

Analyzing the Priority of Leadership Elements for Project Manager of Building Construction Project

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Abstract

In construction, the outcome of work depends on the leadership of the project manager, and as a result this has been emerging as an important factor. The purpose of this study is to analyze the main elements of leadership that are essential for project managers, and to rank these elements in order of importance. In this study, leadership and its elements are reviewed through reviewing the literature, and the main elements and their relative importance for project managers were analyzed through questionnaire survey of project managers, contractor engineers, and subcontractor engineers. Through this survey, it was found that the project manager's leadership had a significant influence on the success of a construction project, and this study revealed that the key elements of leadership for project manager could be ranked in the order of resolution, responsibility, and reliance.

Keywords : building construction project manager, leadership element, importance ranking

1. Introduction

1.1 Research Background and Objective

A leader's management ability or leadership in an organization, society or a nation has a great influence on success or failure in completing the project[1]. An organization must set a goal and attain it. The organization attains the goal by preparing strategies in response to the external environment, and resolving internal problems. However, what is most important in attaining a goal is for each member in the organization to make an attempt to achieve it. Here, the leader's role is important in making the members strive to attain the goal.

At the end of 1996, the Korea Chamber of Commerce and Industry conducted a survey that aimed to identify 10 success factors of the top 30 companies and 10 failure factors of insolvent companies. From the research findings, it was identified that 'securing capable manpower' and 'believing in individual leadership' were two of the important success elements. On the other hand, 'low job performance' and 'lack of leadership by the leader' were revealed as the most serious failure factors. This is a good example showing the close relationship between leadership and the success or failure of an organization [2].

As construction projects have grown to become larger, more complex and more specialized, the importance of the project manager has grown exponentially. In particular, in an industry like construction, which requires a large labor force, the leader's role in making members strive to attain the goal is more essential.

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Unlike some other industries, the construction industry is very labor-intensive and puts stress on the project manager's capability, and thus the performance of a construction site can vary depending on how effectively it is managed by the project manager. As the leadership of the project manager can make a great difference in the productivity of the construction site, it has become an important area of research [3]. Thus far, studies have mostly dealt with the leadership styles of construction project managers [3,4,5,6,7] and the elements influencing the leadership of the project managers [8,9,10]. However, previous research on the elements of the leadership of the construction project manager and their relative priority as evaluated by the project participants concerned has left much to be desired.

Therefore, this study aims to analyze the tasks of a construction project manager, and derive the main elements of the leadership of the project manager and the relative priority of these leadership elements as evaluated by the project's participants concerned. Through this research, it is believed that when a project manager manages a project, the elements to be treated importantly by managed object are set, and they are utilized at his/her discretion as fundamental data to improve the elements deemed insufficient.

1.2 Research Scope and Method

This research aims to present the fundamental data required to perform a successful construction project by presenting the leadership elements and the role of a project manager performing tasks required in the construction site. A review of the literature on leadership was carried out, and the general management process of a project manager or site manager was analyzed. First, the elements of leadership and the roles that needed to be

fulfilled by project managers were selected. A questionnaire survey based on the selected elements was then given to engineers and managers working on construction sites, which was then analyzed.

