AN EFFECTIVE SUGGESTION SYSTEM UNDER TPM: AN EXPERIENCE OF SAMSUNG CORNING, INC IN KOREA

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Abstract

An experience of suggestion system was reported in this paper for the purpose of investigating effective factors of suggestion system at the Suwon Plant of Samsung Corning, Inc. in Korea. Suggestion system is a formal attempt in which employees make suggestions from ideas and thinkings. With the effective system, the company can achieve goals on the improvement of the working processes and products. At Suwon Plant, TPM is connected to both corporate vision and suggestion system: the former is the management concept and the latter is an operational tool. Linked to TPM, suggestion system is found to be effective owing to the factors such as strong support of top management, high job involvement, extensive participation and speedy, convenient evaluation procedure.

I. Introduction

Suggestion system is a formal attempt in which employees make suggestions from ideas and thinkings so that the company may achieve goals on the improvement of the working processes and products. As known in the world, Japanese companies have widely employed the system and achieved trmendously fruitful results. On the average, each person makes nine suggestions per year [1]. The abundant ideas in Japan results partially from program structure and the value which management places on suggestions [1]. This system has been developed for the completion of TQM which is an organizational philosophy and

strategy, making quality a responsibility of all employees. Through suggestion system, fims can strategically pursue quality rather than short-term profits. Quality hereby means conformances to requirements that meet or exceed customer's expectations.

Actually, quality improvement does not depend on suggestions by groups only like QC circles. QC circles alone would not complete suggestion system. Individual workers should be able to make commitment to quality improvement on product, process and organizational system of the company, where suggestion system becomes everybody's responsibility.

In Korea, QC circles were introduced in the 1970's in order to learn Japanese practices in quality management which had been developed in the early 1960's. Soon, Korean companies found that suggestion system combined with QC circles would be an effective tool for bottom-up communication in quality control although this kind of communication system have been practiced in the company. Top management was eager to relate suggestion system to QC. Individuals were encouraged to participate in the program connected to TQM. Unlike many other maufacturing companies, however, Samsung Corning, Inc. puts TPM (Total Productive Maintenance) on the top priority as a management philosophy for the manufacturing efficiency. It would be interesting to learn how this firm aligns suggestion system to TPM as the important factory strategy.

This paper is concerned with investigating effective factors in operating the suggestion system under TPM at the Suwan Plant of Samsung Corning, Inc. In order to conduct the research, an experience of the plant was excavated in search of its characteristics in the suggestion system. Further, a questionnaire survey was conducted from 137 workers in order to investigate how they think about the system. Relevant data were obtained and then analyzed for the study. Conclusions were made based on the results.

II. Samsung Corning, Inc.

Samsung Corning, Inc., one of Samsung Group companies, was established in 1973 as a joint venture with American Corning, Inc. A mission was stressed that human resources and technology should be used to create top quality products and services and thereby contribute to society [5]. Under the vision of "World Best Frontier", this company produces high-tech products such as TV and monitor tube

glass, LCD glass, and soft ferrite. With three offshore plants in Malaysia, Gremany, and China, the company is operating two local plants: Suwan and Kumi, located 30 km and 250 km south of Seoul, respectively.

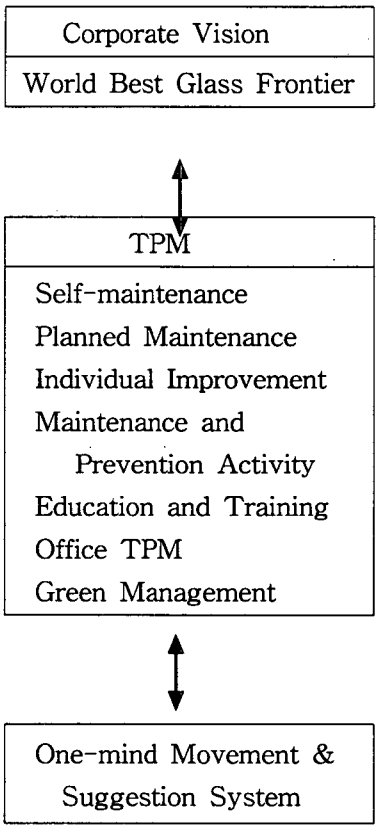
Concerning the Suwan Plant, main products include the front and back glass parts of TV broun. Although the product is relatively simple, the process requires special attention on quality because of high defective rate. The current number of employees are 1,680 and the sales recorded 420 billion won, equivalent to about 0.3 billion dollars, in 1997.

