UNIT 14   KEY MANAGEMENT TOOLS

Structure

14.0   LEARNING OUTCOME

After reading this Unit, you should be able to:

- Explain the concept of total quality management

- Discuss the principles and techniques of total quality management

- Identify the problem areas in the application of total quality management

- Analyse the concept and life cycle of project management

- Highlight the tools and techniques of project management

- Examine the concept and approaches of systems analysis; and

- Describe the phases of system analysis

14.1   INTRODUCTION

Public systems management catering to the needs of the citizens, is expected to adhere to the norms of quality, cost effectiveness, efficiency and promptness. The emphasis on 'quality' is assuming importance, especially after the spread in recent times of the principles of new public management. The application of management techniques is aiding public systems management to fulfil its activities. Though these are adapted from the corporate sector, efforts are being made to introduce in various aspects of public service delivery too. Total quality management, project management and systems analysis are amongst the key management tools, which shall be discussed in this unit. As you are aware, Business Process Reengineering, another important management tool has been discussed in Unit 16 of MPA 011.

14.2 TOTAL QUALITY MANAGEMENT: CONCEPT

The Total Quality Management (TQM) is a technique of managing the organisation to achieve excellence with focus on customer. It incorporates the concepts of product quality, process control, quality assurance, and quality improvement. Consequently, it is the control of all transformation processes of an organisation to satisfy customer needs in the most economical way by applying quantitative methods and integrating fundamental management techniques.

The simple objective of TQM is "Do the right things, right the first time, every time". TQM is infinitely variable and adaptable. For long, it was applied to manufacturing operations only, but now it is recognised as a generic management tool, equally applicable to service and public sector organisations. The basic assumptions of the Total Quality Control approach are:

- Work can be broken down into tasks, which are a series of related steps.

- All related tasks are grouped through a process to achieve the pre-determined outcome.

- People completing a series of related tasks have interdependent roles in the organisation.

- The system is a group of related processes.

- The practice of defining the steps and outcomes (products and services) in their processes and systems, enlists employees' participation and makes them aware of their responsibilities.

- Scientific approach is applied for measurement and improvement of quality by using flow charts, work-flow diagrams, deployment charts, pareto charts and cause and effect diagrams etc.

Total Quality Management originated in Japanese industry in the 1950s and became popular in the West in the early 1980s. Many of the TQM concepts originated with the work of Dr. W. Edwards Deming, the American statistician, who guided the Japanese industry's recovery after World War II. Many of his ideas were formed during World War II when he used statistical methods to improve the quality of military products in American industries. Due to absence of competition, there were a few takers of his ideas in the American industrial sector. However, Japanese industrialists, who then were facing problems in producing quality products and services, showed interest, in adopting this technique.

In this new paradigm, Deming urged for a new management approach that shifted the focus from profits to quality. He emphasised upon the Japanese industrialists to find out what their customers wanted, then study and improve the design and production processes until the quality of their product exceeded the customers' expectations. He emphasised that employees should learn how to monitor, control and continually improve their work processes and systems with the application of a scientific approach. Consequently, decisions were based on data gathered with scientific tools and approaches, which led to improved products and services. Thus, it differed from the traditional management practice of management-by-objectives (MBO) with a hierarchy of objectives and standards that were passed down in the organisation from the top.

In quality management, there is a rule of thumb called the 85/15 Rule which suggests that the root cause of 85% of organisational problems is faulty systems and that a few problems are the result of the behaviour of employees. It implies that systems are viewed as the producer of quality.

14.3 TOTAL QUALITY MANAGEMENT: PRINCIPLES AND TECHNIQUES

In TQM, each organisation is expected to develop its own core values. However, some principles that define TQM need to be kept in focus during the exercise. Let us now discuss the important principles and techniques of TQM.

