THE CAUSES OF BAD PROFIT IN OVERSEAS CONSTRUCTION PROJECTS

Seung Heon Han[1], Du Yon Kim[2], and Sang Hyuk Park[3]

[1] Associate Professor, Department of Civil Engineering, Yonsei University, Seoul, Korea
[2] Ph. D Students, Department of Civil Engineering, Yonsei University, Seoul, Korea
[3] Ph. D Students, Department of Civil Engineering, Yonsei University, Seoul, Korea

ABSTRACT : International construction projects are exposed to various and complicated risk factors stemming from different political, economical, social, and cultural backgrounds, which make contractors entering into international construction to experience severe losses. It implies that overseas markets do not necessarily secure the high return, which is typically expected to in the high risky attempts. Accordingly, contractors need to evaluate various risk factors faced with overseas construction projects that can possibly aggravate the profitability. This paper aims at establishing a valid groundwork for further research on developing the integrated risk management model. For this end, it analyzes the long-term trend of profitability on total of 3,487 projects performed by Korean global contractors in world-wide construction markets during the last four decades. Then, it investigates the possible factors/causes of bad profit that have affected the profitability significantly through the structured surveys of 90 real overseas projects based on the project-specific information and experiences of Korean contractors in overseas markets. Furthermore, it analyzes relative importance of these factors/causes and identifies the important features expected for the risk management of international construction projects. Finally, vital distinctions between success and failure projects and lessons learned to improve profitability are then distilled.

Key words : International Project, Project Failure, Critical Failure Factors, Risk Management

1. INTRODUCTION

Globalization pressures have created more opportunities for contractors to enter international construction markets. However, larger contract amounts, longer return periods of investment, and higher burdens of financing than those found in domestic markets are the major threats on international construction projects. In addition, international construction firms are exposed to a complex skein of risks such as currency and interest rates, inflation, credit, and other business risks [1, 2, 3, 4]. Failure to fully understand the political, economic, cultural and legal project conditions can significantly affect the firms' opportunities to sustain profit and growth associated with foreign markets. Subsequently, increasing numbers of Korean contractors have taken on a negative perspective to the overseas projects and are content to settle down in the safer domestic market [5]. More often, strong and less risky domestic market intends to decrease the need for circumventing stiff competition confronted at the internal market.

At this point, the following questions can be raised - "The construction firms can maintain a sustainable growth by staying in the less risky domestic markets rather than by competing in extremely challenging global markets?" According to numerous authors who have identified the motive for global expansion, the volume of international contracts contributes to a nation's trade balance at a national level [6, 7, 8]. At a corporate level, most firms seek to obtain overseas contracts to balance the growth of their company in order to not only contribute to their security through increased global activities, but also mitigate the impact of the cyclic nature of their workload. Moreover, highly specialized firms view work abroad as a means of capitalizing on expertise and experience gained from long involvement in one type of construction or technology. Based on these strong motives, the previous researchers have emphasized that the contractors need to establish long-term strategies aiming at balanced growth of the domestic and international construction markets to overcome limitations of the cyclic domestic construction market so as to realize the sustainable development. For these reasons, despite the higher possibility of project failure, the contractors are motivated to go abroad and so able to select potentially profitable projects at the initial stage of bidding process attempting to mitigate the high degree of risk exposures.

The fundamental goal of this paper is to examine key factors influencing on the bottom line of profitability in order to reduce risks under the rapidly changing global construction markets. Toward this end, this paper begins by analyzing the chronological trend of profitability on about 3,487 overseas projects performed by Korean global contractors in world-wide construction markets during the last 36 years. Then, it investigates the critical failure factors based on the level of criticality on the causes of bad profit through the in-depth case studies of 90 real overseas projects. In addition, as an essential step for further developing more analytical and statistically refined model, this paper provides

a comprehensive model for analyzing the complex cause-and-effect relationships that can lead to a loss in overseas projects. Finally, it provides significant distinctions between success and failure projects and lessons learned in improving profitability in the highly uncertain overseas projects.

