

## NECESSITY OF VE PROMOTION ACCORDING TO THE PHASES OF VE APPLICATION

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### ABSTRACT

This paper is based upon the prevailing facts that the result of VE application elsewhere varies according to the "on-going phases" of specific VE application within respective companies. Thus, this paper identifies the intrinsic characteristics of VE promotion at each phase of promotion activities, specific elements of successful VE and phase-by-phase styles of VE promotion.

### INTRODUCTION

A survey conducted in 1996 over the member-firms of the Society of Japanese Value Engineering (SJVE) aimed at identifying the effort-and-accomplishment relationship between and among the phases of VE application and the facts about the application practice and management of VE in Japan. A total of 211 member-firms returned their

positive responses.

The basic survey approach was designed to clarify:

- How VE accomplishments are actually related to the growth phases of VE application, and
- What are the discreet characteristics of VE application and management as related to such phases within respective companies.

In the survey, the actual phases of VE application were defined as follows:

Phase I: Introduction	The phase where VE has begun to be initially used.
Phase II: Partial application	The phase where VE is being used in some part of the organization, but not throughout the company.
Phase III: Total application	The phase where VE is

being used in each and all units of the company.

Phase IV: Stabilized application The phase where VE is regularly used, steadily deriving some results.

The percentage distribution by the survey respondents as to where they were in the phases of VE application is shown below:

Phase	Positive respondents	Percentage (%)
I -Introduction	18	8.5
II -Partial	80	37.9
III -Total	44	20.9
IV -Stabilized	62	29.4
Total	211	100%

The ratio of VE application is highest at Phase II, followed by Phases IV and III in that order. These three phases represent more than 90% of all responding firms.

SURVEY ANALYSIS BY SPECIFIC ASPECTS

Aspect #1: Results of VE application as related to the phases of application

Respondents were requested to indicate the degree of the “steadiness” of the results by applying VE. For this, two tangible measures were used: 1) the number of proposals actually submitted, and 2) the monetary amount of the estimated cost savings. Table 1 shows the result of analysis:

**Table 1: VE results by application phases**

	Phase I Introducing	Phase II Partial	Phase III Total	Phase IV Stabilized
<b>Steady or fluctuating</b>				
Rather steady, year to year	22.3	35.1	59.1	82.3
Rather fluctuating, year to year	50.0	62.5	36.4	17.7

[Respondents percentage]

It was found that where the results of VE application is rather steady, the ratio keeps rising from Phase I on to Phase IV. Where the status is rather fluctuating, the ratio tends to go down toward Phase IV. While ratios higher than 50% for the steady cases represent Phases III and IV (that is, the two mature phases).

These data certainly indicate that a rather steady status of VE results can be accomplished when VE application concentrates on Phases III and IV. Therefore, it is believed that VE application as an established daily task to be assumed on a company-wide scale is essential to securing a constant level of VE accomplishment in the company.

Aspect #2: The trend of company’s VE emphasis

Questions asked in this aspect of the survey were:

- Has there been any notable shift in the last 5 years in the company’s emphasis on VE application?
- If yes, in what ways such changes have taken place?

The answers were analyzed as shown in Table 2:

Under “No change seen”, respondents’ ratio was highest at Phase I, followed by Phase II, and low at Phases III and IV. Under “Changes seen”, on the contrary, the ratios were higher at Phases III and IV and lower at Phases I and II.

**Table 2: Shifting emphases**

	Phase I	Phase II	Phase III	Phase IV
<b>Change or no change</b>	Introducing	Partial	Total	Stabilized
No change seen	66.7	50.0	20.5	25.8
Changes seen	16.7	48.8	79.6	72.6
<b>What changes</b>				
From improvement of existing products to designing new products	5.0	27.5	56.8	45.2
From improvement of existing products to planning for new products	0	11.3	15.9	27.4
From improvement of existing products to improvement of manufacturing processes	0	8.8	15.9	14.5
From designing new products to planning for new products	0	3.8	18.2	19.4

[Respondents percentage]

The trend of emphasis changes can be characterized by the shift from “Improvement of existing products” to “Designing and Planning for new products”. In other words, VE emphasis is shifting toward the upstream phases of the product life cycle.

