

7.6 Significance of Thinking and Procedures for DTC using DTCN Method

7.6.1 Significance of Thinking and Procedures for DTC using DTCN Method

7.6.2 Conclusion

7.6.1 Significance of Thinking and Procedures for DTC Using DTCN Method

We have now finished the explanations on unit production cost using the way of thinking and procedures (DTCN/DTC method) of DTC. Based on this, the response to the discussions on conventional DTC stated in Chapter 6.1-3 will be summarized in Table 7.6-1. From this table, the application of this method (thinking and procedure) will further be extended to areas of management operation strategies to build various subjects and systems, including software and hardware.

The following state some significant points. They involve the methods indicated in the DTC way of thinking and procedures through the DTCN method for project management, excluding cost.

- (1) Conventional management technology (including project management) does not contain methods to fully extract factors and create procedures. This method allows you to do these things.
- (2) In the past, there was no method to comprehensively connect cost, technology, quality, and the schedule. This method does this.
- (3) The DTC way of thinking and procedures are a means of realization with creative thinking for the idea of standardization of MIL-STD-499A (Engineering Management), a standard of the US Department of Defense. MIL-STD-499A is considered to be the basic standard of request items to implement system engineering. Also, the same could be said for NASA's NBH-7121.4, Guideline for Planning (1972), the basics of system engineering.
- (4) An attempt to create information of differences brings about two comparative plans, assisting decision-making and the discovery of opinions in a broader sense. This will result in a mechanism that brings about creative management.
- (5) Information of differences and the PMD way of thinking will not only trigger action, but also goal-oriented thought.
- (6) The PMD method that settles the level of functional expression against the task will become a method

for bringing out thinking power to devise comparative activity plans.

(7) The DTC worksheet and its idea matrix column for design plan combinations will be a place where the following three can be carried out, based on a group's way of designing: i) concept and comparison, ii) structuring ways to realize the concept, and iii) comparison of concept combinations at same time.

(8) As you finish working on a certain level with DTC worksheet, you can lower the level and still use the DTC worksheet.

(9) The process of the DTC worksheet will be useful in helping newcomers, both new employees and those who transferred from other sections, to swiftly acclimatize to the design section.

(10) Combinations of A-approach and B-approach are practical ways of effectively proceeding the assignment within a limited time schedule.

(11) Data accumulation through K-Cards freely combines the cards according to the objectives. Hence, a broad purpose cost and price table becomes available. Moreover, because the cards can be recombined for different objectives, they will never become out-dated.

(12) Research on portion B of the cost-driving factor produces a clue to the ranking of the work items which focus the possibilities of lowering the cost.

7.6.2 Conclusion

Using the DTCN methodology, the idea of DTC that used to exist only as a concept is now a method to collect thoughts and take action, and a framework for management. Further improvement and development will be possible. In addition, its formulas and applications have brought about satisfactory results (the Japan Defense Agency, the National Space Development Agency, and private entities). These will bring well-balanced, comprehensive, new project management to expedite cost control.

DTC procedures differ depending on the target products and corporations involved. However, in all cases, from the beginning, it is important to draw a PMD and a steplist to fit the target products or corporation involved. After that, you will know from where and how to work on each project. (See Table 7.6-2.) As a result, you will soon see a change within the nature of the company.

<References>

1. Esaki, M. Maneejimento niokeru Ishikettei no Ichihouhou (One Method of Decision-making in Management). Proceedings for 28th All Japan Management Association, 1971: 69-75.
2. Esaki, M..A Method of Decision-making For Management (A Technique for Relationalized Decision of Behavior by Comparison). 4th International Conference on Production Research, August 1977: Print 3.10.
3. Esaki, M. Suteppurisuto Maneejimento no Houhou (Steplist Management Method). Proceedings of 9th Society of Japan Value Engineers,1976: 27-42.
4. Esaki, M. Steplist Management Method: A Creative Tool for Complex Management. Society of American Value Engineering, 1977.
5. Marchinski, Leonard J. Design-to-Cost at Work for Helicopter System. American Helicopter Society: 30th National Forum,1974.
6. Manufacturing Engineering Planning and Estimating Handbook. American Society of Tool and Mfg. Engineers.
7. The Japan Society for Aeronautical and Space Sciences. Aeronautical and Space Engineering Handbook, Tokyo (Maruzen, 1995).

