
UNIT 11 NEW DEVELOPMENT / TECHNIQUES OF MANAGEMENT AND MANAGEMENT CONTROL

Objectives

The objectives of this unit are:

- to familiarise you with new techniques of management and management control;
- to familiarise you with the installation and implementation process of these techniques; and
- to make you aware of the impact of these techniques on management control.

Structure

- 11.1 Introduction
- 11.2 Total Quality Management (TQM)
- 11.3 Business Process Reengineering (BPR)
- 11.4 Enterprise Resource Planning (ERP)
- 11.5 Value Added Analysis
- 11.6 Programme and Performance Budgeting (PPB)
- 11.7 Agency Theory Framework
- 11.8 Management by Objective (MBO)
- 11.9 Activity Based Costing (ABC)
- 11.10 Summary
- 11.11 Self Assessment Questions
- 11.12 Further Readings

11.1 INTRODUCTION

Till late 1980's , most of the Japanese manufacturing products were quite unpopular in the west; so much so that they were rated unreliable and of extremely poor quality. However, this unpopularity and bad quality products took a complete U-turn around the year 1990. The Japanese goods, particularly in the field of electronics and automobile sectors created a revolution by the application of latest management principles. This could become possible due to post second world war restructuring of unions and institutions permitting innovations like just-in-time (JIT), value added management (VAM) and total quality management (TQM).

One may consider this as a paradox that famous management gurus of United States like W. Edwards Deming, Joseph Juran, Crosby and Feigen Baum of US were in the forefront in popularizing the concept of TQM as a process of continuous improvement, US corporations were not able to apply these principles in their factories due to strong labour union resistances, thus providing a golden opportunity to Japanese entrepreneurs to implement these ideas at their work places, particularly in the field of automobiles and electronics.

11.2 TOTAL QUALITY MANAGEMENT



In this section, we will consider an in-depth study of the implementation of the TQM process. A systematic process is adopted to identify and implement solutions to prioritize opportunities for improvement. The TQM approach highlights the need for customer oriented approach to management reporting, eliminating some of our more traditional reporting practices.

TQM seeks to increase customer satisfaction by finding the factors that limit performance. The practice of TQM in a manufacturing environment has produced tangible improvements in efficiency and profitability as a result of many small improvements.

On the shop-floor, quality concepts have been based around the involvement of employees and an approach according to which each worker sees the next person on the assembly line as their customer. The application of quality concepts to service areas require a similar approach, necessitating a focus on customer requirement. The customers' are the receivers of a product' whose satisfaction' is determined by the usefulness of the product.

There is a danger of viewing TQM in terms of statistical processes and control charts. It is much more than this. Quality is not some vague utopian ideal associated with goodness; it can be seen as requiring that we conform to very specific performance requirements. Close enough is not good enough in this respect. The cost of quality is the monetary impact of a failure to conform, a measurable characteristic which can be reduced through a system of prevention in much the same way as safety standards are implemented.

In a manufacturing environment the cost of quality might be viewed as the sum of the costs associated with scrap, reworks, warranty claims and inspection expenses. The same costs.

it is generally believed that TQM is exclusively meant for manufacturing sector. But the reality is that this concept is of universal applicability and can be applied very comfortably in service sector as well. Let us first understand what is Quality?

A Quality product or a service is the one which has the following attributes:

- Systematic
- Conformity
- Zero defects
- Cost saving
- Customer satisfaction
- Safety and-reliability

Before proceeding further let us define some of the terms related to the quality aspects. Some of the definitions are taken from ISO 9000 series and ISO 8403.

- 1) **Quality policy:** The overall Quality intentions and directions of an organization as regards quality, as formally expressed by management.
- 2) **Quality management:** That aspect of the overall management function that determines and implements the Quality policy.
- 3) **Quality system:** The organizational structure, responsibilities, procedures, processes and resources for implementing quality management.



- 4) **Quality control:** The operational techniques and activities that are used to fulfill requirement for Quality.
- 5) **Quality assurance:** All those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for Quality.
- 6) **Product and Service Quality** (Feigenbaum 1983):

"The total composite product and service characteristics of marketing, engineering, manufacture and maintenance through which the product and service in use will meet the expectations of the customer."

Karinne Prytz (1995) defines, "Total Quality Management is the collection of all technical, administrative, creative and social activities in the entire company. TQM aims to create a basis for continuous improvements in all processes and products to satisfy all customer demands, both the specified and unspecified ones. It will lead to Total Quality which is the sign of the ideal production system where all activities are performed right the first time and all times."

Total Quality Management (TQM) Comprises three main activities (Imai, 1986)

- maintenance of Quality
- quality improvement
- quality renewal

The relationship between these three activities is depicted in figure 11.1

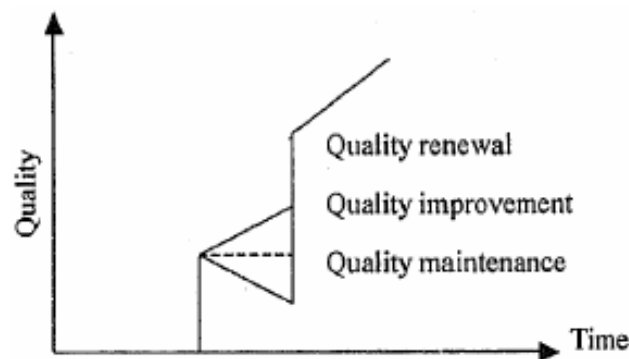


Fig. 11.1: Main Task of TQM

Total Quality Management Approach

The total quality management approach may constitute of three parts which are discussed below:

- a) **Responsibility for quality:** The traditional view about quality is that, quality problem arises on factory floor and workers and workmanship are responsible for quality problems. This philosophy gave rise to quality control departments which looked for or "inspected Quality into the product." In contrast to this the TQM approach specifies that everyone in the organisation is responsible for quality. Edward Deming states that a production process can be separated into two parts.
 - 1) the system which is under the control of management;
 - 2) the workers who are under their own control.

He found that 85 percent of the Quality problems can be attributed to faulty systems and only 15 percent could be attributed to the workers. The system could be faulty due to many reasons, main among them are product design,

procurement of inferior raw material, inadequate maintenance of plant and machinery, poor working conditions and excessive pressure to increase output. Since the system is designed and administered by management quality is the primary responsibility of management.



The TQM process tries to "build quality into the product" rather than "inspect quality in the product". The errors have to be detected at the initial stage rather at the terminating stage. The workers should be responsible for workmanship and not for faulty designs and poor quality raw material and components.

b) **Product Design:** Researches have shown that many of the Quality problems are due to design of the product. Common problems encountered at the design stage are:

- i) Manufacturability of the product
- ii) Inclusion of parts which are unique to the product whereas parts which are already available, cheap and common to other products would function satisfactorily.
- iii) Include more separate parts than are necessary which would result in more set up time thus increasing cost.

All these inadequacies in design results in problems at the manufacturing end. Recognizing this the TQM process emphasise on close coordination between designers and manufacturing engineers.

Another factor for product design is the market ability of the product. With availability of technology and computer aided designing tools designer tend to create products with multiple features disregarding the fact that wether customer really needs them or not. Stuffing a product with too many features dilute the appeal of the main distinguishing feature of the product. It also results in cost increase thereby reducing competitive advantage of the product, here also the TQM process lays emphasis on close cooperation between designers and marketing people.

c) **Relation with Suppliers:** Few years back the companies preferred to have a host of suppliers for raw material, sub assemblies and components. With improvement in logistics and supply chain management the companies should reduce the number of suppliers, so as to have uniformity in the final product. Managing a large number of suppliers is always a complicated task and in this process the first casualty is quality. While managing a small number of suppliers the company can always monitor quality as well as help suppliers in their R&D efforts and other areas resulting in improved quality of sub assemblies and components.

Implication for Management Control

Financial Measures: Traditionally, conformance quality was measured by the cost of the product scrapped or reworked. In the new approach all the cost of doing things wrong are estimated and aggregated. The total cost of quality is the sum of the four elements listed below:

- Preventive costs
- Appraisal costs
- Internal failure costs
- External failure costs

The data about these costs are collected monthly and reports are prepared annually or semi-annually. These reports highlight the total Quality cost and identify areas which require remedial measures.



In some American companies the total cost of bad quality amounts to 25% of the total cost, whereas in contrast for Japanese companies it varies between 2.5% to 4%.

