

Market Expansion Strategies for Small or Medium-sized Construction Companies by Developing Quantitative Risk Assessment Model

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Abstract: Korean construction industry has developed with national economy growth for a couple of decades. However, because of slump of real estate, the domestic construction industry was intimidated. In this situation, many construction company has no choice but to go abroad to find construction projects. However, almost small or medium-sized construction companies are very hard to operate their business because they have small funding ability and weak labor power. Therefore, this study aims to propose an assessment tool through analyzing risk factors of overseas construction projects for small or medium-sized companies by examining preceding research and interviewing industry experts. Weights of the risk factors are determined through the surveys of the industry practitioners. All of the data is configured into the assessment tool and this converts the quantitative information which leads to the optimal of strategies choice. This paper provides a quantitative measurement of possible performance and detailed assessment of each itemized risk factors. This assessment tool is qualified for industry experts so that it can safely be applied to the future projects. Ultimately, many small or medium sized construction companies will benefit from the tool proposed in this study to examine the potential of the overseas market expansion.

Keywords: International construction markets, Risk factors analysis, Overseas expansion instrument for evaluation, Risk assessment tool

I. INTRODUCTION

A. The background and purpose of this study

The market of national construction has continuously been decreased. On the other hand, foreign markets of construction has increasingly maintained their sale on higher records on Middle East/Central Asia and Latin America. In this way, our national construction market cannot help considering the expansion to foreign markets. However most of small or medium sized Korean companies have less ability to analyze the whole range of foreign construction risk factors than big sized companies. On the other hands, the big sized companies are easier to check those items. So, the purpose of this study is to develop self-assessment tool for foreign market expansion by analyzing the foreign construction risks for small or medium construction companies.

B. Scope and Methodology of Research

This study is focused on Korean small or medium sized construction companies to enter foreign construction market and the research methodology is depicted <Figure I>

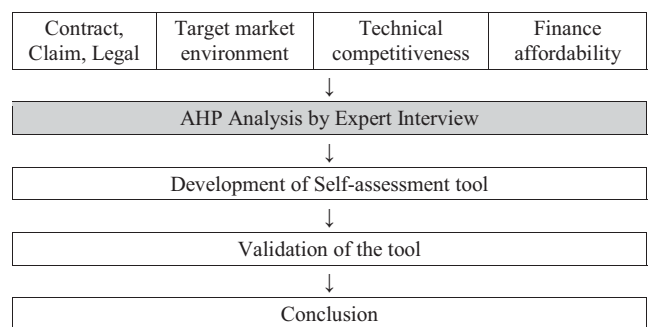
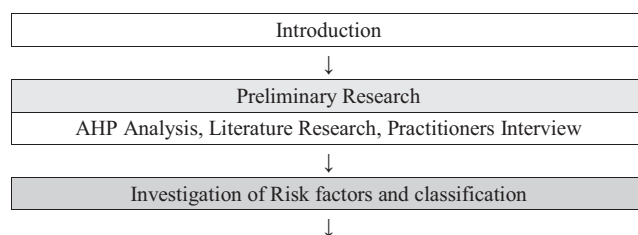


Figure I
METHODOLOGY OF RESEARCH

To identify risk factors in entering the foreign construction markets, AHP method has been applied and the qualitative analysis to survey the identified risk factors has been conducted. In conclusion, a self-assessment tool has been developed after encompassing the outcomes of this study.

II. RISK IDENTIFICATION AND CLASSIFICATION

Based on prior studies, the survey of risks for entering foreign markets are consulted. The categories of risk factors in small/medium construction companies entering the foreign markets are divided into “Contract, Claim and Legal(16)”, “Target market environment(22)”, “Technical competitiveness (28)” and “Finance affordability(6)”. All these categories additionally has been departmentalized into 72 small items. Furthermore, to verify reliability of the risk factors from literatures, questionnaire survey, interviews and AHP method have also been employed. The

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experienced industry practitioners have been selected for this investigation(78% of all has been 6 or 10 experienced, of 11% has been between 11 and 15 years, and the other 11 was between 1~5 years of experience.)

