CHAPTER 8

Resource allocation

During the development phase of a project, the need will arise for various types of resources at different times. Ensuring the timely delivery of these resources to the project development team is of great importance, as late delivery will most probably mean that the project development will fall behind schedule. Study Chapter 8 of the textbook, which deals with resource allocation.

Unit 7 objectives:

The aim of Chapter 8 of the textbook is to introduce the following concepts:

- the nature of resources;
- identification of resource requirements;
- scheduling of resources including:
    - creation of critical paths, and
    - counting cost;
- being specific;
- publishing the resource schedule;
- cost schedules; and
- the scheduling sequence.

Unit 7 outcomes:

After studying Chapter 8 of the textbook, you should be able to:

- identify the resources required for a project;
- ensure that the demand for resources is more evenly distributed throughout the life of a project; and
- produce a work plan and resource schedule.

Consider the following example on cost and resources:

EXAMPLE 1

The third month of a seven-month project has just been completed and actual figures (in person-months) are given in the table below:

Month	Budgeted effort	Value completed	Actual effort
1	11	5	7
2	15	7	8
3	20	11	12
4	20		
5	16		
6	13		
7	5		

1. What percentage of work should be completed at this stage, according to the original plan?
2. What percentage of work is actually complete?
3. What percentage of the total budget has been expended?
4. What do these figures tell us about the project?

Solutions to this example:

1. Total budget 100
   Budget months 1 to 3 46
   Estimated % complete (46 / 100 * 100) 46

2. Total budget 100
   Value completed months 1 to 3 23
   Estimated % complete (23 / 100 * 100) 23

3. Total budget 100
   Actual effort months 1 to 3 27
   Estimated % complete (27 / 100 * 100) 27

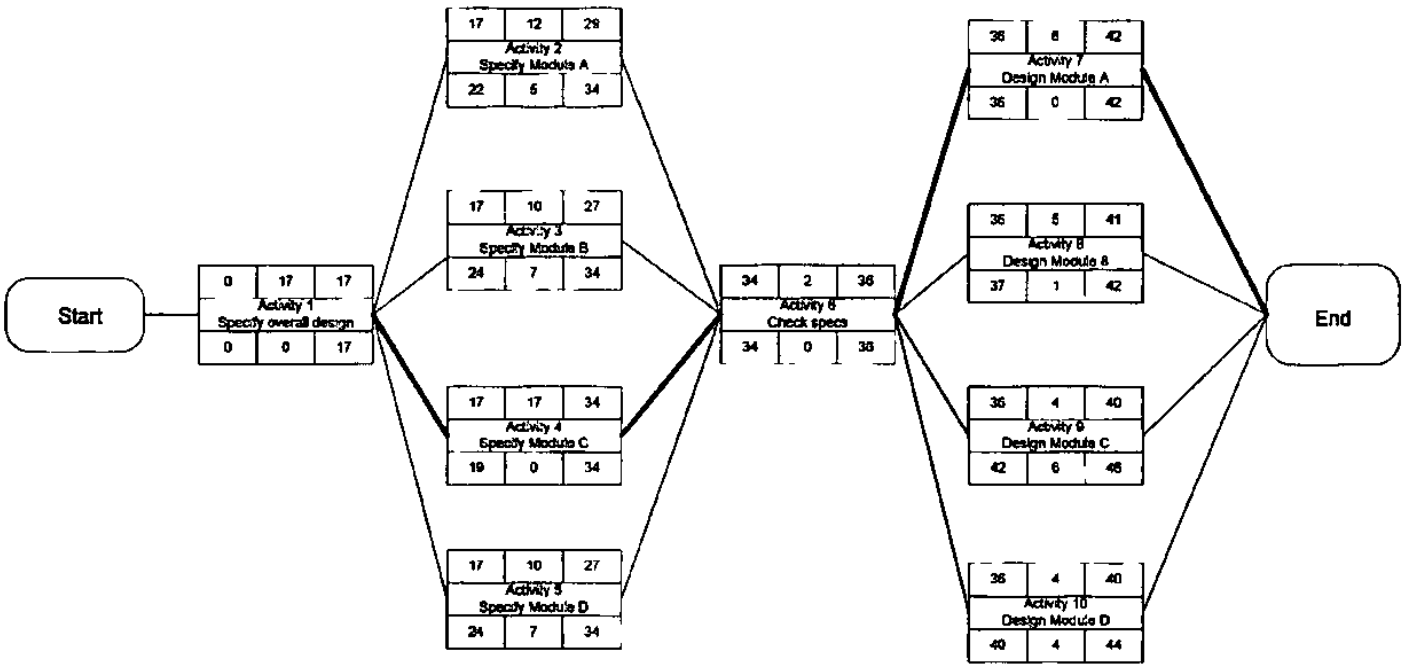
4. The project is late with regard to completion: 23% actually completed (= value completed during month 1 to month 3 = 5+7+11 = 23) versus 46% planned completion (= budgeted effort = 11+15+20 = 46).

   Estimating 15% low: 23% of the work is actually complete (refer q.2) and 27% of the budget has been spent (refer q.3). Not too much has been overspent, i.e. the budget was estimated (27-23)/27 * 100% = 4/27 * 100% = 15%.

