Employee Performance Appraisal of R & D Departments in Japanese Companies

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1. Introduction

The Japanese economy has been trapped in a long term recession ever since the burst of a bubble economy and the business environment has been tough.   The ordinary profit of listed companies in the fiscal year ending this March is estimated to be 20% less than that of the previous term.   The complete unemployment rate is over 4 % and Japanese companies are rapidly shifting their personnel system to the merit system and performance-based appraisal system.   According to the Ministry of Labor's 1996 Survey on Employment Management in terms of the basic personnel management style, 48.4% of companies emphasize "merit system" and 41.7% use "a combination of seniority system and merit system."   In total as much as 90% of companies are trying to introduce the merit system. However, it seems they are still not clear that what kind of merit and performance they should highly appreciate.   In this paper, the performance appraisal system in Japanese companies, R & D departments in particular, will be discussed.   A special attention is given to R & D departments because investments in R & D, according to the Nihon Keizai (1998), increased in 3 consecutive years despite the long lasting recession after the bubble burst and Japanese companies seem to consider R & D activities important.

In the following sections, firstly the requirements in effective appraisal system, secondly performance standards, lastly the appraisal process (who should evaluate the performance, how it is done and when) will be discussed taking examples of HONDA, SONY, SHARP and NEC.   The results of a questionnaire survey by Fujimura (1998) will also be introduced.   In this survey, date were collected from 1604 middle managers who are equivalent to section chiefs of 24 cooperative companies and how performance appraisal is conducted in practice by the front line managers is shown.

2. Requirements in Effective Appraisal System

What are necessary conditions of a personnel appraisal system? Cascio (1989) included relevance, sensitivity, reliability, acceptability and practicality as necessary requirements and states: Relevance implies that there are clear links between the performance standards for a particular job and an organization's goals and clear links between the critical job elements identified through a job analysis and the dimensions to be rated on an appraisal form.   Sensitivity implies that a performance appraisal system is capable of distinguishing effective from ineffecive performers.   Reliability refers to consistency of judgment.   For an any given employee, appraisals made by raters working independently

of one another should agree closely.　　Acceptability implies that human resource programs must have the support of those who will use them.　　Practicality implies that appraisal instruments are easy for managers and employees to understand and to use.　　Relevance, sensitivity and reliability are technical requirements, and acceptability and practicality are requirements for implementation.

Imano (1996) proposed objectivity, fairness, transparency, and additive principle as necessary conditions for an appraisal system.　　Since the results of an appraisal largely influence promotion／demotion and wages, a fair evaluation should be given objectively and understood by employees.　　Recently, a focus is given to transparent nature of the system in which personnel evaluation rules, criteria and results are disclosed to the ratee to facilitate their understanding.　　He also explains that an additive principle is emphasized in order to motivate employees to challenge to innovation without fear of failure.

Honda, for example, states that an epoch-making, core idea (concept) is necessary for making good differentiated products.　　Essential creation is indispensable and it is necessary to leave the factory culture which has governed the Japanese style manufacturing. This factory culture employs scientific management, standardization and simplification. In order to avoid influences of individual differences of ability upon productivity, egalitarianism has been the core of the appraisal.　　Hard working, patience, acquiring skill, not disturbing harmony of an organization, and team work have been highly evaluated. Certainly, this uniform personnel system was a driving force in productivity improvements in factories.　　However, so called blue-collar workers decreased in number and white-collar workers are increasing recently.　　The previous personnel system is no more applicable.　　In the coming intellectual and creative society, "from equality to fairness" is the key word and fairness should be the basis of the personnel system in the future.

Sony further states that R & D members should be judged fairly with a clear objective based on a disclosed criteria.　　But it is often the case that the appraisal only shows the degree of satisfaction of the rater.　　Figure 1 shows 6 items Sony considers necessary for appropriate appraisal of R & D members.

