



Methodology

For Work Study of direct operations, VCS has developed & successfully tested, through more than 9 years of experience in management consulting, its 5 steps **REAMS** methodology:

Recognizing the products / services & processes

Examining the methods

Analysis of work & break-up into elements

Measurement & Computation of Work Content

Setting of Time Standards & Norms

Recognition is the first preparatory step wherein the Consultants, who come from outside the organization, try to get an overview of Company's Products/Services & Processes and develop a preliminary understanding of the People & Work Culture. It is done through visit(s) to Plant/Work Place, meeting(s) with key people and by study & analysis of Operation & Process Flow Charts. This period also provides an opportunity to give the insiders an overview of the Purpose & Methodology of Consultants' work.

Examining of Methods is an essential pre-requisite for an effective work-study program. Within the constraints of limited time, consultants use the techniques of structured analysis, critical examination and brain storming to



identify areas for obvious and low cost method improvements. Changes are formulated for improving effectiveness and efficiency of operations that will lead to better business performance on all facets of competitiveness, namely productivity, quality, delivery and flexibility.

The methods review may not be intended to be a full-fledged “Methods Study” and hence, consultants’ efforts may be limited to developing only such method improvements that can be implemented in short & medium term. Potential areas for further improvement, in the long term, are generally identified and documented. This step not only results in ideas for improvement of operations, but also leads to systematic compilation of records of the agreed methods and processes to be studied with detailed process parameters/standards clearly defined, understood & documented.

Analysis of work and breaking up each operation into work elements is the starting point for actual work-measurement, the core step in Work-study. This is done by experienced consultant(s) based on preliminary study / observations. While deciding the work elements, consultants interact and discuss with the concerned operations / process people to ensure that the start and end of each element is clearly defined and observable. While allowing manual and machine/computer work to be distinguished, repetitive and occasional work are separately recorded, thus enabling accurate assessment of pace of work to arrive at an objective measure of work.



Measurement and computation of work content involves studying various operations, already broken-up into work-elements, through one or more of the established Work Measurement Techniques of

- Micro Motion Study using Video Camera
- Time Study with Stop-Watch
- Production/Operations Study
- Work Sampling
- Analytical Estimation
- Equipment / Process Monitoring data analysis

The choice of work-measurement technique(s), method of recording / charting & analysis of work, such as right hand-left hand chart, man-machine chart, multiple-activity chart etc. and the computation of normal time is made, in accordance with well established principles of Industrial Engineering. It is done by the senior members of VCS team who have long & varied experience and possess valuable expertise in Industrial Engineering & General Management.

Setting Standards & Norms, which is the closing step of work-measurement cycle, is based primarily on Measured & Computed Normal Time. Allowances for Fatigue, Personal needs & Contingencies are taken into account as per industry/business/company practice and in conformity with guidelines of ILO (International Labour Organisation). Work restrictions due to Machines or other resources and / or special business environments are taken cognizance of while setting standards. Instead of merely setting



time standards by taking studies for each operation, which are specific only to observed operations for the existing

- Products / Services & Processes
- Work Methods & Practices
- Facilities & Workmen

and use only average values of limited number of operation cycles observed,

we at VCS go much beyond !

Using an Integrated Systems Approach, we selectively use Random Activity Sampling, Production / Operations Study and Regression Analysis for

- Validation of studies,
- Developing internal consistency,
- Improving accuracy of standards, and
- Building capability to develop synthetic standards through Interpolation / Extrapolation.

The last feature of setting time standards through regression analysis is particularly useful for ensuring internal consistency in time standards and for developing time standards for uncommon & infrequent products/services for which actual time studies may not have been taken. Normally, we prefer developing Linear Multiple-Regression model(s) from prior technical/job knowledge gained through experience sharing with the operations managers. The coefficient of determination (r^2) is normally 0.9 or above for the Linear Multiple-Regression models.

REAMS Methodology



During the course of the assignment, Non-productive Time Analysis is also carried out selectively to facilitate identification & correction of anomalies, deficiencies and problems of wastage especially for critical resources.

The Norms so established will, in future, form the basis of computing the capacity of each Process/WorkStation/Line and optimal manpower required for specified production / activity level. While the Work Content for each operation can be directly calculated from the Standards / Norms, these are to be suitably aggregated into individual jobs or job clusters as per company's policy on Work organisation in each area / group. Additional provision for excess capacity, for peak work load/premium service level, and reserve for leave & absenteeism will have to be made as per company's strategic outlook and policies.