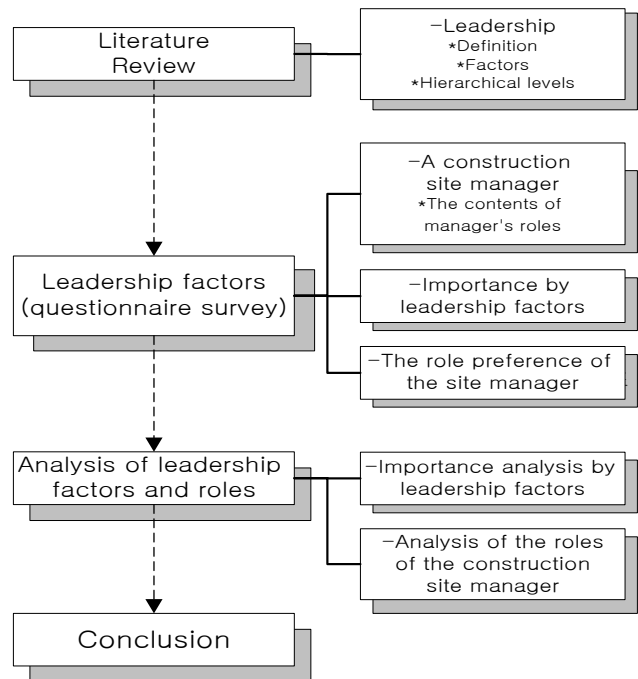


Figure 1. The research procedure

Figure 1 shows the procedure of this research. The details of the research are as follows; first, definition and factors of leadership were drawn based on a review of the leadership-related literature and case studies, second, the tasks and roles of a project manager were understood through a review of the literature on Korean project managers, third, the leadership elements required of project managers in the construction industry were derived through a questionnaire survey, fourth, based on the analyzed results of the questionnaire survey, the importance of the leadership elements and the role of the project managers were verified.

2. Preliminary Research

2.1 Reviewing the Previous Research

As shown in Table 1, the previous research on leadership has mainly dealt with leadership styles and influential elements. Therefore, elements that have an influence on the leadership of the project managers and the priority of the elements as perceived by the project's participants concerned are discussed in this research.

2.2 Definition of leadership

The term 'leadership' refers to the knowledge a leader should have, but its definition varies depending on the researcher who defines it. The following are some examples. Lee [11] defined

leadership as the ability and volition to bind together members for a goal and personal power to build a sense of reliability among members, while Kim [12] defined it as the power lead people to voluntarily do what one wants and expects, without force or threat. In addition, Stewart Crainer [13] defined it as when people with specific motives and purpose drive motivation from the proponents in a competitive situation or conflict and mobilize systemic, political and psychological resources in order to satisfy the goals. Lee [14] claimed that leadership is a process that runs from setting a direction for the organization to facilitating goal-oriented task behavior and influencing the creation of culture and maintenance of the group.

Table 1. Literature review

Authors	Title	Research Objectives
Seymour and Abd Elhalee [4]	'Horses for courses' – effective leadership in construction	This study, which used Fiedler's contingency model, suggests that Fiedler's advice on the need to match leaders with situations needs to be revised in conditions of temporary, project organization.
Odusami, Iyagba, and Omirin [8]	The relationship between project leadership, team composition and construction project performance in Nigeria	This study is on the effect of project leadership and team composition on construction project performance in Nigeria.
Giritli and Popcu Oraz [5]	Leadership styles: some evidence from the Turkish construction industry	This study aimed to explore and compare the leadership styles of managerial personnel in the construction industry.
Son [10]	Study on the analysis of the leadership factors as construction project manager	This research aimed to analyze the business and leadership factor for PMs who will adopt a capability.
Muller and Turner [6]	Matching the project manager's leadership style to the project type	This study aimed to show that different leadership styles are more likely to lead to a successful outcome in different styles of project.
Toor and Ofori [9]	Leadership for future construction industry: Agenda for authentic leadership	This paper discusses the recent construct of "authentic leadership" in the context of construction projects.
An [3]	A Study on the Construction Manager's Leadership Styles Based on the Condition of Building Projects	This study aimed to present the project manager's leadership styles based on the condition of building projects by using Analytic Hierarchy Process.
Gang and Kim [7]	Evaluation of Project Manager's Leadership in Construction Projects	This study aimed to evaluate the leadership of project managers and to analyze their major characteristics.

Based on the definitions above, leadership can be defined as the process of interaction between and having an influence on at least 2 people, and the factor that connects individual behaviors and volition for goal attainment.

2.3 Leadership styles

There are various leadership styles, but the leadership styles that correspond to the construction field include transactional leadership, transformational leadership, emotional leadership, managerial leadership, and strategic leadership. For instance, while leaders that exert power over members by giving a reward depending on a situation [15] are providing transactional leadership, transformational leadership is the process by which a leader and members are made more moral and motivated [16]. On the other hand, Collins [17] analyzed the characteristics of leadership in excellent companies according to the hierarchy shown in Figure 2 [18].



Figure 2. Leadership by hierarchical levels of company

2.4 Leadership elements

Through a process that took a number of years, Kouzes & Posner [19] derived 20 leadership factors by asking more than 15,000 managers and members various questions, including, “What quality do you want your leader or boss to have?”

