

# Costs and Financing in Open Schools

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*Written by*  
Ed Du Vivier



COMMONWEALTH *of* LEARNING

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*The Commonwealth of Learning (COL) is an intergovernmental organisation created by Commonwealth Heads of Government to encourage the development and sharing of open learning and distance education knowledge, resources and technologies.*



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## **COSTS AND FINANCING IN OPEN SCHOOLS**

Ed Du Vivier

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# Overview

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These self-instructional resources have their origins in a workshop on the *Costs and Financing of Open & Distance Learning* which took place from 6-10 August 2007 in Gaborone, Botswana. The workshop was sponsored by the [Commonwealth of Learning](#) with the overall aim of building capacity to plan, negotiate and manage appropriate financial arrangements for the development and maintenance of ODL in member states. COL would like to acknowledge the Namibian College of Open Learning (NAMCOL) for giving permission to use some of their copyrighted materials. The workshop was facilitated by Ed Du Vivier, an independent education and training consultant, with the assistance of two resource persons: Ms Frances Ferreira, Education Specialist: Basic Education and Open Schooling from COL Head Office, and Prof. Pankaj Khare, Director: International Division of the Indira Gandhi National Open University. Twenty-five participants from eight countries attended the workshop.

These resources were created by the facilitator for the following target groups:

- chief executive officers, chief financial officers and senior managers in open schools, colleges or universities or in dual-mode institutions;
- members of governing bodies or advisory committees for ODL institutions;
- political office-holders, permanent secretaries and senior managers in ministries of education;
- members of higher education authorities or funding bodies;
- other professional and managerial staff in ODL institutions;
- anyone who is interested in the development of open & distance learning.

The materials comprise a series of eleven units, each of which includes specific learning objectives, explanatory text, practical exercises, questions for discussion and recommendations for further reading. The units are as follows:

1. Some Basic Concepts of Cost Analysis
2. How Student Numbers Affect Costs
3. Capital Costs

4. Overheads
5. Unit Costs: determining costs per student, per course or per programme
6. Costing a New Course or Programme
7. Budgeting: preparing estimates of income & expenditure
8. Full-Time Equivalent Students: establishing a basis of comparison with conventional education
9. Efficiency & Effectiveness of ODL
10. Funding Open & Distance Learning
11. Student Fees: determining fee levels & devising a fee structure

While these units develop in a natural progression, it is not necessary to work your way through all units from start to finish. Instead, please feel free to dip into the units as you wish.

## Icons

The following icons are used throughout this manual to call your attention to certain types of material:



Definition



Objectives



Exercise



Feedback



Reflection



Self-Test



Resources

# UNIT 1

## Some Basic Concepts of Cost Analysis

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### Objectives of this Unit



By the end of this unit, you will be able to:

- describe the various sub-systems in a simple model of an open and distance learning (ODL) institution;
- discuss the difference between direct and indirect costs and categorise different items of expenditure;
- provide definitions and examples of fixed costs, variable costs and semi-variable costs;
- explain how some costs can be classified as committed and others as managed;
- discuss the concept of cost drivers and identify those driving costs in your institution.

### 1.1 Introduction



Any expenditure of money on materials, labour, equipment or services is referred to as a cost. Costs may be either notional or actual. *Notional costs* are ideal or average figures that are used to estimate future expenditure. The term *actual costs* is used to refer to the exact amount spent in the past, as reflected in an institution's accounts.

Like any education institution, open schools must spend money on a variety of things in order to provide courses to their learners. However, when compared to conventional education, the pattern of expenditure in ODL institutions is quite distinct. This unit looks at some of these differences and introduces a basic vocabulary for categorising and analysing costs incurred by open schools.

## 1.2 Systems Model of Open and Distance Learning

Rumble (1986, pages 15-17) proposes a simple model which looks at the operations in ODL institutions in terms of four inter-related sub-systems. The value of such a model is that it clearly identifies the main areas of activity in an ODL institution and defines the relationships between them. It also suggests an analogy between a factory producing items for consumption and the 'quasi-industrial processes' of an ODL institution. Just as in a factory, ODL involves the specialisation of tasks and the division of labour between different units.

The four sub-systems in Rumble's model are:

### **Materials Sub-System**

The first major sub-subsystem includes all activities involved in the design, production and distribution of self-instructional materials, whether these are primarily print-based or involve other media.

### **Student Sub-System**

Once learning materials have been developed and distributed to learners, they are passed over to the Student Sub-system. This sub-system comprises all of the activities, staff and other resources that are involved in facilitating learning by students and managing their progress through a programme.

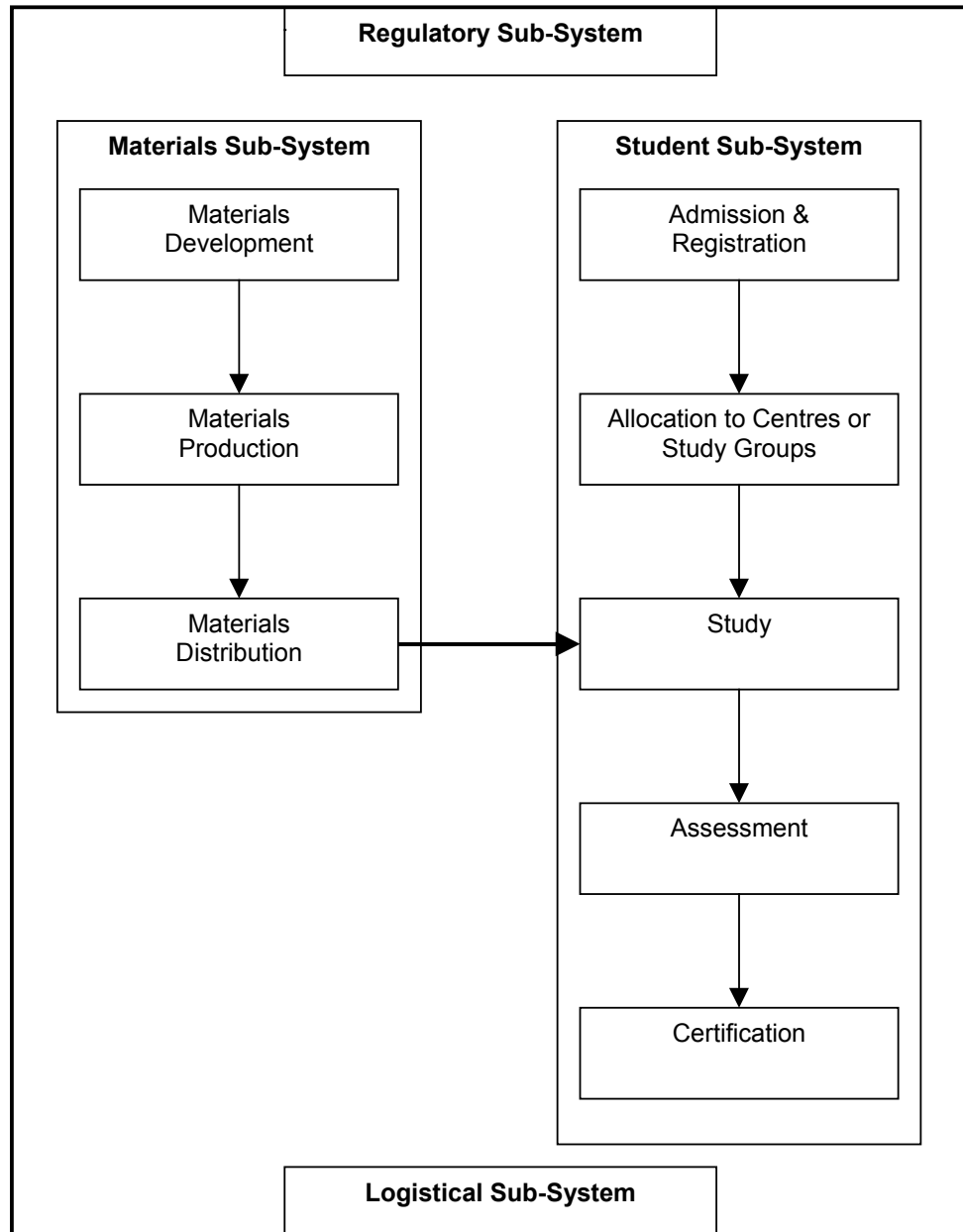
### **Logistical Sub-System**

The Materials and Student Sub-systems are supported by other units which procure and manage resources for the institution. Those units which look after finances, human resources and information and communications technology (ICT) comprise the Logistical Sub-System of any open school, college or university.

### **Regulatory Sub-System**

Finally, overall management and guidance comprise the Regulatory Sub-System, which is sometimes referred to as the 'Brains' of the institution. All activities related to strategic planning, policy formulation and monitoring the institution's performance in meeting its goals are part of this sub-system.

Rumble's model is illustrated in Figure 1a.



*Figure 1a. Systems model of open and distance learning (Rumble 1986, 17).*

Unlike a conventional school or college, an ODL institution devotes a large part of its resources (staff time and office facilities, as well as funds) to its Materials Sub-System and much of its expenditure on materials development is incurred before any students enrol for that course. On the other hand, an open school is not the same as an educational publishing company, because the former also includes a Student Sub-System which supports the learning process.



### Exercise 1.1

This exercise may be done on your own, with a partner or in a small group.

- Looking at Figure 1a, think of some examples of costs that are incurred in carrying out the activities in each of the four sub-systems.
- Write these down along the left-hand margin of a blank piece of paper. Draw four vertical lines to the right of your list to form four additional (narrow) columns.



### Sample Answer

Some examples of the types of costs you might have listed can be found in the sample answer on page 11. Please retain your work for future use.

## 1.3 Direct and Indirect Costs

The costs of providing educational services through ODL can be classified in a number of different ways. Understanding the terminology used to categorise costs is important in analysing how they arise and how they will behave. The first distinction that must be made is between direct and indirect costs.



The term *direct cost* refers to any expenditure that CAN be directly related to a particular product or service. For example, many open schools employ part-time workers to mark assignments submitted by students. The fee paid for this task is an example of a direct cost since it can be directly linked with a specific course.



An *indirect cost*, on the other hand, is any expenditure that CANNOT be directly related to a particular product or service. Indirect costs are often referred to as *overheads*. Examples of indirect costs include rental or maintenance of offices, general office equipment, and the salaries of support staff, such as the institution's chief accountant or the secretary for its director. It is difficult to link expenditure on these things directly to any of the institution's courses or programmes.

When a course could not go ahead without a particular item of expenditure, then it can be classified as a direct cost. If the relationship between an item of expenditure and the running of the course is less clear, then it should be categorised as an indirect cost. In some cases, a particular activity (and its related costs) can be attributed to two or more courses or products. For example, some ODL institutions run a workshop once a year to train writers for all their courses. Expenditure on such a workshop should be classified as a direct cost though, for the purposes of analysis, it will need to be apportioned to the different products.



### Exercise 1.2

- Look at the list of costs that you wrote out for Exercise 1.1.
- Decide whether each cost should be categorised as Direct or Indirect. In some cases, the expenditure may be direct cost in some cases, but indirect in others.
- In the first blank column, write either a 'D' (for Direct), an 'I' (for Indirect) or 'D/I' (for either Direct or Indirect, depending on the circumstances).



### Sample Answer

Refer to the sample answer on page 13 to see some examples of how different costs can be categorised as either direct or indirect. Please retain your work for future use.

In general, the more closely an activity (and its associated costs) can be linked with a particular course, the easier it is to determine that it is a direct cost. For example, printing study booklets for a given course is clearly a direct cost. As the association between the activity/expenditure and a product/course becomes more distant, it is increasingly difficult to link costs with a particular course or product. Nevertheless, when carrying out a comprehensive analysis of expenditure, it is important to apportion and attach indirect costs/overheads to different courses in order to determine the full cost of providing the service. Different ways of dealing with overheads are discussed in Unit 4.

## 1.4 Fixed, Variable and Semi-Variable Costs

Another way of categorising costs in ODL institutions is to consider whether a change in the level of productive activity (for example, by enrolling more students) has an impact on expenditure.



In cases where expenditure does NOT increase or decrease with changes in the level of productive activity, then this is categorised as a *fixed cost*. For example, regardless of whether an ODL institution has a hundred registered students or a hundred thousand, it needs to employ a chief executive officer (CEO) or director. Although the duties of the post and the salary on offer would very likely be different in the two situations, the salary of the CEO is considered a fixed cost.



By way of contrast, a *variable cost* is any expenditure that varies in proportion to a change in the level of activity. Expenditure for printing study materials is a good example of a variable cost. For each additional student enrolled for a course, extra expenditure is incurred.

Some costs seem stable for a particular level of activity, but suddenly increase with a significant increase in student numbers. For example, most ODL institutions have policies regarding the maximum number of students who can be accommodated in a class group for face-to-face tutorials. When student

numbers exceed the maximum, then a second class group is formed, necessitating the employment of another tutor (or additional hours for the same part-time tutor). The term *semi-variable cost* refers to such expenditure which remains fixed within a particular level of productive activity, which is referred to as the *range*. If the level exceeds this range, then additional costs will be incurred.