2. LOSS TREND OF OVERSEAS PROJECTS

2.1 Trend of Top 225 Global Contractors

Historically, it has been argued that international construction projects are more risky, but more profitable than domestic projects. However, the risky nature of international construction can make contractors sustain higher risks and low returns on their overseas' markets. According to Engineering News Record [9], 15.1% of the "top 225 global contractors" have suffered losses in international construction projects during the period of 1994 – 2004, while only 9.7% of them have suffered losses in domestic projects. This means that international construction projects have a higher probability of failure and need a higher risk taking than domestic projects. As for profitability, despite a higher risk-taking attempt, the average profit from foreign works among these contractors has declined significantly during the same period. The average profit of foreign work among the "Top 225 global contractors" is 10.8%, while that of domestic project lies in almost the same level at 9.8%. It implies that the international construction market assumes higher risk, but cannot always secure higher returns for their efforts even in the case of highly competitive global contractors.

2.2 Trend of Koran Global Contractors

In conjunction with the overall trend of overseas markets, this paper first analyzes the long-term trend of profitability on about 3,487 projects performed by Korean global contractors in world-wide construction markets. The total volume valued at 172,906 million US dollars. This investigation provides us with a guide to further study on profit-influencing factors in international construction projects. All of the investigations on the overall profit trends in international construction markets were conducted on the basis of self-reports by Korean global contractors, which are obligatorily required to submit to the "International Contractors Association of Korea" by the rule of "Promotion Act for Overseas Construction".

Geographically, the portion of projects performed in the Middle East accounts for 60% among the 3,487 projects, followed by Asian area (31%) and the North America/the Pacific area (5%). In terms of project types, the percent of building projects (42%) was more than civil (28%), industrial plants projects (17%) and engineering projects (8%), respectively. As for delivery systems, nominated bid takes the largest portion (44%) and then sequentially followed by negotiated contract (35%), open competitive bids (19%), and proposed bids by contractors (2%). Also, these firms have participated in international projects as sole general contractors (67%), subcontractors (24%), and joint-ventured organizations (9%). With a consideration of project phases, most projects (89%) were procured solely by construction phase, whereas the percent of design-build was only 10%.

Interestingly, through careful examination on these projects chronically, it is pointed out that there exist significant changes with the lapse of time over the last four decades. With regard to project types, it is found that the civil and building construction projects were dominantly occupied in the era of 1960's, but since then the portion has been gradually declined to 40% at this time. On the contrary, the industrial plants projects control over half of the global construction business market, which implies that the global market structure has been gradually changing toward highly complex and technology-oriented EPC (Engineering-Procurement-Construct) projects.

Regionally, during the 1970's and 1980's, overseas construction projects were carried out mostly in the area of Middle East (89%). However, in the 1990's, due to the rapid economic growth in Asia regions, a large number of project opportunities were created and subsequently more than 56% of total revenue was awarded from these countries rims. After experiencing a financial crisis in Asian countries in 1997 that led to the severe devaluation of local currency, the market trend was slightly moved to Middle East area again (45%) by accompanying increasing acquisition of industrial plant projects.

The average contract amount was no more than about $880,000 in the 1960's, but since then it has been on the rapid rise. In the 1990's, there began to appear some large-scaled projects and the average contract amount reached around $40 million US dollars in 2000. Lastly, most of firms (89%) participated only in construction phase until the middle of 1990's, but today, more than half of international construction projects are delivered in the form of design-build system. With the considerations of long-term trend of the 3,487 projects, this paper analyses the statistical trend on the profitability.

The Box-plot in Figure 1 illustrates variation and distribution of profit rates with respect to time spans. In the 1960's, Korean contractors administered few international projects where the average profit rates were nearly 0%. Since the 1980's, the number of international projects acquired by Korean contractors has increased rapidly, still 70% of them making profits. Nevertheless, many of projects in the 1980's were confronted losses with the appearance of bad projects suffering losses at lower than -10%. Particularly, the portion of loss-suffering projects performed from 1998 to date accounts for over 50%. This implies that the overall environment in the sense of profit-making in global construction market is continuously deteriorating. Further, contrast with the declining trend of profitability, most projects in the Europe, Africa, and Latin America have acquired profit more or less above the break-even line. On the other hand, quarter of projects in the Middle East and the North America/Pacific regions has suffered losses. Similarly, 34% of Asia projects have sustained losses and also put on a wide range of deviation largely due to oil shock in the 70's and relatively unstable economic condition like economic crisis in 1997.

Observing profit rates with respect to project types, 34% of civil and building construction projects sustained losses during these periods, while most of small-sized electrical or telecommunications construction earned profits. More specifically, profit of civil construction projects have been more fluctuated with outlier projects with about -15% loss,

which implies that civil works have a higher probability of losses mainly due to the uncertain site condition and wide varieties in the process of executing projects.