Figure 1 : Requirements for Correct Evaluation at Sony

1. Both the person who evaluates and the one to be evaluated have common understanding as to performance standards or the goal to achieve.　　It is desirable that they are expressed quantitatively as much as possible.
2. Naturally, the primary evaluation is conducted based on the achievement of objectives set in the start of the period.　　In addition, the process of achievement, secondary effect, cooperation to others and other departments should be taken properly into consideration for the overall evaluation.
3. Evaluation should be given as fair as possible by asking more than one person in addition to the primary rater and by adjusting the relative level with the other departments.
4. The appraisal result should be accurately communicated to the ratee and compared with the ratee's self-appraisal.　　If there is a gap between the two, the reason behind the gap should be mutually and thoroughly understood.
5. The rater should understand that the appraisal is conducted not only for the evaluation of the past performance but for supporting the researchers to grow in the future and bear the better fruits.
6. The rater should be fully aware of the fact that evaluation always holds subjectiveness and arbitrariness and that evaluation of the subordinates means evaluation of oneself.

In Fujimura's (1998) survey, managers were asked: "Do you find any *problems in* the appraisal system of your company ? " 69.5% of managers found problems, 23.2% did not see any serious problems, 2.5% was not sure and 4.9% did not give any answers. Almost 70% of managers see some problems in the evaluation system of their companies and very few of them think that the appraisal system of Japanese companies is reliable.
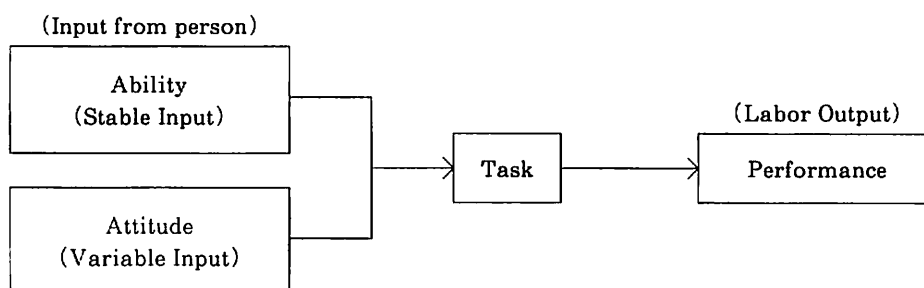
The requirements of personnel appraisal system include: each employee recognizes the system to be fair, and they perceive that efforts improve performance which enables them to get rewards they expect. In order to realize this, the above mentioned requirements should be satisfied in the appraisal system and it is indispensable that the problems associated with the implementation of the system are solved.

3. Performance Standards

The performance standards must cover both the job content (what should be done and are expected) and the level of performance (how well it must be done). Such information shoud be clearly shown to both the superior and the subordinates.

According to Imano (1996), the performance standards of Japanese companies generally consist of 3 domains: ability, attitude for task and performance as shown in the figure 2. The ability and the attitude are input to the task and performance is the output which is shown through the task. In the evaluation, there are 3 methods nemely, evaluation by the size of input, by the size of output and by the combination of the two. The methods based on either input or output only have both advantages and disadvantages. Japanese companies therefore establish their performance criteria by properly combining all three; ability and attitude (input) and performance (output).

Figure 2 : Relation between Evaluation Domain and Task

(Input from person)

| Ability (Stable Input) | | (Labor Output) |
| Attitude (Variable Input) | Task | Performance |

Source: Imano, Koichiro. Jinji Kanri Nyumon (Introduction to Personnel Management), Nihon Keizai Shimbun, 1996, p.90.

The evaluation in these 3 domains are called ability evaluation, attitude evaluation, performance evaluation, respectively. These evaluations consist of more than one evaluation items (elements). According to Imano (1996), the ability evaluation includes items such as knowledge, skill, understanding, explanation capability, judgment, planning capability, leadership and negotiation capability. The attitude evaluation includes positiveness, sense of responsibility, cooperativeness, discipline, innovative thinking, training

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and development of subordinates, and company-wide viewpoints. As to the performance evaluation, MBO (Management by Objectives) are being adopted as will be discussed later in detail.

Let us now look at a practical example of Sony. Although there are some differences due to the rank of researchers and the job contents, evaluation is given based generally on 3 aspects; achievement of the objective, research results, ability of and attitude to research as shown in the figure 3.

