

CHAPTER 6
EFFECTS OF BEHAVIORAL FACTORS IN TARGET COST
ALLOCATION ON TARGET COST ACHIEVEMENT:
A SURVEY RESEARCH

After determining a product's target cost, the next major step is to decompose that target cost down to the function, component and part level so that the purchase prices of those items can be determined. In target cost allocation process, to attain the per-unit target cost of a product, the designers initially break down this target cost into functional elements assigned to corresponding design departments which are again broken into parts elements. In target costing, the product designers carefully design a product taking into account information about alternative methods to achieve the required functions of products and its parts and selecting the best methods to attain the lowest costs. If the target cost cannot be achieved, i.e. if the estimated cost is greater than the target cost, the cost-reduction activities will be repeated by investigating alternative designs, until the estimated cost becomes, at most, equal to the target cost. The cost-reduction activities in the real world are essentially based on ideas created by designers. The idea generation capability or cost-reduction performance of product designers may vary since different levels of participation and performance-evaluation methods will motivate them in different ways. This paper will investigate how the participation in target cost setting and controllability in performance-evaluation in target costing system affect the target cost achievement. The main purpose of this chapter is to validate the results of a previously conducted laboratory experiment using a field-study approach.

In this study, an attempt has been undertaken to see:

1. whether the differences in the different levels of participation have any impact on target cost achievement,
2. whether the differences in the two types of performance evaluation measures have any impact on target cost achievement,
3. whether the interactions between the different levels participation and performance evaluation methods have any impact on target cost achievement,
4. whether there is any analogy between the findings of the laboratory experiment on "Target Costing Performance based on Alternative Participation and Evaluation Methods" (Monden, Akter and Kubo, 1997) and the findings of the present questionnaire survey, in order to check the resemblance of the real world situation with the laboratory experiment.

6.1. Research Method

The method used in this study is a survey questionnaire administered to the accounting managers of 518 companies of four major industries listed in Tokyo Stock Exchange Part I, which include machinery, electronics, transportation and precision equipment. One hundred and forty six companies replied within the deadline of 10th of November 1996, among which three responses could not be used due to incomplete nature of their answers. The response rate is 28.19% and the effective response rate is 27.61%. Three variables measured by the questionnaire are considered for this analysis: target cost achievement level, participation of product's designers in allocating product's target cost and performance evaluation measures of products designers. A short description of the variables used in this study is given below:

Target cost achievement level (TCAL): The respondents were given five options to choose one showing at what level their company can achieve the target cost of the product. The higher the level of target cost achievement, the greater will be the cost-reduction performance. For the purpose of analysis, the five-point scale is converted into three.

Participation (PAR): It is measured by three items asking the respondents to indicate their state of participation in allocating the target cost of a product into parts elements. The levels of participation are full-participation of product designers (*P*), joint participation with product manager (*JP*) and non-participation (*NP*) of product designers.

Performance evaluation measures (PE): It is coded into two categories, evaluation by group performance (uncontrollable-item information, *UC*) and evaluation by individual performance (controllable-item information, *C*).

The effects of product designer's participation and their performance evaluation measures on the target cost achievement is evaluated in the present empirical study through a variation of logistic regression of ordinal categorical variables called proportional-odds model. Target cost achievement level, the *TCAL*, a surrogate variable for the cost-reduction performance, is the response variable of the model and *PAR* and *PE* will be used as explanatory variables. We measure how the *PAR* and *PE* influence the *TCAL*.

The statistical analyses have been conducted twice. In the first phase of analyses, we divided *PAR* into three categories. In the second phase of analyses, we divided *PAR* into two categories. Here in categorizing *PAR*, we assume that the dominance of the product managers is such that the state of joint-participation is approximately equivalent to the state of non-participation, thus converting three

categories into two by combining *JP* and *NP*. The reason of conducting the analyses for twice is to see whether results before categorization differs from that after categorization and to find the analogy between the laboratory experiment and the real world situation.

6.2. Previous Literature and Theoretical Development

An indispensable condition leading to the success of target costing is that each employee should participate in the cost-reduction activity (Sakurai and Scarbrough, 1997). The question of the conditions under which participation in target cost allocation will lead to desirable cost-reduction performance is a matter of concern to researchers for two reasons: (1) participation is widely believed to provide a managerial approach to improving performance of product designers and (2) the evidence which exists in the literature of budgetary participation is in considerable conflict. This question provided the motivation for a laboratory experiment reported elsewhere (Monden, Akter and Kubo, 1997) of the role of controllability in performance evaluation information as a moderator of the relationship between participation in target cost setting and target cost achievement. One of the main purposes of the present study is to validate the results of the laboratory experiment using a field study approach.