P.B. Crosby, estimates that for every one dollar which a company spends on prevention results in saving on ten dollars in appraisal and failure costs.

Non Financial Measures: In addition to financial measures the companies also use non financial measures for quality management. These non financial measures are basically the process data collected at three levels. The first set of data pertains to suppliers. The various variables in this data set are number of defective units supplied by each supplier, number and frequency of late deliveries. The second set of data pertains to shop floor operations and includes number of parts in a product, common and unique parts in a product, percentage yields, first pass yield, scrap rework, machine breakdown, Frequency and magnitude of change in production and delivery schedule and employee's suggestions, The third set of data pertains to customers and includes Customer complaints, customer satisfaction, warranty claims, field service expenses and number and frequency of product returns.

The main advantage of non financial measures is most of the variables are reported on a daily basis thereby corrective action can be taken immediately. Secondly non financial measures pin point the trouble spots. Non financial measures are an important feedback mechanism for management, managers and workers.

TQM Process: In order to implement TQM in an organisation the whole process can be subdivided into three parts (i) Main Focus (ii) Implementation Process (iii) Tools and Methods.

The main objective of any TQM process is to create a foundation for customer satisfaction. This foundation for customer satisfaction is created by laying stress on the following parameters:

- a) customer focus/orientation
- b) process focus
- c) long range planning
- d) institute training

This set of activities essentially includes continuous employee's training, supplier's integration to TQM process, to highlight Quality Component as a part of strategic planning.

The TQM is a continuous process divided into different programs some of which are as follows:

- top management' commitment.
- status analysis
- training
- organising for improvements
- quality measurements
- improvement projects
- quality awareness

TQM is a continuous and a dynamic process which covers management behavioural aspects as well as operational aspects. The main methods/tools of TQM are as follows:



- SPC (Statistical Process Control)
- team work (Cross functional, Quality circles)
- long term focus on suppliers and customers and integrating them in development and manufacturing process
- work unit analysis
- Process analysis
- Quality awareness

Table 11.1 depicts the frame work for the six-step TQM analysis, identified by the acronym 'PRAISE'.

The successful adoption of this sequence of steps demands discipline and commitment. The goal of quality. improvement is paramount and guides the actions of the change team throughout.

Table 11.1: Framework for TQM Process

| Step | Activity | Elements |
|-------------|------------------------|---|
| 1. | Problem identification | Areas of customer dissatisfaction. Absence of competitive advantage. Complacency regarding present arrangement. |
| 2. | Ranking | Prioritize problems and opportunities by : – perceived importance, and – ease of measurement and solution. |
| 3. | Analysis | Ask 'Why?' to identify possible causes Keep asking 'Why?' to move beyond the symptoms and to avoid jumping to premature conclusions. Ask 'What?' to consider potential implications. Ask 'How much?' to quantify cause and effect. |
| 4. | Innovation | Use creative thinking to generate potential solutions. Operationalise these solutions by identifying: – barriers to implementation. – available enables, and – people whose co-operation must be sought |
| 5. | Solution | Implement the preferred solution Take appropriate action to bring about the required changes. Reinforce with training and documentation back-up. |
| 6. | Evaluation | Monitor the effectiveness of actions. Establish and interpret performance indicators to track progress towards objectives. Identify the potential for further improvements – and return to step 1. |



Activity 1

Identify a few of the Indian Companies Implementing TQM process.

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Activity 2

List some of the non financial measures of Quality.

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11.3 BUSINESS PROCESS REENGINEERING (BPR)

Michael Hammer and Champy, the management experts, who initiated the reengineering movement, defines reengineering as "the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed."

The concept of reengineering has been around for nearly two decades and was implemented in a piecemeal fashion in organizations: Production organizations have been in the vanguard without knowing it. They have undertaken reengineering by implementing concurrent engineering, lean production, cellular manufacturing, group technology, and pull-type production systems. These represent fundamental rethinking of the manufacturing process.

Reengineering is often compared to total quality management (TQM). Some people have said that the two are, in fact, the same, while others have been argued that they are incompatible. Michael Hammer says that the two concepts are compatible and actually complement one another. Both concepts are centered on a customer focus. The concepts of teamwork, worker participation and empowerment, cross-functionality, process analysis and measurement, supplier involvement, and benchmarking are significant contributions from quality management. In addition, quality management in an era of extensive fictionalization of business has reemphasized the need for a "total" view of the organization. Quality management has also influenced company culture and values by Exposing organizations to the need for change. The basic difference between the two is that quality management has emphasized continuous and incremental improvement processes that is in control. Whereas reengineering is about radical, discontinuous change through process innovation. Thus a given process is enhanced by TQM until its useful lifetime is over, at which point it is reengineered. Then enhancement is resumed and the entire cycle starts again. Hammer points out that this is not a once-in-a-lifetime endeavor. As business circumstances change in major ways, so must process designs.

According to (Carr 1993) for successful implementation of Business reengineering process the following conditions are desirable:



- leadership and guidance from top management
- external focus through customer research, competitive and economic analysis and benchmarking
- top level strategy to guide change and leaders who can implement change
- methods for redesigning processes to meet performance targets
- use of advance information technology
- effective change management and ability to develop organisational culture

BPR tends to change the operation in a dramatic way and some of the core focus areas for BPR implementation are listed below:

- Customer orientation
- Process orientation
- Focus on core business
- Rule breaking –
- Devotion for simplification
- Creative use of information technology
- Rapid payback

Principles of Reengineering

Reengineering is about achieving a significant improvement in processes so that contemporary customer requirements of quality, speed, innovation, customization, and service are met. Hammer has proposed seven principles or rules for reengineering and integration.

Rule-1 Organize around outcomes, not Tasks: Several specialized tasks previously performed by different people should be combined into a single job. This could be performed by an individual "case worker" or by a "case team". The new job created should involve all the steps in a process that creates a well-defined outcome. Organizing around eliminates the need for handoffs, resulting in greater speed, productivity, and customer responsiveness. It also provides a single knowledgeable point of contact for the customer. -

Rule 2 Have those who use the output of the process perform the process: Work should be carried out where it makes the most sense to do it. This results in people closest to the process actually performing the work, which shifts work across traditional infra - and inter organisational boundaries. For instance, employees can make some their own purchases without going through purchasing, customers can perform simple repairs themselves, and suppliers can be asked to manage part inventory. Relocating work in the fashion eliminates the need to coordinate the performers and users of a process.

Rule 3. Merge Information: Processing work into the real work that produces the information: This means that people who collect information should be responsible for processing it, it minimizes the need for another group for reconcile and process that information, and greatly reduces errors by cutting



the number of external contact point for a process. A typical account payable department that reconciles purchase orders, receiving notices, and supplier invoices is a case in point. By eliminating the need for invoices by processing orders and receiving information on-line, much of the work done in the traditional accounts payable function becomes unnecessary.

Rule 4. Treat Geographically Dispersed Resources as Though they were Centralized: Information technology now makes the concept of hybrid centralized/decentralized operations a reality. It facilitates the parallel processing of work by separate organizational units that perform the same job, while improving the company's overall control. For instance, centralized databases and telecommunication networks now allow companies to link with separate units or individual field personnel, providing them with economies of scale while maintaining their individual flexibility and responsiveness to customers.

Rule 5 Link Parallel Activities Instead of Integrating Their Results: The concept of integrating only the outcomes of parallel activities that must eventually come together is the primary cause for rework, high costs, and delays in the final outcome of the overall process. Such parallel activities should be linked continually and coordinated during the process.

Rule 6. Put the Decision Point where the work is performed and Build Control into Process: Decision making should be made part of the work performed. This is possible today with a more educated and knowledgeable workforce plus decision-aiding technology. Controls are now made part of the process. The vertical compression that results produces flatter, more responsive organizations.

Rule 7. Capture Information Once- at the Source: Information should be collected and captured in the company's on-line information system only once - at the source where it was created. This approach avoids erroneous data entries and costly reentries.

Organizational Changes by implementing BPR

Hammer and Champy (1993) emphasise that the following changes occur within the organization by application of BPR in the organization.