Figure 3 : Major Evaluation Items at Sony

1. Achievement of Objective
(1) Level of achievement
(2) Difficulty or ease of the objective
2. Research
(1) Intellectual property rights (patent application, quality and importance of patent, award for patent, etc.)
(2) Activities in the company (technology transfer, technical support, technical report, activities in company committees, contribution to other departments, etc.)
(3) Activities outside of the company (presentation at academic society meeting, paper publication, invited lecture, activities in academic society and industry, announcement in newspaper, etc.)
3. Research Ability and Attitude
(1) Creativity, originality, and expertise
(2) Independence, positiveness, challenge to difficult tasks, and registance to stress
(3) Cooperation in teamworks and to other departments, trainings of followers, and other overall attitude toward tasks

The weight of each evaluation item differs in different kind of jobs. For example, if a project is expected to bear the result in a short term, the project leader is expected to be good in achieving the objective. The project members are evaluated by the research performance as well as the achievement of the goal. If a researcher engages in a long term basic study, he∕she is evaluated mainly by the research results. In general R & D jobs, attentions are given both to objective accomplishment and research results. Research ability and attitude are evaluated in long term perspective and the evaluation results are used as important materials for judging salary increase and promotion.

At Honda, it is considered that R & D activities are largely influenced by aptitude of people. They developed so called the Multiple Aptitude Observation Method to find the aptitude of R & D members at an early stage and to allocate and train the manpower according to their aptitude. As shown in the table 1 , the aptitude of researchers are largely classified into ability aspects and personality aspects. In total there are 36 items and the observer evaluates each item into 7 grades using a marksheet.

Table 1 : Outline of Observation Items at Honda

Classification	Viewpoints	Observation Items
Technical Skill Variables	knowledge and skill in area-specific methods, treatments, procedure, etc.	theoretical expert knowledge expert skill wide-ranging knowledge in the specialty general knowledge (social science)
Thinking Variables	thinking ability and style manifested in execution of task	use of information application of knowledge and skill abstract and logical thinking practical and concrete thinking logical and systematic thinking microscopic view macroscopic view original idea sound idea grasping and pointing out the problems insight into the present condition future projection and forecasting planning ability
Administrative Skill Variables	administrative skill in a narrow sense and manifested ability and features in execution of task	ability to negotiate and coordinate job allocation selling of project and study theme sense of economy schedule planning and coordination
Human Skill Variables	ability and features manifested in doing works in team and organization	leadership manpower training listening ability cooperative nature (coordination ability)
Motivation Variables	willingness and eagerness which trigger action toward an objective and task, ability to maintain and promote action	challenge spirit enthusiasm patience and perseverance vitality desire to improve oneself
Emotional Variables	behavior and attitude which characterize personality in daily business	sense of responsibility belief acceptance of criticism emotional stability attractive personality

A factor analysis was carried out for 36 observation items and the result showed 4 factors behind the items, namely, management (administrative skill), research (research and technical skill), interpersonal relations (friendliness and human skill) and motivation (motivation and willingness). The factor scores of the individuals were put into 4-axis diamond graphs. It was found that the same type of the researchers show similar shape of the graph. For example, product development team members seem to need motivation and interpersonal relations. A general manager needs excellent administrative skill. A project leader needs overall balanced ability and motivation. Based on such data and

understanding of the aptitude of each researcher, they are trying to implement a strategic career development program.

At Sharp, evaluation of researchers is carried out by the personnel system called CM (Creative Management) Ⅱ. The CM activities started in 1985 and then were revised in 1995 into the current CM Ⅱ. In CM activities, the basis is PDCA cycle in which individuals set the objective on their own initiative (Plan), implement (Do), consult their superior (Check) and carry out measures (Action), prerequisites being their vector is matched with the whole company policy and the work place policy. The aim of the system is to establish an organizational climate in which independence and creativity of employees are highly motivated. CM Ⅱ attaches importance to both individual's expertise which is the origin of creativity, and cooperative ability which promotes creativity in an organization. Without overemphasizing the result and achievement, they focus on topic finding ability and innovative ability and try to appropriately reflect the degree of contribution to the task and status of motivation on promotion so that qualification and wage system is applied according to employee's ability. Based on this CM Ⅱ the researchers in the technology division (Sharp R & D) are evaluated in two aspects: contribution to the business and that to the generic and core technology in the future business. The contribution to the business has two domains, one is contribution to the products currently on the market and the other is contribution to future business such as strengthening the existing business and creating a new business. It is further divided into two: short term contribution which is evaluated in 1 to 2 years and middle and long term contribution which is evaluated in 3 to 5 years. The contribution to the generic and core technology in the future business includes patent application (number of invention items, number of excellent invention awards, patent evaluation score, etc.) and presentation in conferences (paper presentation in Japan and abroad, participation in exhibitions, announcement in newspaper, etc.).