The hypothesized moderating effects of performance evaluations measures (controllable and uncontrollable information) are based on the notion of congruence between the information structure (through which information relating to target performance, actual performance, and deviations therein is communicated to the participants), and the 'behavioral' processes (consist of psychological factors such as

perceptions, attitudes, beliefs, values and cognition emanating from the degree of participation by participants).

To see what is involved in this interaction, it may be useful to consider first the separate impact of two independent variables. From the evidence in budgeting and psychology literature, it seems reasonable to postulate that high employee performance emerges when their performance evaluation measures are confined only to controllable items, and the inclusion of uncontrollable items in the performance evaluation measures will cause their performance to decline (Ansari, 1976; Argyris, 1952; Stedry, 1960; Hofstede, 1967; Becker and Green, 1962; Cook, 1967; Ronen, 1974).

Turning now to the behavioral factors, there is sufficient evidence in the previous literature to conclude that participation is positively and significantly associated with performance (Bass and Leavitt, 1963; Kenis, 1979). Even some contradictory results are also found, where participation is negatively associated with performance (Bryan and Locke, 1967; Stedry, 1960). Some researchers found no direct correlation between participation and improved productivity; some also found that while participation enhances satisfaction or morale, it does not necessarily increase productivity (Cherrington and Cherrington, 1973; Coch and French, 1948; Vroom, 1960).

Regarding interaction effects of participation and controllability in performance evaluation information, several studies in psychology and behavioral accounting literature indicate that individuals whose performance is evaluated by controllable information, prefer and perform better in the task situations, over which they have control, that is, when their participation is high. Conversely, under conditions of low participation, the individuals prefer and perform better when their performance is evaluated by uncontrollable information (Cherrington and Cherrington, 1973; Vroom,

1960; Cromwell et al., 1961; Houston, 1972; Brownel, 1982; Ansari, 1976, Monden, Akter and Kubo, 1997, Rotter and Mulry, 1965; Watson and Baumal, 1967). The parallelism between controllability in performance evaluation information and participation in target cost allocation derives from the view that under the condition of high participation, an individual has substantial control over the target setting which often forms the basis for performance evaluation, while low participation in target cost allocation, denies the individual such control.

The results of a laboratory experiment (Monden, Akter and Kubo, 1997), designed to test this question, provided strong confirmation of the predicted individual as well as interactive effects of participation in target cost allocation and controllability in performance evaluation information for the subjects of 120 accounting students. In that laboratory experiment, the theories of leadership style and performance evaluation information of behavioral accounting research were applied to the target costing process to observe the effects of participation and performance evaluation factors on the cost reduction performance of product designers. Expectancy theory (Porter and Lawler, 1967; House, 1971; and Ronen and Livingstone, 1975) was used to explain the separate effects of participation and performance-evaluation information on motivation or cost-reduction performance, while, cognitive dissonance theory (Festinger, 1957) was used to present the interaction effect between participation and performance evaluation information. Verification of the separate effects showed that target cost achievement got better with high participation of product designers and performance evaluation by controllable information. Interaction effects revealed that when the product designers are evaluated by controllable information, perform better under conditions of high participation. By contrast, when the product designers are

evaluated by uncontrollable information, perform better under conditions of low participation.

The ability to generate valid causal inferences is the major strength of experimental designs. However, a lack of generalizability or external validity is their most typical weakness. It may not be assured that the effects of alternative experimental treatments on some dependent variable is a true replica of the real world process it is intended to present. On the contrary, a field setting, while far weaker in its ability to generate causal statements, can effectively address the generalizability issue. Together, experimental and field approaches are mutually reinforcing (Brownell, 1982).

The hypotheses tested for verifying the separate as well as joint effects of participation and performance evaluation measures in target cost allocation process in previous experimental study are also tested in this study. Hypotheses 6-1 and 6-2 are developed based on expectancy theory while hypotheses 6-3 and 6-4 are developed based on cognitive dissonance theory. These can be stated as follows:

Hypothesis 6-1: The target cost achievement of the companies where the designers can participate in the target cost setting process will be higher than that of the companies where the designers cannot participate.