III. RISK ANALYSIS FOR ENTERING FOREIGN MARKETS

A. Result of AHP Questionnaire

Questionnaire survey's result has been analyzed using AHP Method as follows: <Table I> (Contract, Claim, Legal(F1), Target market environments (F2), Technical competitiveness(F3), Finance affordability(F4), and their weight values. The weight results are said to be consistent, indicating that the numerical value of Consistency Index(CI) is 0.0153, which is less than 0.1

TABLE I
 RESULT OF AHP ANALYSIS

	F1	F2	F3	F4
F1	1	0.5	2	1
F2	0.5	1	3	2
F3	2	3	1	0.333333
F4	1	2	0.333333	1
Weight	0.233	0.419	0.108	0.249

B. Reliability test and risk Analysis

By using SPSS, the total of Cronbach's Alpha has been calculated in order to evaluate reliability of the factors in each category. When the total Cronbach's alpha is over 0.6, the results can be reliable. All the results throughout the SPSS come up with "Contract, Claim, Legal" (0.666), "Target market environments" (0.606), "Technical competitiveness" (0.629), "Finance affordability" (0.666), which all have the meaningful degree of reliability.

To make a qualifiable assessment tool, average rates of each item have been converted and compared with the result of weight values in order to deduct all the risk factors. The process is as follows:

- (1) Calculate Average of raw scores(A_i) (2) Calculate weighted average(A_n)

$$A_i = \frac{\text{sum of interview scores}}{\text{the number of interviewees}} \quad A_n = \frac{a_i}{\sum_{k=1}^{67} a_k} \times 100 (\%)$$

- (3) Calculate risk factor scores(X_i) (4) Calculate risk factor weights(Y_i)

$$X_i = A_i \times x_j \quad (1 \leq i \leq 67, 1 \leq j \leq 4) \quad Y_i = \frac{X_i}{\sum_{k=1}^{67} X_k} \times 100 (\%)$$

The most important risk factor is "Target market environment(F2)". On the other hand, 30% is indicated "technical competitiveness(F3)", which suggests our national construction technology relatively less important than foreign market condition. All these things taken into accounts are coming from interviewee's opinions that they think information about foreign markets, including level of skill, workforce and equipment

IV. DEVELOPMENT OF SELF-ASSESSMENT TOOL

The key result developed in this study is a quantifiable self-assessment tool for checking themselves when in making decision on entering foreign construction markets. (Refer to < Figure II>, < TABLE II & III>)



Figure II
 DEVELOPMENT OF THE TOOL BASED MS EXCEL

TABLE II
 INTERPRETATION OF TOTAL SCORE

Rate	Evaluation
More than 75%	Possible to enter foreign market after checking the detail
50% ~ 75%	Possible to enter foreign market under the charge of leading executives
Less than 50%	Disable to enter foreign market

TABLE III
 INTERPRETATION OF CATEGORY SCORE

Category	Rate	Evaluation
Contract, Claim, Legal	More than 75%	After checking the details of risk regarding to this category, be possible to enter foreign market.
	50% ~ 75%	Correction of the risk problems regarding to this category
	Less than 50%	Re-check the risk factors and take advices by experts
Target market environments	More than 75%	After checking the details of risk regarding to this category, be possible to enter foreign market.
	50% ~ 75%	Correction of the risk problems regarding to this category
	Less than 50%	Re-check the risk factors and take advices by experts
Technical competitiveness	More than 75%	After checking the details of risk regarding to this category, be possible to enter foreign market.
	50% ~ 75%	Correction of the risk problems regarding to this category
	Less than 50%	Re-check the risk factors and take advices by experts
Finance affordability	More than 75%	After checking the details of risk regarding to this category, be possible to enter foreign market.
	50% ~ 75%	Correction of the risk problems regarding to this category
	Less than 50%	Re-check the risk factors and take advices by experts

V. CONCLUSION

This study has developed self-assessment tool by analyzing risks of foreign construction market. Small or medium construction companies who are lacking in information about entering foreign markets can benefit from this tool. This study also expedite a strategic approach in foreign market by effecting and checking the potential risks for particular country.

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