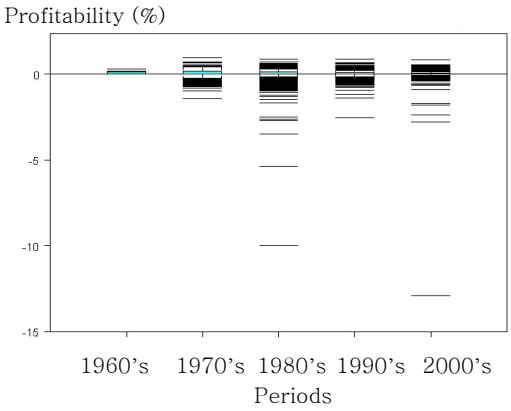


Figure 1. Profit rates With Respect to Time Periods

Interestingly, as for the profit rates with respect to organizational types, the projects performed by sole general contractors have suffered losses with a higher potential for severe failures, whereas those of joint-ventured organizations have acquired more stable returns. Lastly, considering delivery types and sources of funds, typical design-bid-build projects takes on an extensive variance, while most of BOT (Build Operate Transfer) projects or contractor-proposed projects initiated by developers have yielded a modest profit. Moreover, Korean contractors have experienced severe loss at the very low rates from the design-build projects, which requires a design quality and sophisticated interface management technique. As expected, the profit rate of Korean Contractors entails the similar trend to the top 225 global contractors. It can be explained by the fact that international construction market is exposed to various risk factors that can possibly aggravate the profitability if not managed properly.

3. CAUSES OF LOSS IN GLOBAL MARKETS

3.1 Previous Related Researches

According to Kangari [10], "bad profits account for over half of all business failures in the construction industry. Bad profit is the most significant in sustaining the business". Other important causes of business failure in the construction industry were identified as; management incompetence and lack of experience, inadequate sales, loss of market and economic decline, and difficulty collecting from customers. Loss is an extremely disruptive force to the construction firms. Perhaps, this explains why construction firms must be aware of the potential causes of loss at the initial stage of bidding processes adequately to screen the possibility of failure.

Loss of profit is mainly attributed to unanticipated speculative market conditions and project-related risks. A number of authors have described the risks specific to international construction projects, which are at far very sensitive to regional conditions such as currency devaluation, currency exchange restrictions, cultural differences, or unstable laws or regulations. The variety of these risks make decision makers more sensitive to project conditions and forces them to require more return before making a bid decision. As a consequence, contractors are less self-assured regarding their bid decisions for international project than for doing work in domestic markets [11, 12]. In addition, international construction projects are typically larger in size and more complex technologically and organizationally. Due to the distribution of projects around world, the international contractor is more project-oriented, more mobile and subject to more environmental influences. This risky nature of international construction makes the bid decision for potential project opportunities difficult and severely hampers a firm's success [13].

The primary step in evaluating a loss in profit is to demonstrate what factors caused the loss. In the critical review of international business failure done by Gordon and Arnold [14] and White [15], a number of important reasons why international businesses fail were pointed out: (1) failure to develop a business plan; (2) lack of commitment from top management in the early stages of the venture; (3) lack of attention to the development of strategic links in the international market place; (4) failure to recognize the demands of operating in a multicultural business environment; (5) failure to weigh foreign requirements with respect to their social, legal, political and governmental procedures. More specifically, Lee and Walters [1] investigated the various tariff and non-tariff barriers to international construction projects including currency restrictions, government subsidies, and government acts and regulations, which put foreign construction firms at potential failures in doing business in international construction. Another survey performed by International Contractors Association of Korea [5] showed the outlined causes of damages/losses in international construction projects such as: (1) non-payment by foreign governments due to a lack of funds or economic crises; (2) low profitability due to the competitive bidding process, misunderstanding of contract provisions or specification requirements, etc; (3) miscommunication with foreign governments; (4) foreign exchange exposures; (5) unfair contracts clauses; (6) productivity declination due to weather, labor and material supply, etc; (7) lack of experience and inability to perform; (8) conflicts among clients, engineers, contractors, and local subcontractors; (9) excess burden of banking and insurance cost; (10) failure to manage cash flow; and (11) damages due to inappropriate partners.

