

Analysis of the Capability of Korean Construction Companies for International Investment Development Business

Jang, Hyoun-Seung Kim, Hwa-Rang*

School of Architecture, Seoul National University of Science and Technology, No Won -Gu, Seoul, 139-743, Korea

Abstract

Korean overseas construction has been on the rise, and exceeded the 2011 goal of \$50 billion by securing \$59.1 billion in orders. However, these orders were heavily concentrated in the Middle East (50%) and plant construction contracts (75%). This study suggests that, to maintain growth in foreign markets, Korea construction companies should enter into the high value-added investment development business and aggressively seek ways to diversify their regions of activity and construction types. To secure the entry of Korean construction companies into lucrative markets and better understand the competitive factors facing Korean construction concerns, a survey of the literature and focus group discussions targeting relevant experts were carried out. From those efforts, a list of 44 competitive factors crucial to entering and competing in the international investment development business was developed. Survey responses were analyzed by applying IPA. The results revealed that while Korean concerns compete well in engineering/technical capabilities, maintaining a cooperative relationship with contractors, and warranty/after sales service capabilities, their ability to obtain business information on the target country, to form private/public cooperative systems, and to build international human networks require immediate improvement.

Keywords : public private partnership (PPP), private finance initiative(PFI), private equity fund (PEF), importance performance analysis (IPA), focus group discussion (FGD)

1. Introduction

Korean overseas construction has been on an uptrend, exceeding the 2011 goal of \$50 billion by securing \$59.1 billion in orders. However, these orders were heavily concentrated in the Middle East (50%) and plant construction contracts (75%)[1]. This study suggests that, to maintain growth in foreign markets, Korea construction companies should enter into the high-value-added investment development business and aggressively seek ways to diversify their regions of activity and

construction types. That is to say, Korean construction concerns involved in international construction have primarily been successful in securing construction contract accounts and plant orders in the Middle East region. Kim and Ock[2] revealed that business expansion and regional diversification are necessary in order to consistently develop Korean overseas construction businesses. Along with studies by academia and relevant organizations on the investment development business, Korean construction companies have recently begun to show high interest in the overseas investment development business. This phenomenon can be attributed to reduced profits in the existing international construction contract market, over-competition, and the increasing realization by international construction

Received : August 7, 2012

Revision received : February 13, 2013

Accepted : February 19, 2013

* Corresponding author : Kim, Hwa-Rang

[Tel: 82-2-970-7255, E-mail: k6208@seoultech.ac.kr]

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businesses that financing is indispensable.

Public private partnership (PPP) markets in developing countries are expanding rapidly due to the increased demand on social overhead capital (SOC) caused by economic development programs; not only traditional projects, such as water supply infrastructure and hospitals, but a variety of projects in new sectors, such as sports, courts, and schools, are being developed. The PPP market is a new opportunity for the Korean construction industry, as it is a means of entry into new foreign markets.

Through our study, we were able to analyze the importance of each competitiveness factor in the PPP market and derive current performance levels for each. This information can now be used to improve the ability of Korean construction concerns to win orders and secure advantages in their future competition with global business concerns in the international investment development business market.

2. Construction Business through Investment Development Business

Various studies have been conducted on diverse aspects of the international investment development market, including financing methods and the need to enter the sector, investment models, and finance cases for investment development business. Kim[3] studied support policies that facilitate the entrance of Korean construction companies into construction markets in developing countries and the investment development business. Analyzing them dynamically, Kim classified the variables affected by the true expansion of investment development business through advanced research, defined the cause-effect relationship among the variables, and made a cause-effect map based on the