1. Customer-driven quality

TQM has a customer-first orientation. It is directed toward customer retention, market share gain and growth, and demands constant sensitivity to changing and emerging customer and market requirements. The concept of requirements is expanded to take into account not only product and service attributes that meet basic requirements, but also those that enhance and differentiate them for competitive advantage. Each part of the organisation is involved in total quality, operating as a customer of some functions and as a supplier to others. Continuous customer feedback may enable organisations to assess the customer requirements. Various techniques are used for collecting the feedback. Some of them are mentioned below:

a) **Comment Card**: It is a low-cost method, that involves attaching a comment card at the product / service delivery point. The problem with this, is that customers often do not respond and where they respond the quality of response may not be so good.

b) **Survey**: It is a popular tool for obtaining opinions and perceptions about an organisation or its product and services. Mostly the responses are recorded on a one-to-five or one-to-ten scale. However, the survey may not always be a true representation of normal population.

c) **Report Card**: This has emerged as an effective performance measurement technique. It is sent to customers at periodic intervals and the data are analysed to determine areas for improvement.

d) **Internet**: The advancement of technology has given service providers a cost effective opportunity to gather information. Many organisations put a discussion forum or complaint box on their websites to be used by customers. However, the limited accessibility of internet, especially in a country like India where the net-penetration is very low, may restrict the scope of feedback.

e) **Toll Free Numbers**: This is also a low cost method to collect information. Herein, the service provider makes available a dedicated telephone line to its customers where they can complain or seek information. The use of this technique has grown tremendously in recent times.

Leadership

TQM has to be introduced and led by top management. Commitment and personal involvement is required from top management in setting directions, creating and deploying clear quality values and goals consistent with the objectives of the company. The leadership also has to create and deploy well-defined systems, methods and performance measures for achieving those goals. Tools like Quality Function Deployment (QFD) are used for planning to fulfill customer expectations. These systems and methods guide all quality activities and encourage participation by all employees.

3. Continuous Process Improvement

Continuous improvement of all operations and activities is essential for TQM. Achieving the highest levels of performance requires a well-executed approach to continuous improvement and learning. This refers to both 'incremental' and 'breakthrough' improvement. Improvement cycles are encouraged for all the activities of the organisation. This implies that all activities include measurement and monitoring of cycle time and responsiveness as a basis for seeking opportunities for improvement.

The elimination of waste, with strong emphasis on prevention rather than detection and quality at the design stage, is a major component of the continuous improvement approach. Let us discuss some techniques of continuous process improvement.

Plan-Do-Study (PDSA) Cycle

It is a simple adaptation of more elaborate problem-solving method. According to Besterfield *et al* (2001), the method has seven phases:

i)   identify the opportunity

ii)   analyse the current process

iii)   develop the optimal solutions

iv)   implement changes

v)   study the results

vi)   standardise the solutions

Benchmarking

Benchmarking is the comparison of the processes and systems of a given function across organisations, particularly those that excel, and identifying how they differ. It can be applied to any area of an organisation. Benchmarking can be done by:

- Measuring performance against that of best-in-class organisations

- Analysing the methods that enable these organisations to enhance their performance level; and

- Using the information as the basis for evaluating targets, strategy, and applications of the organisation.

Failure Mode and Effect Analysis (FMEA*)*

It is an analytical technique that combines the technology and experience of people in identifying foreseeable failure modes of a product or a process and planning for its elimination.

4. Fast Response

To achieve customer satisfaction, the organisation has to respond rapidly to customer needs. This implies short product and service introduction cycles. Major improvements in response time often requires simplification of work processes. Simplification is achieved through concurrent product and process development. Efficiencies are realised from the elimination of those activities which do not add any value. Consequently, there is improvement in organisation, quality and productivity.

5. Management by Facts

Modern organisations depend upon measurement and analysis of performance. Data required for measurement and improvements are of many types, including customer, product and service delivery operations, supplier, employee, cost and financial

aspects. Facts derived from measurement and analysis, provide the basis for planning, review and performance tracking, improvement of operations, and comparison of performance with competitors. Unless the right information is available, the analysis cannot take place and errors cannot be identified and corrected.

Statistical Process Control*:* This is an effective technique in collecting data.