As presented, typical causes of failure in international construction projects mainly result from various trade barriers—related to government procurement, subsidies, license and certification requirements—and project-specific losses such as repudiation, low bid price, and labor issues, etc. However, previous researches related to the cause of success or failure factors of overseas projects do not well address the criticality of each factor empirically and statistically based on the real project cases that can differently affect the performance of project. Moreover, they have simply focused on the specific domains of various factors that are used to construct the rudimentary or simple checklists as specified in Lee and Walters [1] and International Contractors Association of Korea [5]. Other researchers [16, 17, 18, 19, 20, 21] provided more analytical framework of CSFs (Critical Success Factors) on the degree of project performance and suggested the guideline to implement CSFs in managing projects more effectively, but they basically

focused on the domestic projects or on the specific configurations of risk exposures such as joint-venture risks or political risks on the Build Operate Transfer project. Moreover, they did not clearly present the causal relationships between these factors on the level of profitability.

The first step for finding possible cause of loss is to refer to the previous studies related to loss of profit. The factors used in this research are selected from the various resources including above-mentioned extensive literatures, preliminary expert interviews with industry practitioners in this area. As a result, 93 risk factors associated with profitability are drawn as partitioned into five classes such as: (1) condition of host country and project owner, (2) information on project acquisition and bidding, (3) project characteristics and contractual conditions, (4) characteristics of organization and participants, and (5) contractor's ability and capacity. Although these risk factors include most of the previous literatures related to these issues, we found that they have some limitations in view of a practical usage as well as duplicated meanings. Accordingly, ensuring the applicability of risk factors, series of focused-group discussions with practical experts on international construction were followed. Additionally, 30 real cases of international projects that exposed to the severe losses were examined to find any valuable sources in identifying risk variables. Through the cases reviews and advice of experts to combine duplicate sources and to remove the slight-influencing/trivial factors, this paper drew a total of 64 profit-influencing risk variables on overseas construction projects, as shown in Appendix 1.

Based on the shorting comings of previous researches, this paper identifies the critical profit-influencing variables and their cause-and-effect structures based on surveys from the real overseas projects, which addresses all of aspects of loss factors that possibly can make international construction quite risky.

3.2 Criticality of Possible Causes of Loss

To elicit factors correlated with the degree of criticality on profitability, we carried out case surveys on the total of 90 projects aiming at evaluating the profit-influencing variables in more details. Data were collected from the Korean overseas construction companies based on their real perfomances and experiences on the international construction projects. Sample projects were chosen uniformly in connection with project types and regions. More than 75% of respondents, who are taking part in those projects or have been engaged in before, have experiences more than 10 years. Of the 90 respondents who have been engaged in sample projects, around 90% were from the project manager or project assistant manager level to have their personal background and sufficient experience with the designated project. Because each participant may exhibit different types of perspectives, we asked participants to reply from their firm's view and project-specific standpoint.

The questionnaire consists of 2 main sections; (1) criticality of each factor on the causes of loss, and (2) comprehensive opinion and qualitative aspects of profitability. The first section are designed for respondents to rate the criticalities of profit-influencing variables. The criticality of a variable refers to the extent the factor will affect the profitability of international projects. To measure the criticalities, this study adopts a 7-point Likert scale ('1 Not critical at all' to '7: Exceptionally critical') in order to help respondents judge facilely because this scale is accustomed to people when quantitatively evaluate a phenomenon and differentiate cognitive perception about criticalities of profit-influencing factors as possible. If respondent answer low index, it is likely that this factor is perceived, to some degree, as insignificant to the level of profits.

The second section consists of two more parts. The one is the focus considerations section which is designed to answer 31 open ended questions on the specific causes of success and failure with respect to the profitability. The other is the comprehensive opinions section where respondents freely express their own subjective outlook on the overseas projects.

The questionnaire respondents assessed the influencing magnitudes of all the risk variables included in each project phases. With the result, the degree of their influence on overall project's profitability could be analyzed. Additionally, through statistical analyses, we carefully examined the top 20% factors based on the mean values of criticality, which greatly influence on the profitability more than do the rest. Top ranked factors were drawn from the Pareto's principle where 20 percent of something always are responsible for 80 percent of the results - observation of the "vital few and trivial many". These critical factors are listed in Table 1.