Performance of nonparticipative type < performance of participative type

Hypothesis 6-2: Where the performance of the designers is evaluated by their individual performance, the target cost achievement of those companies will be higher than the companies where the performance of the designers is evaluated by their group performance. Therefore,

Performance based on uncontrollable item information < performance based on controllable item information

Due to the interaction of three levels of participation factor (Participation, Joint participation, and Nonparticipation) and two levels of performance evaluation factor (Controllable information and Uncontrollable information), different types of cognitive elements will be created which will produce dissonance or consonance of different magnitudes. Table 6.1 may be used to explain the existence of dissonance or consonance within each of the types when *PAR* has three levels. Table 6.2 depicts the same situation but here joint-participation is combined with nonparticipation.

Table 6-1. Consonance and dissonance when *PAR* is categorized into three levels

Factors Relating to Participation \ Factors Relating to Performance Evaluation	Nonparticipation	Joint Participation	Participation
Group Performance	<u>Type 1</u> Dissonance tends to consonance	<u>Type 5*</u> Dissonance tends to consonance	<u>Type 2</u> Dissonance
Individual Performance	<u>Type 3</u> Dissonance	<u>Type 6*</u> Dissonance	<u>Type 4</u> Consonance

*In determining the degree of dissonance, it is assumed that the state of joint participation is approximately equal to the state of nonparticipation

Table 6-2. Consonance and dissonance when *PAR* is categorized into two levels

		Factors Relating to Participation	
		Nonparticipation*	Participation
Factors Relating to Performance Evaluation	Uncontrollable Information	<u>Type 1</u> Dissonance tends to consonance	<u>Type 2</u> Dissonance
Measures	Controllable Information	<u>Type 3</u> Dissonance	<u>Type 4</u> Consonance

*Joint participation is considered as equivalent to the nonparticipation and therefore combined with nonparticipation

The interaction between nonparticipative target setting and evaluation by uncontrollable information (Type 1) could be interpreted as dissonance leading to a consonance situation. In this case, each individual designer cannot know the validity of his/her actual performance. Since individual performances are not reported, designers

may think that they are being held accountable for someone else's fault. Because of this psychological anxiety, there is a possibility of the creation of dissonance in the minds of the designers. Since the designers are not allowed to participate in target cost setting, they do not know the accuracy of target and may blindly accept the target. They cannot evaluate the degree of rationality of target given from the upper level. So whenever there is any dissonance, they will be motivated to eliminate it. Therefore, they will be inclined to trust the target value and evaluation given by the project manager as valid. Thus, discomfort emanating from the interaction of nonparticipative target setting and evaluation by uncontrollable information will no longer exist. They will give up any complaint and will have no stress in their minds. The magnitude of dissonance is lower in case of Type 1 and the subordinates can arrive at a congruent state.

The interaction between participative target setting and evaluation by controllable information (Type 4) will create no dissonance at all because there is no mismatch or conflict between the elements of these two factors. Therefore, Type 1 and Type 4 will be under consonance situation in terms of participation and evaluation factors, while Type 3 and Type 2 will be in dissonance situation as both of them have one element which conflicts with the other. However, the degree of consonance in Type 1 will be much smaller than that of Type 4. In a superior-subordinate relationship, it is more likely that the superior will dominate over the subordinates and the degree of domination will determine whether the state of joint participation will be closer to nonparticipation or to participation. If the state of joint participation is closer to nonparticipation, then the designers of Type 5 will be able to reduce dissonance like Type 1 but may not be in the same degree which will be reflected in their performance.

Again, if joint participation is equivalent to nonparticipation, the performance of the designers of Type 6 will be lower like Types 2 or 3.

The relationship between major types—Types 1, 4 and 5 (supportive type) and Types 2, 3 and 6 (nonsupportive type) in terms of consonance and dissonance situation is similar to that between the supportive group and the nonsupportive group stated by Ansari (1976). In this study as well as in the laboratory experiment, supportive types are defined as the types in which the subordinate staff or the parts designers: (1) will not feel any conflicts against the product manager's behavior, or (2) can find some mechanism to resolve the cognitive dissonance without affecting the achievement of target cost. We propose that if the Types have failed to reduce dissonance and still stay in mental frustration and stress, their performance will be lower than the Types who can reduce the dissonance and have no frustration. Based on this proposition, hypotheses 6-3 and 6-4 are formulated.