Table 2. Priority of leadership factors

Ranking	Survey years	
	1987	1993
1	Honesty	Honesty
2	Ability	Vision
3	Vision	Pioneer spirit
4	Pioneer spirit	Ability
5	Intellectual	Fairness
6	Fairness	Support power
7	Generosity/Tolerance	Generosity/Tolerance
8	Frankness	Intellectual
9	Creative	Frankness
10	Reliance	Boldness

Table 2 shows top 10 ranks of 20 factors researched in 1987 and 1993. The qualities ranked at the top are honesty, vision, pioneer spirit and ability, in that order. Kouzes & Posner [19] summarized it in a simple phrase as ‘truth or trust.’ The general quality that a leader should have is to be a reliable person whom the members can trust and follow. They said it is desirable for a leader to be absolutely reliable. In other words, there should be absolute honesty at least between a leader and members about tasks, and no small doubts or dishonesty whatsoever [20].

Park [21] determined 8 qualities a leader should have: resolution, imagination, vitality, endurance, leadership, innovation, expressiveness and financing capability. Collins [22] claimed that efficient leadership is exerted when functional leadership is combined with leadership style, as shown in Figure 3.

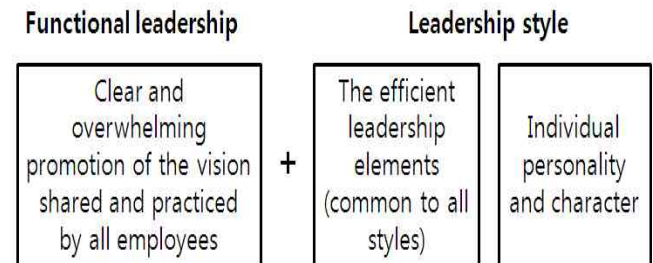


Figure 3. The efficient leadership by Jim Collins

The best virtue of a leader, functional leadership serves not only to set a clear vision that all the staff members can share, but also to enable all members to earnestly pursue the vision. This means that leaders should go beyond cultivating the leadership style, which is known as a preliminary quality for leaders to have. Leadership styles differ from leader to leader, and the leadership styles a leader may choose when performing the functions are numerous, which is paradoxical. The efficient leadership to resolve the problem was commonly answered.

Collins & Lazier [22] presented seven common elements in leadership, which were truthfulness, resolution, concentration, personal relationship, human network, communication and leadership.

3. Leadership of project managers

3.1 Major tasks of project managers

A project manager is the person in charge of a construction site, and acts as an agent of the construction company. His or her job has a direct relationship to the success or failure of a construction project. In general, to complete a project within a given amount of budget and period of time, special knowledge and technologies are required. On a construction site, the project manager is given authority and obligation from the president of the company to handle civil complaints, cooperate with administrative organizations, perform authorized tasks, determine the inputs in terms of material and labor force, and handle overall processes related to the construction project. Therefore, the project manager gets the reports from engineers in his/her charge, and offers his or her a plan, judgment, review or confirmation (See Table 3).

Table 3. Major task of the project manager

Works	Task
Project management	Cost management
	Quality management
	Building construction management
	Time management
	Building material management
	Safety management
	Organization management
Supplier management	Check productivity
	Sub-contract management
	Earned value and account settlement management
	One-construction mock-ups for construction
Other services	Around the Site management
	Professional complaints
	Construction of trust with the owner

The purpose of business is the pursuit of profit, and as the construction site is where actual profit is created, the project manager should make the fair pursuit of profit the first priority. Nevertheless, it is not desirable to force members and subcontractors to sacrifice themselves for the construction company's profit in the process of operation. The company that demands a lopsided sacrifice from its staff members cannot expect or drive their voluntary and total participation, and thus it cannot grow any further. That is, since it is actually impossible to pursue profit for the company without sharing profits with workers and subcontractors, the project manager's main task is to operate a site that is profitable for all the members participating in the construction site. Members participating in the construction site include employees in charge of site management, laborers and subcontractors. In the process of doing work in the site, the project manager should mobilize technical measures and managerial techniques to get the tasks done in an effective and efficient manner.

The project manager acts not only as a leader but also as a coordinator. Many interests are

complexly intertwined in the construction site, and each member is given a specific task. As each task should be done on a given timeline and budget, conflict can arise. At this time, the project manger should act as a coordinator to resolve problems and coordinate resources reasonably.

3.2 Leadership elements of project managers

The diverse leadership elements are presented by person or literature. In order to derive the appropriate leadership elements, we reviewed and organized the leadership elements presented in the precedent literature [19,21,22,23]. Based on reviewing the literature of the leadership, an interview of project managers was carried out, and then the most frequently elements selected were determined as the leadership elements required of project managers, as shown in Figure 4.