### Exercise 1.3

- Refer to the list of costs that you wrote out for Exercise 1.1.
- Decide whether each cost should be categorised as fixed, variable or semi-variable.
- In the next blank column, write either 'F' (for Fixed), 'V' (for Variable) or 'S-V' (for Semi-Variable).



### Sample Answer

Refer to the sample answer on page 15 to see some examples of how different costs can be categorised as either fixed, variable or semi-variable. Please retain your work for future use.

This exercise highlights the fact that, while many costs appear to be fixed at first glance, they are really semi-variable. Take, for example, the salary of the institution's CEO or Director. When student numbers are low, the CEO will most likely have responsibility for many tasks related to the supervision of staff and the day-to-day running of the institution. However, if student numbers grow dramatically, it is often necessary to buy in specialised services or employ extra managerial or professional staff to take over some of these duties. Thus, even though the institution still has only one CEO, the job that he or she originally carried out has been split among a number of additional employees, with an accompanying increase in costs.

## 1.5 Committed and Managed Costs

A third way to categorise expenditure is based on the relative ease or difficulty of doing without the materials, labour or equipment that incurs a cost.



Where expenditure CANNOT be eliminated or cut back without a major negative impact on the institution's objectives or profits (in the case of a commercial operation), this is referred to as a *committed cost*. For example, if an ODL institution entered into a long-term lease for additional office space to accommodate a planned expansion of its courses, it may be difficult to break the lease without a significant financial penalty. Likewise, once a staff member is confirmed as a permanent employee, it may be necessary to incur substantial

expenditure in redundancy payments if the position is no longer necessary. In most cases, such expenditure should be categorised as a *committed cost*.



However, where expenditure can be delayed, reduced or eliminated without an immediate major disruption in the institution's programme, then it should be categorised as a *managed cost*. For example, if resources are limited, it may be possible to postpone the revision of a particular course for one or more years. Staff training, foreign travel and entertainment expenses are often treated as *managed costs*.



### Exercise 1.4

- Refer again to the list of costs that you wrote out for Exercise 1.1.
- Decide whether each cost should be categorised as committed or managed.
- In the next blank column, write either a 'C' (for Committed) or an 'M' (for Managed).



### Sample Answer

Refer to the sample answer on page 17 to see some examples of how different costs can be categorised as either committed or managed. Make sure to hold on to your work for use in Unit 3.

## 1.6 Cost Drivers



A final concept that is important in any analysis of expenditure is that of a *cost driver*, which is defined as anything that causes an overall increase (or decrease) in costs when it increases (or decreases). Student numbers are the most obvious example of a cost driver. In addition, the number of tutorial groups drives the cost of tutors, since an increase in the number of groups necessitates the employment of additional tutors. Likewise, the number of study centres is a cost driver for several different items of expenditure. Decreasing the number of study centres has an impact on the amount paid for employing centre heads, leasing/renting/maintaining buildings, electricity for centres, ICT services, etc.

In order to analyse and control expenses, it is essential to identify all of the factors driving costs for a particular activity.



### Exercise 1.5

- Consider all the costs associated with developing and offering one or more new ODL courses in your institution.
- On a blank piece of paper, write down all the cost drivers for this activity.



### Sample Answer

Refer to the sample answer on page 19.



### Other Resources

Rumble, G. 1997. *Costs and Economics of Open and Distance Learning*. Chapter 4, pages 21-31.

Hülsmann, T. 2004. *Costing Open and Distance Learning*. Section 2.2: 'Drawing up a Budget, a generic template for costing ODL', pages 4-7 & Section 3.2: 'Elements of Cost Analysis, fixed and variable costs', pages 13-14.

# Sample Answers

## Exercise 1.1

<b>MATERIALS SUB-SYSTEM</b>				
<b>Materials Development</b>				
• training workshop for course writers				
• payments for course writers				
• fees/salary for editor				
• salary/wages for typist				
• costs of pilot-testing materials				
<b>Materials Production</b>				
• salary/wages/fees for desk-top publishing				
• payments for illustrations				
• payments for use of copyright material				
• costs of printing or photocopying				
<b>Materials Distribution</b>				
• storage of materials				
• packing materials				
• transporting materials				
• communication with those handing out materials to learners				
<b>STUDENT SUB-SYSTEM</b>				
<b>Admission and Registration</b>				
• assessing applications from potential students				
• entering registration forms on computer database				
• checking data entry for accuracy and completeness				
<b>Allocation to Centres or Study Groups</b>				
• rent or maintenance of study centre building				
• utilities for study centre				
• payments to centre heads				
• provision of ICTs at Centres				
• informing students about when and which centre they should go to				

<b>Study</b>				
• payments to tutors				
• training of tutors				
• teaching materials (chalk, markers, photocopies, etc.)				
<b>Assessment</b>				
• fees/wages for marking assignments				
• rental of examination hall				
• payment for exam invigilators				
• payment for exam marking				
<b>Certification</b>				
• checking that students have met all the requirements for the certificate				
• printing certificates				
• graduation ceremony				
<b>LOGISTICAL SUB-SYSTEM</b>				
• recruiting part-time tutors and issuing contracts to them				
• issuing cheques or arranging for bank transfers to pay tutors				
• maintaining the institution's computer network				
• insurance for the institution				
<b>REGULATORY SUB-SYSTEM</b>				
• salary of institution's director or chief executive officer				
• payments to institution's board of governors/advisors				
• costs of strategic planning workshop				
• costs of periodic evaluation of institution				

## Exercise 1.2

D = Direct Cost I = Indirect Cost D/I = Either Direct or Indirect

<b>MATERIALS SUB-SYSTEM</b>				
<b>Materials Development</b>				
• training workshop for course writers	D			
• payments for course writers	D			
• fees/salary for editor	D			
• salary/wages for typist	D			
• costs of pilot-testing materials	D			
<b>Materials Production</b>				
• salary/wages/fees for desk-top publishing	D			
• payments for illustrations	D			
• payments for use of copyright material	D			
• costs of printing or photocopying	D			
<b>Materials Distribution</b>				
• storage of materials	D			
• packing materials	D			
• transporting materials	D			
• communication with those handing out materials to learners	D			
<b>STUDENT SUB-SYSTEM</b>				
<b>Admission and Registration</b>				
• assessing applications from potential students	D			
• entering registration forms on computer database	D			
• checking data entry for accuracy and completeness	D/I			
<b>Allocation to Centres or Study Groups</b>				
• rent or maintenance of study centre building	D/I			
• utilities for study centre	D/I			
• payments to centre heads	D/I			
• provision of ICTs at Centres	D/I			
• informing students about when and which centre they should go to	D			
<b>Study</b>				
• payments to tutors	D			

D = Direct Cost I = Indirect Cost D/I = Either Direct or Indirect

• training of tutors	D/I			
• teaching materials (chalk, markers, photocopies, etc.)	D			
<b>Assessment</b>				
• fees/wages for marking assignments	D			
• rental of examination hall	D			
• payment for exam invigilators	D			
• payment for exam marking	D			
<b>Certification</b>				
• checking that students have met all the requirements for the certificate	D			
• printing certificates	D			
• graduation ceremony	D			
<b>LOGISTICAL SUB-SYSTEM</b>				
• recruiting part-time tutors and issuing contracts to them	D			
• issuing cheques or arranging for bank transfers to pay tutors	D			
• maintaining the institution's computer network	I			
• insurance for the institution	I			
<b>REGULATORY SUB-SYSTEM</b>				
• salary of institution's director or chief executive officer	I			
• payments to institution's board of governors/advisors	I			
• costs of strategic planning workshop	I			
• costs of periodic evaluation of institution	D/I			

### Exercise 1.3

F = Fixed Cost    V = Variable Cost    S-V = Semi-Variable Cost

<b>MATERIALS SUB-SYSTEM</b>				
<b>Materials Development</b>				
• training workshop for course writers		S-V		
• payments for course writers		V		
• fees/salary for editor		V or S-V		
• salary/wages for typist		V or S-V		
• costs of pilot-testing materials		F		
<b>Materials Production</b>				
• salary/wages/fees for desk-top publishing		S-V or V		
• payments for illustrations		V		
• payments for use of copyright material		F or V		
• costs of printing or photocopying		V		
<b>Materials Distribution</b>				
• storage of materials		S-V		
• packing materials		V		
• transporting materials		V		
• communication with those handing out materials to learners		S-V		
<b>STUDENT SUB-SYSTEM</b>				
<b>Admission and Registration</b>				
• assessing applications from potential students		V or S-V		
• entering registration forms on computer database		V		
• checking data entry for accuracy and completeness		F or S-V		
<b>Allocation to Centres or Study Groups</b>				
• rent or maintenance of study centre building		F or S-V		
• utilities for study centre		S-V		
• payments to centre heads		S-V		
• provision of ICTs at Centres		S-V		
• informing students about when and which centre they should go to		V		
<b>Study</b>				
• payments to tutors		S-V		

F = Fixed Cost    V = Variable Cost    S-V = Semi-Variable Cost

• training of tutors		F or S-V		
• teaching materials (chalk, markers, photocopies, etc.)		V		
<b>Assessment</b>				
• fees/wages for marking assignments		V		
• rental of examination hall		S-V		
• payment for exam invigilators		S-V		
• payment for exam marking		V		
<b>Certification</b>				
• checking that students have met all the requirements for the certificate		S-V		
• printing certificates		V		
• graduation ceremony		S-V		
<b>LOGISTICAL SUB-SYSTEM</b>				
• recruiting part-time tutors and issuing contracts to them		S-V		
• issuing cheques or arranging for bank transfers to pay tutors		S-V		
• maintaining the institution's computer network		S-V		
• insurance for the institution		F		
<b>REGULATORY SUB-SYSTEM</b>				
• salary of institution's director or chief executive officer		F		
• payments to institution's board of governors/advisors		F or S-V		
• costs of strategic planning workshop		F		
• costs of periodic evaluation of institution		S-V		

## Exercise 1.4

C = Committed Cost    M = Managed Cost

<b>MATERIALS SUB-SYSTEM</b>				
<b>Materials Development</b>				
• training workshop for course writers			M	
• payments for course writers			M	
• fees/salary for editor			C	
• salary/wages for typist			C	
• costs of pilot-testing materials			M	
<b>Materials Production</b>				
• salary/wages/fees for desk-top publishing			M	
• payments for illustrations			M	
• payments for use of copyright material			C	
• costs of printing or photocopying			C	
<b>Materials Distribution</b>				
• storage of materials			C	
• packing materials			C	
• transporting materials			C	
• communication with those handing out materials to learners			C	
<b>STUDENT SUB-SYSTEM</b>				
<b>Admission and Registration</b>				
• assessing applications from potential students			C	
• entering registration forms on computer database			C	
• checking data entry for accuracy and completeness			M	
<b>Allocation to Centres or Study Groups</b>				
• rent or maintenance of study centre building			C	
• utilities for study centre			C	
• payments to centre heads			C	
• provision of ICTs at Centres			M	
• informing students about when and which centre they should go to			C	
<b>Study</b>				
• payments to tutors			C	

C = Committed Cost    M = Managed Cost

• training of tutors			M	
• teaching materials (chalk, markers, photocopies, etc.)			C	
<b>Assessment</b>				
• fees/wages for marking assignments			C	
• rental of examination hall			C	
• payment for exam invigilators			C	
• payment for exam marking			C	
<b>Certification</b>				
• checking that students have met all the requirements for the certificate			C	
• printing certificates			C	
• graduation ceremony			M	
<b>LOGISTICAL SUB-SYSTEM</b>				
• recruiting part-time tutors and issuing contracts to them			C	
• issuing cheques or arranging for bank transfers to pay tutors			C	
• maintaining the institution's computer network			M	
• insurance for the institution			C	
<b>REGULATORY SUB-SYSTEM</b>				
• salary of institution's director or chief executive officer			C	
• payments to institution's board of governors/advisors			C	
• costs of strategic planning workshop			M	
• costs of periodic evaluation of institution			M	

## Exercise 1.5

Cost drivers for developing and offering one or more new courses

COST DRIVER	ACTIVITY	COST
<b>Costs related to course/materials development</b>		
number of courses	preparation of course specification	payment to Programme Officer/Developer
number of courses	feasibility study	payment to Researcher
number of courses	preparation of cost estimates	payment to Programme Officer/Manager
number of courses	instructional design	payment to Instructional Designer
number of units/modules	writing of study guides	payment to Course Writers
number of pages	editing of study guides for grammar and readability	payment to Language Editor
number of pages	editing of study guides for accuracy of information	payment to Content Editor/Academic Reviewer
number of pages	typing/word-processing	payment to Typist
number of illustrations required	preparation of illustrations for study guides	payment to Illustrator/Graphic Designer
number of pages	DTP/layout of study guides	payment to DTP Technician/Designer
number of units/modules	peer review of study materials	payment to Peer Reviewers
number of audio cassettes/CDs/radio broadcasts	writing scripts for audio recording	payment to Script Writers
number of hours of audio	recording audio content	payment for use of Studio facilities
number of hours of audio	recording audio content	payment to Actors to read scripts
number of hours of audio	editing audio recordings	payment to Audio Editor
number of assignments	writing of assignments	payment to Assignment Setters
<b>Other costs associated with offering a course</b>		
number of students registered	printing of study materials	payment for Printing/Photocopying
number of tutorial centres	providing venues for face-to-face tutorials	payments to Centre Heads
number of tutorial groups	providing face-to-face tuition	payment to Tutors
number of tutorials per year	providing face-to-face tuition	payment to Tutors
number of tutor-marked assignments	marking of assignments	payment to Tutor Markers
number of examinations	invigilating examinations	payment to Invigilators
number of successful candidates	awarding certificates	payment for printing of Certificates



# UNIT 2

## How Student Numbers Affect Costs

---

### Objectives of this Unit



By the end of this unit, you will be able to:

- graphically illustrate how an increase or decrease in the number of students registered for a particular course affects fixed costs, variable costs, semi-variable costs, total costs and average costs;
- use the Total Costs Equation and explain its significance;
- define economies of scale and explain why they are important;
- use the Average Costs Equation and explain its significance;
- discuss how the costs of an ODL institution compare with those incurred for conventional, school-based education systems;
- suggest at least three ways of reducing average costs.