Table 1. Top 20% Ranked Variables

Variables	Mean	Std. Devi.
Leadership and ability of Project Manager	5.871	1.078
Firm's ability of project planning and management	5.523	1.093
Owner's fund capability and concern about payment delays or defaults	5.477	1.470
Adequacy of contractual duration and Project schedule uncertainty	5.432	1.320
Host country's conditions on various tariff and non-tariff barriers (ex,. currency restrictions, government subsidies, and government acts and regulations, etc)	5.404	1.222
Field engineers' technical ability and management skill	5.287	1.219
Acquisition of proper and competent bid information	5.225	1.277
Accuracy of material cost estimation	5.213	1.310
Excess burden of owner's/owner's representative's requirements	5.136	1.456
Sufficiency of endowed time for bid estimation	5.135	1.307
Owner's unreasonable payment delays, retention, or repudiation	5.101	1.168
Local partners/subcontractors' skill, availability, and experience	5.096	1.358
Reflection of owner's demands and requirements	5.079	1.400

Further, we do the exploratory factor analysis where empirical data are explored to discover and detect characteristic feature and interesting relationships without any definite constructs on the data. It was performed to compress risk variables to the relevant groups that have a high correlation each other. This procedure is often used to reduce the number of variables in a data set. Through the principle component analysis we sorted out the variables which had eigen-value of above 1. As a result, the 14 group factors were

drawn as a valid sub-dimensional representation of the initial sources of 64 profit-influencing variables. Total variance in project profitability explained by these group factors is estimated up to 70.37 %. Accordingly, it would be conservative to say the group factors were elicited quite appropriately. In summary, quality of estimation, project information in early stage of a project, attitude and ability of owner & A/E, contract conditions & types, project condition, and commitment of organization were the major group factors that affected the degree of overall profitability. Figure 2 shows relative degree of criticality between these group factors on the project's profitability.

The 64 primitive profit-influencing variables and 14 group factors can be useful in developing a profitability forecasting model or a risk management system. However, in real business environment, the control over every factor is virtually hard to pin down, so it would be better in project performance management to focus on the top 20 % factors identified in the precedent analyses.

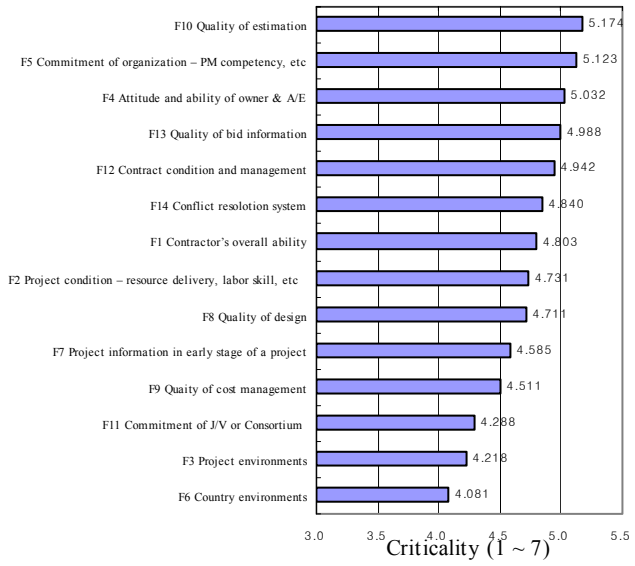


Figure 2. Criticalities of Group Factors

Finally, in addition to the questionnaire on the critical factors on the profitability, this paper surveyed the respondents' general perceptions on profitability. First, the prospects for global construction markets wouldn't appear to be promising, displaying the evaluation score of 4.22 out of 10 ("very optimistic"). As for the current risk analysis tools adopted by respondents' companies (dual answers allowed), 60 percent chose experience or intuition-based judgment. It means that a large number of global construction companies still stay in rudimentary stage of risk management despite its deteriorating environments in earning profit.

On the major criteria in selecting profitable projects, each respondent was asked to list the three most critical factors from the open question that affected their decisions. The top ranked factors are described as; (1) desirable contract forms and specifications (11.5%), (2) credibility and stability of funds (10.9%), (3) business environment of host country (10.3%), (4) construction technology ability to perform (10.3%), (5) owner's factor such as no relation and reputation (9.2%), (6) possible project profit/gain (9.2%), (7) conditions of resources supplies and procurements (8%), (8) familiarity and experience with the work (6.9%), (9) project scale and contractual duration (2.3%), (10) field conditions (2.3%), and (11) degree of localization (1.7%). Interestingly, these criteria are almost coinciding with the critical profit-influencing variables or group factors aforementioned.