The evaluation items and the weight given to each item differ according to the rank and job content of the researcher. Fujimura (1998) reported that evaluation items and judgment criteria of each item are shown to the subordinates by 67% and 57% of the superiors, respectively. However, the weight of each evaluation item is shown only by 44% of superiors. It seems necessary that the evaluation items and the weight of each item are shown to the subordinates so that they can work knowing what can give them a good evaluation.

4. Appraisal Process

(1) Who evaluates?

The person who does appraisal needs to satisfy the following two conditions. At first, the person should be well aware of the performance standards and be in the position that allows him to observe the subordinates' work for a certain period (6 months for example). Secondly, the person should be motivated to do an accurate appraisal and has enough skill of doing so.

In Japanese companies, it is usual that the immediate superior does the whole appraisal. The person who satisfies the above conditions may include the peer and the

subordinates in addition to the immediate superior. Each one of them can observe a particular aspect of the ratee. For example, the superior is in the best position to observe how well the ratee is doing the given job and to relate the ratee's performance to the objectives of the department and the company. The peer is in a good position to observe whether the ratee is cooperating with the peer in the job. The subordinates are in good positions to see extent of authority transfer by the ratee, communication skill, style of leadership, and extent to which he or she plans and organizes.

If a ratee's job is not limited to inhouse, it is desirable to have evaluation by clients and suppliers. Such evaluation often brings in a unique information which cannot be obtained from the inhouse rater. Taking an example of a researcher who is engaging in a study which searches for unknown basics, it is very difficult for person in the company to carry out the evaluation and it is useful to refer to the evaluation made by the specialists who are active in academic societies.

In some case, self-appraisal is added to the process. This will improve the motivation of the ratee and offer a smooth dialogue between the immediate superior and the ratee on the final appraisal results. However the self-appraisal is often more generous than the appraisal by the superior or the peer. The self-appraisal result should be used as information for future ability development rather than as material for promotion and salary increase.