relationships among the variables. In addition, the study integrated the cause-effect map for each support policy and analyzed the relationships among the influencing variables. Lee[4] analyzed the international competitiveness of Korean construction concerns and discovered the strategic support factors necessary to successful entrance into the global marketplace. By investigating the characteristics and risks of PPP and private finance initiative (PFI) projects, Lee was able to rank them in order of priority. He also identified various international competitiveness indices that can be used to measure national competitiveness, and evaluated the international competitiveness of the Korean construction industry. The risks of build-operate-transfer (BOT) projects such as PPP/PFI projects were defined and analyzed based on business value and obstacles to growth. Moon[5] analyzed specific strengths and limits and suggested directional policy matrix (DPM) analysis methods to map out strategies for entering new markets and applicable cases in order to determine the market potential, entrance strategies, and risk management strategies. Choi[6] defined PPP/PFI characteristics for policies that promote participation in the international construction market, risks, and the factors that determine the success of PPP projects in the infrastructure development market. He classified the risks of FDI host countries by agency concerned, efficiency, and socioeconomic measurement by type and level. Furthermore, Choi researched the uncertainty and possible risk factors in the PPP project process. Finally, he defined strategic assignments, general problems, and requirements in the implementation procedure through his study of Korean project finance cases. This research suggested specific methods and practical procedures from the perspective of construction businesses, allowing subsequent researchers to continue and supplement existing studies. To investigate the competitiveness of

Korean construction concerns in the PPP project market, we researched companies that have entered into PPP projects and relevant studies by research centers and academic organizations. The results of our analysis are expected to help Korean companies that wish to enter the global PPP projects market competitively.

3. Methodology

To achieve the goals of this study, literature survey and statistical analysis methods were implemented, as shown in the algorithm depicted in Figure 1.

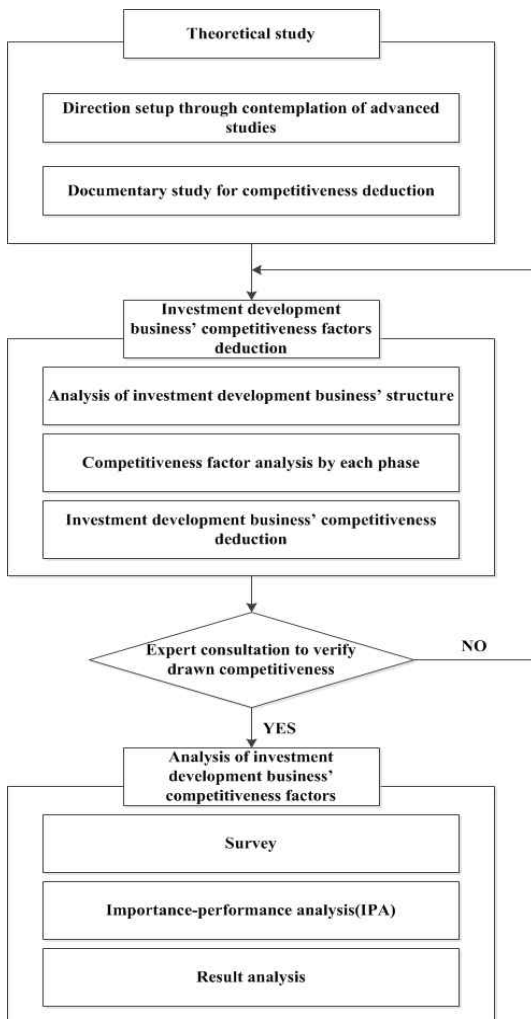


Figure 1. Research Flow Chart

Competitiveness factors for conducting investment development business were selected following the literature search, and to confirm objectivity in factor selection, focus group discussions (FGDs) were conducted with relevant experts with experience in the investment development business market. Based on the results, the competitiveness factors required for successful participation in investment development projects were determined. Then, Importance Performance Analysis (IPA) was conducted. Related experts were surveyed in order to evaluate the importance of the competitiveness factors and current performance levels. This data and GAP analysis allowed us to evaluate the competitiveness levels of Korean construction companies. Surveys were distributed to and collected from relevant experts between August 2011 and October 2011.

The survey questionnaires addressed 14 factors in the planning and discovery phase, 16 factors in the ordering and marketing phase, and 14 factors in the engineering-construction-follow-up service phase. Each factor was evaluated using a 7-point Likert scale.

3.1 FGD

The FGD method was applied in this study to gather useful information from a few experts. There is a limited range of international investment development business experience among Korean construction concerns.

Table 1. FGD Contents and Methods

Classification	Contents
Participants	Academic institutes : 4, Work-level corporate employees : 2
Number	2
Time	Forty minutes ~ One hour

The information on competitiveness collected

through FGD was employed to create the questionnaires used in our survey. FGD were initially developed to facilitate the understanding of qualitative consumer data by market researchers (Krueger and Casey[7]). The FGD method is a preferred method of rapidly collecting information about a target[8].