- Work unit changes from functional departments to process team. It is a team that naturally falls together to complete a whole piece of work - a process. According to Drucker (1992) the team 'performs' and the members only 'contribute'. Task flexibility is a central aspect of lean production system (Womack et.al., 1990),
- Job changes from simple tasks to multidimensional work. Decentralization of planning, control and several support activities, implies job enrichment for members of process team, but also requires employees to succeed. Elimination of non value adding activities is a primary task resulting in cost reduction due to which resources are freed to reinforce value adding activities.
- Job preparation changes from training to education. After BPR the jobs are not structured and employees who are members of process team will have to perform multi dimensional jobs. To empower the team member, transfer of knowledge is a must which will help team members in making judgement and taking decisions.
- Focus of performance measurement shifts from activity to result
- Advancement criteria changes from performance to ability



- Values change from protective to productive which is measured by customer satisfaction.
- Organization structure changes from hierarchical to flat.
- Managers change from scorekeeper to leaders.

Activity 3

Outline the major differences in TQM and BPR.

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Activity 4

List the fore focus areas for BPR implementation.

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11.4 ENTERPRISE RESOURCE PLANNING

Introduction

Enterprise Resource Planning (ERP) is the latest high-end solution which information technology has lent to business application. The ERP solutions seek to streamline and integrate operation processes and information flows in the company to synergize the resources of an organization namely men, material, money and machine through information. Initially only infrastructure companies opted for ERP due to it's high cost. Today, many companies in India have gone in for implementation of ERP. It is expected that in the near future, 60 percent of the companies will be implementing one or the other ERP packages since this will become a must for gaining competitive advantage.

Meaning of ERP: Enterprise resource planning software or ERP attempts to integrate all departments and functions across a company into a single computer system that can serve all those different department's particular needs. In fact ERP Combines all computerized departments together with the help of a single integrated software program that runs on a single database so that various departments can easily share information and communicate with each other.

The need for ERP: Most organization across the world have realized that in a rapidly changing environment, it is impossible to create and maintain a customer designed software package which will cater to all their requirements and be up-to-date. Realizing the requirement of user organizations, some of the leading software companies have designed Enterprise Resource planning software, which offers an integrated software solution to all the functions of an organization.



Components of ERP: To enable the easy handling of the system, ERP has been divided into the following core subsystems: sales and marketing, master scheduling, Material requirement planning, capacity requirement planning, bill of materials, purchasing, shop floor control, accounts payable/receivable, logistics, asset management and financial accounting.

Features of Enterprise Resource Planning

Some of the major features of ERP and what ERP can do for the business system are:

- ERP facilitates company-wide Integrated Information system covering all functional areas like manufacturing, selling and distribution, payables, receivables, inventory accounts, human resources, purchases etc.
- ERP performs core activities and increases customer service, thereby augmenting the corporate image.
- ERP bridges the information gap across organizations.
- ERP provides complete integration of systems not only across departments but also across companies under the same management.
- ERP is the solution for better project management,
- ERP allows automatic introduction of the latest technologies like Electronic Fund Transfer(EFT), Electronic Data Interchange (EDI), Internet, Intranet, Video conferencing, E-commerce.etc.
- ERP eliminates most business problems related with material shortages, productivity enhancements, customer service, cash management, inventory problems, quality problems, prompt delivery etc.
- ERP not only addresses the current requirements of the company but also provides the opportunity of continually improving and refining business Processes.
- ERP provides business intelligence tools like Decision Support System (DSS), Executive Information system (EIS), Reporting, Data Mining and Early warning systems (Robots) for enabling people to make better decision and thus improve their business processes.

Benefits of Enterprise Resource Planning

In an industry that is sensitive to dynamic market forces, cost fluctuations and manufacturing responsiveness, there are many benefits to be gained from investing in ERP. ERP applications have shifted from assisting after-the-fact monitoring to real-time analysis, control and forecasting; and from facilitation standardization, economies of scale and cost reduction in product, to enable fast, flexible and accurate response and customization. The benefits accruing to any business enterprise by implementing an ERP package are unlimited.

- 1) **Product Costing:** Determination of cost of products correctly, is quite critical in every industry. All costing methods and information can be fully integrated with finance. This provides the company with essential financial information for monitoring and controlling costs.
- 2) **Inventory Management:** ERP can be used in multi-national, multi-company, and multi-site manufacturing and distribution environments. This system simplifies complicated logistics by allowing one to plan and manage companies in different countries as a single unit and its advanced functionality allows one to process product and financial information flows in several different ways.



Entering and managing the basic data required to effectively running once business is an important start for effective warehouse management. The basic data includes warehouses, locations, items, containers, lot and serial numbers, units of measure (including conversion), alias numbers, replacement and substitute items, and more.

Inventory reporting supports all reporting of specific and general types of stock transactions, such as various types of stock transfers, re-classifications, ID changes and physical inventory results. Additionally, functions are available for managing different stock and purchase requisitions as well as supporting the selection of appropriate location for receipts. Inventory valuation involves both warehouse management and cost accounting. ERP supports several valuation methods including standard cost, average cost, FIFO and batch-specific prices.

- 3) **Distribution & Delivery:** Delivery and distribution in ERP lets one to define logistics processes, flexibly and efficiently to deliver the right product from the right warehouse to the right customer at the right time-every time. To the customer, the most important element of quality is one-time delivery. It does not matter how well as product is made if it arrives late. Applications support automatic or manual load planning, transportation planning for in-house vehicles or third party agents, EDI support for transport booking, confirmation and dispatch, and proof of delivery processing. processing distribution or acquisition orders involves several closely related activities.

CPFR (Collaborative Planning, Forecasting and Replenishment): In 1996 US retail chain Wal Mart successfully conducted a pilot program in which it used Internet communications with one of its suppliers to achieve significant cuts in inventories. The process use in the pilot was called CPFR (Collaborative Planning, Forecasting and Replenishment). CPFR has since been implemented by many companies seeking to emulate Wal-Mart's success.

- 4) **E-Commerce:** Internet enabled ERP offers Internet, Intranet and extranet solutions for business to business, business to consumer, employee self-service and more.
- 5) **Automatic Control:** It ensures automatic quality control procedure.
- 6) **Sales Service:** It ensures better after sales service.
- 7) **Improvement in Production Planning:** It improves production planning.
- 8) **Quick response:** It enables quick response to change in business operations & markets conditions.
- 9) **Competitive Edge's:** It helps to achieve competitive advantage by improving business process.

Reasons for the Implementation of ERP by the Companies

- 1) **Improve company's business performance:** ERP automates the tasks involved in performing a business process- such as order fulfillment, which involves taking an order from a customer, shipping it and billing for it. With ERP, when a customer service representative takes an order from a customer, he or she has all the information necessary to complete the order (the customer's credit rating and order history, the company's inventory levels and the shipping dock's trucking schedule). Everyone else in the company sees the same computer screen and has access to the single database that holds the customer's new order, when one department finishes with the order it is automatically routed via the ERP



system to the next department. To find out where the order is at any point, one need only to log into the ERP system and track it down. With luck, the order process moves like a bolt of lightning through the organization, and customers get their orders faster and with fewer errors than before. ERP can apply that same magic to the other major business processes, such as employee benefits or financial reporting.

- 2) **Standardize manufacturing processes:** Manufacturing companies often find that multiple business units across the company make the same type of reports using different methods and computer systems. Standardizing those processes and using a single, integrated computer system can save time, increase productivity & reduce headcounts.
- 3) **Integrate Financial data:** As the CEO tries to understand the company's overall performance, he or she may find many different versions of the truth. Finance has its own set of revenue numbers, sales has another version, and the different business units may each have their own versions of how much they contributed to revenues. ERP creates a single version of the truth that cannot be questioned because everyone is using the same system.
- 4) **To standardize HR information:** Especially in companies with multiple business units, HR may not have a unified, a simple method for tracking employee time and communicating with them about benefits and services. ERP can fix that.

Activity 5

Try to find out ten different companies from various industries, which are using ERP.

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Activity 6

List the major benefits of using ERP package.

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11.5 VALUE ADDED ANALYSIS

Activities can be classified as value added or non value added or as efficient or inefficient. This discussion requires an important qualification. To this point, we have considered only the customer's perspective in classifying activities. We must be careful when we are classifying activities to recall that other stakeholders also define constraints that organizations must meet and that some activities may reflect some of the constraints defined by other stakeholders.



For example, customers may want products at the lowest possible price. To keep costs low, an organization might spend as little as possible on employee safety and, consequently, provide a dangerous working environment. Even if a dangerous work environment did not affect employee attitudes and performance, most governments consider dangerous working conditions socially undesirable and have passed laws that regulate work environment. Therefore, dangerous working conditions would fail to meet community expectations about the type of work environment that organizations should provide.