The Suwan Plant set up TQC department in 1977, and adopted the suggestion system in 1979. As customers demanded higher quality of products and competition became more severe, it started to operate TPM program in 1986 in lieu of TQC. In the following year, the company obtained the first prize in the national TPM competition and started to develop the suggestion information system for effective digestion of suggestions which were increasingly proposed by employees. Since then, TPM has become the main theme of the quality management, with the combination of suggestion system. It won the Excellence Prize of suggestion in the national competition and the TPM Prize in the International Production Innovation Conference in 1997. This Plant obtained the second prize in the suggestion competition which was held for all the Samsung Group companies this year.

III. TPM and Suggestion System at the Suwon Plant

As mentioned in the above, the history of suggestion system is 20 years at the Suwan Plant. However, this plant has never experienced a greater achievement than now. Especially, the current Suwan Plant manager, Executive Director Ju-Hwan Jin, innitially adopted TPM as a new philosophy of quality improvement when he inaugurated as factory manager of the Plant in 1995. He initiated the program such that all employees are driven to participating in TPM. The TPM concept of the Suwon Plant is presented in the following figure.

Figure 1: TPM Concept of the Suwon Plant



As shown in the figure, TPM is connected to both corporate vision and suggestion system. The seven main themes of TPM are realized by the corporate vision of "World Best Glass Fontier." The TPM spirits, which are characterized by total participation, preventive activity and perfectionism, are embodied in the system combined with office, technology and manufacturing areas. In addition, TPM is supported by one-mind movement and suggestion system. The one-mind movement is a team spirit for the perfect accomplishment of team objectives. And suggestion system is an important system for recording the performance results of TPM. To make TPM successful, the plant manager has reinforced the suggestion system by means of examining how workers have done in the suggestion program.

The following figure shows the resulting performances of the system at the Suwan Plant.

Figure 2: Average Performances per Year

Contents	Introduction Stage (1979 - 1983)	Diffusion Stage (1984 - 1990)	Activation Stage (1991 - 1996)	Quality-Seeking Stage (1997 -)
Suggestions (thousands)	3.20	48.06	106.33	80.3*
Suggestions per person	3.92	22.51	50.40	54.7*
Implementations (thousands)	0.24	6.69	84.48	80.3*
Implementations rate (%)	7.56	13.01	50.05	100.0*

* The numbers indicate the performance in 1997 only.

As shown in the above figure, four stages were identified: introduction, diffusion, activation and quality-seeking stages at this Plant [Samsung Corning, Inc., 1998]. The average number of total suggestions dropped from 106.33 thousands in the activation stage to 80.3 thousands in 1997. It is because the evaluation level for adoption was raised. Regardless, the average number of suggestions per person rather went up. In view of the 100% implemenation of the adopted suggestions in 1997 which is compared with 50% in the previous stage, this indicates the factory began to enter the qualitative stage from the quatitative stage.

Let's take a look at the characteristics of each stage in the development of suggestion system.

Figure 3: Characteristics of the Four Stages

Stage	Characteristics
Introduction (1979 - 1983)	- Introduction of suggestion system - Establishment of self-management - QC education and training
Diffusion (1984 - 1990)	- Establishment of system for patent - Case competitions of improvement suggestion - Suggestion competitions in Samsung Group
Activation (1991 - 1996)	- Active implementation of suggestion system - Computerization of suggestion system - Installation of sign boards
Quality-Seeking (1997 -)	- Development of suggestion system within the employee's life - Standardization of tangible effects - Publication of manual for grades, effects and rewards on suggestion - Expansion of suggestion system to suppliers

As shown on the above figure, the Suwon Plant firstly introduced the suggestion system in 1979 with the purpose of improving product and process quality. Then, the system was group-widely disseminated during the period of 1984 - 1990. During the early 90's, the system was activated owing to the increasing number of suggestions throughout the factory and computer system was initiated for the purpose of facilitating the implementation of the selected ideas. Emphoses on the "watching with eyes" lead to installation of sign boards on every major work ststion, so that workers can see how it is going on here and there. Bench marking can be done from other workers' suggestions and sign boards. Also, group suggestions within one-mind movement are encouraged across other work stations and departments. Their own work environments are the basis for making suggestions.

In 1997, the system turned to new stage. The company declared suggestion system would enter quality-seeking stage. It had been focused on the quantity of suggestions before. The quantitative number was important. But, qualitative number has been regarded more important, with the purpose of meeting the corporate vision of world best glass frontier.

In order to review recent performances in more details, data for the last five years were arranged in the following figure.

Figure 4: Recent Performances

	1993	1994	1995	1996	1997
Average number of workers	1,347	1,474	1,543	1,585	1,469
Number of suggestions	50,960	47,891	120,739	349,425	80,307
Number of suggestions per person	37.8	32.9	78.2	220.4	54.7
Adoption rate (%)	32.8	50.9	97.7	100	100
Number of implementation	13,150	22,239	110,638	348,254	80,307
Implemetation rate (%)	25.8	46.4	91.6	99.7	100
Reward amount (million won)	92	238	726	1,362	360
Effect amount (million won)	8,112	15,539	25,688	9,090	27,847
Effect index*	88.2	65.3	35.3	6.7	77.4
Participation (%)	78.7	85.6	88.5	92.8	89.0

* effect index = effect amount / reward amount

The number of suggestions per person increased strikingly before 1996, when the Suwon Plant acquired the top among the national companies with 220.4 suggestions [6]. As the Plant raised the adoption level of qualitative standards in 1997, the number decreased in comparison with one in the previous years. It is notable that all of the proposed suggestions were implemented in 1996 and 1997.