3.2 IPA

The goal of the IPA (Importance Performance Analysis) method is to find factors to input preferentially given the limited resources of a company. Martilla and James[9] introduced it as a marketing investigation technique in an article titled “Importance–performance Analysis,” published in the *Journal of Marketing* in 1977. They insisted that an IPA matrix (importance–performance grid) could provide data that could improve marketing decisions and management methods. By applying the IPA method, various factors, such as service quality, can be found [9,10,11]. Using the IPA technique, several studies [12,13,14] were devoted to determining the competitiveness of a product, service, or destination by displaying its strengths and weaknesses in the form of an importance–performance grid [15], as shown in Figure 2.

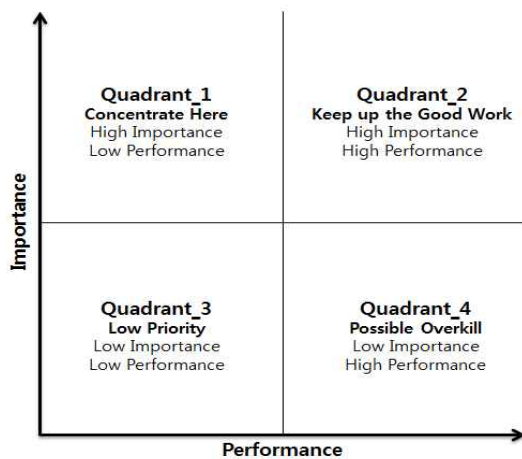


Figure 2. Importance Performance Analysis Grid

Quadrant 1 (concentrate here): Competitive capabilities that fall within this quadrant are perceived to be very important to respondents, but their performance levels are fairly low. This sends a direct message that improvement efforts should be concentrated here.

Quadrant 2 (keep up the good work): Competitive capabilities that fall within this quadrant are perceived to be very important to respondents, and at the same time, the organization has high levels of performance for these activities. The message here is “Keep up the Good Work.”

Quadrant 3 (low priority): Competitive capabilities that fall within this quadrant are of low importance and have low performance. Although performance levels may be low in this area, experts should not be overly concerned since the attribute in this competence is not perceived to be very important. Limited resources should be expended on this low priority area.

Quadrant 4 (possible overkill): This area contains attributes of low importance, but relatively high performance. The relatively high capacity to produce the desired properties brings a potential competitive advantage, including competence.

Sources: Adapted from the works of Martilla and James[9], Keyt[11], Evans and Chon[16], and Hemmasi [17].

3.3 Factors

In this study, a preliminary listing of competitiveness factors[3, 18, 19, 20] was defined following a literature survey. Six investment development business related experts were then consulted, each factor evaluated twice, and a final listing of 44 factors was developed. The final listing (Table 2) included 14 factors for the planning phase, 16 factors for the marketing phase and 14 factors for the operating phase.

Table 2. Competitiveness Factors for Investment Development Business

Project Phase	Code	Competitiveness Factor
Planning Phase (A)	A-1	The ability to obtain business information on target local country.
	A-2	The ability to build relationships with ordering country through high level diplomatic activities
	A-3	The ability to perform a field survey and rough feasibility study
	A-4	The ability to organize a council to concentrate competencies support order winning.
	A-5	The ability to build an international human network
	A-6	The ability to garner order winning support services from the embassy and diplomatic offices
	A-7	Consistency with the economic and development plans of the recipient country
	A-8	The ability to form a private and public cooperative system
	A-9	The ability to collect sales and information
	A-10	Abilities in business development and sales
	A-11	Abilities in procedure and manual management
	A-12	Project team leader competence
	A-13	Feasibility and evaluation for profitability capabilities
	A-14	The ability to identify project trend information, survey, and plan
Marketing Phase (B)	B-1	Knowledge of export financing and insurance conditions
	B-2	Development knowledge within the participating company
	B-3	Public awareness of the participating company
	B-4	The ability to handle risks of the local country
	B-5	The ability to prepare bidding documents in English
	B-6	Project financing capabilities
	B-7	The ability of the participating company and Korean government to assess the ordering country
	B-8	The ability to build human relationships and trust with persons charged with order placement
	B-9	The ability to manage construction contract and claims
	B-10	Experience in similar projects
	B-11	The ability to accept the contractor's requirements
	B-12	Knowledge of currency exchange risk measures
	B-13	The engineering/technical capabilities of the participating company
	B-14	The ability to adapt to foreign social culture
	B-15	The ability to cope with various order placing methods of the contractor
	B-16	The existence of a cooperative relationship with the contractor
Operating Phase (C)	C-1	Compliance with regulatory guidelines of local government
	C-2	Design and design management capabilities
	C-3	Material procurement and material management capabilities
	C-4	The ability to combine technologies and new construction methods
	C-5	The ability to manage construction drawings, procedures, and manuals
	C-6	The ability to retain technological capabilities
	C-7	The level of subcontractor management
	C-8	The ability to manage and train local labor
	C-9	The ability to control quality for the work
	C-10	Project management capabilities
	C-11	Negotiation and claim handling capabilities
	C-12	Work schedule management capabilities
	C-13	The ability to determine whether to establish a separate corporation for further operation
	C-14	Warranty and after sales service capabilities