Hypothesis 6-3: The performance of the supportive type will be higher than that of the nonsupportive type. In other words,

Performance of Types 1, 4 and 5 > performance of Types 2, 3 and 6

Or, Performance of Types 1 and 4 > performance of Types 2 and 3

Hypothesis 6-4: If in a company the power of determining part's target cost lies with the product designers and their performance is evaluated by the actual cost reduction performance of the parts for which he/she is responsible, the target cost achievement of that company will be the highest in comparison to all others. The order of performance among various types can be expected as follows:

Performance of Type 2 < Performance of < Performance of < Performance of
or Type 3 or Type 6 Type 5 Type 1 Type 4

Or,

Performance of Type 2 < Performance of Type 1 < Performance of Type 4
or Type 3

6.3. Results and Discussion

6.3.1. Pairwise Relationship

The results of the separate impacts as explained in hypotheses 6-1 and 6-2 are presented in Table 6-3.

Table 6-3. Single effects of *PAR* and *PE* on *TCAL* as explained in hypotheses 6-1 and 6-2

Effect parameters	Reg. Coeff.	Standard Error	t value	Probability
<u>Hypothesis 6-1</u>				
<i>PAR</i> (when divided into 3 categories):				
<i>JP</i>	0.124	0.322	0.37	n.s.
<i>P</i>	-0.405	0.366	-1.11	< 0.12
<i>PAR</i> (when divided into 2 categories):				
<i>P</i>	-0.461	0.336	-1.37	< 0.10
<u>Hypothesis 6-2</u>				
<i>PE</i> :				
<i>C</i>	0.097	0.337	0.29	n.s.

While analyzing the effect of *PAR* on *TCAL*, it is observed that cost reduction performance gets better when only the product designers participate in allocating the product's target cost into parts. Thus, hypothesis 6-1 is verified as valid by the results. Both the effect and statistical significance of *P* improve when *PAR* is categorized into two rather than three. The full-participation of the product designers in target cost allocation process renders higher target cost achievement. We can explain this finding with the help of expectancy theory. Conceivably, mutual adherence among the group members was improved by participation. Therefore, participative condition improved mental satisfaction through performance. The mental satisfaction associated with work performance will increase if the designers have influence in target setting and can

exercise control. Also, mental satisfaction associated with effort or action will be improved depending on how the product designers are attached to each other. The sample companies are quite similar in their target cost setting activities, so the mental satisfaction associated with effort or action will not vary as a participation effect which means that there is no difference among the designers of different companies in attaining the target cost. The designers will be motivated to participate if they are satisfied with monetary or promotional rewards contingent upon successful task performance. The positive effect of participative condition on target cost achievement is consistent with that of the previously reported experimental phase.

While authenticating hypothesis 6-2, no significant association could be established between performance evaluation and target cost achievement. Perhaps, our survey data is not sufficient to establish a significant relation between performance evaluation measures and target cost achievement. However, in the experimental phase, performance evaluation by individual performance was found the most dominating variable having the strongest effect on performance.

6.3.2. Combination Effects of Participation and Performance Evaluation Factors

Tables 6-4 and 6-5 present the results of the interaction effects of participation and performance evaluation variables as stated in hypotheses 6-4 and 6-5. Table 6-4 shows the effects when *PAR* is categorized into three levels, while Table 6-5 shows the effects when *PAR* is categorized into two levels.

Table 6-4. Interaction effects of *PAR* (three categories) and *PE* on *TCAL*

Combination Baseline	NP×UC (Type 1)	JP×UC (Type 5)	P×UC (Type 2)	NP×C (Type 3)	JP×C (Type 6)	P×C (Type 4)
NP×UC (Type 1)	-	0.192 0.41	0.517 (0.98)	0.298 (0.55)	1.354 (2.26)	-0.887 (-1.34)
JP×UC (Type 5)	-0.192 (-0.41)	-	0.325 (0.60)	0.107 (0.19)	1.162 (1.90)	-1.07 (-1.60) ^c
P×UC (Type 2)	-0.517 (-0.98)	-0.325 (-0.60)	-	-0.219 (-0.36)	0.837 (1.28)	-1.403 (-1.95)
NP×C (Type 3)	-0.298 (-0.55)	-0.107 (-0.191)	0.219 (0.36)	-	1.055 (1.58)	-1.185 (-1.62)
JP×C (Type 6)	-1.354 (-2.26)	-1.162 (-1.90)	-0.837 (-1.28)	-1.055 (-1.58)	-	-2.240 (-2.89)
P×C (Type 4)	0.887 (1.34)	1.078 (1.60)	1.403 (1.95)	1.185 (1.62)	2.240 (2.89)	-

Figure in parenthesis represents t value.