There are seven basic techniques*:*

i) **Pareto Diagram**: It is a graph that ranks data classifications in descending order from left to right. It is used to identify most important problems.

ii) **Process Flow Diagram**: These diagrams show the flow of the product or service as it moves through the various processing operations.

iii) **Cause and Effect Diagram**: This diagram is presented in the form of a picture composed of line and symbols to represent the relationship between an effect and its causes.

iv) **Check Sheets**: The pattern of check sheet is customised depending on the requirements by the project team.

v) **Histogram:** it describes the variations in the process.

vi) **Control Charts**: These are used to control in particular, quality characteristics by checking variations.

vii) **Scatter Diagrams**: The simplest way to examine if a cause and effect relationship exists between two variables is to plot a scatter diagram.

6. Employee Involvement

The skills and motivation of the work force determine the level of success of any organisation. The organisations need to offer opportunities to their employees to participate in decision making. Such participation is reinforced by reward and recognition systems and also through education and training. In TQM, employees are encouraged to take more responsibility, communicate more effectively, act creatively, and innovate. TQM links remuneration to customer satisfaction levels.

Experts suggest that the Employee Involvement (EI) strategy should include:

a) **Readiness Assessment** to identify: 1) barriers to implementation of EI and the related practices, and 2) the existing practices. Such information helps decision-makers to make choices about the practices that could be most appropriate for the organisation to adapt them. Various methods like interviews, questionnaires, focus groups, observation, and examination of records are used to assess these aspects.

b) **Communication** of specific goals for EI set by management. The leadership or the top management informs or publicises policy statements, rewards, shares work-related information and accomplishments through various means.

c) **Training** to enable both managers and employees to learn the skills required for EI practices. The training may be related to group leadership, providing feedback, and problem-solving in order to work together effectively on improvement efforts.

d) **Performance Appraisal** to let employees know how they are doing. They need to be made aware of the appraisal process. The appraisal should bring out the strengths and weaknesses so that performance can be improved.

e) **Evaluation of the program features and effect***s* include formal measurement of target results and monitoring the implementation and support of employee participation in planning, problem solving and decision-making.

Teams and Teamwork

The most common vehicle for EI is a team. A team is defined as a group of people working together to achieve common objectives. Teams range in scope and responsibility from problem-solving groups to self-managed work teams that schedule work, assign jobs, hire members, and set the standards and volume of output. Teams are effective because each member of the team has special abilities that can be used for decision making. A participative work culture is encouraged when quality becomes everybody's responsibility.

7. The TQM culture

Introducing TQM requires an open and cooperative culture. Employees have to be made to feel that they are responsible for customer satisfaction. They will feel so if they are not excluded from the development of vision, strategies and plans, and participate in decision making. Again the leadership has to lead the way by practicing what it suggests.

14.4 TOTAL QUALITY MANAGEMENT IN PUBLIC SYSTEMS MANAGEMENT: PROBLEM AREAS

As mentioned earlier, TQM has emerged as a generic management tool equally applicable to public sector organisations. However, there are certain issues which need to be resolved.

i) **Resistance to TQM change**: Active resistance through effective and creative use of skills and competencies to prevent change is experienced by all the organisations.

ii) **Planning the Initiative**: Public sector organisations are most of the times mammoth in size and often have several locations. It poses problem in designing the initiative for the entire organisation. Sometimes new quality structures are put in place, which effectively create new layers of decision-making, and consequently create confusion.

iii) *Role of Top Management*: Apart from formulating a policy, the leadership is mostly not visibly committed to TQM implementation.

iv) *Political Support*: Political support for the initiative will be only for the period that tangible results are seen. Since, TQM does not guarantee success, the moment failures are noticed, there is fear that the commitment of political leadership will vanish.

v) *Identifying Customers*: The definition of customer is altogether different in public service organisations and often there are different interpretations. It could be the beneficiary, funding agency, political leader or anyother stakeholder.

vi) *Benchmarking*: Often the welfare objectives guide the State actions and productivity or efficiency is compromised. It would not be fair to compare with the best-in-class companies. However, such problems can be taken care of at the design stage.

With increasing globalisation and competitive pressures, the public sector organisations would have little choice. They will have to adopt TQM principles to meet the growing aspirations and expectations of the people.