**Aspect #3: Organizations for the effective VE utilization**

So that the use of VE technology can be accomplished with tangible results, each company establishes 1) VE-practicing organizational units (to be engaged in improvement and designing of products and services) and 2) a staff management unit for supporting and promoting such VE practice and application throughout the company. To identify the facts on this aspect, the following questions were asked:

1. In what forms of organization is VE used for product design and improvement activities?

2. What types of organization element are used in promoting VE application?

Table 3 summarizes the answers to these questions.

As for VE-practicing organizations, ratios under “Specific functional divisions” are typically high at Phases I and II while Phases III and IV are dominated by high ratios under “Taskforce organizations”. These trends indicate that Phases III and IV can be characterized by some forms of multi-functional team activities.

As for VE-promoting organizations, Phases III and IV are typically high in ratios under “Company-wide committees”, while Phase II is characterized by the highest ratio under “Specific functional divisions”. Thus, it can be said that the form of VE-promoting organizations seems to be shifting from “Specific functional divisions” to “Company-wide committees”. And, “Full-time exclusive units” at Phase IV shows higher ratio than other phases.

**Table 3: Organizational elements for VE application**

<b>Organizational forms for VE application practices</b>	Phase I	Phase II	Phase III	Phase IV
	Introducing	Partial	Total	Stabilized
Individuals	22.2	21.2	4.5	14.5
Specific functional divisions	50.0	60.0	34.1	29.0
Taskforce organizations	22.2	35.0	77.3	79.0
<b>VE Promotion</b>				
Specific functional divisions	22.2	52.5	22.7	17.7
Company-wide committees	22.2	23.8	45.5	41.9
Full-time exclusive units	22.2	12.5	27.3	33.9

[Respondents percentage]

**Aspect #4: Management for VE utilization**

VE teams must develop alternative proposals to have all problems solved so that expected results can be realized. Such efforts, however, would be of no avail if done without any clearly stated company policies and specific action plans as such. Thus, effective VE management is essential.

Management factors to be analyzed here are as follows:

- Top management policies for VE application
- Target-setting and kinds of targets
- Specific planning for VE application
- Evaluation of actual accomplishments

As for Top management policies, highest ratios were seen under “Needs expressed but no clear policies” at Phases I and II, while “Policies clarified and division heads informed” were at Phases III and IV. Ratios under both “Policies clarified and division heads informed” and “Policies clarified and personnel informed” reflect the same rising tendency from Phase I on to Phase IV meaning Phase II reflected higher ratio than I, Phase III was higher than II, and successively in this way.

As for Target-setting, ratios were rather even between “Established” and “Not established” at Phases I and II, while “Established” ratios at Phases III and IV were much higher than those at Phases I and II. Thus, it can be said that VE targets are being periodically established at these later two phases.

As for Kinds of targets, ratio at Phase I was highest under “Number of subjects,” the ratios at Phases II, III and IV were highest under “Actual accomplishments”, followed by “Potential accomplishments”. Ratios under “Actual accomplishments” kept rising from Phase I on to Phase IV.

As for VE planning, ratios at Phases I and II were highest under “Made as deemed necessary within the division” while the ratios at Phases III and IV were highest under “Plans are matched with corporate business plans”. The ratios of these responses were getting higher as the phases went forward.

As for Evaluation of accomplishments, ratios at Phases I and II are highest under “Up to concerned division heads”, while ratios at Phases III and IV were very high under “Formal criteria and procedure formulated”.

**Table 4: Aspects of VA Management**

<b>Top management policies</b>	Phase I	Phase II	Phase III	Phase IV
Needs expressed but no clear policies	77.8	60.0	36.4	16.1
Policies clarified and division heads well informed	11.1	23.8	43.2	51.6
Policies clarified and all personnel well informed	5.6	8.8	18.2	29.0
<b>Target-setting</b>				
Established periodically	50.0	58.8	88.6	91.9
Not established periodically	50.0	40.0	11.4	8.1
<b>Kinds of targets</b>				
Number of subjects to be studied	27.8	15.0	22.7	11.3
Potential accomplishments by VE alternatives	22.2	21.3	45.5	33.9
Actual accomplishments by VE alternatives	11.1	28.8	56.8	62.9
<b>VE planning</b>				
Not specifically formulated	33.3	7.5	2.3	1.6
Made as deemed necessary within the division	50.0	53.8	15.9	16.1
Plans are matched with corporate business plans	0	12.5	43.2	66.1
<b>Evaluating accomplishments</b>				
Not regularly scheduled	38.9	17.5	9.1	0
Up to concerned division heads	38.9	51.3	18.2	24.2
Formal criteria and procedures established	16.7	30.0	72.7	75.8

[Respondents' multiple percentages]

**Aspect #5: Activities essential to effective VE promotion**

Given a set of 15 items as "Essential activities for VE promotion", each respondent had been asked to pick up "five most important items" of his or her choice among the

fifteen.