Non-bracketed figure represents regression coefficient.

^a Significant at $p < 0.025$

^b Significant at $p < 0.05$

^c Significant at $p < 0.10$

Table 6-5. Interaction effects of *PAR* (two categories) and *PE* on *TCAL*

Combination Baseline	NP × UC (Type 1)	NP × C (Type 2)	P × UC (Type 3)	P × C (Type 4)
NP × UC (Type 1)	-	0.666 (1.66) ^c	0.425 (0.89)	-0.971 (-1.56) ^c
NP × C (Type 2)	-0.666 (-1.66) ^c	-	-0.241 (-0.46)	-1.638 (-2.45) ^a
P × UC (Type 3)	-0.425 (-0.89)	0.241 (0.46)	-	-1.397 (-1.95) ^b
P × C (Type 4)	0.971 (1.56) ^c	1.638 (2.45) ^a	1.397 (1.95) ^b	-

Figure in parenthesis represents t value.

Non-bracketed figure represents regression coefficient.

^a Significant at $p < 0.025$

^b Significant at $p < 0.05$

^c Significant at $p < 0.10$

From the results presented in Tables 6-4 and 6-5, it is evident that hypotheses 6-4 and 6-5 are verified as valid by the results. Table 6-4 shows that among all the types, the contribution of Type 4 is relatively the highest since it is the only one combination which is significantly improving the *TCAL* more than any other combinations (column 6). In performance order, the second position is occupied by Type 1. It is seen in column 2 of Table 6-4 that Type 1 is performing better than Types 2, 3, 5 and 6 while, it is inferior to Type 4. Type 5 takes the third place in performance

ranking, as its performance is better than Types 2, 3 and 6 while, it is lower than Types 4 and 1 (column 3). Type 3 takes the fourth place in performance order as its performance is better than Types 2 and 6 while, it is lower than Types 4, 1 and 5 (column 5). The fifth position is occupied by Type 2 that is performing better than Type 6 but worse than Types 4, 1, 5 and 3 (column 4). Finally, among six types or combinations, Type 6 occupies the last position in the performance order. Its performance is lower than any other combinations (column 6). The performance order based on actual results obtained can be presented in the following way,

Performance > Performance > Performance > Performance> Performance> Performance
of Type 4 of Type 1 of Type 5 of Type 3 of Type 2 of Type 6

Table 6-5 depicts that among all the types, the contribution of Type 4 is the highest since it is the only one combination which is significantly improving the *TCAL* more than any other combinations (column 5). In performance order, the second position is occupied by Type 1. It is seen in column 2 of Table 6-5 that Type 1 is performing better than Types 2 and 3, while, it is inferior to Type 4. Type 3 takes the third place in performance ranking as its performance is better than Type 2 while, it is lower than Types 4 and 1 (column 4). Finally, among four types or combinations, Type 2 occupies the last position in the performance order. Its performance is lower than any other combinations (column 3). The performance order based on actual results obtained can be presented in the following way,

Type 4 > Type 1 > Type 3 > Type 2

These performance orders are consistent with that predicted by hypothesis 6-5. According to hypothesis 6-4, Types 4, 1 and 5 belong to the supportive type while Types 2, 3 and 6 belong to the non-supportive type. It is clear that the performance of

supportive type (Types 4, 1 and 5) is better than that of nonsupportive type (Types 2, 3 and 6) which gives support to accept hypothesis 6-4. Figure 6-1 displays the findings of this study.