4. ORGANIZING CAUSAL MODEL

4.1. Cause-And-Effect Model

While drawing a critical failure factors is useful for evaluating the possible effects that specific factors might cause loss, it is of limited value because, the results can vary widely from project to project depending on individual project conditions. In addition, the overseas projects are subject to shape diverse configurations in terms of delivery modes, project types, regional considerations, and market conditions. The results do not provide sufficiently either of the causing factors in details or their mutual influences in an exhaustive and a vivid manner. For the more comprehensive grasp of all what is required for the successful performance of the international construction projects, this paper presents the comprehensive cause-and-effect model that graphically depicts how a variety of factors may interact to induce a loss based on the possible causes of loss aforementioned.

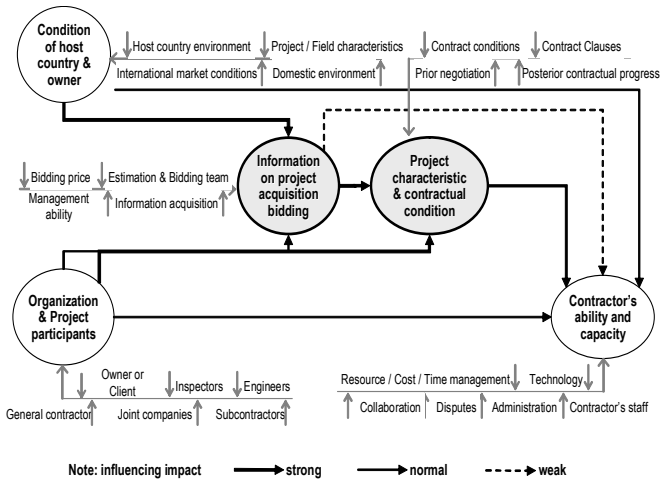


Figure 3. Causal Relationships of Profit-Influencing Factors

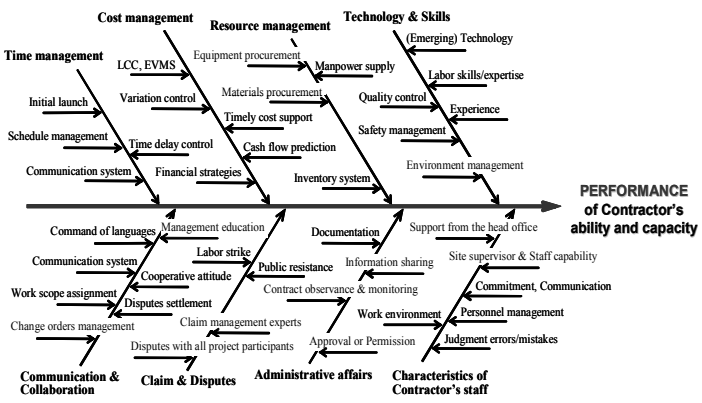


Figure 4. Causal Relationships in Contactor's Ability Part

Cause-and-effect diagram is a pictorial description of a hierarchical list in which possible causes of problems or objectives are identified and arranged. Using branch and arrow symbols to depict sequential influencing conditions between the diagram elements in different levels, it is an effective way that allows people to easily comprehend the entire situational context as well as the causal relationships in terms of specific results. In this study, we represent the project's ultimate profitability, which arranges five category factors in the highest level and all the elicited causes in lower levels on a cause-and-effect diagram as a whole (see Figure 3). It displays of the five highest-level factors, namely, business environment, project planning and bidding, contractual affairs, project participants and construction management. Each highest-level factor contains the detailed inter-relationships as the levels are lowered. Figure 4 illustratively displays the casual relationships in more detail involved in the tree of construction management part. The model shows how the profitability is influenced by the various hierarchical factors with a consideration of the particular project conditions, additionally by portraying how the strategic alternatives or management options can mitigate or eliminate any possible causes of loss. As a result, the model can be used to identify and evaluate the causes of profitability loss in more systematic way.