### 2.1 Introduction

In the previous unit, you learned that the number of students enrolled for a particular course is a critical factor that drives several items of expenditure. This unit considers the impact of a change in student numbers on the total costs of running courses and on the average cost per student.

### 2.2 Review of Fixed, Variable and Semi-Variable Costs



You will recall that when an item of expenditure remains the same regardless of the increases or decreases in the level of activity, we refer to this as a *fixed cost*. If we were to draw a bar chart of the fixed costs for a particular course, it would look something like Figure 2a below:

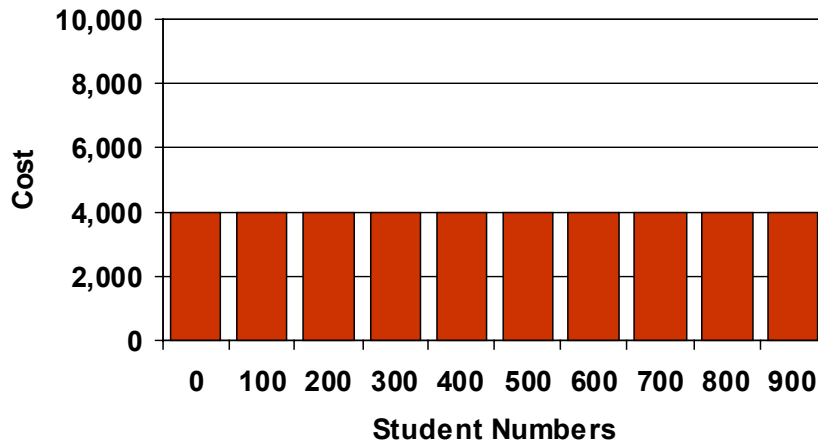


Figure 2a. Fixed costs.

The bar chart shows that the fixed costs for this particular course are ZAR 4,000 irrespective of whether one student or nine hundred students enrol for it.



By way of contrast, *variable costs* increase or decrease in proportion to increases or decreases in the level of productive activity. This is graphically illustrated in Figure 2b below. The graph shows that the variable costs for this course change in a linear (straight line) fashion. The variable costs of providing the course for one hundred students are ZAR 1,000, for two hundred students they are ZAR 2,000, and so forth.

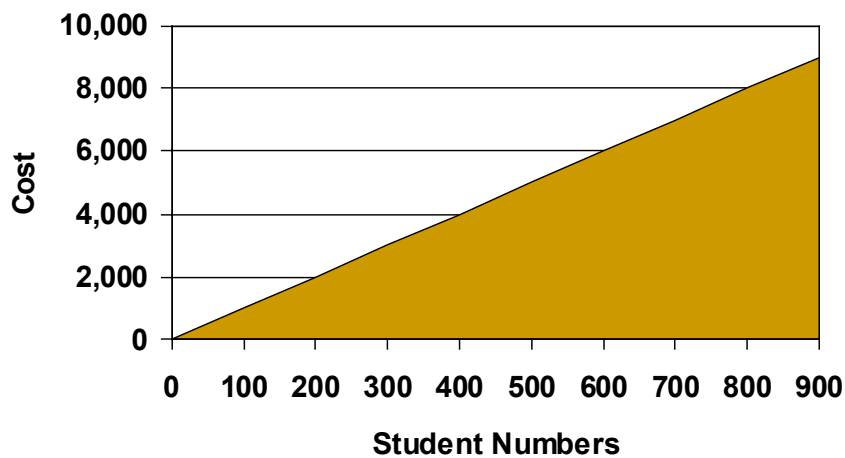


Figure 2b. Variable costs.



Finally, you will remember that *semi-variable costs* behave like fixed costs within a particular range or level of activity. Once that range is exceeded, then the amount spent will rise in a step-by-step fashion. A typical example of semi-variable costs is illustrated in Figure 2c below. When student numbers on this particular course are between 1-299, then the semi-variable costs remain unchanged at ZAR 2,000. If three hundred students are enrolled, then the semi-variable costs would go up to ZAR 4,000. These step-like increases occur every time student numbers increase by three hundred.

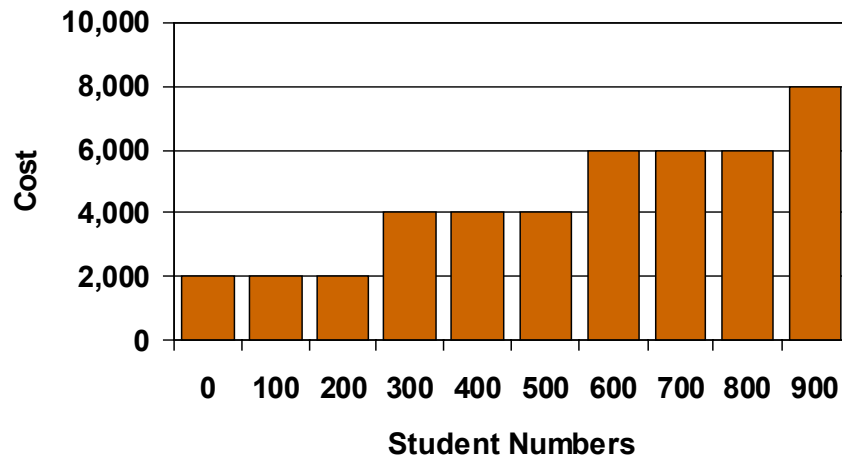


Figure 2c. Semi-variable costs.

## 2.3 Total Costs

So far, we have looked at different categories of cost and discussed how these behave in isolation from one another. In terms of budgeting and cost management, though, it is the total expenditure on a course that is of greatest important. The term *total costs* refers to the sum of fixed, variable and semi-variable costs. However, to start with, we will look at a simplified equation wherein semi-variable costs are treated as either fixed or variable.

The basic equation for Total Costs is:

$$TC = F + (V \times N)$$

Where:

- TC = total costs
- F = fixed costs
- V = variable costs per student
- N = number of students

Variable costs are often estimated on the basis of expenditure per student for materials, labour, equipment, etc. For this reason, it is necessary to multiply the unit cost per student by the number of students to determine the total variable costs. However, if your budget estimates or accounts of actual expenditure show total variable costs, it is not necessary to calculate the unit cost per student. Instead, you can simply add total variable costs with total fixed costs to arrive at the overall total cost for a specific number of students, whether notional or actual.



### Exercise 2.1

Open the Hülsmann CD-ROM.

- Select Section 3 – *Elements of cost analysis*.
- Go to the bottom of the first page of this section and select Part 2 – *Fixed & variable costs*.
- Scroll down to Activity A9 – *Exploring the Total Costs Equation* and click the purple letters that read 'Click here'.
- Follow the instructions in the MS Excel worksheet.

There are two key lessons to learn from this exercise, especially when we compare the costs of ODL with conventional education:

- In terms of their impact on total costs, sooner or later, variable costs are more decisive than fixed costs.
- Even when an ODL course starts with a higher level of fixed costs than conventional education, if its variable costs are lower, then you will always arrive at a point where the total costs for ODL are lower for a given number of students.

## 2.4 Average Costs



The exercise above highlights the importance of average costs in the economics of ODL. Average costs are simply the total costs of a course divided by the total number of students who register for it during its economic life, as shown in the following equation:

Average Costs equation:

$$AC_s = TC/TN_s$$

Where:

$$AC_s = \text{average cost per student}$$

TC = total costs

TN<sub>s</sub> = total number of students

The average cost per student behaves in a different way from the total cost of a course. Whereas the total cost of a course continues to rise as student numbers increase, the average cost per student actually falls. This is because the fixed costs of the course can be spread amongst a greater number of students, even though the variable cost per student remains unchanged.



### Exercise 2.2

Open the Hülsmann CD-ROM.

- Select Section 3 – *Elements of cost analysis*.
- Go to the bottom of the first page of this section and select Part 2 – *Fixed & variable costs*.
- Scroll down to Activity A10 – *Exploring the Average Costs Equation* and click the purple letters that read 'Click here'.
- Follow the instructions in the MS Excel worksheet.



### Self-Test

Decide how changes in student numbers will affect fixed and variable costs, both in total and on an average (per student) basis and write your answers in the blank cells of the table below. Costs will either Increase, Decrease or Stay the Same.

		Student Numbers Grow	Student Numbers Decline
Fixed Costs	In Total		
	Average (per Student)		
Variable Costs	In Total		
	Average (per Student)		

Source: Adapted from Rumble, 1997, Figure 5.2, page 37.

### Sample Answers

		Student Numbers Grow	Student Numbers Decline
Fixed Costs	In Total	Stay the Same	Stay the Same
	Average (per Student)	Decrease	Increase
Variable Costs	In Total	Increase	Decrease
	Average (per Student)	Stay the Same	Stay the Same

## 2.5 Economies of Scale

Often, total costs do not continue rising in a straight line as student numbers increase. This is because they are a mix of fixed costs, variable costs and semi-variable costs. Take, for example, the cost of producing a print-based study guide. Part of this expenditure is made up of paper and ink, which are variable costs that increase in proportion to each additional copy made. Although a certain amount of human labour is required for each copy, the bulk of the operator's time is spent setting up the machine for the print run and this is a semi-variable cost. Finally, all of the costs associated with developing the materials to the stage where they are ready for printing are fixed, regardless of the number of copies made. As a result, the rate of increase in total costs tends to level off as student numbers grow, as can be seen in Figure 2d below:

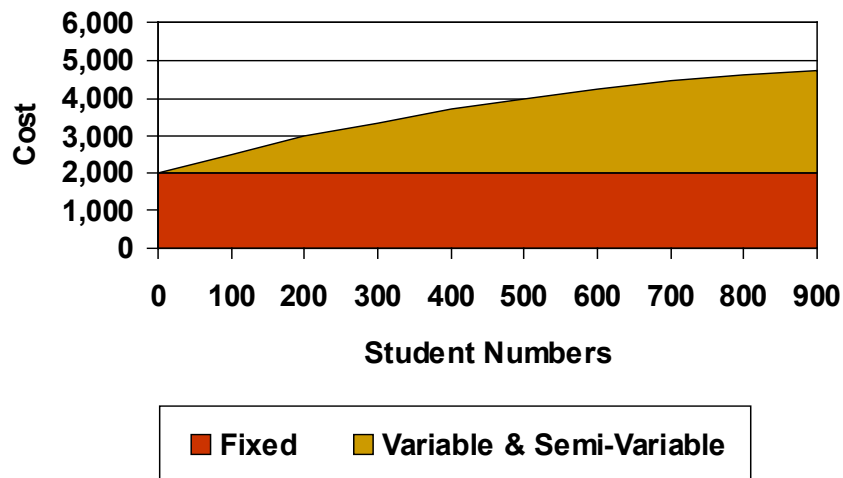


Figure 2d. Actual graph of total costs.

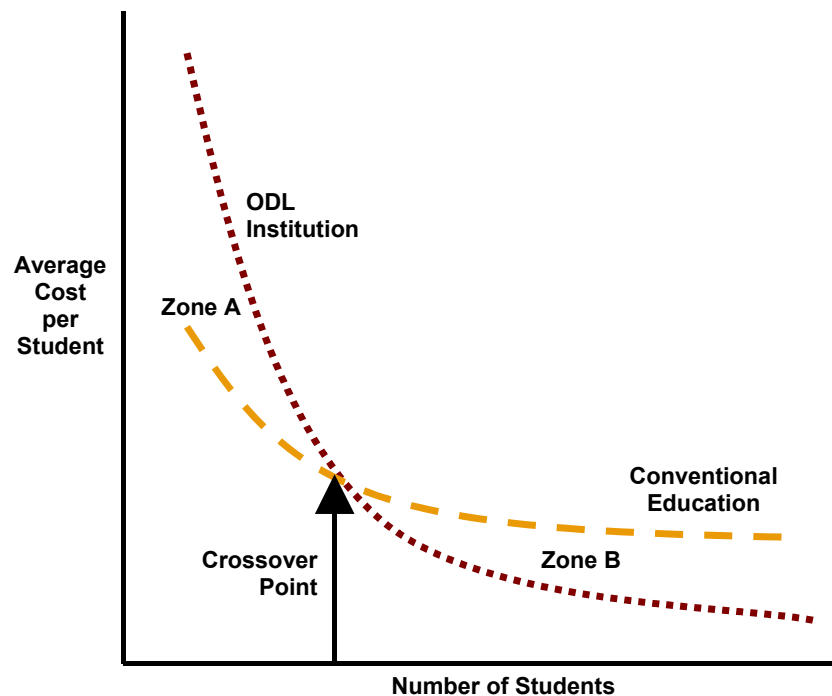


When we consider the average cost per booklet, this will tend to be higher when a small number of booklets are printed, because the fixed and semi-variable costs of production are shared among relatively few students. By way of contrast, when many booklets are printed, the fixed and semi-variable costs are spread among a larger number of units, and the average cost per booklet will fall. When the cost of producing an additional unit of output of a good or service decreases as the volume of output (the scale of production) increases, this is referred to as an *economy of scale*.