4. Evaluation of Investment Development Business Competitiveness

A survey was conducted to interpret the importance of competitiveness factors and gather current performance-related information about entering the investment development business market. It targeted experts on investment development related businesses. Of the 50 experts sent questionnaires, 35 responded to the survey (response rate 70%). The largest group of respondents included the employees of research

and academic institutes (25), followed by working-level corporate employees (10). As 60% of the respondents had more than 5 years of experience researching or working in investment development business related fields, they were considered to be appropriate respondents that were sufficiently qualified to evaluate the competitiveness factors related to investment development projects. The survey queried the importance of and performance by Korean concerns in terms of the competitiveness factors derived from focus group discussion (FGD). The survey results are shown in Table 3.

Table 3. Importance and current performance by competitiveness factor

(a) Importance			(b) Performance		
Order	Code	Mean	Order	Code	Mean
1	A-14	5.72	1	C-6	5.43
2	A-13	5.70	2	C-9	5.14
3	A-8	5.62	3	C-14	5.00
4	A-1	5.57	4	B-16	4.86
5	A-2	5.57	5	C-12	4.86
6	A-7	5.57	6	C-2	4.74
7	A-5	5.46	7	C-13	4.74
8	B-6	5.45	8	A-12	4.71
9	A-3	5.43	9	B-8	4.71
10	A-9	5.43	10	C-7	4.71
11	A-10	5.43	11	C-10	4.71
12	A-12	5.43	12	C-1	4.71
13	B-9	5.43	13	C-5	4.69
14	B-16	5.43	14	C-8	4.68
15	B-1	5.42	15	A-9	4.67
16	B-3	5.31	16	B-11	4.59
17	B-10	5.31	17	A-13	4.57
18	A-6	5.29	18	A-2	4.57
19	A-11	5.29	19	B-10	4.57
20	B-2	5.29	20	B-13	4.57
21	B-4	5.29	21	B-7	4.57
22	C-14	5.29	22	B-15	4.57
23	B-13	5.27	23	B-14	4.57
24	B-7	5.16	24	C-4	4.57
25	A-4	5.14	25	A-14	4.56
26	B-5	5.14	26	A-10	4.43
27	B-8	5.14	27	A-11	4.43
28	B-11	5.14	28	C-11	4.43
29	C-11	5.14	29	C-3	4.43
30	C-12	5.14	30	A-3	4.31
31	B-15	5.12	31	A-8	4.29
32	C-7	5.10	32	A-7	4.29
33	B-14	5.07	33	B-1	4.29
34	C-3	5.05	34	B-2	4.29
35	C-8	5.05	35	B-5	4.29
36	C-10	5.03	36	B-12	4.29
37	C-2	5.00	37	B-6	4.27
38	C-4	5.00	38	A-5	4.14
39	C-6	5.00	39	B-9	4.14
40	C-9	5.00	40	B-3	4.14
41	C-5	4.91	41	A-6	4.14
42	B-12	4.86	42	A-4	4.14
43	C-13	4.86	43	A-1	4.00
44	C-1	4.84	44	B-4	4.00
Average Value		5.25	Average Value		4.52

4.1 Reliability Analysis

Reliability analysis was conducted using the survey results collected in order to measure the internal consistency values for the Cronbach's alpha coefficient as an analytical tool SPSS 18.0.