Similarly, although inspection is usually viewed as a nonvalue-added activity, sometimes the law requires it. For example, government contracting usually requires 100 percent inspection of parts critical to aircraft. Customer product safety laws require 100 percent inspection of the formulation of batches of chemicals used to prepare prescription drugs that are critical to a patient's life. Therefore, we always must be careful to evaluate whether an activity is value added and efficient within the constraints that the organization's stakeholders define for the organization's operations.

As per Porter strategies to create competitive advantage could be divided into three categories a) cost leadership b) Differentiation c) Focusing. To follow any of the strategies one has to evaluate the value chain. The value chain for any firm in any business is the linked set of value creating activities to produce a product and its spans from basic raw material sources for component supplier to the ultimate end product delivered to the final customer.

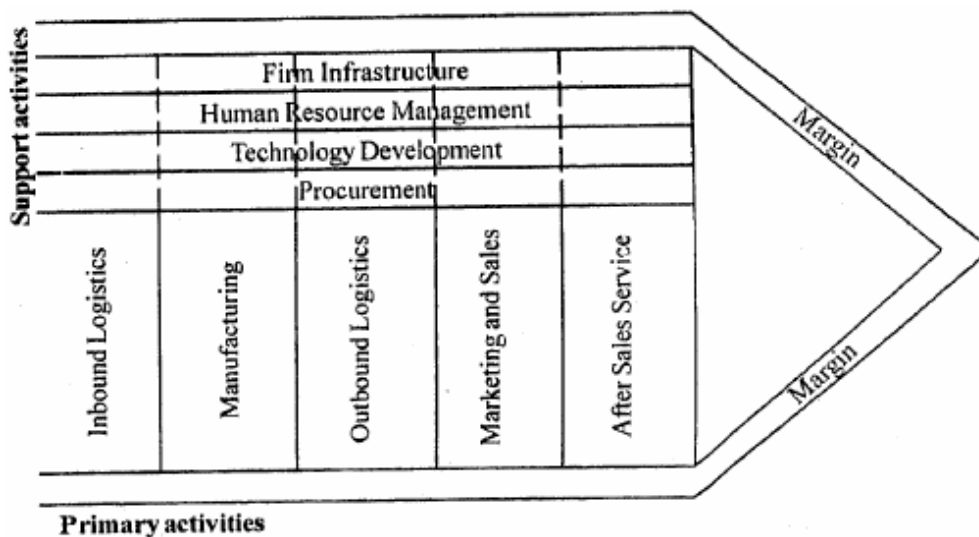


Fig. 11.2: Value Chain

Fig. 11.2: Value Chain

Source : *Competitive Advantage : Creating and Sustaining Superior Performance*, Porter, 1985 Free Press, New York, N. J.

Emphasis of value chain is to "segregate a firm into strategically relevant activities in order to understand the behavior of cost and the existing potential source of differentiation". (Porter 1985).

in order to understand the concept of value chain more clearly let us divide the activities which adds value to the inputs. As shown above in figure 11.2 the activities can be divided into two main groups a) Primary b) Support activities.



a) Primary activities: These are the activities which are required for manufacturing, sales, transfer of the product to customer and after sales service

Support activities: These are the activities which are required for efficient and timely performance of primary activities and includes activities like procurement of the resources, technology, human resources etc.

Porter has identified five standard type of primary activities:

Inbound logistics includes activities related to receiving, storing and distributing factor inputs (raw material for the product)

Manufacturing includes physical transformation activities of raw material into products.

Outbound logistics relates to collecting, storing and distribution of final products to the dealer network/customers.

Marketing and sales relates to communication of product availability features, price etc. It also includes making product available to the distribution channel and persuading customers to buy the same.

After sales service is related to improve and maintain the value of the product. The standard set of support activities include:

Procurement which is the function to provide factor inputs that are used in the value chain of the company.

Technology development which focus on process and product development

Management of human resources which includes activities like recruiting, employing, educating, developing and rewarding all kinds of employees.

A company's infrastructure which includes activities like administration, planning, finance, accounting, legal matters, communicating with regulatory authorities etc.

Each category of primary and support activities contain three subgroup of activities;

Direct activities which are directly involved in adding value to the factors (raw material) like manufacturing, assembly, marketing etc.

Indirect activities which are basically support activities which include maintenance, planning, administration etc.

Quality assurance which includes control, inspection, testing, revision, checking, correction and rework.

Every company has its unique value chain. As mentioned in the beginning the companies in order to gain competitive advantage can follow only one of the three strategies of cost leadership; differentiation and focusing. In order to follow any of the strategies the companies have to modify the activities of value chain, for example Dell computers follows the strategy of cost leadership and it has been made possible by modifying the process of inbound logistics and outbound logistics. Dell computers have eliminated intermediaries for procurement of components and simultaneously adhere to Just in Time philosophy (JIT). On the outbound logistic front again the intermediaries have been eliminated and it sells directly to the customer. A part of the resultant savings are passed on to the customer. In this way additional value is created on inbound and outbound logistics point on the value chain. Retail industries by going for backward and forward integration have created additional value in the value

chain as most of its business is shielded from volatility in prices of inputs (raw material).



Process of value analysis

Value analysis is particularly directed at reducing cost in products and materials while maintaining or improving the products or process function. It is used after the product has been put into production" (Juran 1988)

Value analysis generally proceeds through seven stages:

Introduction, specifying the objectives, identifying the process or the product and identifying the individuals who are going to be involved in the study.

Collecting information regarding usage, cost, demand, quality, standards and process.

Collective analysis and brainstorming which leads to multiple ideas and suggestions.

Evaluation of ideas and suggestions generated in the previous step and selection of the most promising one.

Detailed study of each idea selected

Proposals are made to senior managers for decision.

Executing the recommended change,

Strategic Aspect

For the strategic purpose the value chain analysis may highlight three profit improvement areas

Linkage with suppliers

Linkage with customers

Process linkage within the value chain of the firm

As highlighted previously the inbound/outbound logistics play an important role in overall value creation. Inbound logistics (linkage with suppliers) can be improved by reducing the number of vendors, automating order placing process, practising JIT, and by holding vendors responsible for component quality. Similarly outbound logistics (linkage with customers) can be improved by improving the Supply Chain Management (SCM). The areas of improvement includes Order processing, distribution channels, Warehousing, transportation etc.

Value chain analysis explicitly recognises that individual value creation activities are not independent but interdependent, value-creation at a-specific point on value chain will be carried over to other points thereby creating an environment of efficiency.

Value Added Analysis/Activity analysis

Activity analysis or V AA is an approach to operations control that began to enjoy extensive use during the 1980s. An activity is any discrete task that an organization undertakes to make or deliver a product or service. Specifically, activity analysis has four steps:

- 1) Identify, the process objectives that are defined by what the customer wants, or expects, from the process.



- 2) Record by charging, from start to finish, the activities used to complete the product or service.
- 3) Classify all activities as value added or nonvalue added.
- 4) Continuously improve the efficiency of all activities and develop plans to eliminate nonvalue-added activities.

Figure 11.3 summarizes these steps. Activity analysis has proved very useful in helping organizations to identify opportunities to reduce costs and to improve quality and processing time in a systematic way.

Activity analysis represents a systematic way for organizations to think about the processes that they use to provide products to their customers.

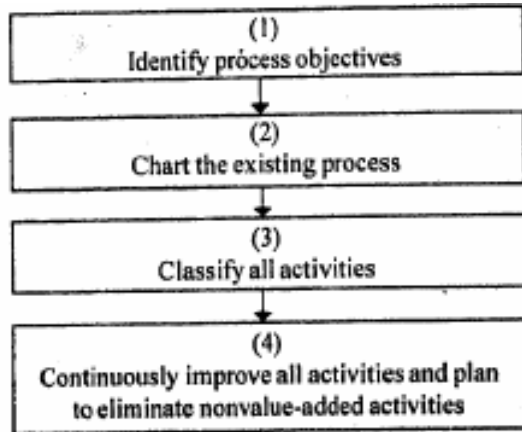


Fig. 11.3: Steps in Activity analysis

Activity 7

Identify the various strategies to create a competitive advantage.

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Activity 8

List the various primary and support activities.