The analysis of the data revealed the following five items most frequently selected by them:

1. Collecting and providing information and rendering

- technical support
- 2. Conducting VE training
- 3. Diffusing the VE concepts throughout the company
- 4. Applying VE methodologies to new products and new businesses

- 5. Making corporate-wide plans for VE application

Table 5 reflects the respondents' multiple percentage data at each of the four phases of VE application, selected as top five items.

**Table 5: Importance of VE emphases**

	Phase I	Phase II	Phase III	Phase IV
Information and technical support	61.1	57.5	47.7	74.2
VE training	77.8	51.3	54.5	51.6
Diffusion of VE concepts	66.7	47.5	47.7	27.4
VE application to new products/businesses	16.7	35.0	47.7	54.8
Corporate-wide VE plans	16.7	33.8	50.0	46.8

[Respondents' multiple percentages]

As for VE emphasis, the ratio is highest at Phase I under "VE training", followed by "Diffusion of VE concepts". At phase II, higher ratios stand for "Information and technical support" and "VE training". At Phase III, higher ratios are shown under "VE training" and "VE application to new products/businesses". Lastly at Phase IV, the highest ratio is shown under "Information and technical support", followed by "New products and businesses".

Although the notion of "Diffusion of VE concepts" goes with a high ratio at Phase I, its ratio at Phase IV is

notably low.

As for Activities essential to VE promotion, variances in ratios are seen throughout the four phases.

**SUMMARY OF THE RESULT OF ANALAYSIS**

The result of survey analysis reflects different characteristics at each of the four phases of VE application. Largely, the most notable contrast is shown between the first two phases and the last two. Below is a summary illustrating how they are contrasted with each other:

<b>Survey aspect</b>	<b>Phase I and Phase II</b>	<b>Phase III and Phase IV</b>
VE emphasis shifting	No change, sticking to improvement of existing products	Changing toward the upstream product life cycle
Organization for VE application	Specific functional division	Taskforce
Organization for VE promotion	Specific functional division	Company-wide committee and full-time exclusive VE units
Top management policy for VE application	Needs are expressed but not policies clarified	Policies are clarified to all division heads and all personnel

<b>Survey aspect</b>	<b>Phase I and Phase II</b>	<b>Phase III and Phase IV</b>
Kinds of target	Number of subjects to be studied actual VE accomplishments	Actual VE accomplishments potential accomplishments
Planning for VE application	As necessary within the division	Matched with corporate business plans
Evaluation of VE accomplishments	Up to concerned division	Formal criteria and procedures

These varied characteristics at each phase of VE application seem to derive different scale and quality of VE accomplishments.

The data largely reflect that a steady status of VE accomplishments can be realized when VE application is at its Total and Stabilized application phases, whereas a fluctuating status of VE accomplishments is seen at its Introductory and Partial application phases.

#### CONCLUDING REMARKS

Based on the result of 1996 survey of Japanese companies, this paper has identified characteristics of their VE application, as reflected in each of its phases from initial introduction through stabilized use. The result reveals that there are distinctive differences between the trend in the earlier two phases (Introductory and Partial

application) as contrasted to the last two phases (Total and Stabilized application) when looked through such angles as Top management policies, Types of VE-practicing organizations, areas of VE application and Styles of VE management. Such variations seem to be reflected in the ways leading to VE accomplishments. Phase-to-phase variances are also seen in what are considered to be essential to VE promotion. These variances indicate different types of issues to be challenged for solutions.

The data from survey analysis seems to imply that a Stabilized state of VE application must by all means realized. However, such an effort may be very difficult to be accomplished in one day. Conclusively, it is recommendable that VE be kept promoted at each phase of its application with a standing goal always set at the Stabilized level, as clarified in this paper.