Table 7.6-1 Questions in conventional DTC and answers to the questions

No	Questions in conventional DTC	Answer by thinking and its procedure for design to cost
1	How start DTC?	1.Use thinking and its procedure for Design to Cost. 2.Have the budget for Design to Cost. 3.Make DTC implementation plan with steplist and approve it.(Refer No.12)
2	How to decide the target cost and how to allocate target cost, reasonably?	1.Combine the possible condition method and equal cutting method. 2.Use WBS phasing theme to pick up the potential theme.
3	How to improve the vague procedure in VE for DTC	1.Proceed design work with identifying function. Up to the plan drawing phase,start with theme. When manufacturing drawing and production, start by looking the drawing or thing itself. 2.In order to identify the most appropriate expression of function, use PMD method.
4	How to combine the DTC activity with project schedule	1.Devide "P"-approach into "A"-approach. 2.Create the examining priority of DTC theme by using WBS phasing theme technique.
5	How to quickly and effectively create and select idea to meet each objective after the objectives have.	1.Develop PMD and identify the most appropriate expression of function. 2.When it is necessary, use NM-method to create the concrete image of objectives. 3.Understand the total structure of creation deployment, using the concept structure of FBS technique.
6	How to acculate up-to-date cost data for multiple use? Because the past cost table prepared by conventional method soon become obsolete.	1.Use K-card thinking and its system.
7	How to analyze the quantity and escalation effect in pricing data considering published indices.	1.Use K-card thinking and its system. 2.Analyze the data of actual price data in K-card system.(Refer Fig.7.5-1)
8	How to control the deviation of in cost estimates which vary as design progress.	1.Use grade of estimation. 2.Make at target cost allocation phase the verification procedure of cost estimation by considering the concept of grade of estimate.
9	How to change the emerging technique in design which is slightly different in the early stage of design and in the later stage of design.	1.In early stage of design, use the concept of FBS and WBS theme phasing technique to start thinking from laft side brain. 2.In later stage of design, use the concept of reducing cost driving factor and pre-design review meeting by looking at planed drawing to start the thinking from right side brain.
10	Can we improve the life cycle cost technique more easily?	1.Use DTC/LCC technique by information of difference.
11	How to create the effective and efficient WBS?	1.Use FBS technique.
12	Is it really necessary to have an incentive at any time?	1.The incentive is not practical when developing an entirely new thing. Because, it is entirely difficult to grasp the reasonable cost before the very beginning stage of the new thing development, it is entirely difficult to have the evaluation standard for incentive pay. 2.Give the budget to proceed DTC. So you can proceed DTC work, because by having DTCN/DTC thinking and its procedure already established by DTCN/DTC-methodology in this book, they can proceed DTC and make reasonable DTC activity report by using the given budget for DTC activities. 3.DTCN/DTC method is the effective method to improve the nature of company and accumulate the data, if it is forcibly proceeded. (Note In Japan , also, it is impossible to give the incentive pay, from the standpoint of account, budget, closing account law.)
13	What difference exist between DTC for unit production cost and DTC for development cost?	1.See the chapter 9 "Q & A for DTC of development cost by DTCN methodology"
14	How to proceed with MIL-STD-499A	1.Make implementation plan by using PMD, steplist to use PMD, steplist management, FBS technique, WBS theme phasing technique and root organizing method in the proect.

Table 7.6-2 Key factors in the success of Design to Cost (Government/Enterprise)

1. Proceed DTC by DTCN methodology.
2. Allocate a budget for DTC activities.
3. Make and approve an implementation plan, and a steplist.
4. Provide and agree on the basic contract of material transaction, which includes article 5 of reference 5.2-1 in this book, with the vendor.
Also, from the beginning stage of DTC, the people concerned with the DTC activity should agree that is the purchasing department. The only department to decide the selected things and the agreed on purchasing price with its purchasing conditions.
5. Provide a one room to accommodate the design team people, including purchasing, manufacturing, planning and quality control people, so that they can think creatively as a team.
6. Reach agreement between the contracting parties on the target cost.
7. Provide and agree on the cost verification procedure for each phase of development.
8. Find out the maximum feasible methods or ideas for purchasing materials and product at the lowest cost, and materialize these methods and ideas.