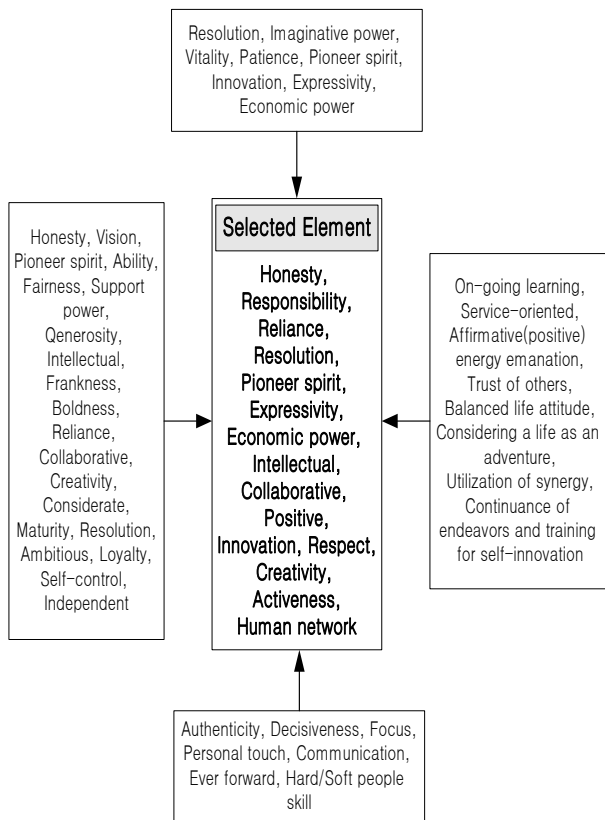


Figure 4. Leadership elements selected by interviewing project managers

4. Leadership elements and roles of project managers

4.1 Outline of Questionnaire Survey

A survey on the leadership elements and roles was carried out by dividing the respondents into three groups: project managers, contractor’s engineers and subcontractor engineers. The respondents were divided in this manner in order to understand the leadership elements the respondents in each group considered important for the construction project managers. The questionnaire consisted of the basic information of the respondent, questions to derive the important leadership elements required of project managers, questions about leadership required for each working process, and questions to identify the importance of the leadership of the project managers by each group. The survey was carried out from Oct. 18, 2010 to Nov. 20, 2010 by distributing 118 questionnaires. Of the 118 questionnaires collected, 110 were analyzed once surveys that were poorly answered were eliminated.

Table 5. Descriptive analysis of questionnaire survey respondents

	Respondent	Frequency	Rate(%)
Position	Project manager	30	27.3
	Contractor engineer	40	36.4
	Subcontractor engineer	40	36.4
Career (years)	Under 4 years	11	10
	4 – 7 years	15	13.6
	8 – 10 years	17	15.5
	Over 10 years	67	60.9

The respondents consisted of 40 contractor engineers (36.4%), 30 project managers (27.3%) and 40 subcontractor engineers (36.4%), as shown in

Table 5. In terms of work experience, 60.9 percent or 67 respondents had more than 10 years of experience, followed by 15.5 percent with less than 10 years (17 people), 13.6 percent with less than 7 years (15 people), and 10 percent with less than 4 years (11 people).

4.2 Importance level by leadership element

In a construction project, the leadership of managers, particularly project managers, has a great impact on its success or failure. A 5-point scale was used to understand how respondents by group consider leadership of a project manager to affect a project. The scale consisted of 1 (never), 2 (a little), 3 (medium), 4 (much), and 5 (very much), and the average of the responses by group was indicated. Most respondents answered that the leadership of a project manager has something to do with the successful construction project. In particular, the average response value of project managers was shown to be 4.87, which was the highest of the three respondents (See Figure 4).