14.5   PROJECT MANAGEMENT TECHINQUE

To understand the technique of project management we first need to know what is a project. A project comprises a number of activities that must be completed in a pre-determined manner. Wysocki *et al* (1995), define project as "a sequence of unique, complex and connected activities having one goal or purpose and that must be completed by a specific time, within budget and according to specification". The activities under a project are unique because the environmental conditions are never the same and they are complex because they are not repetitive and require special skills, creative inputs and effective decision-making capabilities. All the activities are connected, because the output of one activity is input for another activity. These activities lead to achievement of the pre-determined goals in the specified time period and within the resource limits. Projects are different from programmes as the latter are larger in scope and comprise multiple projects.

Project Management (PM) has evolved in order to plan, coordinate and control the activities of the project. Its purpose is to foresee or predict the potential risks which may come as barriers, so that they can be planned for and project goals are achieved in time. It is important because there is a direct relationship between time and costs. If the planned timescale is exceeded, the original cost estimates and budgets will exceed too. The cost overruns could be direct as well as indirect due to various factors like inflation, price rises, and overhead costs of administration. Every project is constrained by factors such as time, cost and resources.

14.6   PROJECT MANAGEMENT LIFE CYCLE

The principles of management which are associated with management of an organisation are equally applicable to the project management. Consequently, the life cycle of project management has different phases.

1. Planning

A complete plan delineates all the activities to be undertaken, the reason for each activity, the person responsible for each activity and the resources required for each of them. Though, a project plan is dynamic and is often subject to change, the mere act gives an understanding of the goals and objectives of the project. There are a number of participatory approaches that have emerged, like the Participatory Rural Appraisal (PRA), which can be used to plan the projects.

Planning Process

There are several steps in the planning stage:

(i)   **Project Overview Statement**: It defines the scope and goals of the project. It has five components (Wysocki *et al*, 1995)

- Problem/ opportunity
- Project goal
- Project objectives
- Expected outcomes

- Assumptions, risks, obstacles- technological, environmental, interpersonal, cultural, and causal relationships

(ii) **Identifying Project Activities**: As mentioned earlier, project is a sum of various interconnected activities. This list of work is generated through various techniques. Work Breakdown Structure (WBS), is a popular technique that deconstructs the projects into chunks of work, proceeding from major chunks of work to smaller chunks of work and finally to a level of detail that meets planning and scheduling needs.

(iii) **Estimating Activity Durations**: Various factors like varying skills, unexpected events, efficiency of people etc., have an impact on the duration of the project completion. But a standard is set to set up milestones keeping these risks in mind. Delphi Technique is popular for estimating activity duration. We shall be discussing this in detail in Unit 18 of this Course.

(iv) **Determining Resource Requirements**: There are various types of resources:

- Human
- Facilities
- Equipment
- Materials
- Money

There are three ways to assign resources to activities

a. At constant rate or *pro rata*

b. A lump sum amount for each activity

c. Assign the worker to an activity till it is completed.

- ***Constructing the Project Network***: Since all the activities are connected and depend on each other, it is beneficial to have a network representation of the project.

(v) ***Finalising Project Proposal***: It is the sum of all the activities done so far and it has the following features:

a. Background

b. Objectives

c. Approach to be taken

d. Detailed statement of work

e. Time and cost summary

2. Executing

Executing involves a number of steps. In addition to organising people, resources-personnel, materials and money, have to be identified. The scheduling of activities with start and closing dates is done. A number of tools and techniques have been developed to facilitate this activity. Following steps are involved:

i. **Organising Project Team**: The project manager, the core team and other team members are recruited with specific responsibilities. Their authority should be commensurate with their responsibilities.

ii.   **Operating Rules**: The rules regarding authority to take decisions, limits on the exercise of power and conflict resolution mechanisms needs to be put into place. We have already discussed conflict resolution in Unit 20 of Course 011.

iii.   **Scheduling Activities**: A detailed working schedule reflecting personnel, money and material needs to be calculated and put in place. Programme Evaluation and Review Technique (PERT) and Critical Path Analysis (CPA) are useful techniques in scheduling activities. We shall be explaining these concepts in Unit 17 of this Course.