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11.6 PROGRAMME AND PERFORMANCE BUDGETING (PPB)



Conventional system of budgeting essentially involved target fixation from the top to next level middle management to the grass root management. The main shortcomings of this system was lack of involvement of grass-root level managers who are really responsible for business. This system was gradually replaced by zero-base budgeting, which also suffered from following serious limitations:

1. Zero-base budgeting involves huge cost, hence unsuitable to middle-size and small business.
2. The identification of decision units creates numerous problems for the organisation.
3. The Zero-base budgeting system requires expertise and continuous training by the executives. Hence it is time consuming and takes long time to deliver results.
4. The annual or periodical reviews of the programmes become a dry ritual with passage of time, hence ineffective in delivering result.

Above limitations of top to bottom budgeting or zero-base budgeting gave place to more result-oriented system of Programme budgeting and Performance Budgeting (PPB), which are discussed here under:-

Programme Budgeting

As discussed above, the conventional budgeting failed to pay desired attention on the benefits of an activity in its evaluation. Budget proposals are always evaluated with reference to costs. As a result such a budgeting approach does not prove much effective for particularly Government programmes launched mainly for the benefits of the society. Such programmes need in-depth evaluation of cost-benefit relationships. The programme budgeting was developed in early 1960's precisely for this purpose. This type of budgeting is often referred as Planning, Programming, Budgeting system or output budgeting. This system was used for the first time in the United States for defence programme in 1961 by Robert M. Namara.

A programme budgeting is a budgetary system tailored to meet the requirements of Government departments and non-profit institutions that focuses upon the output of the organisation rather than on specific inputs. According to *David Noviek*, Programme budgeting is "the sum of the steps of interdependent activities which enter into the attainment of a specified objectives". Such an approach to budgeting attempts to bridge the gap between the planning activities of the organisation and the budget processes. Under programme budgeting the budget preparations are governed by the objectives of the programme rather than a budget unit. With the result such a budgeting programme become popular day by day among local bodies and Government institutions. The not-for-profit organisation accept such programmes that contribute maximum benefits to the society. Therefore, it is not feasible to evaluate the programme and projects on cost return (income) basis. There should be a system that compares programme benefits with programme costs- Programme budgeting for evaluation of state departmental programmes. An efficient programme budgeting may have the following characteristics:-

- 1) Programme Accounting- an accounting system with an ability to attach accounting data to specific programme to show the resources used or budgeted for each of the, objective.



- 2) **Multi-year Costing:** It attempts to identify costs with a project for its total life rather than just for the future budget period.
- 3) **Detailed Description of Activities-** It involves designing and developing of activity description of each programme against which on-going programmes and new programmes are evaluated.
- 4) **Zero-Base Budgeting-** A budgeting approach that attempts to review and evaluate on-going programmes as well as new programmes to justify all resources. The evaluation process of the programmes begins without a resource commitment even it is an on-going programme.
- 5) **Benefit-Cost analysis-** a formal technique that evaluates alternative course of action by comparing costs with benefits.

Objectives of Programme Budgeting

The following are the main objectives of programme budgeting:

- To identify national goals with greater precision and determine the priority among goals:
- To develop and analyse alternative means of achieving the goals:
- To project long term costs and relate them to the benefits of each programme;
- To specify plans for several years ahead that will achieve the stated objectives; and
- To strengthen control over programmes and budgets through improved measurement and analysis of programme performance in relation to cost.

Limitations of Programme Budgeting

The main limitations of programme budgeting are:

- i) It simply states about the programme to be done but fails to throw light on the operation and implementation process of the programme.
- ii) The concept of programme budgeting has no relevance to the preparation of actual budget.
- iii) It does not provide an operating tool for the line executives who implement the policy and programme decisions.
- iv) The mechanism for funding the programmes and fixing priorities for varying levels of effort are not stated in programme budgeting.
- v) it does not focus on the evaluation of on-going programme activities and operations but stresses only on new programmes.

Performance Budgeting

The concept of performance budgeting was first time used by the Hoover Commission in the US in the year 1949 and then it was applied in the defence budget of the said country in the 1960s. This approach to budgeting provide an alternative to normal industrial budgeting in non-industrial enterprise. Performance budgeting lays more emphasis to the corporate objectives and gives least attention to the money aspect of different objects.



Performance budgeting aims to formulate programmes and their evaluation to ensure that programme objectives are achieved. It studies the physical and financial relations of the programme and activities. According to Decoster and Schafer performance budget is " an adjusted budget prepared after operations to compare actual results with costs that should have been incurred at the actual level attained". The National Institute of Bank Management, Bombay, defines performance budgeting as "the process of analyzing, identifying, simplifying and crystallizing specific performance objectives of job to be completed over a period and specifying the framework of the organizational objectives, the purpose and objectives of the job". Thus, performance budgeting is a system of budgeting which states operations in terms of functions and activities. At the same time, it attempts to match monetary cost and benefit of the programme. It gives the definite scope of the activity and its cost.

The performance budgeting consists of the following steps:

Formulation of departmental objectives;

- i) Identification, evaluation and selection of the programme;
- ii) Preparation and execution of budget; and
- iii) Performance appraisal.

Objectives of Performance Budgeting

The performance budgeting seeks to achieve the following objectives:

- i) To make budget formulation process simple;
- ii) To bring coordination between various physical and financial aspects of the programme.
- iii) To improve the efficiency and quality of performance audit;
- iv) To make management more accountable for its actions; and
- v) To serve as controlling tool for financial operations.

Advantages of Performance Budgeting

The major advantages of performance budgeting are given below:

- i) It ensures efficient utilization of resources by suggesting appropriate means of allocating full programmes;
- ii) It provides a systematic and sound system for performance reporting and evaluation objective;
- iii) It makes possible the introduction of management-by-objectives (MBO);
- iv) It ensures achievement of the organization objectives by identifying and selecting only such variables, which contribute maximum to these objectives;
- v) It facilitates decision making at all levels of management in the organization;
- vi) It ensures smooth execution of the budget by coordinating its various physical and financial objectives;
- vii) It improves the quality of financial control.

Limitations of Performance Budgeting

Despite above mentioned qualities of performance budgeting, it suffers from the following defects:



- i) Performance budgeting evaluates only quantitative and financial variables of the programme. Hence, it looks quantitative approach to the evaluation of the programme which is equally needed for proper evaluation.
- ii) It can be used only for such programmes where evaluation can be done in a precise manner, and its scope is limited and
- iii) The use of performance budgeting requires the departments of an organization well organized programmes and activities properly identified which is rare to find, therefore, only a limited organization can be benefited by this approach to budgeting.

Activity 9

List the main characteristics of programme budgeting.

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Activity 10

List the limitations of performance budgeting.

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11.7 AGENCY THEORY FRAMEWORK

Agency theory explains how to best organize relationships in which one party (the principal) determines the work, which another party (the agent) undertakes (Eisenhardt, 1985). The theory argues that under conditions of incomplete information and uncertainty, which characterize most business settings, two agency problems arise: adverse selection and moral hazard. Adverse selection is the condition under which the principal cannot ascertain if the agent accurately represents his ability to do the work for which he is being paid. Moral hazard is the condition under which the principal cannot be sure if the agent has put forth maximal effort (Eisenhardt, 1989).

The problems of adverse selection and moral hazard mean that fixed wage contracts are not always the optimal way to organize relationships between principals and agents (Jensen and Meckling, 1976). A fixed wage might create an incentive fo'r the agent to shirk since his compensation will be the same regardless of the quality of his work or his effort level (Eisenhardt, 1985). When agents have incentive to shirk, it is often more efficient to replace fixed wages with compensation based on residual claimancy on the profits of the firm (Alchian and Demsetz, 1972). The provision of ownership rights reduces the incentive for agents' adverse selection and moral hazard since it makes their compensation dependent on their performance (Jensen, 1983).



Concept: An agency relationship exists whenever one party (principal) hires another party (the agent) to perform some services and in doing so the authority for decision making is delegated to the agent: In a corporate setting the chief executive officer (CEO) is the agent of shareholders (Principal) and similarly business unit managers are the agents of CEO. Here the question which gets predominance is how to motivate the agents to act in a way as if they were the principal (owners). One of the key elements of agency theory is that the principal and agents have divergent preferences or objectives.