## 2.6 Costs of ODL versus Conventional Education

The cost-effectiveness of open and distance learning relative to conventional systems of delivering education relies heavily upon its potential to achieve economies of scale. Conventional, classroom-based education is characterised by relatively low fixed costs. Even though considerable amounts are spent on providing school buildings, the relative importance of these costs is reduced if they are depreciated over the useful life of the structure. However, large numbers of teachers are needed to provide conventional education, and their salaries represent a high variable cost.

By way of contrast, ODL institutions incur high fixed costs in developing self-instructional materials. However, the variable costs of reproducing and distributing these materials, as well as providing face-to-face tutorials and academic support, can be considerably lower than for conventional education. If the ODL institution manages to increase the number of students registered for a particular course, the average costs per student declines more rapidly than those for conventional education. This situation is illustrated in Figure 2e below.



*Figure 2e. Average costs of ODL vs conventional education. (Adapted from Rumble 1986, Figure 4.1, page 66)*

Whether it is cheaper to deliver a course through ODL methods than in a conventional classroom depends upon the average costs of the two modes, which are themselves dependent on student numbers. Zone A in Figure 2e shows where the average cost per student for conventional education is lower than for ODL. As student numbers increase, however, the relative position changes so that the average cost per student is lower for the ODL institution, as is the case in Zone B.

The point at which the graph lines showing the average costs for the two modes of delivery cross over corresponds with a specific number of students. If the ODL institution can enrol more than this number for its course, then both average and total costs of delivering the service will be lower than for classroom-based education.

From an economist's point of view, ODL institutions must do the following in order to ensure that they remain cost-competitive in relation to conventional methods of delivering education:

1. Increase the scale or number of students enrolled for their courses (beyond the crossover point).
2. Keep their fixed costs to a minimum, by:
  - Reducing the scope or range of courses offered (especially those with low numbers),
  - Utilising less sophisticated media in delivering their courses,
  - Extending the life of courses.
3. Keep variable costs to a minimum, by:
  - Limiting interaction between students and tutors,
  - Minimising other student services.



### Questions for Consideration

- Why might it be counterproductive to follow the economist's advice?
- What reasons can you think of for:
  - NOT reducing the range of courses offered?
  - Using more varied and sophisticated media to deliver a course?
  - NOT extending the life of a course?
  - NOT limiting interaction between students and tutors?
  - NOT minimising other student services?



## Other Resources

Rumble, G. 1997. *The Costs and Economics of Open and Distance Learning*. Chapter 4, pages 24-30 & Chapter 5, pages 32-41.

Hülsmann, T. 2004. *Costing Open and Distance Learning*. Section 3.2: 'Elements of Cost Analysis, fixed and variable costs', pages 13-21.



# UNIT 3

## Capital Costs

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### Objectives of this Unit



After completing this unit, you will be able to:

- describe the difference between operating expenditure and capital expenditure, and classify costs based on this distinction;
- explain the reasons for treating capital costs differently than operating expenditure;
- list three approaches to depreciating capital costs;
- demonstrate how to calculate simple depreciation;
- explain the difference between simple depreciation and annualization;
- discuss when it is more appropriate to use the simple depreciation method.

### 3.1 Introduction

When people say that “time is money”, they are usually referring to the costs associated with paying staff for the time they work on productive activities or ‘waste’ on personal business. However, we also know that the value of money is dependent upon time. For example, consider the following situation: If you were offered \$ 1,000 today or the same amount in ten years’ time, which would you take?

Most of us would realise that, because of inflation, the value of the money would decrease over the period so that the \$ 1,000 would not buy as much in ten years’ time as it does today. Seen from another perspective, if you take the money today, you can put it in the bank and earn interest, so that the actual amount increases over the period. This simple example illustrates the need for us to treat for capital and operating expenditure differently, and this forms the content of this unit.

## 3.2 Capital and Operating Costs



The term *operating costs* refers to any expenditure on things whose value is used up within the same financial year. These are sometimes referred to as revenue costs because they are normally met by the income (or revenue) that a business earns in the current financial year. Operating costs can either be *recurrent*, such as staff salaries that must be paid every year, or *non-recurrent*, such as once-off payments for consultancy services or specialised advice.



By way of contrast, *capital* expenditure acquires or produces an asset whose value continues to be used (or consumed) over several financial years. Expenditure on the construction of an office building is a typical example of a capital cost for an ODL institution. Although the cost of constructing a new building is very substantial, its benefits (in terms of office accommodation for the institution's staff) are used over the lifetime of the asset, which is typically forty to fifty years. Normally, capital expenditure is non-recurrent or recurs only after several years.



### Exercise 3.1 – Classifying Costs as either Operating or Capital Expenditure

This exercise may be done on your own, with a partner or in a small group.

- Take out the list of different costs that you worked with in Unit 1.
- Decide whether each cost you listed should be classified as Operating or Capital expenditure.
- In the last blank column, write either an 'O' (for Operating) or a 'C' (for Capital).



#### Sample Answer

Some examples of items of expenditure that may be classified as Capital or Operating costs can be found in the sample answer on page 39.

Clearly, items of expenditure such as staff salaries or the printing of study materials should be classified as operating costs. Although costs incurred in constructing a building should be treated as capital expenditure, renting or leasing of buildings is an operational cost. In some accounting systems, provision is made for a portion of the capital budget to be spent on periodic maintenance of buildings. The provision of ICTs for staff at an institution's head office and for students in study centres includes both a capital component (purchase of equipment) and an operational component (telecommunications charges, payment to an Internet Service Provider, consumables such as printer cartridges, etc.). Even though staff training is usually treated as operating expenditure, it should arguably be considered a capital investment, as the added value it generates benefits the institution over a period of several years.

Many open schools, colleges and universities absorb the costs of developing new courses and study materials within their recurrent budget, but Rumble (1997, pages 47-50) argues forcefully that these should be treated as capital expenditure. “Just as the purchase of land, buildings and equipment is an investment for the future, so the development of course materials is an investment that pays off over the life of the course (*Ibid.*, page 47).” No accountant would charge expenditure incurred in constructing a building or procuring equipment to a single financial year. Likewise, it makes no sense to charge the full costs of developing study materials to the first year of the course. This is particularly important when calculating the fees that students must pay for a new course.

### 3.3 Depreciating Capital Costs



The value of a capital asset may change over its working life. If its value goes up, we refer to this as *appreciation*. For example, if the sale price of a work of art continues to increase faster than the rate of inflation, we would say that it is appreciating in value. In most cases, however, the value of the asset decreases as it is used up, and we call this phenomenon *depreciation*. While accountants have devised very sophisticated ways of calculating how the value of an asset depreciates or decreases over time, this unit outlines three main approaches, each of which is discussed separately below.

#### Simple Depreciation



The easiest method to understand is *simple depreciation*, which is based on the assumption that the value of the capital asset decreases by an equal amount each year of its working life. In order to calculate the amount of annual depreciation, the price originally paid for the item (its capital cost) is divided by the number of years during which it will be used. This calculation is expressed in the following equation:

Equation for Simple Depreciation:

$$AD = CC \div N$$

Where:

AD = Amount of Annual Depreciation

CC = Capital Cost

N = Number of years in working life

For example, if you buy a laptop computer for € 1,000 and expect to use it for a period of five years before buying a replacement, the equation for simple depreciation indicates that you will use up € 200 of its value each year. These calculations are illustrated in Table 3a below.

Value Type	Amount	Year 1	Year 2	Year 3	Year 4	Year 5
Initial Value	1,000					
Annual Depreciation Cost		200	200	200	200	200
Written Down Value		800	600	400	200	0

*Table 3a. Simple depreciation method.*



The *written down value* is a notional figure that represents the un-depreciated part of the asset, which continues to decline over its working life. So, if the original price of the laptop was € 1,000 and € 200 of its value is ‘used up’ each year, then its written down value after I have used it for one year is € 800. The simple depreciation approach assumes that the asset has almost no residual value at the end of the period, when its written down value should be equal to zero. Such an assumption would not be unusual for computer equipment, which becomes outdated very quickly.



### Exercise 3.2

Open the Hülsmann CD-ROM.

- Go to Section 3 – *Elements of cost analysis*.
- At the bottom of the starting page, select Part 1 – *Capital & operating costs*.
- Scroll down to Activity A4 – *Depreciating capital costs* and open the Excel workbook.
- Follow the instructions.

### Social Discount Approach

If you had deposited your € 1,000 in a bank five years ago instead of buying a laptop, it would have earned interest during the intervening period and you would now have more money to spend. This example illustrates the fact that there is a cost that arises from having your capital tied up in an asset. The value lost each year should thus include not only the annual depreciation cost but also the interest you could have earned but decided to forego. The simple depreciation method does not account for foregone interest.



The *social discount* method of calculating depreciation was devised in order to reflect the actual costs of expending public funds to acquire a capital asset as opposed to investing it for future use. The social discount approach accounts for the “value judgement concerning the cost to society” of consuming resources in the present in the expectation that their value will increase when compared to setting them aside for future use (Rumble 1997, page 44).

Determining the social discount involves calculating the annual loss of value through simple depreciation and adding the interest foregone on the un-depreciated value of the asset. If instead of spending your money to buy a laptop computer you had been able to lease one at € 200 per year (paid in advance), you would still have had € 800 to deposit in the bank earning interest at 5% per annum. At the end of the first year, the amount in the bank would have increased by € 40. Thus, the real cost of owning the laptop would be the annual depreciation cost of € 200 plus the loss of the opportunity to earn interest of € 40. For subsequent years, the amount of interest foregone fluctuates because the un-depreciated value of the laptop continues to decline and the calculation of interest foregone has been compounded from the start of the period. Table 3b illustrates the calculation of the amounts that should be accounted for each year if we apply the social discount method to the purchase of a laptop:

Value Type	Amount	Year 1	Year 2	Year 3	Year 4	Year 5
Initial Value	1,000					
Annual Depreciation Cost		200	200	200	200	200
Written Down Value		800	600	400	200	0
Value if Invested with Compound Interest	5%	840	662	463	243	0
Interest Foregone		40	62	63	43	0
Social Discount		240	262	263	243	200

Table 3b. Social discount method.

## Annualization

A significant problem with the social discount method is that it yields different values for each year of the asset's working life. Common sense suggests that its value is used up at about the same rate from year to year, and this means that the social discount rate does not seem plausible, except in certain circumstances. With the *annualization* method, the total amount of interest foregone is averaged over the life of the asset, so that the resulting figure is the same from year to year. In general, this is more convenient when reckoning multi-annual depreciation.

In Table 3c below, we continue with the example of the laptop. Using the annualization approach, the 'real' cost of buying a laptop (as opposed to leasing one) would be € 231 each year. Compare this with the values in Table 3b above, which vary between € 200 and € 263 when the social discount method is used.

Value Type	Amount	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Initial Value	1,000						
Annual Depreciation Cost		200	200	200	200	200	1,000
Social Discount		240	262	263	243	200	1,208
Annualization		231	231	231	231	231	1,155

*Table 3c. Annualization method.*

The simplest way to determine the figure to be used for annualized depreciation involves multiplying the original purchase price (€ 1,000 in the example above) by an annualization factor (0.231 in this case). This factor can be found in an annualization table which provides different values depending upon the prevailing rate of interest and the expected life of the capital asset. Activity A.7 in Hülsmann (2004) provides an interactive resource for calculating annualization factors. If necessary, however, the annualization factor can be calculated using the following formula:

Equation for Annualization Factor:

$$a(r,n) = \frac{r(1+r)^n}{(1+r)^n - 1}$$

Where:

- a(r,n) = Annualization Factor
- r = prevailing rate of interest
- n = usable life of capital asset.

The equation looks quite complex, but it is simply a reworking of the formula for compound interest and can be carried out on most calculators.



### Exercise 3.3

Open the Hülsmann CD-ROM.

- Go to Section 3 – *Elements of cost analysis*.
- At the bottom of the starting page, select Part 1 – *Capital & operating costs*.
- Scroll down to Activity A6 – *Comparing depreciation and annualization* and open the Excel workbook.
- Follow the instructions.