4.2 Other Statistical Casual Model

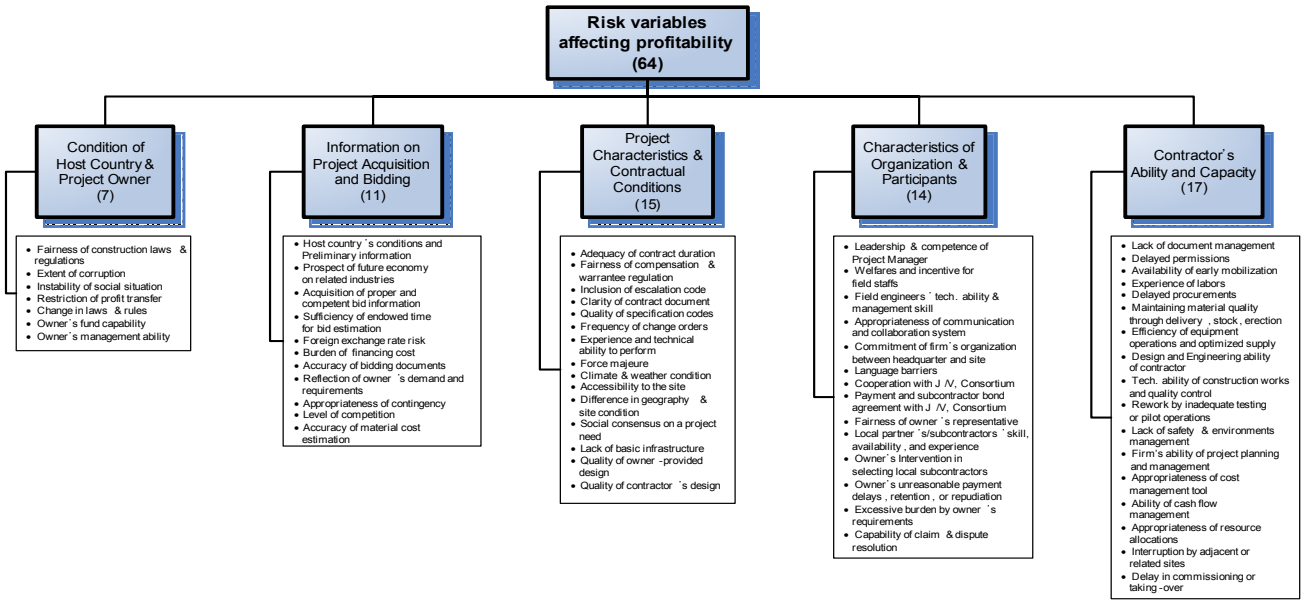
The previous qualitative models illustrates that the cause-and-effect model can be used as a practical guideline to evaluate the project with respect to its profitability. Further, we developed a fault tree and a statistical model using a multiple regression analysis and an artificial neural network to quantitatively predict the level of profitability depending on the conditions of profit-influencing factors. The details of these models and its validity will be presented in the procedural paper.

5. LESSONS LEARNED AND CONCLUSIONS

All overseas projects are the possible candidates for losses due to the risks inherent in the process of project. The circumstances of project gains or losses are unique or idiosyncratic and subsequently attempts for formalizing a prediction model are hard to pin down. An important finding of our study, however, was in that overseas projects have some fundamental similarity with regards to the factors that can determine the success or the failure with respect to profitability. While the causes of project gain/loss differ in various ways among the projects, our research can draw essential and far similar requirements attempting for acquiring the profitable projects as a practical suggestion. Particularly, this work contributes to the identification of key variables and the development of casual models that determine the profitability of a overseas project. This research provides the profitability evaluation bases, with which overseas construction participants can forecast and analyze the risk more systematically, by eliciting profit-influencing factors from real overseas construction projects and structuring their causal relationships. The profitability causal hierarchy structure describes the hierarchy of these factors in details and their interrelationships. It also enables us to find out critical factors directly related to profitability aggravation through a qualitative analysis. Ultimately, with this hierarchy structure as the base, this research will suggest how to develop the quantitative profitability forecasting model.

As presented, critical factors concerning a profitability in international construction projects mainly lie in: (1) quality of estimation such as a endowed estimation period and ability of quantity surveyors; (2) project information in early stage such as adequacy of financing, prior bid information, site investigation, and country risk-rating, etc; (3) attitude and ability of owners &

APPENDIX 1: SUMMARY OF PROFIT-INFLUENCING RISK VARIABLES



A/E; (4) contract condition & management ability; (5) project environment and condition such as resource delivery; procurement system, labor skill, etc; (6) commitment of organization such as project manager's competency and ability of field engineers; and (7) contractor's ability & experience.

