

In this chapter we will look at the steps involved in systems analysis. Harlequin Aquatics has not used a computer system before so the company can start a new system from scratch. The steps involved in systems analysis are:

- fact finding
- a feasibility study
- an analysis phase
- system design
- implementation
- testing
- documentation
- evaluation.

We will look at what each of the above entails.

Fact finding

Fact finding is concerned with finding about the existing system. It may be that computers are already used but not to their full extent or it may be that a manual system exists which needs computerising. In either case, we need to find out how things are done at the moment, before we can suggest any improvements.

There are four main ways of finding out about existing systems, these are:

- 1 asking questions (interviewing people)
- 2 getting people to fill in carefully designed questionnaires
- 3 sitting with various people to observe how the job is done at the moment
- 4 inspecting any bits of paper, screen displays and files which are used in the present system.

The final step in fact finding is to produce a report which describes the existing system and its shortcomings, together with some description of the output needed from the new system.

Feasibility study

The feasibility study looks at the chances of being able to solve a particular problem at a reasonable cost. The feasibility report is the

QUESTIONS

- 1 Have another read of the scenario on Harlequin Aquatics. You are going to carry out a systems analysis on this company.

Imagine you have just received instructions to go and investigate their present system. You have no other background information apart from the scenario.

- (a) Prepare a questionnaire which you could get the company to fill in before you arrange an interview. Your questionnaire should be general to start with but then go on to ask more details later. Prepare this using suitable software.
- (b) After receiving back the questionnaire you decide to arrange a visit. Write a list of questions you would ask in the light of the results of your questionnaire. Try to not ask too many questions that are simply answered yes or no but ask open ended questions such as 'can you tell me what problems you have had with the existing system?'

- 2 One part of the fact finding process is to collect the various pieces of paper used in the business and then examine them. Read the scenario again and decide which pieces of paper you would like to examine.

document produced at the end of the study and will give an idea of the time the project is likely to take, along with some estimate of cost. The aim of the feasibility study is to see whether it is possible to devise a system that can be implemented and will work at reasonable cost.

The feasibility study ends when a decision has been reached whether or not to proceed with the project.

The following are usually included in a feasibility study:

- 1 a description of what the system is required to do (called the objectives of the system); Figure 13.2 shows some of the objectives for the Harlequin Aquatics' system
- 2 some preliminary design so that the costs may be estimated

- 3 some alternative designs so that the most suitable one can be chosen
- 4 a cost/benefit analysis; this looks at the benefits and makes sure that they outweigh the costs. The costs of a system are not just the costs of the hardware and the software needed. Figure 13.3 shows some of the costs you might not have thought of
- 5 the conclusion, which states whether it is worth going ahead with the project and which design has been chosen.
- 5 the human, technical and economic factors:
 - do the staff have the expertise to cope with the new system?
 - is the technology available, i.e. can it be done?
 - is there enough money to go ahead?
- 6 a plan for the implementation
- 7 a proposed course of action (i.e. what the consultant/systems analyst suggests the company should do next).

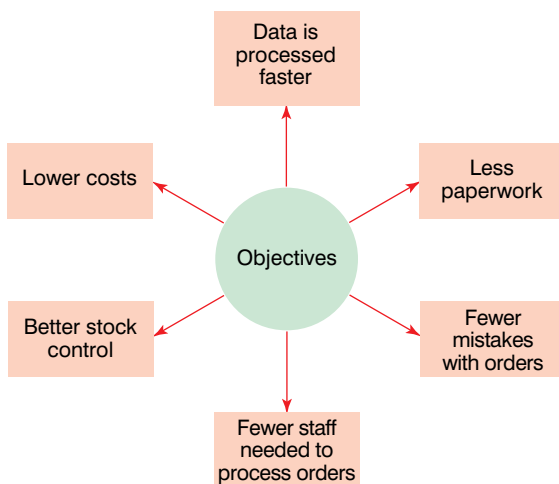


Figure 13.2 Some of the objectives of a system for Harlequin Aquatics

The feasibility report

The feasibility report is a written report given to the directors of Harlequin Aquatics and is really a summary of the results of the feasibility study. Usually the report is written but it can also be given in the form of a spoken presentation.

The feasibility report should include the following:

- 1 a brief description of the business and any problems with the existing system
- 2 details of what part of the business is being looked at; for instance with Harlequin we are looking at the processing of orders
- 3 the objectives of the proposed system
- 4 a list of some of the alternative solutions considered and why these alternatives were rejected

QUESTIONS

Figure 13.3 shows the headings for some of the costs which Harlequin Aquatics might have to pay during the development and eventual use of the system. Write a more detailed list under the headings in Figure 13.3.

Figure 13.3 The costs associated with an information system

Analysis phase

The feasibility study outlines what is required from the system and in the analysis phase this study is used to design the new system. To perform the analysis, the systems analyst will need to look at the system in greater detail than for the feasibility study. When the present system is investigated, the systems analyst will find more weaknesses in it.

In the analysis phase, the charts (systems flowcharts and data flow diagrams) should be drawn as an aid to understanding the present system.

Included in the analysis phase are:

- 1 detailed objectives of the proposed system
- 2 facts about the parts of the old system being replaced by the new system
- 3 any constraints on the system: these are limitations on the solution to the problem. Many problems can be solved if the money, technical expertise and time are available. If any of these cannot be found, then they are constraints on the system
- 4 an update of the cost/benefit analysis based on the new information
- 5 an update of the plan for further development of the system. This would include such things as the responsibilities of the members of the team involved with the project and deadlines by which the stages must be completed.

System design

If the directors of the company are convinced that a new system will be worth having, work can be started designing the new system. Further investigation should be undertaken to consider what inputs, processes and outputs will be needed. Let's now consider each one in turn:

Outputs

Since the outputs from the system determine how the rest of the system operates, these are looked at first.

We need to look at each of the following areas.

- 1 What output is needed? For instance, we may decide that for our system we need the following:
 - an invoice (bill) which is sent out to each customer
 - a copy of the invoice to be sent to the accounts office
 - a dispatch note to be sent with the goods
 - a picking list for the storekeeper

- a screen display so that we can find out if a particular item is in stock.
- 2 We must then look at what needs to be on these documents and screens. We may be able to use the same document for different processes. In this way we could make several copies of the invoice using multi-part stationery and give one each to the customer, warehouse and accounts office.
 - 3 How frequently do these documents need producing? For instance we may need a list of all the stock at the end of each day or a list of all the past customers just once a year when there is a sale on.
 - 4 What is the volume of output? How many orders are dealt with each day? How many items are on each order? All of these determine the type of system we need to use and the input method chosen. If lots of orders are dealt with, methods other than keying need to be looked at.

Inputs

Questions the systems analyst will need to answer are as follows:

- 1 Where does the data come from? In our company the orders come in a variety of ways. They are placed on an order form and posted, or they may be telephoned or faxed.
- 2 What data needs to be input into the system? This would include catalogue numbers, descriptions, prices, quantities, etc.
- 3 How much data needs to be entered and how often it needs entering? For our company, it would be useful to determine how many orders were received in a day, what was the number of items on each order and so on. To determine the sizes of files we need to find out how many customers the company has and how many items there are in the catalogue.
- 4 Which input device should be chosen? This really depends on the volume of data and whether any of the data can be captured using OMR, OCR, barcoding, etc.

The systems analyst will also need to look at the design of the input screen, which should preferably match the design of the order forms.