## When to Use Different Methods for Depreciating Capital Costs

When is it appropriate to use the different methods discussed above?

In general, the social discount approach is not recommended because it produces a different amount of depreciation from year to year, which complicates the process of estimating costs or producing accounts.

The annualization approach is based on the assumption that the money available can be spent on something else or invested for future use. However, in many cases, ODL institutions do not have complete freedom with regard to the use of funds. In some cases, money is ‘ring-fenced’, which means that it has been given on the condition that it be used only for a specified purpose. Alternatively, donors may demand that funding be returned if it is not used within a specified period. In such cases, the simple depreciation method should be used.

However, when funds are not ring-fenced and there is a genuine alternative for their use, then the annualization approach may be a more appropriate way of calculating depreciation of capital assets. This is particularly true when preparing cost estimates for using different forms of technology to deliver an ODL course or programme. In addition, if the capital asset will need to be replaced at some point in the future (for example, computer equipment), then the annualization approach will come closer to reflecting the actual replacement cost than the simple depreciation method.



### Exercise 3.4 – Simple Depreciation or Annualization

This exercise can be carried out on your own, with a partner or as a team.

An open school in South Asia is planning a new course in physical science for out-of-school learners at higher secondary level. In order to successfully complete the course, learners must carry out a series of experiments either in a laboratory or virtually using interactive computer software.

Before making a funding application for this project, it is necessary to determine which of these delivery methods would be cheaper on an annual basis. Another team is estimating the costs of providing laboratory equipment. Your job is to calculate the capital costs of procuring computer equipment and the annual depreciated amount that should be charged to the project, using the following information:

Number of personal computers required .....	200
Purchase price (including installation).....	Rupees 12,000
Expected working life of PCs.....	6 years
Estimated rate of interest for the period.....	7.2%
Annualization Factor.....	0.211

Prepare a spreadsheet showing the amount of depreciation that should be charged to the project each year for the working life of the computers using both the simple depreciation and annualization methods.

Which of these two methods would be most appropriate for estimating the capital costs of this project?

The answers to this exercise can be found in the sample answer on page 41.



## Other Resources

Hülsmann, T. 2004. *Costing Open and Distance Learning*. Section 3.1: 'Elements of Cost Analysis, Capital and operating costs', pages 9-13.

Rumble, G. 1997. *Costs and Economics of Open and Distance Learning*. Chapter 6, pages 42-50.

## Sample Answers

### Exercise 3.1

C = Capital Cost    O = Operating (Revenue) Cost

<b>MATERIALS SUB-SYSTEM</b>				
<b>Materials Development</b>				
• training workshop for course writers				C
• payments for course writers				C
• fees/salary for editor				C
• salary/wages for typist				C
• costs of pilot-testing materials				C
<b>Materials Production</b>				
• salary/wages/fees for desk-top publishing				C
• payments for illustrations				C
• payments for use of copyright material				C
• costs of printing or photocopying				O
<b>Materials Distribution</b>				
• storage of materials				O
• packing materials				O
• transporting materials				O
• communication with those handing out materials to learners				O
<b>STUDENT SUB-SYSTEM</b>				
<b>Admission and Registration</b>				
• assessing applications from potential students				O
• entering registration forms on computer database				O
• checking data entry for accuracy and completeness				O
<b>Allocation to Centres or Study Groups</b>				
• rent or maintenance of study centre building				O
• utilities for study centre				O
• payments to centre heads				O
• provision of ICTs at Centres				C & O
• informing students about when and which centre they should go to				O

<b>Study</b>				
• payments to tutors				O
• training of tutors				C
• teaching materials (chalk, markers, photocopies, etc.)				O
<b>Assessment</b>				
• fees/wages for marking assignments				O
• rental of examination hall				O
• payment for exam invigilators				O
• payment for exam marking				O
<b>Certification</b>				
• checking that students have met all the requirements for the certificate				O
• printing certificates				O
• graduation ceremony				O
<b>LOGISTICAL SUB-SYSTEM</b>				
• recruiting part-time tutors and issuing contracts to them				O
• issuing cheques or arranging for bank transfers to pay tutors				O
• maintaining the institution's computer network				O
• insurance for the institution				O
<b>REGULATORY SUB-SYSTEM</b>				
• salary of institution's director or chief executive officer				O
• payments to institution's board of governors/advisors				O
• costs of strategic planning workshop				O
• costs of periodic evaluation of institution				O

### Exercise 3.4

If you prepare a table using the Simple Depreciation and Annualization methods, the annual depreciation or loss of value for the computer equipment would be as follows:

	Simple Depreciation Method	Annualization Method
Initial Capital Cost of PCs	2,400,000	2,400,000
Year 1	400,000	506,400
Year 2	400,000	506,400
Year 3	400,000	506,400
Year 4	400,000	506,400
Year 5	400,000	506,400
Year 6	400,000	506,400
Total Amount Depreciated	2,400,000	3,038,400

Because you are comparing two possible alternative uses for this money, the most appropriate method to use in this situation is *annualization*.



# UNIT 4

## Overheads

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### Objectives of this Unit



By the end of this unit, you will be able to:

- explain why it is important for ODL institutions to analyse and attach indirect costs to particular courses or programmes;
- list two different approaches to attaching indirect costs;
- explain how overheads are apportioned and absorbed in traditional approaches to management accounting;
- discuss at least one situation where these traditional approaches present a distorted picture;
- outline two differences between the traditional approach and Activity-Based Costing (ABC);
- suggest three reasons why an ABC approach can produce a more accurate picture of indirect costs;
- list at least one drawback of the ABC approach;
- define the term *business-sustaining costs*.

### 4.1 Introduction



In Unit 1 we defined *indirect costs* or *overheads* as any expenditure that CANNOT be directly related to a particular product or service. Expenditure on the salaries of senior managers, on units that provide shared services (such as financial administration or human resources) and general supports for the institution as a whole (such as insurance or grounds maintenance) are normally classified as overheads.

Overheads are sometimes treated as a separate category of expenditure in the budgets and accounts of government departments and ODL institutions, but this has a number of disadvantages. In the first instance, there is the danger

that these indirect costs will be overlooked when determining the fees paid for courses or other services. By way of contrast, a commercial concern must, at a minimum, cover all of its overheads in setting the prices of the products it sells. Second, because administrative units that provide shared services do not produce measurable products, their activities are often seen as unnecessary or ‘wasteful’. As a result, there is a widespread tendency to reduce overheads before seeking cuts in direct expenditure whenever financial constraints are encountered. For these reasons, it is undesirable for ODL institutions to classify all indirect costs as overheads.

## 4.2 Traditional Approach to Assigning Overheads



The term *cost allocation* refers to the process of assigning or attaching costs to the product or activity they ‘belong to’. Allocating the direct costs of providing an ODL course is relatively easy and straightforward since, by definition, these can be directly related to the products that generate such costs. However, where the relationship between a particular item of expenditure and the institution’s programmes and other services is not so clear, the process of cost allocation becomes more difficult.



In traditional systems of cost accounting, overheads are first divided up and then added in to the expenditure for producing different goods or services. *Cost apportionment* refers to the process of dividing costs between two or more products in proportion to the estimated benefit received by each. The term *cost absorption* is used to refer to the final step of the process whereby apportioned costs are attached to a particular product and are ultimately reflected in the price charged for it (Rumble 1997, page 52). The traditional approach to assigning overheads is illustrated in Figure 4a:

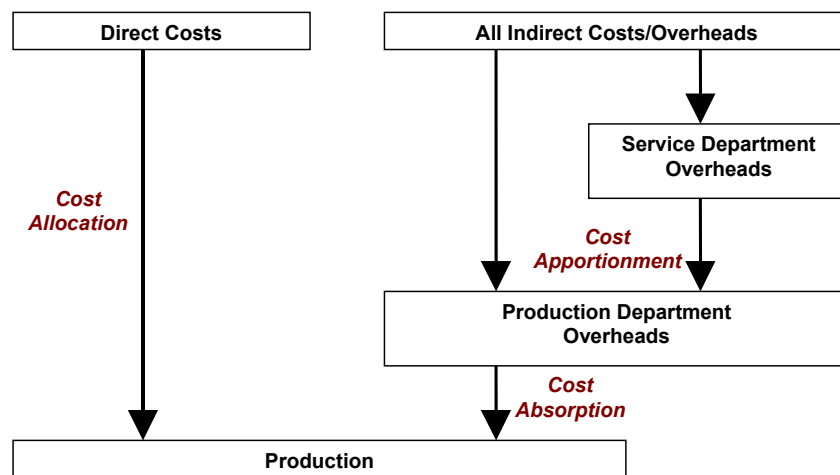


Figure 4a. Traditional approach to assigning overheads. (Source: Rumble 1997, Figure 7.1, page 53)

In a factory, the direct costs of production – materials and labour – are allocated to the different types of goods produced. Indirect costs or overheads must then be dealt with. While some of these overheads can be attached to the production department (such as depreciation of machinery used on the production line), others represent shared common costs (such as those incurred by service departments). The latter must first be apportioned to different production departments. For example, the costs of personnel administration may be divided in proportion to the number of staff in each production department or the costs of financial administration in proportion to a production department's budget. Finally, both the production overheads and service department overheads (or shared common costs) are absorbed into the cost of producing different types of goods.



### Exercise 4.1 – Absorption of Overheads by Conventional Management Accounting Methods<sup>1</sup>

This exercise is based on a simplified industrial scenario.

Consider the situation of a factory that produces two products, electric kettles and toasters. On any given day, the factory produces 1,000 units of each product. It takes a worker half an hour to produce each kettle, whereas a toaster requires only 20 minutes to assemble. The direct labour cost for both products is £30 per hour.

Calculate the direct labour costs for one day's production:

Kettles (batch of 1,000) \_\_\_\_\_  
 Toasters (batch of 1,000) \_\_\_\_\_  
 Total Direct Labour Cost \_\_\_\_\_

To ensure that the goods produced by the factory are of the highest quality, both products are inspected. Each batch of 1,000 kettles requires 10 inspection hours, but 20 hours of an inspector's time are required to check each batch of 1,000 toasters. The total cost of inspecting one day's production in the factory is £750 (or £25 per inspection hour).

The costs of the quality control (inspection) unit are classified as an overhead of the production process and must be apportioned and absorbed by the products that come off the production line. In a conventional costing system, the total overhead costs of inspection (£750) are apportioned in proportion to the cost of direct labour hours. What will be the apportioned cost of inspection (both total and per unit) for these two products?

Calculate the Cost of Inspection for:

Kettles – Total \_\_\_\_\_  
 Kettles – Per Unit \_\_\_\_\_  
 Toasters – Total \_\_\_\_\_  
 Toasters – Per Unit \_\_\_\_\_



#### Sample Answer

The answers to this exercise can be found in the sample answer on page 51.

<sup>1</sup> Adapted from Rumble 1997, Example 7.1, page 54.

This exercise highlights how the traditional approach to assigning overheads to products can produce a distorted and misleading picture of where indirect costs are incurred. Even though it takes only a third as much time to inspect Product A (2 hours per batch) compared with Product B (6 hours per batch), the former product must absorb more than half of the total cost of inspection.

### 4.3 Critique of Traditional Methods of Cost Accounting

The traditional approach to assigning and attaching indirect costs may also be criticised for the following reasons:

- The direct costs of producing goods or services may be only a small fraction of the total costs of the company, while overheads can be substantial. This is particularly true in a service industry, such as education.
- The traditional approach focuses attention on the costs of direct labour, which is the basis for attaching overheads. As a way of reducing costs, managers may decide to reduce direct labour costs by outsourcing some parts of the production process, such as the printing of study materials. However, this is likely to increase indirect costs as more staff are required to liaise with suppliers, as well as to evaluate and supervise outsourcing contracts.
- The level of overheads can be driven by management decisions that are unrelated to the demands of production. For example, senior managers may decide to redecorate executive offices in order to improve the company's corporate image. The costs of this redecoration must be recouped through the prices charged for the company's products even though the production department received no benefit from this expenditure.

### 4.4 Activity-Based Costing



As an alternative to the traditional systems of cost accounting, an alternative approach – Activity-Based Costing (ABC) – was developed to provide more accurate information on where costs arise and how they can be controlled. Whereas the former is based on the belief that products cause costs, the underlying assumption of the ABC approach is that cost objects create a demand for activities, which in turn incur costs (Rumble 1997, page 55). *Cost objects* are the reasons for carrying out activities and may include products, services or customers. In the ABC system, an *activity* is defined as any process or procedure that causes work to be done. Related activities are frequently clustered by function or process into an *activity centre*. As any productive activity requires labour, materials and equipment, it will incur certain costs. The central assumption of the ABC approach is illustrated in Figure 4b below:



**Figure 4b.** Assumption underpinning activity-based costing. (Adapted from Rumble 1997, Figure 7.2, page 55)

Some examples of typical activities that would be classified as overheads by conventional cost accounting methods include:

- entering data from application forms on the institution’s computer system,
- advising students about course options,
- following up on queries about non-receipt of materials,
- following up on the reasons why students have withdrawn from courses.

In traditional systems, all of these activities and their associated costs would be lumped together as general overheads for student services.

