Human Resource Management System for the Product Development Division - Analysis of the Factors Contributing to Performance -

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This study investigates the new methods of designing and building human resource management (HRM) system that is necessary to achieve continuously high performance in the product development division. For that, this study has two main goals. First, this study proposes a method to reexamine the existing HRM system from a viewpoint of how it affects the performance. Instead of dealing with the general issues of HRM practices, this study provides the method for a company to find its own factors that contribute to high performance and how it can manage its human resource to achieve and maintain such high performance. Second, this study provides the framework to build guidelines for a company to decide on which part of is HRM practices to pay attention, based on its strategy for the future business. The following talks about the methods to achieve these two goals, and the results of the study.

To build the method to reexamine the existing HRM system at a company from a viewpoint of performance, the following four steps were taken. In the first step, a model to analyze the factors contributing to performance is provided by revising and simplifying the Porter = Lawler expectancy theoretical model. In the second step, two hypotheses on individual

performance of group leaders and research and development engineers were drawn from the model. The first hypothesis is that the individual performance of a group leader is expressed as a function of individual factors such as morale, specialty, ability/talent, and organizational factors such as technological opportunities, acquisition of resource, and whether one's role is clearly defined or not. In the case of engineers, the individual performance is expressed as a function of individual factors such as morale, specialty, ability/talent, and organizational factors such as technological opportunities, acquisition of resource, whether one's role is clearly defined or not, and leadership of a group leader. In the third step, empirical data is collected through questionnaires in order to test the validity of hypothesis equations. The questionnaires were sent to the manufacturing companies in the six industries, chemicals, pharmaceuticals, machinery, electric & electronic equipment, precision instruments, and transportation equipment. These companies are listed in the First Section of Tokyo Stock Exchange. In the fourth step, the validity of hypothesis equations is verified by regression analysis using collected empirical data. To measure individual performance, the number of new product developed by the individual was used. By controlling the industry and optimizing the predictor variables by industry, statistically meaningful regression equations are obtained. Therefore, the validity of hypothesis equations is confirmed. Furthermore, important items from a viewpoint of performance are defined by comparing the standardized partial regression coefficient of each predictor variable in regression equation. These items are to help companies to clarify the important factors that are necessary to achieve high performance. Hence, they would help companies to find the issues to improve in their HRM.

To achieve the second goal of building the framework for the HRM that fit to the future business strategy of the company, the following steps were taken. First, a model to find fitness among the product strategy, the technology strategy, and the HRM system of a firm was proposed. Product development style (market-pull predominant type vs. technology-push predominant type) and relative length of lead-time (long vs. short) are taken notice of product strategy. For the technology strategy, this study focused on the core function of the product development and the basis of the product development ability. Similarly, the main points of HRM system are incentive system for individuals, rotation/arrangement of staff, manpower development /training, and hiring policies.

The model shows the technology strategy and HRM system that would fit well with the following four types of product strategy. The first type products are characterized by market-pull predominant type of product development and comparatively long lead-time. The second type products are characterized by market-pull predominant type and comparatively short lead-time. The third type products are characterized by technology-push predominant type

and comparatively long lead-time. The fourth type products are characterized by technology-push predominant type and comparatively short lead-time. Kao and Matsushita Electric have accomplished high performance with the first type products. Sharp has accomplished high performance with the second type products. 3M has accomplished high performance with the third type products. Canon and Sony have accomplished high performance with the fourth type products. The case studies of above-mentioned six companies were done to compare the cases with the model. As a result, it is obtained that approximately the fitting model corresponds to six cases.

Further, as the cases of the businesses that have low fitness among their product strategies, technology strategies, and HRM systems, the data storage products business at Kao and 3M were studied. Data storage products are the fourth type products. Therefore, these are different from main high performing products of Kao and 3M. Eventually, Kao withdrew from data storage business and data storage business of 3M was separated. Data storage business was a hard task for Kao and 3M. Of course, the cause of withdrawing or spin-off is not only low fitness among their product strategies, technology strategies, and HRM systems. However, it is concerned that low fitness is one of the main causes of withdrawing or spin-off. In these circumstances, the validity of the fitting model is verified. It is very important for a firm to achieve the fitness among its product strategy, technology strategy, and HRM system. This sounds rather self-evident. However, the studies of the high-performing companies show that keeping the tight fit among strategies and HRM system for a long time is the key.

Next, this study dealt with the issue of how a high-performing company maintains the flexibility to adapt to the environmental changes. Interdependence among product strategy, technology strategy, and HRM system was examined by interviews. The interview data suggests that Kao, market-pull predominant type company, has a close relationship between product strategy and technology strategy. HRM system plays the role of bridging the product strategy and technology strategy of a company. Canon and Sony, technology-push predominant type companies, have a close relationship among product strategy, technology strategy, and HRM system. Therefore, the mechanism of flexibility to maintain tight fit for the environmental changes is different between market-pull and technology-push predominant type companies.

Lastly, the points of designing of HRM system are discussed as for implication from results in this article.