the major regions/countries where the international construction markets are active. These regions and countries were East and Central Europe, Western Europe, Middle East, Russian Federation, China, Australia, North Africa, South and Central Africa, and South America. Each region or country was rated by using the Likert Scale (1 to 5).

- How important is to go abroad with a U.S.-affiliated company?

The students learned about the competitive strengths of U.S. and other companies from different nations in international construction. It is important to see how their interest changed after the lecture. They are asked to rate the importance level by using the Likert Scale (1 to 5).

- What type of projects would you like to work on?

The students learned about the major project segments in international construction: general building, petroleum, transportation, power, industrial, water, sewer/waste, manufacturing, telecoms, and hazardous waste. The answer for this question did not require any scaled rating. The students only checked off the project types that they preferred to work on. The intent of this question was to see if there is any change in their preferences after the lecture.

4 FINDINGS AND ANALYSIS

The students responding “yes” to the first question constituted approximately 85% of the students participating in the survey, a clear indication that the students were highly interested in exploring international construction opportunities. The students also thought that gaining construction work experience in the U.S. is very important before they consider working abroad. The pre-lecture and post-lecture surveys were compared as two-tailed hypothesis. The mean ratings from both survey results were identical (4.31). The result was not significant at $p \leq 0.05$.

When answers from both rounds were compared for what the motivation factor for working abroad is, the mean rating results obtained from pre-lecture and post-lecture surveys are not statistically significant at $p \leq 0.05$, other than the “good salary” option. According to pre-lecture survey results, a “good salary” was the most important factor for the students to consider working abroad. This factor was ranked second in the post-lecture survey after “good career opportunities”. According to post-lecture survey results, the students thought “good career opportunities” is the most important factor to consider before working abroad.

When the answers from both rounds were compared for “what part of the world would you like to work”, the mean rating results obtained from pre- and post-lecture surveys were not statistically significant at $p \leq 0.05$, other than the result of the North Africa region. According to the pre-lecture results, the North Africa region was rated as the least desired place to work among nine different regions/countries. However, post-lecture results indicated that North Africa was rated as the fifth-desired location. The students had learned that North Africa is very active with projects compatible with their preferences. Even though the Middle East is active with similar projects, both pre- and post-lecture results indicated that the Middle East was the least-preferred region, probably due to security concerns. According to post-lecture results, students’ first choice was East and Central Europe. It was already ranked as the third choice in pre-lecture survey, but when they learned Western European manufacturers are shifting their plants to East-Central Europe, it became the students’ first choice.

China was the second-most desired country to consider working in, becoming the third choice post-lecture. Even though it has immense amount of project potential, the limited opportunities for international construction companies may have changed students’ opinion. Australia was ranked as the sixth-most desired country pre-lecture survey and fourth-most post-lecture. The students learned that Australia presents major opportunities in public-private-partnership (PPP) projects. Western Europe was ranked as fourth pre-lecture and second post-lecture after the East-Central Europe option. Even though Western European markets present limited options for international

projects, PPP opportunities in infrastructure projects seemed attractive to the students. The students thought it important to go abroad with a U.S.-affiliated company. The mean ratings for this question were 3.95 and 3.86 respectively, and there was no significant difference at $p \leq 0.05$.

According to the pre-lecture survey results, the students wanted to work in general building, petroleum, and industrial building projects (in order of preference) followed by transportation projects. The results of the post-lecture survey changed the order of preference to petroleum, power and industrial, general building, and transportation. The answers in both rounds were statistically significant at $p \leq 0.05$. The significant difference indicates that the content of the lecture changed the students' opinion. The students wanted to take advantage of U.S. firms' competitive strengths. They wanted to work on projects where U.S. firms are competitive. The results were in accordance with the students' preference given to U.S. companies when considering international projects.

5 CONCLUSIONS

Today's global business environment necessitates that students understand the dynamics that surround their professional environment. Therefore the topic of international construction is important. Besides covering important topics, the students' pre-perception and post-perception after the lecture were evaluated.

The lecture helped the students understand the associated dynamics with international construction. Most students considered working in international construction projects, with good career opportunities being the top factor when considering work abroad.

The students indicated they wanted to work abroad with U.S.-affiliated companies on projects where U.S. companies have a competitive advantage. The students' preferences significantly changed after the lecture. Pre-lecture they were primarily interested in general building projects, but post-lecture they were primarily interested in working on petroleum projects, due in part to the chance of a good salary.

The students also prioritized security issues in the country/region they would work. American firms are active in the Middle East region, but students listed it as the least-preferred option in the post-lecture survey. North Africa was listed as the least-preferred option in the pre-lecture survey but became the fifth-preferred region out of nine regions post-lecture. The change in their perception was significant. The comparative results indicated that the students broadened their perspective on the topic and they have better understanding of the dynamics of international construction markets.

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