Rumble (1997, pages 56-57) argues that, without using an activity-based costing approach, no one in the ODL institution knows:

- what these activities actually cost,
- how much they benefit students and thus add value to the service provided,
- how to make the activities more efficient,
- how to attach the costs of these activities to those who actually use them,
- where or when cost reduction will work,
- what savings can be made if student numbers fall.

For all these reasons, he advocates adoption of the ABC approach.

## 4.5 Steps in Activity-Based Costing

Whereas conventional methods of cost accounting operate as top-down systems, activity-based costing works from the bottom up. Applying the ABC method involves two steps in order to trace costs back to activities and thence to the cost objects with which they can be associated.

The first step is to identify and measure all of the costs incurred in carrying out specific activities. Each category of resource (materials, labour and equipment) needs to be analysed and assigned to the cost pool for a particular activity. You will need to determine:

- who carries out the work and how much time they devote to it;
- what materials are required for the activity,
- what equipment is used in the activity.

The unit cost for each of these resources needs to be calculated, so that the total cost of the activity can be determined.

The second step in the ABC process involves assigning and attaching the costs of the activity to cost objects (for example, the students registered for a particular course). In many cases, this analysis can be done for an individual unit of the cost object, but some activities (such as a face-to-face tutorial) will benefit two or more units at the same time. Still others (such as revising study materials) will benefit all of the units of a particular cost object simultaneously. It is important to measure the actual demand for or use of the activity. For example, even though a particular course requires students to submit four assignments for marking, a number of students are likely to drop out or fail to submit some of their assignments. As a result, the actual number of assignments marked will average fewer than four per student. The steps involved in applying the ABC method are summarised in Figure 4c below.



**Figure 4c.** Steps in applying the activity-based costing method (adapted from Rumble 1997, Figure 7.3, page 57)



## Exercise 4.2 – Absorption of Overheads by Activity-Based Costing Methods<sup>2</sup>

The scenario is identical to that in Exercise 4.1.

A factory produces two products, electric kettles and toasters. The daily production run for each product is 1,000 units. It takes half an hour of direct labour to produce each kettle, whereas a toaster can be assembled in 20 minutes. The direct labour cost for both products is £30 per hour.

Both products are inspected. The inspectors take 10 hours to check each batch of 1,000 kettles, but each batch of 1,000 toasters requires 20 inspection hours. The inspection overhead cost is £750 (or £25 per inspection hour).

As outlined in the Sample Answer to Exercise 4.1, the direct labour costs of each product are:

Kettle:	$\frac{1}{2}$ direct labour hour $\times$ £30 per hour $\times$ 1,000 units = £15,000
Toaster:	$\frac{1}{3}$ direct labour hour $\times$ £30 per hour $\times$ 1,000 units = £10,000
Total Direct Labour Costs:	£15,000 + £10,000 = £25,000

An activity-based costing system identifies and measures the labour hours and cost required to carry out a specific activity and attaches these to the cost objects or products that benefit. Using the ABC method, how should the daily costs of inspection be allocated to the two products?

Calculate the Cost of Inspection for:

Kettles – Total (for a batch of 1,000) \_\_\_\_\_

Kettle – Per Unit \_\_\_\_\_

Toasters – Total (for a batch of 1,000) \_\_\_\_\_

Toaster – Per Unit \_\_\_\_\_



### Sample Answer

The answers to this exercise can be found in the sample answer on page 51.



Clearly the ABC approach produces a more realistic picture of the actual costs incurred for the activity of inspecting these products than traditional methods of cost accounting. Nevertheless, some activities cannot be associated meaningfully with a particular cost object. For example, expenditure on hiring security guards for the head office of an ODL institution cannot be traced to a specific course or other service it provides. Such residual overheads are sometimes referred to as *business-sustaining costs*.

<sup>2</sup> Adapted from Rumble 1997, Example 7.2, page 58.



Business-sustaining costs in open schools, colleges or universities can be apportioned and attached to different courses through conventional methods. For example, these residual overheads can be divided equally among all of the students registered with the institution on the assumption that each benefits by approximately the same amount. Alternatively, they can be absorbed on the basis of the cost per student, which recognises that some courses consume more resources than others. This process is referred to as *full cost absorption* and is essential when determining fee levels with cost recovery approaches (see Unit 11).

## 4.6 Critique of Activity-Based Costing

The principal drawback of the ABC approach is that it is extremely time-consuming. Open schools, colleges and universities are unlikely to have the capacity to design and carry out a detailed ABC study in-house and will, therefore, need to employ consultants for this purpose, which would be costly. Exceptionally detailed records must be maintained in order to facilitate regular ABC exercises. Even when the institution's accounting systems have been modified to enable expenditure to be analysed and attached to particular cost objects, considerable time will be required each year to estimate the number of staff hours devoted to different activities.

It is also easy to overlook some activities and the costs associated with them. Staff members rarely devote a hundred percent of their working hours to productive activities that benefit the employer. Leaving aside non-productive pastimes (such as chatting with co-workers, attending funerals and reading the newspaper), some worthy activities that are carried out during working hours are impossible to account for. For example, how should we allocate the cost of an employee taking part in an AIDS awareness campaign? Using the ABC method, it is all too easy for such costs to go unrecorded with the result that the total costs identified fall short of actual expenditure as recorded in audited accounts. Such 'cost leaks' can be very substantial. A recent study (Rumble, 2006, page 70) reported that up to fifty percent of the working hours of staff in a particular unit of an ODL institution could not be accounted for using the ABC method.



### Other Resources

Rumble, G. 1997. *Costs and Economics of Open and Distance Learning*. Chapter 7, pages 51-59.

## Sample Answers

### Exercise 4.1

The direct labour costs of the two products are calculated as follows:

Kettle:	$\frac{1}{2}$ direct labour hour $\times$ £30 per hour $\times$ 1,000 units = £15,000
Toaster:	$\frac{1}{3}$ direct labour hour $\times$ £30 per hour $\times$ 1,000 units = £10,000
Total Direct Labour Costs:	£15,000 + £10,000 = £25,000

Apportioning the costs of inspection is calculated as follows:

$$\text{Total Cost of Inspection} \times \frac{\text{Direct Labour Costs for each Product}}{\text{Total Direct Labour Costs for all Products}}$$

The unit cost of inspection for each product is calculated as follows:

$$\frac{\text{Total Inspection Cost for Product X}}{\text{Number of Units of Product X produced}}$$

Kettle – Total Inspection Cost:	$£750 \times £15,000/£25,000 = £450.00$
Kettle – Inspection Cost per Unit:	$£450.00 \div 1,000 \text{ units} = £0.45$
Toaster – Total Inspection Cost:	$£750 \times £10,000/£25,000 = £300.00$
Toaster – Inspection Cost per Unit:	$£300.00 \div 1,000 \text{ units} = £0.30$

This means that 45 pence will need to be added to the production costs of each kettle and 30 pence to the production costs of each toaster when calculating their selling price.

### Exercise 4.2

Apportioning the costs of inspection using the ABC method requires the following calculations:

Total Cost of Inspection for a batch of Product X = Inspection Hours  $\times$  Cost per Hour

$$\text{Unit Cost of Inspection for Product X} = \frac{\text{Total Inspection Cost for Product X}}{\text{Number of Units of Product X in batch}}$$

Kettles – Total Inspection Cost:	10 hours $\times$ £25 per hour = £250.00
Kettle – Inspection Cost per Unit:	$£250 \div 1,000 \text{ units} = £0.25$
Toasters – Total Inspection Cost:	20 hours $\times$ £25 per hour = £500.00
Toaster – Inspection Cost per Unit:	$£500 \div 1,000 \text{ units} = £0.50$

Compare these figures with the answers to Exercise 4.1.



# UNIT 5

## Unit Costs: Determining Costs per Student, per Course or per Programme

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### Objectives of this Unit



By the end of this unit, you will be able to:

- suggest at least three reasons why it is important to calculate unit costs;
- explain the Backflush Costing approach and outline situations in which it can be used;
- discuss the limitations of Backflush Costing;
- describe the advantages of the Activity-Based Costing approach to unit costs;
- draw up a hierarchy of cost objects for your own institution;
- derive unit costs using data from an ABC analysis.

### 5.1 Introduction

The ability to calculate costs for a unit or measured amount of a product or service is important in many aspects of budgeting and cost management in open and distance learning. Unit costing is necessary for the following tasks:

- to determine appropriate fee levels (where cost recovery models are used);
- to compare costs of alternative ways of delivering a particular course;
- to carry out an Activity-Based Cost analysis; and
- to compare costs of an ODL institution with those for conventional education.

Some activities, such as marking of assignments by contract tutor-markers, are typically undertaken and paid for on a piece-work basis. Under such circumstances, it is easy to identify the direct cost of each unit, as a fixed fee is paid for each assignment marked. The problem is that other costs associated with this activity are not included in the calculation. For example, the work done by a tutor-marker is only part of a chain of activities, including:

- recruiting tutor-markers,
- receiving assignments from students,
- bundling these for collection by tutor-markers,
- receiving marked assignments from tutor-markers,
- recording marks in the student database,
- returning marked assignments to students.

The full cost of each marked assignment – the measured unit of the service provided by the institution – should include the expenditure incurred for all of these related activities.

A second problem can also arise when defining the unit to be measured. For example, when we use the word ‘student’, what do we mean by this term? Are we referring to individuals registered with our ODL institution, to the number of enrolments for a particular subject or module, or to the number who successfully complete the course? Where a particular course or programme lasts more than one year, the issue becomes even less straightforward. For this reason, we need to make very clear exactly what units and what costs we are referring to in any discussion of unit costs.

Various ways of establishing equivalency between ODL students and those in conventional education are discussed in Unit 8. This unit looks at two basic approaches to unit costs.

## 5.2 Backflush Costing (Average Cost per Unit)

In Unit 2, a means of calculating average costs was introduced in the context of discussing the cost structure of ODL when compared to conventional education. The Average Cost Equation is:

$$AC = TC/N$$

Where:

AC = average cost per student

TC = total cost

N = number of students



The Average Cost Equation provides only a very rough measure of the cost per student, which can be misleading, as outlined above. However, where an ODL institution offers only a few programmes with nearly uniform inputs (costs) and outputs (graduates), then this approach can be used. For example, the *Universidad Nacional Pedagógica* in Mexico offers only a single course, a Bachelor of Education degree (Rumble 1997: 59). Determining the unit cost per graduate can thus be calculated with some accuracy by dividing the total costs of the institution each year by the number of students who complete the course. This approach is referred to as *backflush costing*, which is summarised in the following equation:

Backflush Costing Equation:

$$C_u = TC/N_u$$

Where:

- $C_u$  = cost per unit (FTE student, graduate, course or other unit)
- TC = total cost for institution
- $N_u$  = number of units delivered or used



### Exercise 5.1 – Backflush Costing

An open school in Illinois provides courses leading to the high-school equivalency diploma (senior secondary certificate) to adults who dropped out of school early. Each course lasts one academic year and students need to successfully complete eight subject-courses in order to get their diploma. In the USA, those who obtain their high-school diploma are referred to as 'graduates'. The table below provides the following information for a five-year period:

- total expenditure by the institution in the relevant year,
- number of subject-courses delivered,
- number of subject-course passes.

	2000/01	2001/02	2002/03	2003/04	2004/05
Total Costs (US\$)	1,986,700	2,132,200	2,568,900	2,587,300	2,604,100
Subject-Courses Delivered	2,312	2,428	2,633	2,576	2,498
Cost per Subject-Course Delivered					
Subject-Courses Passed	1,891	1,944	2,103	2,138	1,987
Number of 'Graduates'					
Cost per 'Graduate'					

Using the Backflush Costing approach, calculate the unit costs per subject-course delivered and per 'graduate'. Write these into the blank cells of the table.



### Sample Answer

The answers to this exercise can be found in the sample answer on page 62.

Unit costs can fluctuate significantly from year to year in response to relatively small changes in student numbers (subject-course enrolments) and in examination pass rates ('graduates'). For example, between the 2003/04 and 2004/05 academic years, total costs for the open school in Exercise 5.1 increased by less than one percent, but the unit costs of each subject-course delivered grew by almost four percent because of a drop in enrolments. More importantly, the unit cost per 'graduate' increased by over eight percent because the examination pass rate also declined.

The backflush method of determining unit costs is really only meaningful where an ODL institution produces a single, uniform product. This is because it is based on the assumption that there is little or no variation in the costs of providing different courses. However, for most educational institutions it is considerably cheaper to provide arts courses compared with science subjects, which often require laboratory experiments or other facilities. Likewise, backflush costing ignores cost variations that may arise in different years of a multi-annual programme or for courses at different levels (e.g. junior secondary, senior secondary, certificate or degree).

## 5.3 Activity-Based Costing

In reality, many ODL institutions deliver a range of products or services such as:

- study materials or courseware (both text-based and in other media),
- courses,
- research and consultancy services,
- public services.

In order to make an accurate determination of the unit costs of these different products, it is necessary to identify all expenditures associated with each of them.