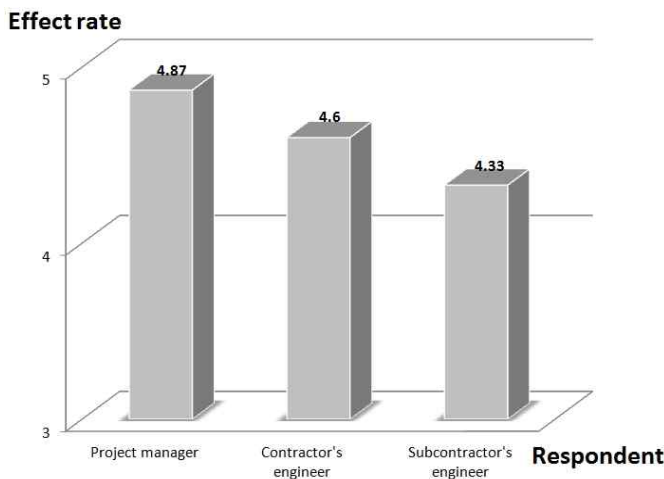


Figure 5. The effect rate of project success by the leadership of project management

In terms of importance, 15 leadership elements drawn from the literature review were also evaluated. With the scale of 1 (never important), 2 (unimportant),

3 (slightly unimportant), 4 (medium), 5 (slightly important), 6 (important) and 7 (very important), the importance evaluation was analyzed and expressed with the average value of the responses.

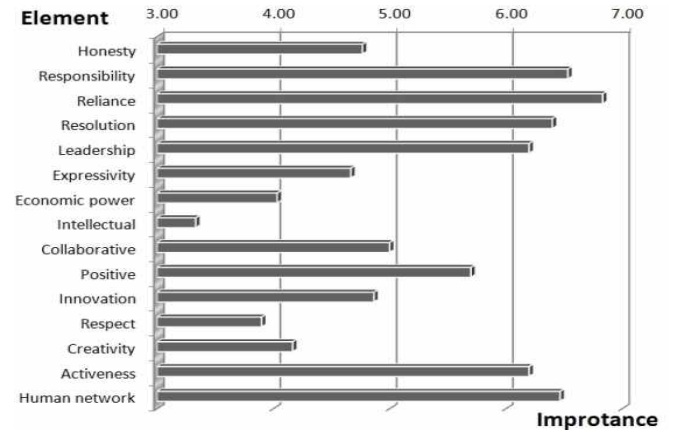


Figure 6. Importance of leadership elements by Project manager

As shown in Figure 6, project managers make much of six elements such as responsibility, reliance, resolution, leadership, activeness, and human network, while contractor's engineers five elements such as responsibility, resolution, leadership and human network (see Figure 7). Project managers consider 'activeness' to be more important than contractor's engineers do.

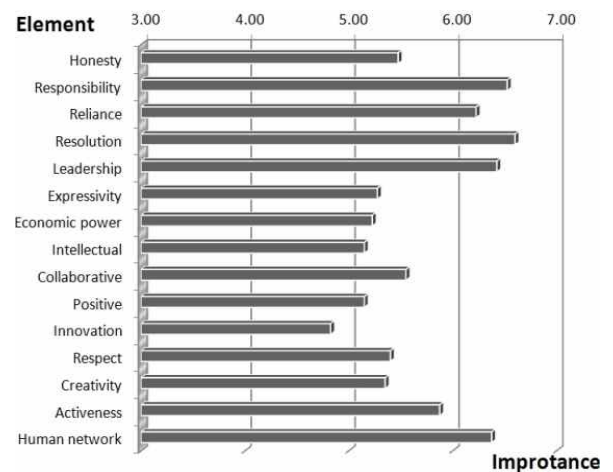


Figure 7. Importance of leadership elements by Contractor engineer

Subcontractor's engineers, as shown in Figure 8, make much of seven elements such as responsibility, reliance, resolution, leadership, collaboration, respect and human network to be important. They consider collaboration and respect to be more important compared with the other groups.

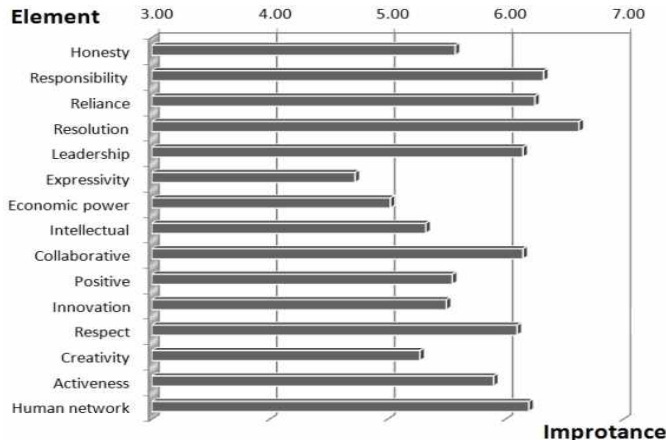


Figure 8. Importance of leadership elements by Subcontractor engineer

4.3 Priority of project manager's work

In terms of the work of project managers, as shown in Figure 9, 'project management' was the response rate given by 64 (58.2%) out of 110 respondents, followed by 'other service' given by 48 respondents (43.6%) and supplier management given by 34 respondents (30.9%) and project progress management by 28 respondents (25.5%).