Divergent Objectives of principal and agents: Agency theory assumes that all individuals act in their self interest. The self interest of agent and principal are more than often not aligned which gives rise to the conflict. Agents receive financial compensation alongwith the perquisites and this involves cost which in turn decreases the return of principal. The principal is primarily concerned with the return on investment. Apart from high perquisites the agents may indulge in work version and work shirking.'

Another divergence between the preferences of principals and agents is risk preference. The agency theory assumes agents prefer more wealth to less, but the marginal utility decreases as more wealth is accumulated. Agents wealth can be sub divided into two parts financial wealth and human capital which they posses in form of managerial capabilities and skills. Human capital is the value of the manager as perceived by the market and is a function of fi'rms performance and in order to preserve this wealth the agents are often risk averse. They prefer their present wealth over the wealth which could be earned by taking risky decisions. On the other hand the principal (share holders) have already diversified their risk by investing in many companies and are interested in expected value of their investment and are risk neutral.

Non observability of Agent's Action: The divergence in preferences associated with compensation and perquisites arises whenever the principal can't observe the agents action. The shareholders can't always monitor the CEO's action and likewise CEO can't always observe the business unit manager's action. In these cases only the agent knows wether his actions are directed towards the objective of the principal or not. This gap of information is referred to as a information asymmetry. Since the agent is near to the action area, he has the access to information about the task which even the principal does not posses. This type of information is called as private information which is primarily gained due to the proximity to the action area. Due to the divergence of preferences between principal and agent and also the private information of the agent, the agent may be tempted to misrepresent the information to the principal which is referred to as moral hazard.

Control Mechanism: Two ways of dealing with the twin problem of divergent objectives and information asymmetry are monitoring and incentives.

Monitoring: The first control device is monitoring. The principal can design control systems which defines scope, authority and autonomy of agents as well monitor the agents action to see whether they are within the brief or not. An example of monitoring is the approval of expenses incurred by the agent by other agents who are guided by the policies and procedures of the company. Another monitoring mechanism is that of audit where a third party checks whether the actions taken by the agent are within his ambit or not and also verifies whether internal rules and procedures are adhered by the agents.or not.

The effectiveness of the monitoring is increased if the task to be performed by the agent is well defined and structured. The effectiveness of monitoring would also depend upon the choice of the feedback signal. In case where monitoring is not effective a better way of control is through incentive contracting.



Incentive Contracting: The divergent preference of the Principal and Agent can be minimised by identifying those performance measures which leads to goal congruence. and basing the incentives of the Principal on these performance measures. The more the agent's compensation is based on performance measures, the more is the incentive for agent to improve the performance measure, therefore the principal should so define the performance measures that it furthers his or her interest. An incentive contract which motivates the agent to work in the principal's best interest, the contract is considered as goal best interest, the contract is considered as goal congruent. An agent's compensation scheme looking an incentive contract passes a serious agency problem.

The main challenge for the principal is to identify signals that are correlated to the agent's effort and firm value. The combination of the agent's effort and the macro economic variables determines the firm's performance. A performance measure which reflects the agent's performance; the more valuable measure, it is an incentive contract.

Even a best designed incentive contract can't lead to complete goal congruence. The underlying reasons being the difference in risk preference of the two parties, asymmetric information and the cost of monitoring. This divergence is named as residual loss. The cost of incentive compensation along with the cost of monitoring and residual loss are known as agency costs.

Activity 11

Why are the objectives of principal and agents divergent?

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Activity 12

List the control mechanism for reducing the agency cost.

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11.8 MANAGEMENT BY OBJECTIVE [MBO]

Introduction

A basic concern of management is how to increase the effectiveness of an organization in a changing environment so that it can get the best out of its resources, and satisfy the needs for which the organization has been created. Many critical issues of management arise from this basic concern. Managers often face dilemmas in the quest for performance improvement capability development and adaptation to the changing environment. Both the success and failure throw up new problems, the seeds of which



are often found in the solutions of the old problems. As organizational and environmental conditions become more complex, managers discover that the popular and tested methods of yesteryears are inadequate for the problems of tomorrow. In their search for appropriate approaches to handle the issues confronting them, managers in thousands of organizations around the world have come to know Management by Objectives (MBO) as an approach which is capable of offering a framework for dealing with many of the issues of organizational effectiveness.

An overview

MBO is a comprehensive management approach focusing on objectives or expected results for providing a frame work for organizational and managerial decisions. Although objectives provide the focal point, the thrust in MBO is on management. Thus, the mere existence of objective is not a sufficient condition for MBO. One can have objectives or targets without having M BO. Similarly, the management processes can be kept hyperactive without clear and agreed objectives. The emphasis in MBO is that the objectives should be the central focus in the management process. MBO begins by defining objectives and then uses these statements as criteria to judge the quality of activity (behaviour) and the adequacy of inputs (resources). Agreement on objectives precedes activity planning and resource allocation. In other words, once the objectives are clearly established in terms of outputs or expected results, the resources, and the processes must be geared towards attaining these objectives. Moreover, it should be appreciated that MBO is concerned with both the achievement of objectives as well as the processes by wh ich these objectives are established and achieved. Therefore, MBO emphasizes the development of the system's capability as well as an individual manger's competence and motivation for performance improvement in the short and the long run.

Though there is evidence of general agreement on the basic concepts of MBO, its rapid and diverse practice has led to problems of comprehension. MBO has tended to mean different things to different people. Depending on the emphasis on selected aspects, one form of MBO tends to be quite different from another; Peter Drucker's original description had provided a comprehensive focus:

What the business enterprise needs is a principle of management that will give full scope to individual strength and responsibility, and at the same time give common direction of vision and effort, establish team work and harmonize the goals of the individual. The only principle'that can do this is management by objectives and self control.

However, it appears that actual practice strayed form this broad definition and tended to emphasize specific aspects only. For example, the initial American practice of MBO stressed appraisal and motivation of the individual manager, resulting in an individual-centered MBO, which could be practiced even without the organization - wide objectives and philosophy of management. On the other hand, the British pattern of MBO, particularly in the sixties, focused on corporate planning and corporate objectives and viewed the individual manager's contribution as a means to the company's goals of profit and•growth.

The American and the British perspectives are reflected respectively, in definitions of MBO offered by George, Odiorne and John Humble. Odiorne defines MBO as "a process whereby the superiorand subordinate managers of an organization jointly define its common goals, define each individual's major areas of responsibility in terms of the results expected of him and use these measures as guides for operating the unit and assessing the contribution of each of its members.



Humble considers MBO as "a dynamic system which seeks to integrate the company's need to clarify and achieve its profit and growth goals with the manager's need to contribute and develop himself."

In his view, MBO "is a demanding and rewarding style of managing a business.

Later years witnessed a tendency to integrate both these perspectives. The following definition of Redding is an example:

"The establishment of effectiveness areas and effectiveness standards for managerial positions and the periodic conversions of these into measurable time bounded objectives, linked vertically and horizontally with future planning."

It may be noted here that even Redding fails to adopt a comprehensive view of MBO. Thus, even though a comprehensive view of MBO may be complex, a limited view leads to avoidable pitfalls. Moreover, in order to be effective, the MBO process should be integrated with the key activities of the management process, e.g. planning, organizing, staffing, directing, and controlling. Figure 11.2 indicates that MBO as a comprehensive approach to management implies an effective integration of the MBO process with key managerial activities.