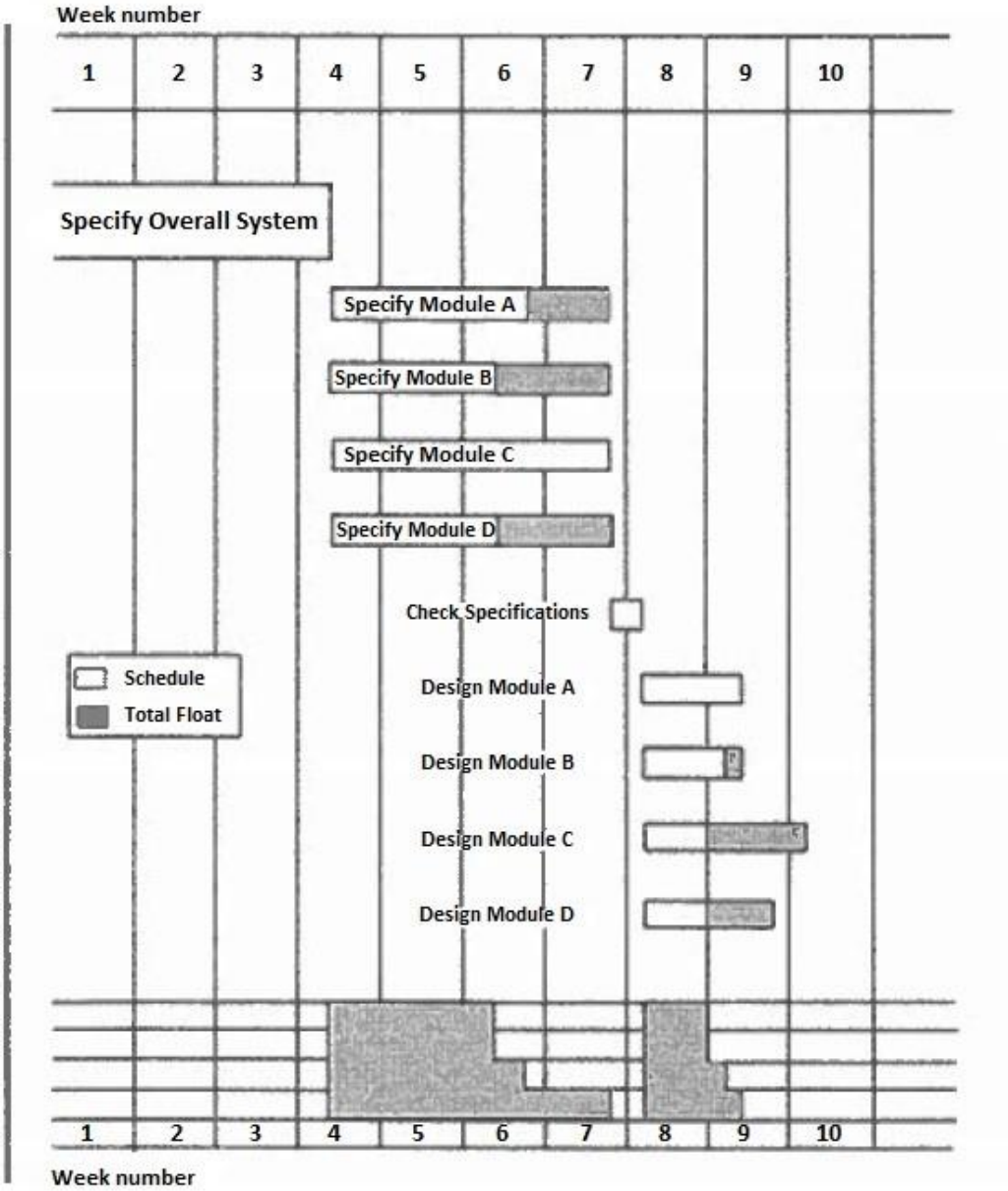
   Resource allocation seems to be the main culprit: 27% actually spent versus 46% planned. Seeing that the budget has only been underestimated by 15%, it doesn't seem to be a problem. The only other alternative to the work being so far behind schedule is that resources are a problem. (for example, too few staff, incompetent staff, incorrectly allocated staff, etc.). Insufficient resources have had a much greater impact than under-estimating.

EXAMPLE 2

Below is partial precedence network for an IT project. Specific individuals have not been allocated to activities yet, but all the activities will be carried out by 'standard' analysts or software developers. **Draw up a bar chart and resource histogram for the information given in the precedence network below.**



Bar chart and resource histogram



EXAMPLE 3

The staff cost of the Phumzani Project is shown below. Nomsa is the project leader of the Phumzani project and will spend 10 extra days on the project to plan and carry out the post project review. The project is scheduled to be finished in 26 days. An amount of R350 per day is charged by the Phumzani team for overhead costs. Busi will work on the project every day, Samuel and Amy will work only half of the days and Juan will work only 10 days

Staff member	**Daily cost**
Nomsa	R400
Samuel	R200
Juan	R300
Busi	R400
Amy	R300

Calculate the total cost for the Phumzani project. **[14]**

Staff member	**Daily cost**	**Days required**	**Cost**	
Nomsa	R400	26 +10 = 36	R 14,400	2 marks
Samuel	R200	26 / 2 =13	R 2,600	2 marks
Juan	R300	10	R 3,000	2 marks
Busi	R400	26	R 10,400	2 marks
Amy	R300	26 / 2 =13	R 3,900	2 marks
Overhead costs**	R350	26	R 9,100	2 marks
Total			**Total**	**R 43,400**

Table for solution to question: Total cost for Phumzani project

****Note:*** The overhead cost per day is very important to include in the calculation of the cost of the entire project. The overhead cost is calculated for the number of days for which the project is scheduled and not for additional days that some staff members may work. This cost can easily be overlooked with great influence on the final cost. In this scenario the overhead cost was only R 9100 but in bigger projects this cost can grow exponentially to have a staggering influence on the total cost of the project.