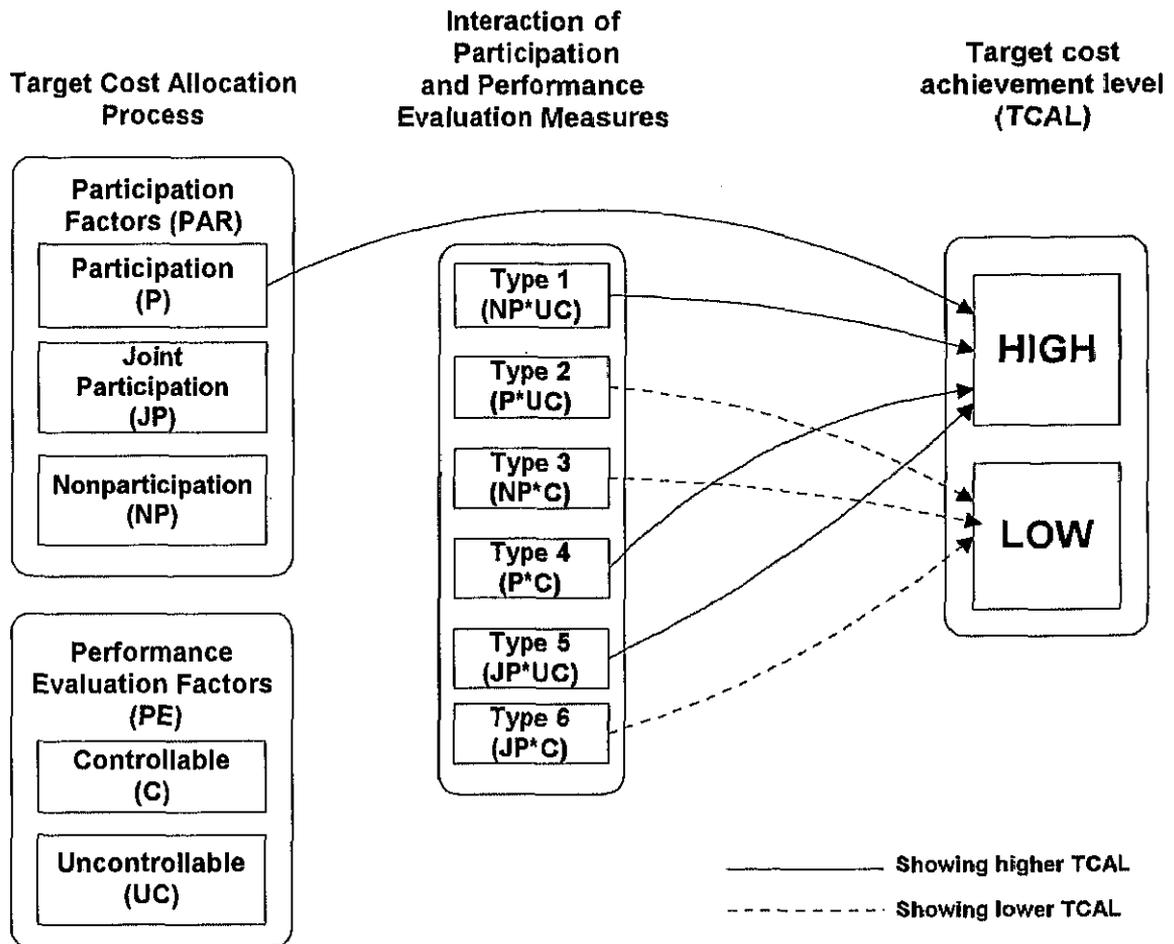


Figure 6-1. Individual and interaction effects of the variables in target cost allocation process

The results of this part of survey phase of the research program can be viewed as consistent with those of the previously reported experimental phase excepting the unexpectedly highly performance of Group 3 in the experiment. To explain the reasons for actual results obtained from the interaction of participation and performance evaluation, the relative influence of the constituents of the interactive factors must be elucidated carefully. Since there is no mismatch and also no conflict between the cognition of participative target setting and evaluation by controllable information, the

interaction of these two elements will create consonance and make the target cost achievement of Type 4 the highest. In Type 1, the designers cannot participate in the target cost setting process and has limited information relating only to group's performance. The designers can reduce their dissonance and by blaming the information structure for not reporting their true performance, they can reach a congruent state. Further, they have nothing to do with the irrationality and tightness of the target, since the target is imposed from the upper level. Considering these cognitive elements, as soon as any dissonance arises, they will try to reduce it on the ground that they should not be held accountable for the defects of built-in organization structures. In Type 5, a designer participates jointly with the product designer in the target cost setting process and has limited information only relating to the group performance, not the individual performance. The degree of the product manager's dominance may make the state of joint participation near to nonparticipation and if any conflict or dissonance arises among the designers of Type 5, they will try to reduce it and tend to reach at a consonant state. However, they will not be successful like Type 1 in reducing dissonance that will make their performance order next to Type 1.