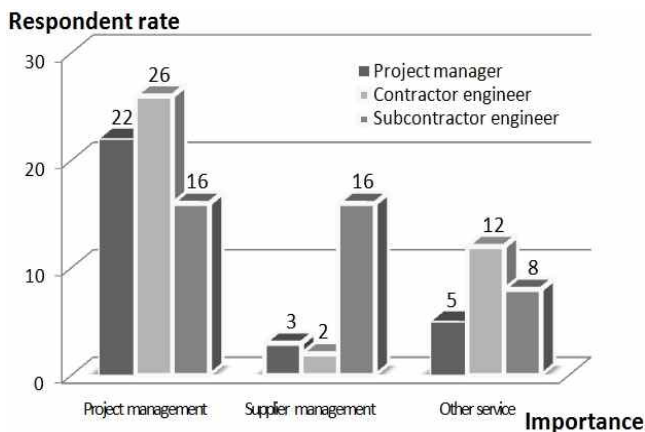


Figure 9. Respondent rate in priority of project manager's work

4.4 Analysis of the roles of project managers

In the construction project, the leadership elements required in each working process were shown in Figures 10, 11, and 12, each of which is divided into construction project management, supplier management and other service.

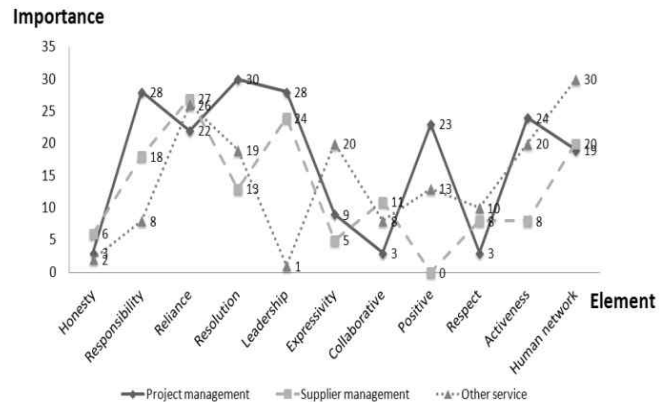


Figure 10. Importance of leadership elements required of project manager for executing project by Project manager response

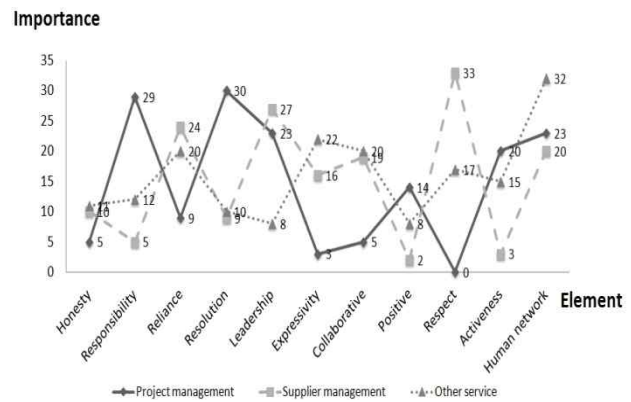


Figure 11. Importance of leadership elements required of project manager for executing project by Contractor engineer response

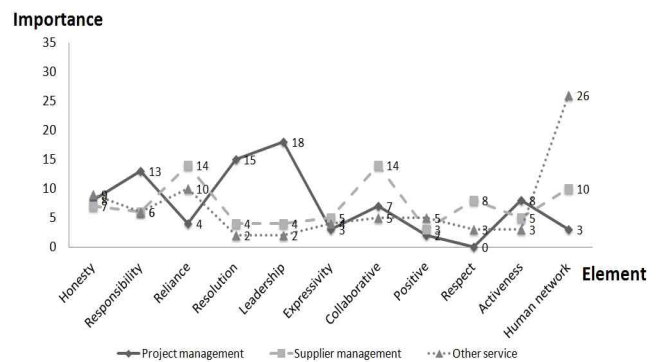


Figure 12. Importance of leadership elements required of project manager for executing project by Subcontractor engineer response