3. Controlling

All the projects require constant monitoring, otherwise there is a risk of exceeding the laid down schedules. Controls are put in place to ensure that performance levels, costs and time schedules are maintained and also to enable tracking the progress of works. Tracking the progress is important because if any variance from the plan is detected, corrective action can be taken. If a significant variance from plan is noticed, the next step is to find out the causes and take remedial actions. It is pertinent to note here that controls reduce the project risks only to a point. If there are more controls, the project team may have to spend substantial time in preparing and defending progress reports. The project manager will need to strike a balance between the two. One solution to this is establishing an effective progress reporting system.

Progress Reporting System

Such a system

- gives periodic, timely, complete and accurate status information
- becomes part of routine and does not interfere with the activities of the project in terms of time
- enables a prompt response to a problem; and
- is readily available to the project team and senior management.

Levels and Frequency of Reports

Progress reporting should be frequent enough to establish accountability and control, but not so frequent as to hamper the activities of the project. Adequate care must be taken that the process is neither ambiguous nor complicated. Progress is tracked at three levels-

(i)   **Activity level:** The person in charge is responsible for getting the work done. So this requires a detailed report at shorter durations.

(ii)   **Project Management level:** Reports at this level need to show scheduling information, planned works and actual performance. These may not be so detailed as at the activity level, but should reflect important details. These reports need to be furnished either at the pre-determined stages or periodically.

(iii)   **Senior Management level**: At this level, strategic decisions are taken, so the details need not be elaborate . Rather a brief summary with graphical reports may suffice. Gantt Charts are usually used to furnish these reports. These reports need to be available when a strategic decision is to be taken about a problem or completion of a phase.

Tools and Techniques

Various tools and techniques are used for reporting. Some of them are mentioned below:

(a) Variance Reporting Tools

These reports have three columns- the planned number, the actual number and the difference between the two.

(b) Graphical Reporting Tools

Graphical representations save time. Some techniques are:

- **Gantt Charts:** The format of Gantt chart is two-dimensional with activities down the rows and time across the horizontal axis.

- **Milestones Charts**: Milestones are zero-duration activities that represent significant events in the project. This chart plots the difference between the planned and estimated date of a project milestone.

- **Cost Schedule Control**: It is used to measure project performance. Actual work performed is compared against planned and budgeted work in this. These are referred as Budgeted Cost of Work Scheduled, Budgeted Cost of Work Performed and Actual Cost of Work Performed.

Review Meetings- Periodic review of the project status is necessary for control. Normally, the project status should be reported weekly, by activity level manager to project manager and fortnightly or monthly by project manager to senior management. However, the frequency or the periodicity depends on the scope of the project as well.

4. **Closing**

The completion of the works related with the projects is followed by a formal project closure statement. But sometimes the projects are closed without completion also, which is either due to redundancy of the project goals or the infeasibility of the project itself. The purpose behind issuing a closure statement is to avoid indicating further expenditures against the accounts of the project. However, in large projects this statement is issued late because invoices from subcontractors or suppliers come after the completion of the project. The formal closure notice is fairly routine, but it should contain the following information:

- Project title

- Project number

- The Effective closure date

- Reason for closure

- Special instructions, if required

- Closure,with authorisation signature

Steps in Closing a Project

(i)   **Obtaining client acceptance**- The client has to approve the deliverables, which should meet the prescribed or agreed to specifications. A checklist

is often used. Sometimes tests are also conducted to check the specifications.

(ii) **Final Project Cost Records**- The final cost accounting information needs to be handed over to the client. These records, also show whether the expenditures were within the limits of the sanctioned funds or exceeded the budgeted sums.

(iii) **Documenting the Project**- Documentation helps in future references. It may also provide inputs for planning similar other projects. In a way it is also a feedback system.

(iv) **Post implementation Audit**- This helps in evaluating the project's goals and objectives, quality of deliverables, specifications and time deadlines.

Project Management in Public Systems

The public sector project especially in a country like India are subject to various constraints. These include location in remote areas, scarcity of inputs like power, communications and building materials, delays in land acquisition, constraints in selections of contractors and suppliers as well as in recruitment of personnel, lack of adequate basic data, frequent changes in personnel etc. There are a very few projects in the public sector like the Delhi Metro Rail Corporation (DMRC), which can claim to have been completed in time within the sanctioned cost, with production schedule and capacity utilisation. This is often due to the feeling that "heavens won't fall", which reflects the lack of accountability of the project team members. So, the factors mentioned above need to be planned for in the project proposal itself.

