The Needs Analysis of the Leadership Competency Development of Nuclear R&D Personnel

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1. Introduction

WEF (World Economic Forum) remarked that the changes in science and technology and the acceleration of its development will lead to the transformations in the workforce structure of industry and those in economy and society [1]. These changes are also expected to result in the shift of workforce competency in science and technology field as well as the alternation of jobs in the future [2].

In the field of science and technology, the 3 core competencies of science workforce are presented as R&D, leadership, and sympathy through Scientist Development Framework [3]. Especially, the leadership competency is the trait of behavior required to lead a task to achieve the value or vision of the organization. It is emphasized to develop the proper leadership competency considering the differences along the career level [4].

However, it is very hard to search the precedent researches relating to the leadership of science and technology workforce and it is even rarer to find out a research on grasping the leadership competency for nuclear R&D personnel by career and level. Based on these necessities, this study intends to show the leadership competency areas perceived by nuclear R&D personnel and to present the needs analysis on the leadership competency by position.

2. Methods and Results

The purpose of this study was to investigate the areas for the leadership competency development and their needs required to the nuclear R&D personnel by position. To accomplish the object of the study, a survey was performed to gather the data and they were analyzed to draw the results of the research.

2.1. Data Analysis

The research data were collected and analyzed with the 239 survey responses from the KAERI employees who are diversely composed in positions and occupations among the nuclear R&D personnel, using the internal survey system to perform the education needs survey from September to October, 2018. The general characteristics of the responses are presented in Table 1.

Table 1: Data Characteristics

Job Characteristics		Frequency	Ratio
Position	Principal	103	43.1%
	Senior	67	28.0%
	Junior	69	28.9%
Occupation	Researcher	151	63.2%
	Technician	60	25.1%
	Etc.	28	11.7%

2.2. Measuring Tools

The measuring tool of this study was based on the competency dictionary in science and technology provided by Korea Institute of Human Resources Development in Science and Technology (KIRD) [3]. The competency traits were selected from the sub-competencies, detailed competencies and learning elements of the leadership competency category presented in the competency dictionary targeting to the researchers and research managers of the study. (See Appendix 1).

2.3. The Result of the Needs Analysis of Leadership Competency Development by Position

The nuclear personnel can be divided in high-level position ranking principal or department managers, mid-level position ranking general, project or team managers, and the other position ranking staffs or other members.

The analysis result of education needs for developing the leadership competency of the nuclear personnel by position is as follows:

The result showed that among 23 leadership competency areas, the top 10 areas required to develop for the personnel in high-level position (above department manager) were listed as presenting and sharing the vision, rational decision making, setting and managing the goals, communication, management attitude, taking the lead, conflict management, fairness, strategic thinking, and motivation in order.

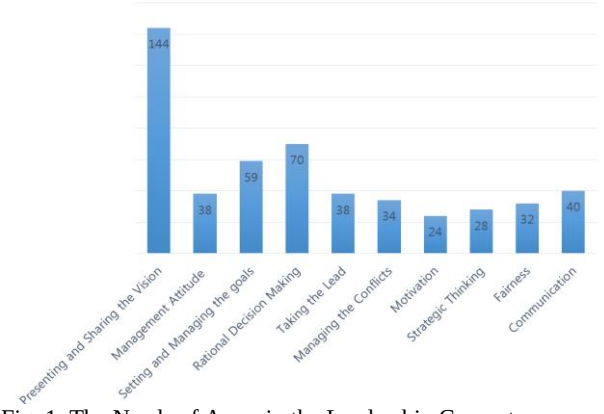

Fig. 1. The Needs of Areas in the Leadership Competency Development for the Personnel in High-Level Position

The top 10 areas for the personnel in mid-level position (general, project or team manager) among the 23 leadership competency were presented as setting and managing the goals, building teamwork, rational decision making, taking the lead, conflict management, communication, motivation, problem solving competence, initiative, presenting and sharing the vision, fairness in order.

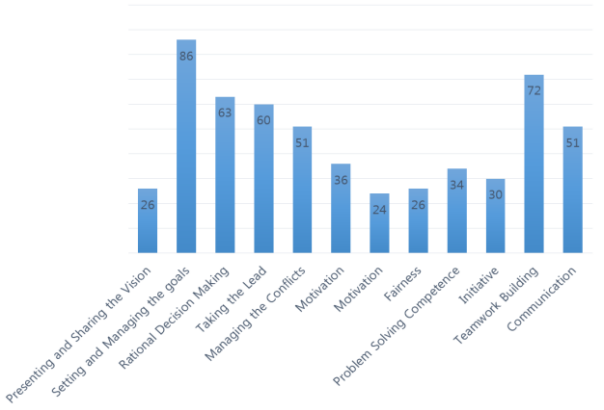

Fig. 2. The Needs of Areas in the Leadership Competency Development for the Personnel in Mid-Level Position

Among the 23 leadership competency areas, the top 10 areas necessary for the staff-level personnel were problem solving competence, communication, positive thinking, setting and managing the goals, intellectual insight, self-control, building teamwork, initiative, motivation, taking the lead in order.

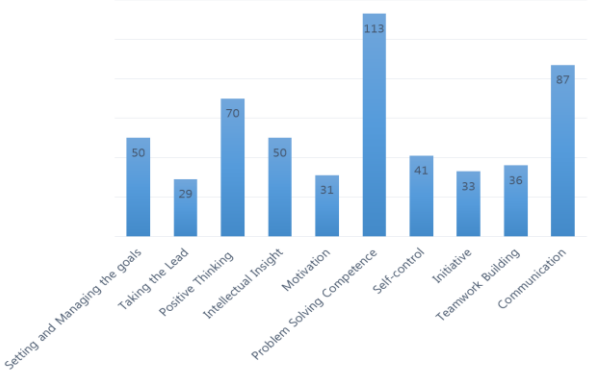

Fig. 3. The Needs of Areas in the Leadership Competency Development for the Staff-Level Personnel

3. Conclusions

This study has researched and presented the areas for the leadership competency development and their needs required to the nuclear R&D personnel by position and occupation. The result has shown that the nuclear R&D personnel have generally considered the areas of setting and managing the goals, communication, motivation, and taking the lead as the top needs in the leadership competency development in common regardless of position. There were needs differences in the leadership competency development by role expectation of each position. The higher position one has, the higher leadership competency development in the areas with macroscopic view one should go through. The results above can be used as a material to set an educating course to develop and improve the leadership competency for the nuclear personnel.

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[Appendix 1]

Division	Leadership Competency
1	Presenting and Sharing the Vision
2	Management Attitude
3	Setting and Managing the goals
4	Rational Decision Making
5	Taking the Lead
6	Managing the Conflicts
7	Positive Thinking
8	Intellectual Insight
9	Motivation
10	Catching up with Mega Trend
11	Strategic Thinking
12	Fairness
13	Problem Solving Competence
14	Empowerment
15	Self-control
16	Negotiation and Compromise
17	Initiative
18	Teamwork Building
19	Communication
20	Human Resource Network
21	Result-Orientation
22	Guiding and Fostering Staffs
23	Resource Management