The Activity-Based Costing (ABC) approach was outlined briefly in Unit 4 in the context of assigning and attaching overheads to different products or services. It is based on the assumption that cost objects cause particular activities (or work) to be carried out. These activities, in turn, incur costs. An ABC exercise involves first identifying and analysing all costs associated with an activity and then assigning and attaching these to the cost objects.



Because the multiple functions of ODL institutions result in a range of outputs, it is necessary to identify all of the cost objects it produces and arrange these in a classification scheme, referred to as a *taxonomy*. Since some cost objects (such as study guides) are only part of larger cost objects (such as subjects or courses), they are normally arranged hierarchically, meaning that they are ranked in order from specific to general. Such a hierarchical taxonomy of cost objects is a useful starting point for an ABC analysis of what is produced by ODL institutions.

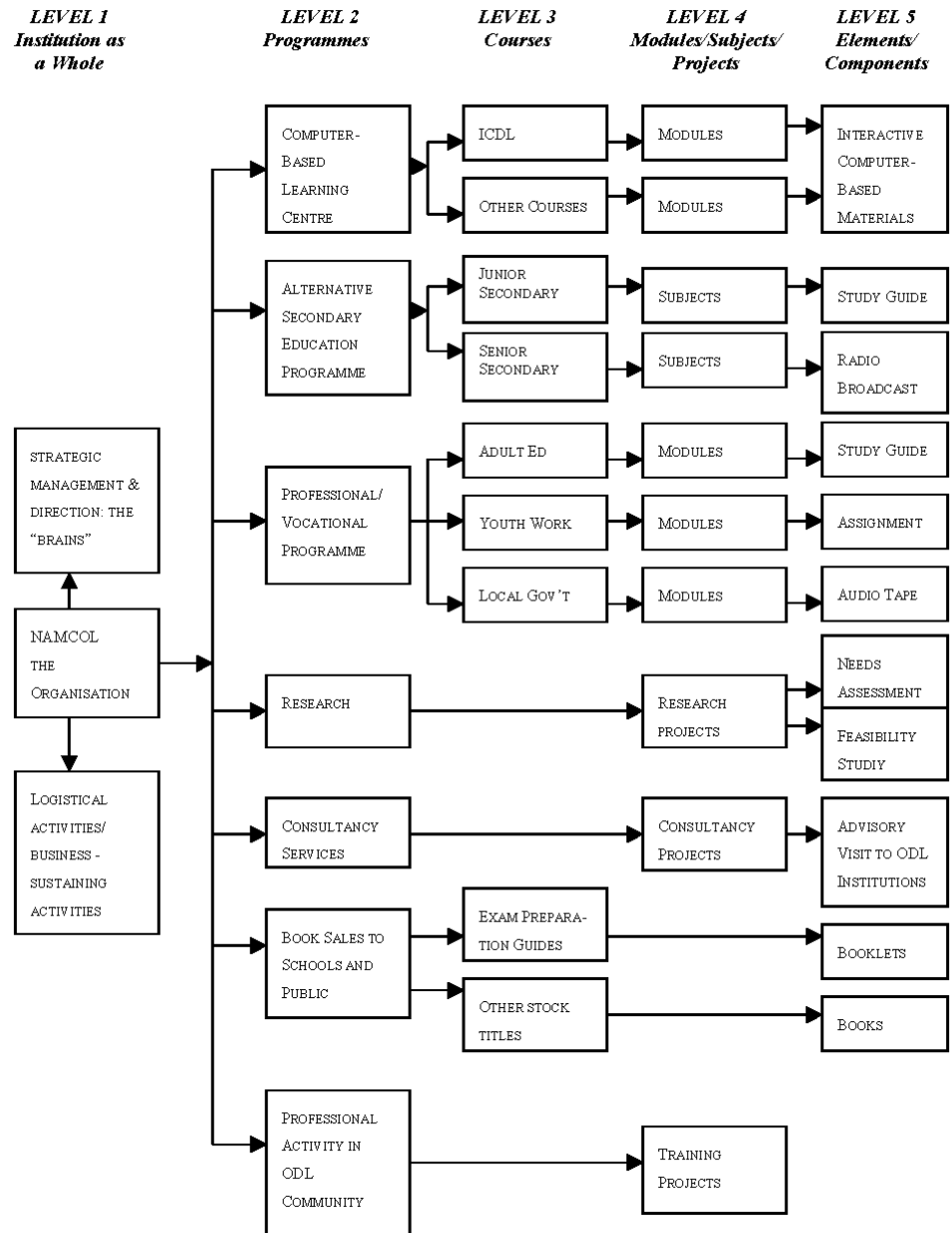


Figure 5a. Hierarchical taxonomy of cost objects at the Namibian College of Open Learning. (Adapted from Rumble 2006a, Figure 13, page 78)

Figure 5a provides an example of a hierarchical taxonomy of cost objects at the Namibian College of Open Learning (NAMCOL). It resembles a pyramid laid on its side. On the left is a box representing the organisation as a whole, with its regulatory and logistical sub-systems above and below. At the next level to the right are the various programmes or other major areas of activity, including NAMCOL's Computer-Based Learning Centre, the Alternative Secondary Education and Professional/Vocational Programmes, research and consultancy services, its Bookstore operation and other professional activities in the wider ODL community. These programmes and activities comprise individual courses, such as the International Computer Driver's Licence (ICDL) or publication series. Each course or activity at Level 3 is made up of modules, subjects or specific projects. Finally, at the lowest level of the hierarchy are the various elements and components, including study guides, audio cassette tapes, radio broadcasts, interactive computer programs, etc. The cost objects at Level 5 are so numerous that not all of them can be shown in this diagram.



### Exercise 5.2 – Hierarchical Taxonomy of Cost Objects

This exercise should ideally be carried out with other managers or staff in your institution.

- Prepare a number of blank sheets of A5 paper by cutting normal photocopying paper in half.
- Brainstorm all the Cost Objects you can think of for your institution. Remember that cost objects are the reasons for carrying out activities and may include products, services and/or customers. The list of Cost Drivers you prepared for Exercise 1.5 might prove useful to stimulate thinking and discussion.
- Write down each cost object on a separate A5 sheet.
- Once the brainstorm has run out of steam, you should begin to arrange the cost objects into a hierarchy similar to that in Figure 5a. You can stick the pieces of paper to a blank wall with tape or blutack, or lay them out on a large table.
- Remember that the most detailed cost objects (elements/components) should be placed to the right or towards the bottom. As you move to the left or towards the top, the cost objects should become more general. You may need to write new headings on additional A5 sheets to fill in the gaps.
- Once you have arranged the cost objects into a pyramid (with its peak either on top or to the left) and ranked them according to different levels of detail, copy it onto a separate A4 sheet of paper or have someone convert it into electronic format for future use.

The ABC approach involves aggregating all of the costs that can be associated with a particular activity. When we are dealing with individual elements or components (Level 5), it may be relatively straightforward to identify the unit cost if the activity is paid for on a piece-work or contract basis. Thus, the direct costs of providing tutorials, printing study guides or marking assignments are usually easy to determine. It may be more convenient to attach other costs at a higher level in the hierarchy. For example, the salary of a permanent member of staff with responsibility for a number of courses might best be aggregated at Level 2 or 3. Finally, you may only be able to account for expenditure on senior management, financial administration, human resources, and other business-sustaining activities at the level of the institution as a whole. However, as discussed in Unit 4, it is desirable for these overheads to be apportioned and absorbed into programmes or courses in order to determine the full costs of providing these services.

In order to calculate unit costs using the ABC framework, a number of steps are necessary:

1. You should decide what level in your hierarchy of cost objects will be used for analysis. All of the costs associated with these activities at the same and lower levels must be added together.
2. Overheads and other costs that can only be aggregated at a higher level should be apportioned and absorbed at the level required.
3. The resulting total should be divided by the number of units used or produced.

The equation for this is as follows:

ABC Unit Costs Equation:

$$C_{co} = TC_{co}/N_{co}$$

Where:

- $C_{co}$  = cost per unit of cost object
- $TC_{co}$  = total costs attached to cost object
- $N_{co}$  = number of units of cost object



### Exercise 5.3 – Activity-Based Costing

An ODL institution in Southern Africa offers five different courses for adults and out-of-school youth. An Activity-Based Costing exercise was carried out to determine the unit costs of providing services at Level 3 in a hierarchical taxonomy of cost objects. The table below shows the costs attached to the various courses, as well as Full-Time Equivalent student enrolments, subject enrolments, and examination subject passes.

**Allocation of Costs by Course**

Course	Junior Secondary	Senior Secondary	Community Healthcare	Community Development	Business Management
Costs (ZAR)					
• Staffing	4,232,313	4,456,809	1,191,964	989,844	1,139,121
• Budgeted Expenditure	7,808,481	10,239,877	1,137,771	1,104,548	1,211,412
• Course Development	1,561,696	2,047,975	227,554	220,910	242,282
<b>TOTAL COSTS</b>	<b>13,602,490</b>	<b>16,744,661</b>	<b>2,557,289</b>	<b>2,315,302</b>	<b>2,592,815</b>
FTE Student Enrolments	11,067	6,624	134	38	92
Unit Cost per FTE Student					
Subject Enrolments	29,548	27,915	331	283	639
Unit Cost per SE					
Examination Passes	21,579	17,682	287	226	561
Unit Cost per Exam Pass					

Using the information provided, calculate the following unit costs for each course:

- per full-time equivalent student,
- per subject enrolment,
- per examination subject pass.

Insert your answers in the blank cells of the table.



#### Sample Answer

The answers to this exercise can be found in the sample answer on page 62.

Exercise 5.3 highlights the differences in unit costs of different courses. Clearly, total expenditure for the junior and senior secondary education courses is much higher than for the other courses. However, the cost per FTE student for the Community Work course is over fifteen times higher than the comparable cost for the junior secondary course. Using the backflush costing method, such differences would be overlooked.



## Other Resources

Rumble, G. 1997. *Costs and Economics of Open and Distance Learning*. Chapter 7, pages 59-64.

## Sample Answers

### Exercise 5.1

	2000/01	2001/02	2002/03	2003/04	2004/05
Total Costs (US\$)	1,986,700	2,132,200	2,568,900	2,587,300	2,604,100
Subject-Courses Delivered	2,312	2,428	2,633	2,576	2,498
Cost per Subject-Course Delivered	\$859	\$878	\$976	\$1,004	\$1,042
Subject-Courses Passed	1,891	1,944	2,103	2,138	1,987
Number of 'Graduates'	236	243	263	267	248
Cost per 'Graduate'	\$8,405	\$8,774	\$9,772	\$9,681	\$10,485

### Exercise 5.3

#### Allocation of Costs by Course

Course	Junior Secondary	Senior Secondary	Community Healthcare	Community Development	Business Management
Costs (ZAR)					
• Staffing	4,232,313	4,456,809	1,191,964	989,844	1,139,121
• Budgeted Expenditure	7,808,481	10,239,877	1,137,771	1,104,548	1,211,412
• Course Development	1,561,696	2,047,975	227,554	220,910	242,282
<b>TOTAL COSTS</b>	<b>13,602,490</b>	<b>16,744,661</b>	<b>2,557,289</b>	<b>2,315,302</b>	<b>2,592,815</b>
FTE Student Enrolments	11,067	6,624	134	38	92
Unit Cost per FTE Student	ZAR 1,229	ZAR 2,528	ZAR 19,084	ZAR 60,929	ZAR 28,183
Subject Enrolments	29,548	27,915	331	283	639
Unit Cost per SE	ZAR 460	ZAR 600	ZAR 7,726	ZAR 8,181	ZAR 4,058
Examination Passes	21,579	17,682	287	226	561
Unit Cost per Exam Pass	ZAR 630	ZAR 947	ZAR 8,910	ZAR 10,245	ZAR 4,622

# UNIT 6

## Costing a New Course or Programme

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### Objectives of this Unit



By the end of this unit, you will be able to:

- project student numbers and attrition rates for a new course;
- draw up a comprehensive list of the costs involved in course/materials development;
- estimate income and expenditure for a new course;
- review the options for treating the capital costs of course/materials development;
- define the term *marginal cost* and demonstrate how it can be calculated;
- explain how the relative costs of alternative modes of delivery can be compared and recommend when it would be best to switch from one to another.

### 6.1 Introduction

As discussed in Unit 2, the cost structure of open and distance learning differs from that of conventional education. ODL incurs considerable fixed costs for the development of study materials even before any students have enrolled for a course. Careful planning for course/materials development is central to managing this aspect of institutional expenditure and ensuring the cost-effectiveness of the process. This unit presents some tools for costing course/materials development and looks at ways of comparing the costs of different modes of course delivery.

## 6.2 Projecting Student Numbers

Accurate projections of the number of students who are likely to enrol for a new course are essential for estimating its costs. Where actual enrolments fall significantly below the projected number, then income will be lost and average costs will be higher than expected. As a result, instead of breaking even or producing a surplus over the life of the course, the institution will actually lose money. On the other hand, if student numbers exceed projected enrolments, problems may also arise in relation to the printing of study materials and the provision of places for face-to-face tutorials.