Let us look at a practical example of Honda. As it was mentioned before, Honda developed the Multiple Aptitude Observation Method with an aim to find the aptitude of individuals at an early stage and assign and train them properly according to their aptitude. In this method, as shown in the figure 4, the subject is evaluated multilaterally by immediate superior and superiors of related departments, the peer in the same section and in the related departments, immediate subordinates and subordinates in the related departments, and by himself or herself. At first, the observers are asked following 3 questions: "how many years do you know this person?", "how much do you know about his/her way of doing the job and the personality?" and "how long did you work with him/her?" By this, the level of acquaintance between the subject and the observers is judged based on which the final selection of the observers is carried out. One person is observed on average by 25.5 persons, and one oberves on average 6.6 persons.
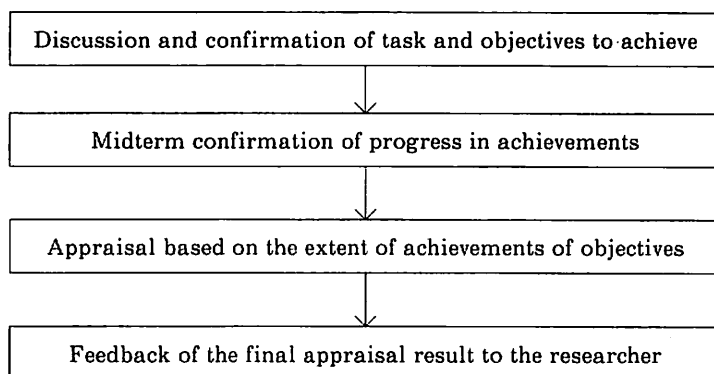
Figure 4 : Selection of Observers in Honda
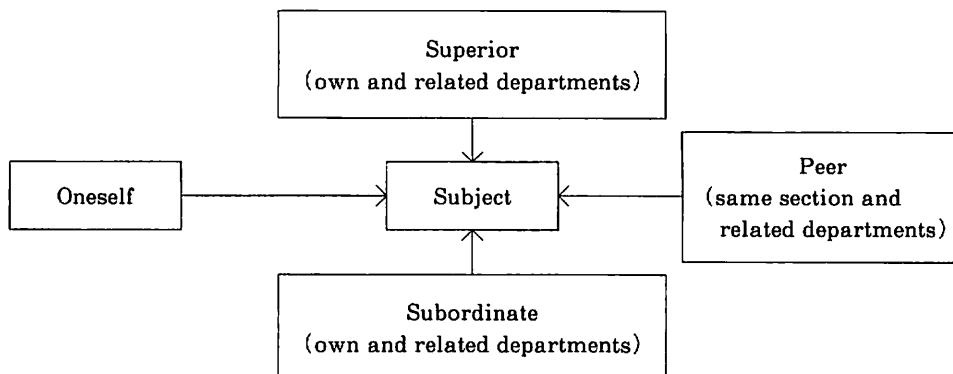
Whoever the rater is, he／she is required of a special skill in observation and needs knowledge of how to avoid errors which frequently happen in the process of the appraisal. According to Fujimura (1998), however, only 5.7% of managers receive the rater training on regular basis. 72.1% of the managers receive the rater training only once when they are promoted to a rating position (generally section chief). 23.1% of the managers receive the training nonregularly time to time. Therefore the managers who receive the rater training more than once are less than 30%. Heneman et al. (1980) reported in a study that the evaluater's intelligence, supervisory skill, cognitive complexity, and analytical thinking ability influence on the evaluation results. It is also mentioned that the age and sex of the rater is related to the results. It is impossible, therefore, to acquire the evaluation skill without receiving special rater trainings. Japanese companies should put priority on the rater training.

(2) How the appraisal is done

The frequently used in performance evaluation is MBO (Management by Objectives). This is a process in which the boss and the subordinate together set the objective in the beginning of the evaluation term, measure the achievements in the end of the term, and evaluate the performance in comparison to the set objective. When the final evaluation is given, the boss gives feedback of the evaluation results to the subordinate and tries to get agreement on the evaluation contents.

This MBO is employed in Sony and Sharp. There are many methods existing in Sony for evaluation of achievements of individual researchers, but one of typical appraisal is evaluation for bonus which is done every half a year shown in the figure 5 .

Figure 5 : Appraisal Process at Sony

Discussion and confirmation of task and objectives to achieve

Midterm confirmation of progress in achievements

Appraisal based on the extent of achievements of objectives

Feedback of the final appraisal result to the researcher

Before the start of the evaluation period (6 months), each researcher discusses with the immediate superior and confirms job content and the objective to achieve. When most of the period is over, the superior checks the extent of achievements so far and holds an appraisal interview to confirm the researcher's own view of achievements. They also talk and confirm the job content and the objective of the next period. After the period is over, the immediate superior gives the primary evaluation based on the extent of achievement of objectives and the other items in the figure 3 . Then the higher management gives the

secondary evaluation, the personnel department does overall adjustments and the appraisal is fixed finally. At the time of bonus payment, the final appraisal result is conveyed to the researcher. If the researcher is dissatisfied with the result, a thorough discussion session is held. This evaluation process is basically same for the managers above the assistant section chief and the bargainables, though there are slight differences according to the rank and the job contents.