14.7 SYSTEMS ANALYSIS: CONCEPT AND APPROACHES

Systems Analysis is the study of a system and its components as to how they work and interact to achieve their objectives. It is an explicit formal inquiry carried out to help decision maker identify a better course of action. Fundamentally, it is about problem solving. A problem situation marked by complexity of the issue and uncertainty of the outcome of any course of action requires systems analysis. Systems analysis usually has some combination of the following: identification and re-identification of objectives, constraints and alternative courses of action, examination of the probable consequences of the alternatives in terms of costs, benefits, and risks, so that the decision maker can make an informed choice.

Systems analysis has different connotations. While a systems analysis related to public decisions is often referred to as *Policy Analysis*, that which concentrates on comparison and ranking of alternatives on basis of their known characteristics is referred to as *Decision Analysis*. That part or aspect of systems analysis that concentrates on finding out whether an intended course of action violates any constraints is referred to as *Feasibility Analysis*. Similarly, a systems analysis in which the alternatives are ranked in terms of effectiveness for fixed cost or in terms of cost for equal effectiveness is referred to as *Cost-effectiveness Analysis*. *Cost-benefit Analysis* is also a variant of systems analysis.

Approaches

Since it has so many variants, there are bound to be many approaches. However, more popular approaches are:

a. **Model Driven Analysis Approaches**: In this approach, pictures communicate problems, requirements and solutions. These include flowcharts, structure charts and organisation charts. Some examples are given below in brief:

i. **Structured Analysis**: It is process-oriented and focuses on the flow of data through enterprise and software processes. Data Flow Diagrams depict the processes along with their inputs, outputs and files.

ii. **Information Engineering and Data Modeling**: It focuses on the structure of stored data in a system and therefore is data-centered. The data models in this approach are known as entity relationship diagrams.

iii. **Object Oriented Analysis**: It eliminates the artificial separation of concerns about data and processes and integrates them into constructs called objects.

b. *Requirements Discovery Methods*: Putting up a system in place is not sufficient, the analysis should lead to identifying problems and opportunities. Consequently, all approaches of systems analysis require some form of requirements discovery. Two techniques are widely used for this:

i. **Fact Finding Techniques**: These are related to sampling of existing documentation, reports and databases; observation of the existing system in action; soliciting opinions of users as well as managers.

ii. **Joint Requirements Planning**: This technique is used to reduce time as is taken in fact finding techniques. A workshop is organised, where a facilitator helps both the system owner and the user to participate in systems analysis.

c. *Process Redesign Methods*: Triggered by TQM, these focus on all processes regardless of their automation. Each process is thoroughly studied and analysed to find out problems and opportunities. However, finally it is examined as to how best the information technology may be applied to further improve the processes.

14.8 SYSTEMS ANALYSIS: PHASES

There are five distinct phases of systems analysis:

i. *Identifying the Scope*: This is the preliminary investigation phase to determine the *raison deters* for the analysis. The scope is defined in terms of scale, development strategy, schedule, resource requirements and budget. Whitten *et al* (2003), have identified five tasks in this phase:

- **Identify baseline problems and opportunities**: This framework summarises urgency, visibility, benefits, priority and possible solutions.

- **Negotiate baseline scope**: This task uses the Preliminary Problem Statement generated by the first task to define the boundary of the project.

- **Assess baseline project worthiness**: Once the scope of the project is determined, it becomes important to assess whether it deserves to be undertaken or not in terms of whether it will solve the problem.

- **Develop baseline schedule and budget**: If the project worthiness is proved, a preliminary plan that includes schedule and resource assignments is prepared.

- **Communicate the project plan:** This task launches the project.

ii. *Problem Analysis*: The goal of this phase is to study and understand the problem domain so that it can reveal the problems, constraints and opportunities in the existing system. Six tasks facilitate problem analysis (Whitten et al, *op.cit*):

- **Understand the Problem Domain**: All parties- systems owner, users and analysts, come together to provide their perceptions, which helps in finding out the domain in which the problems, opportunities and constraints exist.