Table 4. Cronbach's alpha of Survey results

Phase	number	Cronbach's Alpha	
		Importance	Performance
Planning	14	0.989	0.986
Marketing	16	0.990	0.972
Operating	14	0.988	0.950

Nunnally and Bernstein[21] Exploratory Study of the value of the Cronbach's alpha coefficient of 0,60 is more than enough, and the field of basic research in the field of 0,80 or higher should be defined. Therefore, this survey result values are statistically significant.

4.2 Findings

IPA results were distributed in an Action Grid (Figure 3) which plots the mean values of the importance and performance responses into 4 quadrants. This technique allowed us to assess, evaluate, and prioritize the importance and performance properties of each competitiveness factor. In IPA, the median or mean value of importance is used to indicate the calculated value of each variable in a two-dimensional coordinate that is plotted with performance on the X axis and importance on the Y axis. Martilla and James[11] recommend using mean value in cases where the median and mean values are close in value.

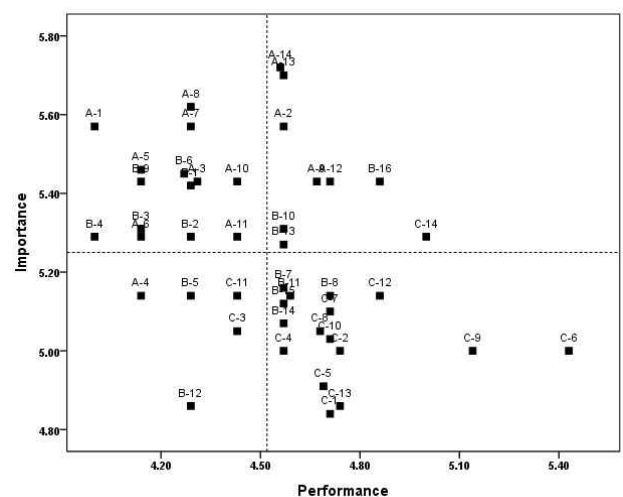


Figure 3. IPA Result Distribution Char

The distribution, as plotted for GAP analysis, of the IPA results for the 14 competitiveness factors that fell within Quadrant 1 is shown in Figure 4.

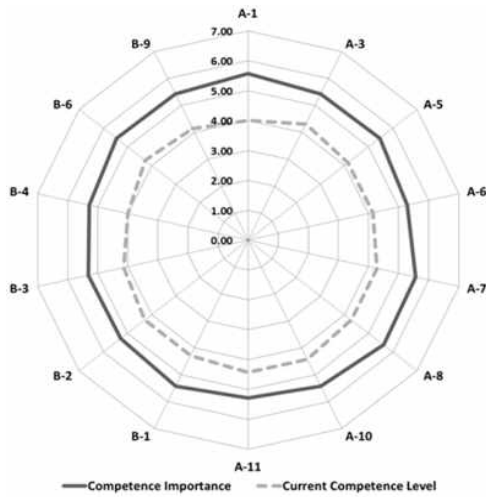


Figure 4. Gap Analysis of Quadrant 1

Results of GAP analysis on the competitiveness factors in quadrant 1 are listed in Table 3. Our analysis revealed that the factors with the largest gaps were found in the planning phase, and included the ability to obtain business information on the target local country (1.57), the ability to form private/public cooperative systems (1.33), and the ability to build international human networks (1.32). In contrast, the factors that were found to have relatively small gaps were in the planning and marketing phases, and included abilities in procedure and manual management (0.86), development knowledge within the participating company (1.00), abilities in business development and sales (1.00). The GAP analysis results of Quadrant 1 revealed relatively large gaps when compared to other quadrants, and although the importance of these competency items is high, the current competence level is low, which means that it is necessary to enhance the competence level for each competence item if Korean construction concerns are to secure order competency.

Table 5. Gap Value Result of Quadrant 1

Quadrant	Code	Importance	Performance	Gap
1	A-1	5.57	4.00	1.57
	A-8	5.62	4.29	1.33
	A-5	5.46	4.14	1.32
	A-7	5.57	4.29	1.29
	B-4	5.29	4.00	1.29
	B-9	5.43	4.14	1.29
	B-6	5.45	4.27	1.18
	B-3	5.31	4.14	1.17
	A-6	5.29	4.14	1.14
	B-1	5.42	4.29	1.13
	A-3	5.43	4.31	1.12
	A-10	5.43	4.43	1.00
	B-2	5.29	4.29	1.00
	A-11	5.29	4.43	0.86

The distribution, as plotted for GAP analysis, of the IPA results for the competitiveness factors that fell within Quadrant 2, is shown in Figure 5.