Types 2, 3 and 6 will be in a dissonant situation as they have one element that *conflicts with the other*. The designers of Type 3 are evaluated by the individual performance. At the same time, they are not allowed to participate in the target setting process and know nothing about the target based on which they will be evaluated. They will not find any reason to justify their nonparticipation, which may cause their performance to decline. Again, incongruity between nonparticipation and evaluation by controllable information will create dissonance and lead to the lower performance. In Type 2, all the designers can participate in the target cost setting process but simultaneously they are evaluated by group performance and are not rewarded for their

personal achievements. Through participation they can judge the rationality and tightness of target and can compare their self-evaluation with the evaluation by the product manager. The discomfort emanating from the interaction of these two nonfitting relations will make the magnitude of their dissonance high, and they may not find any genuine ground for reducing dissonance that may make their performance worse.

Among all Types, the performance of Type 6, where the performance of the designers is evaluated by the individual performance and they jointly participate with the product designers in the target cost setting process, is the worst. The reason for this may be the following: the product designers interact with the product manager in setting target cost. In the interaction process, they come to know the degree of rigidity of the product manager in setting target, which they cannot know, either from the nonparticipation or from their full participation. They can compare the degree of strictness of the product manager in setting target and can see its resultant effect on their individual performance. They may feel that they could do something with the irrationality and tightness of target through their joint participation, but failed. These types of psychological anxieties may make their performance to decline. The results of the laboratory experiment is a bit different from the result of this empirical research where the performance of Group 3 (which is equivalent to Type 3 of the present empirical research) was unexpectedly high. In the laboratory experiment, participation factor consisted of two elements, participation and nonparticipation and there was no joint participation.

The interaction of participation and performance evaluation reveals that the congruity between participation and evaluation by controllable information (i.e. Type 4) improves the cost reduction performance the most among all combinations. The

second best performer is Type 1, which represents the congruence between nonparticipation and evaluation by uncontrollable information. Therefore, it is evident that in the target cost allocation process, adopting either a bottom-up approach or a top-down approach will provide higher target cost achievement and it is evident that the bottom-up approach is more effective in this respect.

From the above explanation, the following practical suggestion can be proposed: first, when the designers are evaluated by controllable information only, then in order to achieve better performance, they should be able to participate in setting target cost. Second, when the designers are evaluated by the information that includes uncontrollable factors, then they should not be allowed to participate in target cost setting process; rather, they had better be given the target from the top i.e. the product manager in order to achieve better performance. This second proposition is one of the most remarkable findings of this empirical research as well as of the laboratory experiment.

6.4. Conclusion

The results of this field study are generally consistent with those from a previous laboratory experiment. The direct or unmoderated effect of participation reveals that higher target cost achievement generates from the wide participation of product designers in decomposing the product-level target cost into parts-level, which essentially represents the effectiveness of bottom-up decision process in target cost allocation. However, participation effect is much weaker in the survey phase. This result is in consistent with that of the experimental phase. However, the direct effect of the controllable item information (which had the strongest effect in experimental

phase) has found to be insignificant in the survey phase. The interaction between participation and performance evaluation factors indicates that the combination of participation-controllable information is more effective in reducing cost than the combination of nonparticipation-uncontrollable information. It connotes that following either a bottom-up or a top-down approach contributes to higher target cost achievement, however the effect of bottom-up approach is more significant. Like experimental phase, the use of the expectancy theory and cognitive dissonance theory has proved to be successful as these could formulate theory on target costing.

The focus on four major industries in drawing sample constitutes the ground for interpreting the results more liberally. The two phases of research program (experiment and survey) regarding target cost allocation process, have provided mutually supportive evidence of the need to recognize the existence of important moderating effect of performance evaluation measures on the relationship between participation and target cost achievement. The potential implications of these results are possibly most important in designing the managerial control system.

Further study is obviously needed to expand the understanding and awareness of other factors that complement design features of accounting system in target costing. Again, whether the results of this empirical study vary across the industries need to be analyzed.