First, project managers assessed the leadership elements required of project managers for executing a project as ‘resolution’ and ‘responsibility,’ while for managing suppliers they assessed that ‘reliance’ and ‘leadership’ were most critical, and for managers of other services ranked ‘human network’ and ‘reliance’ most highly. Contractor engineers assessed the leadership elements required of project managers for executing a project as ‘responsibility’ and ‘resolution,’ while for managing suppliers they assessed that ‘respect’ and ‘leadership’ were most critical, and for managers of other services ranked ‘human network’ and ‘expressiveness’ most highly. However, subcontractor engineers assessed the leadership elements required of project managers for executing a project as leadership and resolution, while for managing suppliers they assessed that ‘reliance’ and ‘collaboration’ were most critical, and for managers of other services ranked ‘human network’ most highly.

‘Resolution’ and ‘responsibility’ were shown to be required for the project execution, but the subcontractor engineers indicated considered ‘leadership’ to control the entire labor force as more important than responsibility. ‘reliance,’ ‘respect’ and ‘leadership’ were shown to be required more for supplier management by project managers and contractor engineers, while ‘reliance’ and ‘collaboration’ were identified as important by contractor engineers. ‘Human network’ was commonly evaluated to be required more for the other services.

4.5 Analysis of research results

Table 6 shows the importance of the leadership elements of ‘resolution,’ ‘responsibility,’ ‘reliance,’ ‘human network’ and ‘leadership,’ in that order. There are no significant differences in the order among the three groups, from which it can be interpreted that project managers, contractor engineers and subcontractor engineers have a

common perception of the leadership required of project managers. In particular, ‘resolution,’ ‘responsibility,’ ‘reliance,’ ‘human network’ and ‘leadership’ are shown in common.

On the other hand, ‘respect’ was ranked 9th by project managers, and ranked 14th and 7th by contractor engineers and subcontractor engineers, respectively.

In addition, ‘resolution’ was ranked 1st by contractor and subcontractor engineers, and 4th by project managers, from which it can be interpreted that project managers put a greater emphasis on the leadership elements that make the project successful through communication between various managers and members, rather than the resolution required to put it into practice after level-headed judgment.

Table 6. Priority of project manager’s leadership element according to position

Leadership elements	Priority according to position			
	Total	Project manager	Contractor engineer	Subcontractor engineer
Resolution	1	4	1	1
Responsibility	2	2	2	2
Reliance	3	1	5	3
Human network	4	3	4	4
Leadership	5	5	3	5
Activeness	6	5	6	8
Collaboration	7	8	7	5
Positive	8	7	13	10
Honesty	9	10	8	9
Respect	10	14	9	7
Innovation	11	9	15	11
Creativity	12	12	10	13
Expressivity	13	11	11	15
Financing capability	14	13	12	14
Intellectual Ability	15	15	13	12

5. Conclusion

This research aims to define the leadership elements and roles required of project managers, particularly construction project managers. To accomplish this, questionnaire surveys were

conducted to understand the importance of leadership, and the leadership elements of project managers were researched and analyzed in three areas: project management, supplier management, and other services.

The following are the research findings; First, project managers, contractor engineers and subcontractor engineers were shown to consider leadership to have a great influence on the success of a project. Second, the leadership elements considered important by project managers, contractor engineers and subcontractor engineers were shown to be 'resolution,' 'responsibility,' 'reliability,' 'human networking' and 'leadership,' in that order. Third, the leadership elements required for each work area were indicated as 'responsibility,' 'resolution' and 'leadership' for project execution, as 'reliance,' 'leadership,' 'collaboration' and 'respect' for supplier management, and as 'human network,' 'expressiveness,' and 'reliance' for other services.

This research revealed that each group considered different leadership elements required of the project managers, so in doing their work, project managers must handle different elements according to the work area. In addition, to perform a successful project, project managers should actively develop the qualities they think that they lack according to each element and priority ranking found in this research. As shown in the previous research and in this research, the quality of a leader and leadership elements vary depending on the environment. To keep up with the changing environment, it is believed that further research should be carried out on the future role and direction of project managers.

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