

## 2. HOW TO TACKLE THE CASE EXERCISES

Some suggestions are made here which may be useful as a starting point for the beginner.

Questions to try to answer in the early problem structuring include:

Who is (are) the clients(s)? Many O.R. textbooks are written as if there is a single client who initiates the project and who can unilaterally accept the recommendations of the O.R. team and implement them. In the majority of projects, especially in developing countries, the situation is more complex. There may be several departments in the organisation which are involved in the study, all of whom have to agree before anything can be done. Also, the majority of development projects involve government departments and parastatal organisations. The student should identify these various interest groups and their objectives.

What does the client want from O.R.? Often the client(s) may know nothing about O.R. or have quite unrealistic expectations. The O.R. team will need to spend quite a lot of time throughout the project in exploratory and educational activities to produce a good mutual understanding. In the case exercises, much can be obtained by reading the text, but some imagination may be needed to fill out the picture. The teacher will probably be prepared to give some guidance on the assumptions which can be made.

What is the system of activities in the organisation? The organisation exists to produce products or provide services. A basic understanding of the system of activities is needed and this is achieved in real projects through interviews with persons in the system, through direct observation, and through study of statistics. In the case exercises this has to be done by careful study of the text. Diagrams are essential as a way of representing the system of activities.

What are factors and changes in the environment which affect the organisation, in particular reactions to changes proposed by the O.R. team? In developing countries there are usually rapid and unpredictable changes in government policies, and in terms of trade, thus affecting prices and availability of raw materials. The student should propose solutions which are 'robust' in the face of such changes. These are preferred to optimal solutions which are dependent upon narrow sets of assumptions.

All the cases provide the opportunity for working in groups which represents the common practice of team work in O.R. To work effectively in a group it is necessary to have adequate space for meetings. Visual aids such as a blackboard and flipcharts should be used for brainstorming and for communication within the group. Efficient group organisation is important including a clear allocation of tasks between group members and well-structured meetings. This will encourage participation of all the members and effective use of their time.

An essential part of all projects is the identification of benefits, costs and constraints. In development projects there may be benefits such as equitable distribution of income in the community which are important but difficult to quantify. Benefits may affect different groups and this must be recognised explicitly. When identifying financial costs, foreign exchange costs must be treated differently to internal costs. Important constraints should be identified such as shortage of labour. The student will often find it useful to make rough estimates of benefits and costs at an early stage. This may eliminate certain possible solutions and indicate where project effort needs to be concentrated.

The student should expect to recycle and rework the analysis several times adding more information and trying out reformulations of the approach. O.R. projects seldom if ever proceed directly to a solution without several deviations and revisions. Exposing your work to other students is a good step and of mutual benefit. In order to be able to do this the student needs to plan the time available as set by the teacher. The student should work backwards from the time of submission of the report to allow time for revision, redrafting and discussion. Most O.R. projects are under time pressure and decisions have to be made which balance the desire to carry out detailed work with the pressure for quick results.

All the cases require at least one report to be written for the client. It is important to write the report for the 'client' not for the teacher. In a particular case it may be apparent that the client knows little about O.R. so that the report should be written at a level suitable for someone without such knowledge.