Although there are some exceptions, both effect and reward amounts have increased in general. Examination of the 1997 data leads us to finding that effect amount sharply increased over the previous year in spite of the fact that reward amount decreased a lot. Accordingly, the effect index recorded a sharp increase in 1997. This indicates how the Suwon Plant of Samsung Corning has effectively implemented the suggestion system.

IV. Effective factors of suggestion system

(1) Strong support of top management

Top management, particularly the factory manager, strongly and visibly supports the suggestion system for the succesful implemention. Until last year, to solicit a suggestion from workers, any suggestion had been welcome so that data could be accumulated in a large quantity. The goal was to generate as many ideas as possible. This quantitative approach was encouraged by top management. After attaining the peak in terms of the number of suggestions per person in 1996 among the national companies, the factory turned to qualitative approach in the following year. The quality of suggestions is focused through feedback and encouragement by top management.

Top's commitment, as a driving force, contributed to the integration of the organization and TPM, and forstered a positive attitude toward the system development from the beginning. He urges employees to participate in the training program. A suggestion badge, as a sign of recognition, is given to only participants that finish the program completely. In the next figure, we can see how workers think about the suggestion system.

	strongly disagree	disagree	middle	agree	strongly agree	mean
Top's support	4(3.0)	18(13.5)	63(47.4)	34(25.6)	14(10.5)	3.27
Connection to vision	3(2.2)	29(21.6)	69(51.5)	27(20.1)	6(4.5)	3.01
Connection to TPM	2(1.5)	25(18.8)	44(33.1)	47(35.3)	15(11.3)	3.27

Note: The parenthesized values indicate percentage.

(2) High job involvement

From the point of employee's view, job itself is important to his or her worklife. The more satisfactory the job, the more the suggestions. Also, workers who feel a high level of accomplishment from the job would submit more suggestions. Job involvement is an important input to make a suggestion reach the level of the total organization. The following figure indicates how they feel about their jobs.

	strongly disagree	disagree	middle	agree	strongly agree	mean
Importance of job	5(3.8)	13(9.8)	43(32.3)	54(40.6)	18(13.5)	3.54
Accomplishment of job	6(4.5)	12(9.0)	50(37.6)	54(40.6)	11(8.3)	3.43

Note: The parenthesized values indicate percentage.

(3) Extensive participation

As mentioned previously, employees at this Plant have extensively been involved in the suggestion process. This is an important input for the system. Successful TPM and suggestion system are a result of employee involvement practices. This input helps in identifying their commitment to management efficiency and effectiveness. This company actively persues employee involvement, with a participation rate of 90% of the total workers so that it can reap organizational creativity. Subordinates are strongly encouraged to learn how to make suggestions by individual and group. They are also recommended to take a challenging work. That is, they are motivated to improve quality as they are told clearly what to do and how to do it. An atmosphere of participation encouraged regarding a suggestion.

	strongly disagree	disagree	middle	agree	strongly agree	mean
Recommendation of challenging work	9(6.8)	21(25.8)	53(39.8)	42(31.6)	8(6.0)	3.13
Recommendation of group suggestion	4(3.0)	19(14.4)	64(48.5)	23(25.0)	12(9.1)	3.20
Quality of fellow workers' suggestions	3(2.3)	18(13.8)	61(46.9)	36(27.7)	12(9.2)	3.20

Note: The parenthesized values indicate percentage.

(4) Speedy, convenient evaluation procedure

The suggestion system has been developed in a manner that employees can see the current status of the submitted suggestion in the procedure at the terminal whenever they want. The procedure is speedy and convenient to participants. The

results of final decisions are quickly disclosed regarding adoption or rejection. Feedack is provided for all participants that submit suggestions. Although people of the Suwon Plant seem to have some complaints on monetary reward, they are quite satified with the evaluation procedure.

	strongly disagree	disagree	middle	agree	strongly agree	mean
Speed of evaluation	2(1.5)	14(10.5)	38(28.6)	63(47.4)	16(12.0)	3.57
Convenient procedure	4(3.0)	18(13.5)	39(29.3)	54(40.6)	18(13.5)	3.49
Fair reward	15(11.3)	29(21.8)	58(43.6)	26(19.5)	5(3.8)	2.80

Note: The parenthesized values indicate percentage.

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