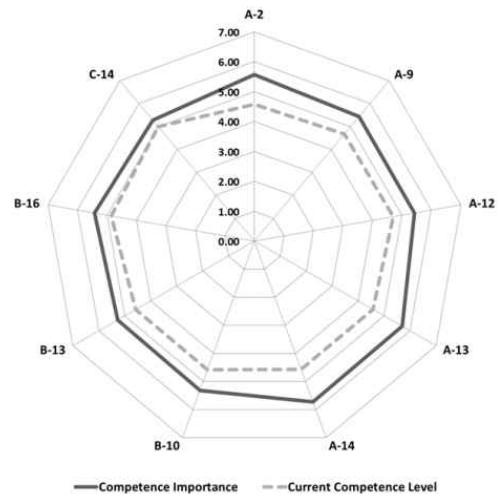


Figure 5. Gap Analysis of Quadrant 2

The results of a GAP analysis on competitiveness factors in quadrant 2 are listed in Table 4. The analysis revealed that the factors with relatively large gaps were found in the planning phase and included the ability to identify project trend information, survey, and plan (1.16), the ability to evaluate the probability of operation and profits (1.13), and the establishment of a relationship with the ordering country through high-level

diplomacy (1.00). The factors with relatively small gaps were found in the marketing and operating phases, and included warranty and after-sales service capabilities (0.29), the existence of a cooperative relationship with the contractor (0.57), and the engineering/technical capabilities of the participating company (0.70).

Further analysis revealed that the strengthening of competence in engineering sectors by Korean construction corporations, along with the adoption of active overseas market entry policies by the Korean government, influenced the values of these competence items.

Table 6. Gap Value Result of Quadrant 2

Quadrant	Code	Importance	Performance	Gap
2	A-14	5.72	4.56	1.16
	A-13	5.70	4.57	1.13
	A-2	5.57	4.57	1.00
	A-9	5.43	4.67	0.76
	B-10	5.31	4.57	0.74
	A-12	5.43	4.71	0.71
	B-13	5.27	4.57	0.70
	B-16	5.43	4.86	0.57
	C-14	5.29	5.00	0.29

The distribution, as plotted for GAP analysis, of the IPA results for the competitiveness factors that fell within Quadrant 3, is shown in Figure 6. Table 5 lists the GAP analysis results in detail.

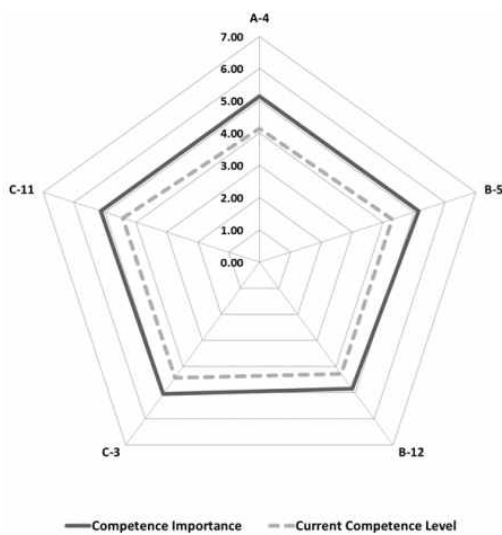


Figure 6. Gap Analysis of Quadrant 3

The analysis revealed that the factors with the largest gaps were found in the planning and marketing phases, and included the ability to organize a council to concentrate competencies that support order winning (1.00) and the ability to prepare bidding documents in English (0.86). Those factors with relatively small gaps were found in the marketing and operating phases, and included knowledge of currency exchange risk measures (0.57), material procurement and material management capabilities (0.62).

Table 7. Gap Value Result of Quadrant 3

Quadrant	Code	Importance	Performance	Gap
3	A-4	5.14	4.14	1.00
	B-5	5.14	4.29	0.86
	C-11	5.14	4.43	0.71
	C-3	5.05	4.43	0.62
	B-12	4.86	4.29	0.57

The distribution, as plotted for GAP analysis, of the IPA results for the competitiveness factors that fell within Quadrant 4, is shown in Figure 7. Table 6 lists the GAP analysis results in detail.