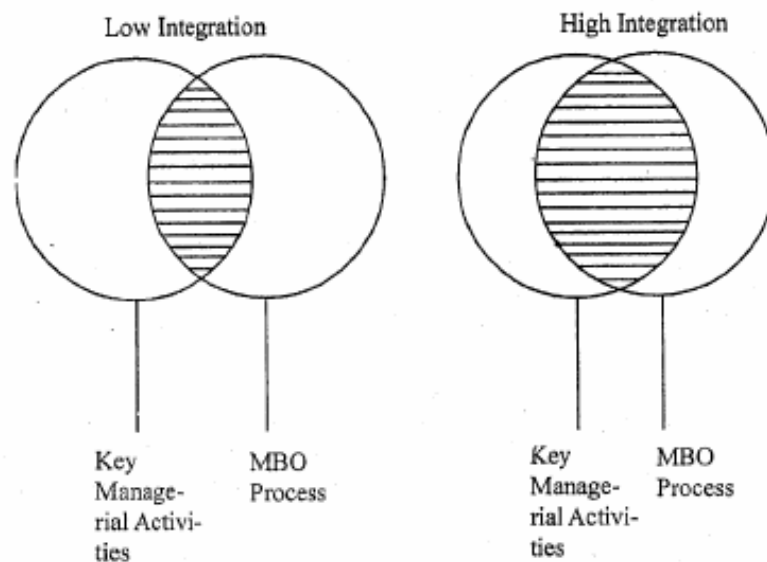


Fig. 11.2: MBO Process and Integration of Key Managerial Activities

Thus, MBO should be considered as a top management planning and control approach, with opportunities for participation in the process. MBO has implications for all aspects of management. Its practice is expected to have an impact on the organization structure and culture, on managerial processes and on the behaviour of the people in the organization. MBO lays stress on result orientation innovation, development of effective systems, and utilization and development of all resources, especially the human resources. All that is significant for the effectiveness of the organization is directly or at least indirectly related to MBO because as an approach which deals with organization issues, it offers a result-oriented perspective. Over a period, if an organization has experienced success in the practice of MBO, it becomes a way of life. In fact, MBO is just an application of good management. As Peter Hives expressed it, "MBO can be regarded as a codification and systematization of management practices fashioned for our times.' It has one major distinguishing feature-the rigour with which the process of management is carried out. The methodology of MBO is a means to



translate the basic concepts and to ensure rigour, Forms, methods and rituals are *the* supportive means and should not by themselves be regarded as MBO.

We should also remember that in practice MBO often falls short of its full potential. Moreover, the MBO literature also shows the existence of a tendency to reinvent the wheel. Many MBO practitioners and consultants have attempted this by changing terms and placing emphasis on specific parts. Besides the difficulty of operating square wheels, this tendency has also resulted in semantic problems. For example, the following other terms are also used to denote Management by Objectives:

- 1) Accountability Management
- 2) Action Plan of Objectives
- 3) Goals Management
- 4) Improving Business Results
- 5) Improving Management Performance
- 6) Management by Objectives and Results
- 7) Management by Results
- 8) Performance Results and Individual Development Evaluation

Further, different terms are used for objectives, key result areas, performance reviews, etc. all this naturally creates confusion in comprehending the major aspects of MBO.

MBO is said to have gone through three phases over the past twenty *years* (Sink and Tuttle, 1989)

- 1) Performance appraisal
- 2) Planning and control method
- 3) Method of managing productivity by objectives

Moreover, the full potential of MBO is often not realized because of the lack of appreciation of its concepts, when applied to real-life situations. The basic concepts of MBO are simple but they demand radical changes in the style and structure of management. The concepts are so simple that on first acquaintance, many managers identify themselves as long established practitioners of MBO. However, when they begin to apply these concepts with rigorous analysis, they tend to get disenchanted with the time-consuming process. The sharp focus on accountability for specific results, as highlighted through the MBO process, is also not always comfortable for most managers. It must be remembered that MBO does not work automatically and it is not easy to put the concepts into operation. Of course, over the years an adequate methodology has been developed for this purpose. But, it is by no means simple. It has to be learnt by actual practice.

Implementation Process

The process of implementation of MBO constitute of the following phases:

- 1) The top manager and key executives reporting to him study the systems and processes.
- 2) The top manager and subordinates set up measures of organisation's performance.
- 3) Goal setting methods are extended up to first line supervisory level. Goals are set through discussions and meetings between the members of organisational units and their superiors. Goals are mutually agreed upon.



- 4) The required changes are undertaken in appraisal system, reward & compensation system. Delegation of authority and responsibility is also undertaken.

The increased popularity of MBO is essentially due to its common sense appeal and simplicity of concepts. At the same time MBO is an exacting and demanding self-discipline as well. Unrealistic expectations, not matched with rigorous process, can lead to disenchantment. Implementation of MBO takes time, expertise, effort and commitment-ingredients usually not found in many organizations.

Activity 13

Highlight the main focus of MBO.

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11.9 ACTIVITY BASED COSTING [ABC]

Introduction

In practice it is surprising to find that many business organizations do not wish to know the precise costs of the products they are manufacturing. This is primarily because prices are based on what the market can bear and what competitors are charging. There are, however, other groups of firms who would like to know their accurate average and marginal costs per unit so that they may precisely know the result of charging the prevailing prices of products on their bottom-line. The latter firms have been greatly benefited from the application of activity based Costing (ABC), which is in a way a modern form of absorption costing method, which was evolved during late 1960's to provide product costs more accurately. The following factors are believed to be responsible for the development of ABC system:

1) Mounting overhead costs due to increasingly automated production process of products. It is estimated that the overhead rates that were ranging between 200 percent to 300 percent 20 years back have gone up to 600 percent to 800 percent now.

Intense market competition led to ascertaining the product costs more accurately; and

3) Increasing product diversity to reap the benefits of scale economies, diversifying the market with a view to increasing the market share.

Meaning of ABC

ABC or Activity Based Costing is an accounting methodology that assigns the costs, both overhead and direct, to various products and services on some scientific bases.

In order to correctly associate costs with products and services, ABC assigns cost to activities based on their use of resources. It then assigns cost to cost objects, such as products or customers, based on their use of activities. ABC can track the flow of activities in organization by creating a link between the activity (resource consumption)



Cost object.

Cost drivers

Resource Cost drivers

Activity Cost Drivers

In order to understand how ABC operates it is necessary to understand the meaning of above terms.

Definitions

A Cost Object- It is an item for which cost measurement is required e.g. a product or a customer.

A Cost Driver- It is a factor that causes a change in the cost of an activity. There are two categories of cost driver:

A Resource Cost Driver- It is a measure of the quantity of resource consumed by an activity. It is used to assign the cost of a resource to an activity or cost pool;.

An Activity Cost Driver- It is a measure of the frequency and intensity of demand, placed on activities by cost objects. It is used to assign activity costs to cost objects.

The cost drive for business functions viz., Research & Development and Customer Service are as below:

Business functions:

Cost Driver

| | |
|------------------------|--|
| Research & Development | - Number of research products - Personnel hours on a project - Technical complexities of projects |
| Customer Service | - Number of service calls - Number of products services - Hours spent on servicing products. |

In traditional costing overhead are first related to cost centres (production & Service Centres and then to cost objects, i.e., products/ In ABC overhead are related to activities or grouped into cost pools (depending on the terminology preferred). Then they are related to the cost objects, e.g., products. The two processes are, therefore, very similar, but the first stage is different as ABC uses activities instead of functional departments (cost centres). The problem with functional departments is that they tend to include a series of different activities, which incur a number of different costs that behave in different ways. Activities also tend to run across functions; for instance, procurement of materials often includes raising a requisition note in a manufacturing department or stores. It is not raised in the purchasing department where most procurement costs are incurred. Activity costs tend to behave in a similar way to each

er i.e., they have the same cost driver. Therefore, ABC gives a more realistic picture of the way in which costs behave.

As with traditional absorption costing ABC rates are calculated in advance, normally for a year ahead, and so the same rates are used for a year at a time. The advantage of this is that any seasonal variations will be spread giving an average cost. If this was not done and actual rates were used the absorption rates would vary monthly. This would mean that when output was high the overhead rate would be low and vice-versa; if



pricing were based on cost the prices quoted would be higher when the business was slack.

Stages in Activity Based Costing

The different stages in activity based costing are listed below:

- 1) **Identification of the activities that may take place in an organization:**
- 2) Usually the number of cost centres that a traditional overhead system uses are quite small, say upto fifteen. In ABC the number of activities will be much more, say 200; the exact number will depend on how the management subdivides the organisation's activities. It is possible to break the organization down into many very small activities. But if ABC is to be acceptable as practical system it is necessary to use larger groupings, so that, say, 40 activities may be used in practice. The additional number of activities over cost centres means that ABC should be more accurate than the traditional method regardless of anything else.
- 3) **Assigning costs to cost pool for each activity** both support and primary activities, that caused them. This creates 'cost pool' or 'cost buckets'. This will be done using resource cost drivers that reflect causality.
- 4) **Support activities are then spread across the primary activities** on some suitable base, which reflects the use of the support activity. The base is the cost driver that is the measure of how the support activities are used.
- 5) **Determine the cost drivers for each activity** that will be used to relate the overhead collected in the cost pools to the cost objects/products. This is based on the factor that drives the consumption of the activity. The question to ask is - what causes the activity to incur costs? In production scheduling, for example, the driver will probably be the number of batches ordered.
- 6) **Assigning the costs of activities to products according to product demand for activities:** This requires to calculate cost driver rate for each activity, just as an overhead absorption rate would be calculated in the traditional system.

$$\text{Activity cost driver rate} = \frac{\text{Total cost of activity}}{\text{Activity driver}}$$

The activity driver rate can be used to cost products, as in traditional absorption costing, but it can also cost other cost objects such as customers/customer segments and distribution channels. The possibility of costing objects other than products is part of the benefit of ABC. The activity cost driver rates will be multiplied by the different amounts of each activity that each product/other cost objects consumes.