Next, let us look at the example of the Management by Objectives in Sharp. In the company, they call this as CM system. In the beginning of the term, major policies (middle range business policy of Sharp, 3 -year plan of the technology division, basic policy of the year, and basic policy of the research institute) are broken down to reflect on the job content, objective and the schedule of each researcher. Progress in activities is confirmed every month. In the end of the period, the researcher does self-appraisal of the half-period achievements of job and objective by 5 grades. Then the researcher meets the head of the department to discuss the contents of self-appraisal and receive comment before the appraisal is fixed. The aims of the system are to see agreement between what a researcher says and what he/she does, to distinguish right from wrong and to make the researcher's own sense of accomplishment and the result of the appraisal consistent.

Next, the performance evaluation system of scientists at NEC Research Institute (NECI) will be introduced.

The performance evaluation is conducted for all the scientists excluding fellow scientists on the achievements in the past one year. Each scientist submits a report on the results of the studies conducted in the past 3 years to the CS VP (computer science vice president) or the PS VP (physical science vice president). This report should cover 5 items: (1) study results, conclusion, and major highlights, (2) summary of progress in studies, (3) activities in NECI (contributions to infrastructure, recruitment, and seminar), (4) activities as specialist outside of the company, and (5) publications (those published and contributed), technical report, oral presentations, patent application, and registered patents.

The evaluation of a scientist is at first given in an evaluation committee composed of 2 or 3 senior scientists. Merits and improvement items of each scientist are pointed out in the committee and a draft evaluation chart is made. If promotion of a scientist is considered, evaluation outside of the company is collected by phone and letters which is used as an index. The draft evaluation chart made by the committee is deliberated in terms of appropriateness by the vice president of the department and the fellow scientists in the case of a senior research scientist, and by the vice president of the department, the fellow scientists and the senior research scientists in the case of a research scientist. Some modifications are made when necessary. The deliberation results are submitted to the directors' meeting and the final appraisal is given. The current evaluation and the previous evaluation are compared and the final appraisal is given by 5 grades, from "much better than expectation" to "much worse than expectation." The result is reflected on the salary of the next year. The final appraisal result is notified to each scientist by the contact vice president and filed after consent of the scientist. If a scientist is dissatisfied with the result, he/she must submit a written report to the president. Discussion is held when

necessary, but the result will not be changed basically.

For the appraisal by the Management by Objectives, it is very important that the superior and the subordinate agree each other to the clear objective in the beginning of the term. According to Fujimura (1998), however, a survey on time for appraisal interview per one subordinate showed that 7 % of the managers used less than 30 minutes, 34% used more than 30 and less than 60 minutes. In total 41% of the managers used less than one hour for the appraisal interview. Suppose if a manager has an interview with a subordinate twice a year, one session is less than 30 minutes. Then it is one way communication from the superior to the subordinate and the subordinate cannot fully express his/her opinions. This will not enable to establish a fair performance standard. Further, managers were asked whether they disclosed the appraisal results to the subordinates and only 54% did so. Subordinates do not know how they are evaluated and cannot give consent to the appraisal result. It seems important that managers fully explain the appraisal results to the subordinates in an interview so that their consent is obtained.

(3) When should appraisal be done ?

It is general in Japanese companies that performance and attitude toward job are appraised twice a year and ability is appraised once per year. The result of performance and attitude appraisals is reflected on bonus and that of ability appraisal on promotion.

In Sony for example, researchers as well as other employees receive appraisal for salary increase once per year, that for bonus twice per year and that for promotion once per year. In addition, evaluation for rise in rank (or vice versa) and awarding are given when opportunity rises.

According to Fujimura (1998), 69% of managers stated: "I do not take record of how my subordinates do the work but I try to evaluate whole period." Only 15% of managers answered: "I take record of subordinates' work so that I can evaluate the performance in the whole period." 11% of managers mentioned: "I try to evaluate the whole period but tend to be influenced by the performance in several months before the appraisal date." It is very difficult for a manager to recollect the subordinate's work in the past 6 months without any records. Taking record for the evaluation in the whole period seems to be important.

5. Conclusion

Many Japanese companies are now trying to shift their performance appraisal system toward merit system and performance-based appraisal system. As stated above, however, the employees are not convinced of the requirements in the appraisal system nor the performance standards. It was made clear that there are still many problems in the process of performance appraisal. It is a major future issue for Japanese companies to establish the performance appraisal system and implement it effectively.

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