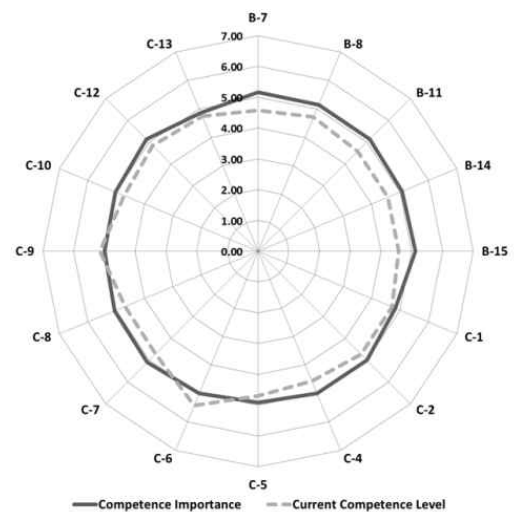


Figure 7. Gap Analysis of Quadrant 4

The analysis revealed that the factors with large

gaps were found in the marketing phase, and included the ability of the participating company and the Korean government to assess the ordering country (0.59), the ability to accept the contractor's requirements (0.55) and the ability to cope with various order placing methods of the contractor (0.55). The factors with relatively small gaps were found in the operating phase, and included the company's technology retention capability (-0.43), the ability to control the quality of the work (-0.14), and the ability to determine whether to establish a separate corporation for further operation (0.12). Competitiveness factors in quadrant 4 show relatively low importance compared to other factors but have a high performance level, so these factors can be considered as having the potential to provide a competitive edge. It can be anticipated that these will become significant factors in securing competitiveness in the future.

Table 8. Gap Value Result of Quadrant 4

Quadrant	Code	Importance	Performance	Gap
4	B-7	5.16	4.57	0.59
	B-11	5.14	4.59	0.55
	B-15	5.12	4.57	0.55
	B-14	5.07	4.57	0.50
	B-8	5.14	4.71	0.43
	C-4	5.00	4.57	0.43
	C-7	5.10	4.71	0.39
	C-8	5.05	4.68	0.37
	C-10	5.03	4.71	0.32
	C-12	5.14	4.86	0.29
	C-2	5.00	4.74	0.26
	C-5	4.91	4.69	0.22
	C-1	4.84	4.71	0.13
	C-13	4.86	4.74	0.12
	C-9	5.00	5.14	-0.14
	C-6	5.00	5.43	-0.43

The factors that, through IPA, fell within Quadrant 2, indicated superior performance for those Korean companies who wish to engage in investment development projects. Of these, the

engineering technology of participating companies, the establishment of a cooperative relationship with ordering party, and repair and follow-up service factors were rated very highly. The competitiveness factors that, through IPA, fell within Quadrant 1 require action at the earliest opportunity and include the ability to acquire local project information from contracted countries, the ability to establish a public-private collaborative system, and the ability to establish a domestic and global human network.

5. Conclusion

This study was a part of a broader study that aimed to provide actionable information for Korean construction companies seeking to enter the investment development business market. In this study, literary searches and FGDs with field experts were used to define competitive factors and reinforce the competitiveness of companies in winning orders in the investment development business market. Then, importance and performance factors were analyzed through an IPA of the survey data collected from related experts. Gaps between importance and current performance level were determined through a GAP analysis of each competitiveness factor in each IPA quadrant. When importance was compared to current performance, the results were low in 42 of the 44 competitiveness factors. We concluded that Korean construction companies should make systematic efforts to enhance the performance level of such factors. In particular, for competitiveness factors that fell within IPA Quadrant 1, the gap between importance and performance was found to be quite large. Companies must strategically address these factors in order to enhance their competitiveness. Furthermore, we recommend that future studies

supplement our qualitative analysis with quantitative analysis if Korean construction concerns are to overcome current obstacles. Relevant studies should continue to be consistently conducted, and should include construction investment business models and various investment development business methods using diverse financial institutes and methods.

Acknowledgement

This study was partially supported by Seoul National University of Science and Technology.

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