This research can contribute for construction firms to screen out bad projects such that the warning signals of failures are detected early by paying attention on the critical factors. By abandoning bad projects, the firms can improve the financial structures at the corporate level. Despite its advantages, however, this paper develops qualititive models for general types of overseas projects. Future procedural research will concentrate on establishing the quantitive models with respect to the different types of projects or diverse regional locations by collecting more realistic project samples.

REFERENCES

[1] Lee, J., and Walters, D., *International Trade in Construction*, Design, and Engineering Services., 1989

[2] Zhi, H., "Risk Management for Overseas Construction Projects", *International Journal of Project Management*, Vol. 13, No. 4, pp. 231-237, 1995

[3] Kalayjian, W.H., *Third World Market: Anticipating the Risks*, Civil Engineering, ASCE, Vol. 70, No. 5, 56-57, 2000

[4] Han, S. H., and Diekmann, J. E., "Approaches for making risk-based Go/No-Go Decision for international projects." *Journal of Construction Engineering and Management*, Vol. 127, No. 4, pp. 300-308, 2001

[5] The International Contractors Association of Korea, *A Study on Profit-loss Analysis and Profitability Improvement in Overseas Construction Projects*., Ministry of Construction & Transportation of Korea, 2002

[6] Lucas, C.L., International Construction Business Management, *A Guide for Architects, Engineers, and Contractor*, McGraw-Hill, New York, 1986

[7] Ashley, D. B. and Bonner, J. J., "Political Risks in International Construction", *Journal of Construction Engineering and Management*, Vol. 113, No. 3, pp. 447-467, 1987

[8] Aziz, A. R. A., "Global strategies: A Comparison Between Japanese and American Construction Firm." *Construction Management and Economics*, 1994

[9] ENR, *Top 225 international contractors*, McGraw-Hill, New York, 1995~2004

[10] Kangari, R., and Boyer, L.T., "Project Selection Under Risk", *Journal of the Construction Division*, ASCE, 107(CO4), pp. 597-608, 1981

[11] Lynn, M.L., and Reinsch, N.L., "Diversification Patterns Among Small Business." *Journal of Small Business Management*, Vol. 24, No. 4, pp. 60-70, 1990

[12] Krishma, E.M., Souza, D., and Derrick, E., "Venturing into Foreign Markets: The cases of the small service firm.", *Entrepreneurship Theory and Practice*, Vol. 17, No. 4, pp. 29-41, 1993

[13] Han, S. H., Diekmann, J. E., and Ock, J. H., "Contractor's Risk Attitudes in the Selction of International Conastruction Projects", *Journal of Construction Engineering and Management*, Vol. 131, No. 3, pp. 283-3292, 2005.

[14] Gordon, J.S., and Arnold, J.R., *Profitable Exporting: A Complete Guide to Marketing Your Products Abroad*, Wiley, New York, 1988

[15] White, D., *Oversea and Undersold: Going Global*, ABC, Sydney, 1990

[16] Baker, B.N., Murphy, D.C., and Fisher, D., *Factors affecting project success*, Project management handbook, Von Nostrand Reinhold, New York, pp. 669-685, 1983

[17] Arditi, D. and Gutierrex, A. E, "Factors Affecting U.S. Contractors Performance Overseas", *Journal of Construction Engineering and Management*, Vol. 117, No. 1, pp. 27-46, 1991

[18] Ashely, D., Jaselskis, E., and Lurie, C. B., "The determininents of construction project success", *Project Management Journal*, Vol. 18, No. 2, pp. 69-79, 1987

[19] Chua, D.K.H., Kog, Y.C., and Loh, P.K., "Critical success factor for different project objectives", *Journal of Construction Engineering and Management*, Vol. 125, No. 3, pp. 142-150, 1999

[20] Bing, L. and Tiong, L. K., "Risk Management Model for International Construction Joint Ventures", *Journal of Construction Engineering and Management*, Vol. 125, No. 5, pp. 377-384, 1999

[21] Wang, S. Q., Tiong, R. L. K., Ting, S. K. and Ashley, D., "Evaluation and Management of Political Risks in China's BOT Projects", *Journal of Construction Engineering and Management*, Vol. 126, No. 3, pp. 242-250, 2000