- **Analyse Problems and Opportunities**: The problems and opportunities identified in the preliminary phase are analysed in detail in this phase, in terms of causes and effects. Fact finding techniques are used in this task.

- **Analyse Process:** This task is more suitable where process redesign or system development projects is required.

- **Establish System Improvement Objectives:** Identification of objectives is important to assess the efficacy of the improvements

- **Modify the Project Plan**: After detailed analysis it becomes imperative that the suitable modifications are introduced in the preliminary project plan.

- **Communicate Findings**: The modified project plan needs to be communicated to all so that further action can be taken,

iii. *Requirements Analysis*: As the name suggests, in this phase, the requirements for new system are analysed. It includes the following tasks:

- **Identify and Express System Requirements**: Functional requirements are identified in terms of inputs, outputs, processes and data, and non-functional requirements are identified in terms of budgets, costs, timetables, documentation and training needs, quality management etc.

- **Prioritise System Requirements**: It is essential to identify requirements more important than others.

- **Communicate:** Communication is an ongoing task. It is important to convey decisions taken. Therefore, requirements need to be communicated so that they can be arranged for.

iv. *Decision Analysis*: Finally, the assessment is made about installing the system with the use of technology. The purpose of this phase is to recommend the solution to the problems. Following tasks, which are quite similar to what Simon had suggested in decision making, facilitate this:

- **Identify Alternatives**: Various possible alternatives are explored which can be solutions to the identified problems.

- **Develop the Solutions**: All the identified courses of action are analysed to assess technical feasibility, operational feasibility, economic feasibility and schedule facility.

- **Selecting the Best Solution**: Finally, choice of the best possible course of action is made by system owners and users.

- **Finalising the Project Plan**: On the basis of recommended solution, the project scope and objectives are reevaluated and project plan is finalised.

Finally, the system solution is accepted and put for implementation. This concludes the system analysis phase.

14.9 CONCLUSION

The key management tools which have just been discussed are quite comprehensive and have certain principles and techniques. The focus of all these tools is on improving managerial processes, planning, coordinating and controlling the activities. It also aims at reducing cost and time overruns and ensuring accountability. Public systems management is set in a particular contextual setting and faces certain unique

problems. Yet exposing it to these managerial tools could prove beneficial in the long run both from the organisational and client angles.

14.10 KEY CONCEPTS

Customer

Any person or group inside or outside the organisation who receives a product or service. A customer functions in a market atmosphere, has certain rights and responsibilities and is willing to pay for the services rendered.

Continuous Improvement Process

The ongoing enhancement of work processes for the benefit of the customer and the organisation; activities devoted to maintaining and improving work process performance through small and gradual improvements as well as radical innovations.

Customer Expectations

The "needs" and "wants" of a customer that define "quality" in a specified product or service.

Gantt Chart

It has been developed by Henry Gantt, an American Engineer in 1917,to facilitate the production flow in organisations.It is a scheduling chart which indicates the time taken to complete each section of a project. The project is subdivided into several sections. The chart has a horizontal axis based on time and a vertical axis based on the sections of a project. Horizontal bars are drawn in the chart that show the time taken to complete each section of the project.

Participatory Rural Appraisal(PRA)

It is a label given to a growing family of participatory approaches and methods that emphasise on local knowledge and enable local people to make their own appraisal,analysis and plans. PRA uses group animation and exercises to facilitate information sharing, analysis and action among stake holders. The purpose of PRA is to enable development practitioners ,government officials and local people to work together to plan context based programmes(World Bank Source Book,2005).

Quality Function Deployment

A structured method in which customer requirements are translated into appropriate technical requirements for each stage of product development and production.This process is referred to as listening to the voice of customer(www.asq.org/info/glossary html)

Total Quality Control

A management approach advocating the involvement of all employees in the continuous improvement process and not just quality control specialists.

14.11 REFERENCES AND FURTHER READINGS

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14.12 ACTIVITIES

1.   Identify the important total quality management activities with regard to a school or hospital or any public service agency.

2.   Attempt to enquire about project management techniques being used in a public or private sector organisation.