Activities can be grouped into four categories, which are popularly known as the manufacturing cost hierarchy. These categories are today generally accepted and they were first identified by Cooper (1990). This categorization helps in determining the type of activity cost driver required by the organization. These four categories are as follows:-

- 1) **Unit Level Activities:** The cost of primary activities are highly correlated to the number of units produced. For example, the use of indirect materials/consumables tends to increase in proportion to the number of units produced. Another example of a unit level activity is the inspection or testing of every item produced, if this is deemed necessary or every 1 00th item produced.
- 2) **Batch Level Activities:** The cost of mainly manufacturing supports activities are driven by the number of batches of units produced; like material ordering-where

order is placed for every batch of output; or machine set-up costs- where machines need resetting between each different batch of production.



Batch of production: Inspection of products- where 1st item in every batch is inspected rather than every 100th item.

- 3) **Product Level Activities:** Cost of some activities are driven by the creation of a new product line and its maintenance, designing, producing parts and keeping technical drawings of products up to date. Advertising costs fall into this category if individual products are advertised rather than the company's name.
- 4) **Facility Level Activities:** Some costs cannot be related to a particular product line, instead they are related to maintaining the buildings and facilities. Examples are the maintenance of buildings, plant security, business rates, etc. Also included in this category are salaries, such as the production manager's. Advertising campaigns that promote the organization would also be included.

The first and last categories above are the same as those in traditional absorption costing and so if an organization costs are mainly made up of these two categories ABC, will not improve the overhead analysis greatly., But like the organisation's costs fall mainly in the second and third categories an ABC analysis will provide a different and more accurate analysis.

Purposes and Benefits of Activity Based Costing

Initially companies switched from traditional absorption costing to ABC in order to produce more accurate cost information for products, as shown above. The managers in some of these companies were surprised by the information revealed, because it gave them a different perspective of the build up of costs/ this led them to adjust their pricing policies and to develop different product strategies, as they found that previously high volume, long production run products had been over-costed and low volume, short production run products under-costed. Total absorption costing averages batch costs, such as set-up, over all products rather than relating them to the batch.)

To summarise, ABC is particularly needed by organization for product costing where:

- Production overhead are high in relation to direct costs
- There is a great diversity in the product range
- Products use very different amounts of the overhead resources
- Consumption of overhead resources is not primarily driven by volume.

But if ABC is only considered to be a more detailed and accurate overhead absorption costing system many organizations may decide to do without it. In France, Germany, the Netherlands and Spain many organizations use a sophisticated "full cost" absorption method and so they have not found it necessary to change to an ABC system. In these organization overheads are usually charged to auxiliary cost centres as well a main cost centres. The auxiliary cost centres are in turn charged to the main cost centres. From the main cost centres the overheads are charged to products. This is not dissimilar to a full traditional absorption costing system used in the U.K. which uses service or indirect cost centres (such as maintenance) that are then charge in their turn to the direct cost centres. Advocates of using ABC for an accurate overhead apportionment usually compare the ABC technique with the most basic traditional absorption costing system where one blanket overhead rate is applied.



Activity Based Cost System Installation and Operation

The motives for pursuing an ABC implementation, or at least of investigating its feasibility, must be established at the outset. Most commonly these will be:

- 1) To improve product costing where a belief exists that existing methods under cost some products and over cost others; or
- 2) To identify non-value-adding activities in the production process which might be a suitable focus for attention or elimination.

In practice the former is the most quoted goal, even though the latter may be more appropriate. This is especially so for firms which are highly labour intensive and which do not have a great diversity of products in their range, and where allocation of over head based on direct labour hours may already function efficiently.

Direct costs, like materials and direct labour, are easily assigned directly to products. Some indirect costs, particularly those selling costs which are product specific (e.g. advertising), may be directly assigned to the product too. The remaining indirect costs are those which are problematical and provide the focus for ABC, with resource costs indirectly assigned to the cost object via cost pools and activity driver.

A number of distinct practical stages in the ABC implementation are as follows:

- 1) **Staff training:** the co-operation of the workforce is critical to the successful implementation of the ABC. They are closest to the process and most aware of the problems. Staff training should be, as far as possible, jargon-free, and create an awareness of the purpose of ABC. It should be nonthreatening in nature, stressing that increased efficiencies resulting from a successful implementation will mean rewards not redundancies. The need for the co-operation of staff in the concerted team effort, for mutual benefit, must be emphasized throughout the training activity.
- 2) **Process specification:** Informal, but structured, interviews with key members of personnel will identify the different stages of the production process, the commitment of resources to each, processing times and bottlenecks. The interviews will yield a list of transactions which may, or may not, be defined as 'activities' at a subsequent stage, but in any case provide a feel for the scope of the process in the entirety.
- 3) **Activity definition:** The problem must be kept manageable at this stage, despite the possibility of information overload from new data, much of which is in need of codification. The listed transactions must be rationalized in order to aggregate those in similar categories and eliminate those deemed immaterial. The resultant cost pools will likely have a number of different events, or drivers, associated with their incurrence.
- 4) **Activity driver selection:** A single driver covering all of the transactions grouped together in a 'activity' probably does not exist. Multiple driver models could be developed if the data were available, but cost-benefit analysis has rarely shown these to be desirable./ The inter correlation of potential activity drivers will probably be so strong as to suggest that it really does not matter which one is selected. This argument might be employed to avoid the costly collection of data items otherwise not monitored, nor easily accessible/.
- 5) **Costing:** A single representative activity driver can be used to assign costs from the activity pools to the cost objects. If, for example, the number of engineering set-ups has been identified as a driver of process costs and the total set-up cost is



Rs. 40,000 for a company producing four products (A,B,C,D then the number of set-ups per product can be used to assign these costs/ If product A requires 2 set-ups; B 4 set-ups; C 24 and D 10, then the average cost per set-up of Rs. 40,000/ 40 set ups = Rs. 1,000, a misleading figure made by the different products.

However, total set-up costs can be distributed to product groups in proportion to use, i.e., A: Rs. 2,000, B: Rs. 4,000, C: Rs. 24,000 and D: Rs. 10,000 and then assigned to individual units of product in proportion to the total level of output.

This procedure can then be repeated for all material activities.

Activity 14

List the various stages of ABC implementation.

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Activity 15

List the categories in which the various activities are classified.

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11.10 SUMMARY

Management processes are constantly evolving so as to assimilate the new techniques. The evolution of new techniques is in response to the need of having a mean andlean operations which leads to effectiveness, cost saving and efficiency. In recent years techniques of TQM, BPR and ERP have become quite popular, the underlying reason being their ability of cut costs and increasing productivity. For the successful) implementation of these techniques a close coordination among various units is prerequisite. Value,added analysis helps in identifying the various points in a valaue chain where value can be added MBO deals with setting and meeting objectives. ABC method uses activities rather than cost centres for allocation of overheads.

11.11 SELF ASSESSMENT QUESTIONS

- 1) Identify the attributes of a Quality Product.
- 2) Identify the main constituents of a Total Quality Management approach.
- 3) Explain the impact of TQM process on management control system of an organization.
- 4) In what aspects is the BPR process different from that of TQM.
- 5) Elabotate the impact of implementing BPR on the organisation processes.
- 6) Explain the underlying principles of reengineering.



- 7) In which type of industries the installation of ERP systems would be most beneficial.
- 8) Draw and analyse the value chain for petrochemical industry.
- 9) Under what conditions programme and performance budgeting are being used? Also explain why traditional budgeting are being used under these circumstances.
- 10) How can the agency cost be minimised?
- 11) Explain in detail the agency theory.
- 12) Define & explain the concept of Activity Based Costing (ABC)
- 13) Define the following terms:
 - i) Cost driver
 - ii) Activity cost pool
- 14) Explain the structuring of organization into cost/activity cost centre,

11.12 FURTHER READINGS

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