In some cases, there may be historical data available to assist in projecting student numbers. For example, where an ODL institution draws the majority of its learners from those who cannot be accommodated in conventional schools, then statistics should be available from the country's Ministry of Education on the number of students who did not reach the required standard for promotion. Examination results can provide useful data on the relative success and failure in different subjects which may be used to project student numbers. If a new course is being developed to enable particular categories of employees to obtain professional qualifications (for example, agricultural extension workers), market research should give some indication of the total number of unqualified workers currently in employment, the annual turnover of staff and projected expansion of employee numbers in the field.

When a course or programme lasts more than a single year, it is essential to make a separate projection for each year's batch or cohort of students. The actual number of students who register for the second (or subsequent) year of a course is dependent upon the number who were enrolled as first-year students the previous year, as well as the rates of failure and repetition.



### Exercise 6.1 – Projecting Student Numbers

- Open a copy of the MS Excel file “Course Development Template.xls” and click on the *Summary* tab.
  - If your ODL institution is considering the development of a new course, enter the programme name, course/module/unit name, planned year of first intake, etc. in the highlighted cells.
  - If there are no new courses under consideration, make up an example of a new course for the purpose of this exercise and enter imaginary details.
- Click on the *Student Numbers* tab.
  - Enter the number of first-year students that you expect to register for the course in the first year it is offered (Year 1) in Cell C14.
  - Enter the estimated percentage of students who will fail the course in Cell B17.
  - Enter the estimated percentage of failures who will repeat the course in Cell B18.
  - If the course lasts only one year, enter a zero in Cell D15, otherwise the template will automatically project numbers for second- and third-year student groups.
  - The template projects student numbers for a course life of up to ten years. However, if the estimated life of the course is less than this, you will need to replace the figures in relevant cells with zeros.



The template should automatically calculate projected student numbers by year, by course-year group and for the life of the course. Experiment by changing the estimated number of First-Year students, as well as the failure and repetition rates.

## 6.3 What do we need to account for?

We have already discussed a variety of different costs that are incurred by open schools. This section consolidates what was presented previously and applies these concepts in a real-life situation.



### Exercise 6.2 – Types of Income and Expenditure in Course Development

This exercise can be done either on your own, with a partner or in a small group.

- If you still have the list you drew up for the exercises in Unit 1, take this out.
- If not, take a few minutes to jot down all the items of income and expenditure that you can think of in relation to the development of a new course.
- Take out three blank sheets of paper and mark them all out as shown in Table 6a below.
- Label the first sheet with the heading INCOME and write down all possible sources of income in the appropriate cells of the table.
- Label the second sheet with the heading DIRECT COSTS and group these under the appropriate headings in the table.
- Label the last sheet INDIRECT COSTS and write down all the different types of expenditure you can think of in the appropriate cells.

	Fixed	Variable
Non-Recurrent		
Recurrent		

**Table 6a.**



#### Sample Answer

Please see the sample answer on page 74 for some examples of the different costs associated with the development of a new course.



### Exercise 6.3 – Estimating Income and Expenditure on Course Development

Open a copy of the file “Course Development Template.xls.”

- Click on the *Other Income* tab and experiment by entering different amounts in the highlighted cells.
- Click on the *Student Fees* tab and experiment with different values in the highlighted cells.
- Look at the other worksheets in this file and play around with different combinations.

This template may be used in future when you need to make a projection of income and expenditure for a new course. Provision has been made for estimating the impact of inflation on costs and fees over the life of the course. If a particular item or cell is not relevant, leave it blank or enter a zero.



## 6.4 Treating the Capital Costs of Materials Development

Like any other capital asset, a course has a particular working (or useful) life. After a certain number of years, the materials will need to be revised substantially in order to keep abreast of expanding knowledge in the field or other changes to the curriculum or syllabus. Some courses may not be viable after some time since they can no longer attract sufficient students. Thus, any projections of income and expenditure for a new course should include an estimate of its working life, and it is advisable to be conservative in this estimate. For example, even though you expect a course to last for seven years, it may be more prudent to base your cost projections on a working life of five years. Should the course remain viable without revision for the full seven years, then the institution will benefit from any unexpected income that accrues.

Unit 3 discussed several different approaches to depreciate or account for the fall in value of course materials over the life of a course. Two methods – simple depreciation and annualization – were recommended. In the above exercises using the Course Development Template file, how was non-recurrent, fixed expenditure on course/materials development treated?

It may not have been evident which approach was used, since no separate calculation was made for non-recurrent, fixed costs. In effect, however, the template uses the simple depreciation method when calculating the annual cost of the course. By aggregating the capital costs of materials development with all other expenditure over the life of the course and dividing this by the number of years it is expected to run, the underlying assumption is that an equal amount of the value of this asset will be ‘used up’ each year.

Table 6b provides an example that illustrates the difference between the use of the Simple Depreciation and Annualization methods. In this particular case, the expected life of the course is six years. The ODL institution begins to incur expenditure for course development two years before any students are enrolled, while some activity (e.g. recording of radio broadcasts) continues into the first year of presentation. After three years, significant shortcomings are discovered in some of the study materials, requiring additional expenditure of Pula 40,000 in Year 4 for re-writing and the preparation of supplementary resources.

Using the Simple Depreciation method, the initial capital investment of Pula 180,000 is divided by the expected life of the course to yield an annual loss of value of Pula 30,000. However, because the additional expenditure for course revision only takes place in Year 4, it must be depreciated over a shorter period. Thus, it is divided into two equal parts and added into the calculation for the final two years of the course.

Alternatively, the value of the course could be depreciated using the Annualization method, which takes account of both simple depreciation and the lost opportunity to invest the money and earn interest. In the example shown in Table 6b, the average rate of interest for the life of the course has been projected at 8.00%, which yields an annualization factor of 0.216. When the initial capital investment is multiplied by the annualization factor, a figure of Pula 38,880 is obtained which represents the annual loss in value for the course.

It is necessary to calculate a new annualization factor for the additional costs incurred for revision in Year 4, since these must be depreciated over a period of only two years. When the total additional amount is multiplied by the new annualization factor (0.561), a figure of Pula 22,440 is obtained. This is added to the original figure of Pula 38,880 to yield the total annual loss of value for the final two years of the course, as shown in the bottom line of the table. When these figures are compared with the amount derived through the Simple Depreciation method, it is clear that the annual loss in value of the course materials would be considerably higher using the Annualization approach.

	Year -1	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Totals
1 Expenditure	40,000	120,000	20,000			40,000			220,000
2 Simple Depreciation			30,000	30,000	30,000	30,000	50,000	50,000	220,000
3 Annualization									
a. Original Work			38,880	38,880	38,880	38,880	38,880	38,880	
b. Revision							22,440	22,440	
Total Annualized Cost			38,880	38,880	38,880	38,880	61,320	61,320	278,160

**Table 6b.** Capital costs of developing an ODL course. (Adapted from Rumble 1997, Table 6.4, page 48)

As discussed in Unit 3, the simple depreciation method may be used where funds have been set aside for the development of a particular course and cannot be used for any other purpose. On the other hand, when funding has not been ‘ring-fenced’ or when you are comparing the relative costs of two or more alternative uses, then the annualization method provides a more accurate picture.

One advantage of depreciating or ‘writing off’ the capital investment in materials development for the expected life of a course is that the fees paid by students (in a commercial concern) or other income secured through grants and subsidies (in a not-for-profit institution) should recover the full cost during the period. If the course is extended beyond its projected life, there is no need to set aside additional funds from income to cover the loss of value through depreciation, and the only expenditure required is for operating costs. This results in a considerable reduction in the average cost of running the course for every year beyond its planned life.

## 6.5 Marginal Cost



A closely related concept is that of marginal cost. The *marginal cost* is additional expenditure incurred to produce one more unit of a product or service. For example, if student enrolments for a course exceed the number estimated, then the marginal cost of accommodating each additional student involves only variable expenditure for printing and distributing study materials, marking assignments, etc. This assumes that the additional students can be accommodated within the institution’s existing capacity or the relevant range for its semi-variable costs. In other words, you need to have unused study materials that can be given to additional students and there must be spare places in tutorial groups. By way of contrast, when additional students cannot be accommodated without making additional provision (such as ordering a new print run for study materials or establishing a new tutorial group), the marginal cost will increase substantially.



## Exercise 6.4 – Calculating the Marginal Cost of Adding One Student

An ODL institution in Malaysia is planning to develop a new course in English Communication Skills. The working life of the course is estimated to be six years and projections of income and expenditure, as well as student numbers, are shown in Table 6.4 below.

Name of Programme	University Bridging Programme
Name of Course/Module/Unit	English Communication Skills
Planned Year of First Intake	2009
Planned Year of Final (First-Year Intake)	2014
Life-Time upon which Financial Projection is based	6 years
Projected Number of Students per Year	8,000 students
Total Number of Students over Life of Course	48,000 students
Fee per Student	250 Malaysian Ringgit

Worksheet	Source	Total Over Financial Life of Course	Currency Unit	Type of Income or Expenditure
<b>TOTAL PROJECTED INCOME</b>				
A	Student Fees, Total	12,000,000	MYR	Variable
B	Grants, Subsidies & Other Income	750,000	MYR	F & V
	<b>Sub-Total: INCOME (All Sources)</b>	<b>12,750,000</b>	<b>MYR</b>	
<b>TOTAL PROJECTED EXPENDITURE</b>				
C	Feasibility Study/Market Research	400,000	MYR	Fixed
D	Materials Development Costs	5,835,000	MYR	Fixed
E	Course Presentation Costs	125,000	MYR	Fixed
F	Provision of Study Materials	3,750,000	MYR	Variable
G	Indirect Common Costs	2,280,000	MYR	Semi-Variable
H	Business-Sustaining Costs	360,000	MYR	Semi-Variable
	<b>Sub-Total: EXPENDITURE</b>	<b>12,750,000</b>	<b>MYR</b>	

**Table 6.4.** Projected income and expenditure.

Calculate the average cost per student over the six-year life of the course.

This particular course does not involve any face-to-face tutorials, and sufficient materials have been produced to accommodate 5% more students than included in the projection. What is the marginal cost of providing the course for each additional student?

If the amount collected in fees exceeds the marginal cost, then the difference represents a 'profit' or a surplus for the institution. Would there be any 'profit' or other advantage to enrolling additional students on this course?



**Sample Answer**

The answers to this exercise can be found in the sample answer on page 75.

## 6.6 Crossover Point



The concept of a cross-over point was introduced in Unit 2 when comparing the costs of offering the same course through ODL methods and conventional education. The *crossover point* was defined as the level of enrolments at which the average cost of ODL becomes lower than the cost per student for school-based education. The crossover point is normally illustrated in a chart where average costs are plotted against student numbers (see Figure 2e on page 27).

A similar concept is useful when comparing how the total costs of two modes of delivery behave in response to changing student numbers. Both Rumble (1997, pages 37-40) and Hülsmann (2004, page 16) refer to this as the 'break-even' point, but this usage may be confusing since the term is commonly used to refer to the level at which income starts to exceed expenditure. For this reason, the concept is referred to here as the *crossover point*.

As an example, consider the case of an open school which needs to deliver audio content for one of its courses. Managers need to compare the relative costs of doing this through radio broadcasts and cassette tapes. Broadcasting content on the radio involves high fixed expenditure for writing and recording the programmes, as well as any payments to the radio station for air-time. However, once these fixed costs have been paid, there are no additional variable costs in providing content to students. Although many of production costs of radio broadcasting (script-writing, studio recording, audio-editing) are also required to make a cassette tape, there are also variable costs associated with the reproduction and distribution of the cassettes. Thus, the total costs of providing content through audio cassettes continue to rise as student numbers increase, while those for radio broadcasting remain flat, as illustrated in Figure 6a below. In this example, the total costs of audio cassettes exceed those of radio broadcasts after relatively few students have enrolled for the course.

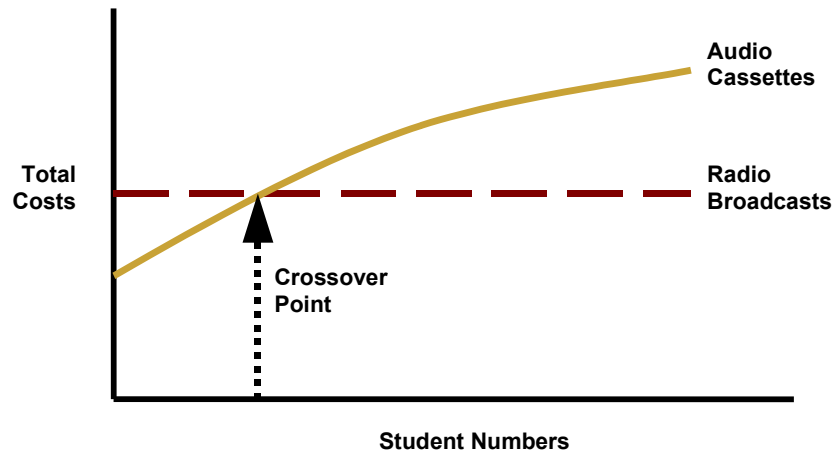


Figure 6a. Comparison of total costs of radio broadcasts vs. audio cassettes.

Now consider a different case, where a college of open learning is planning to deliver content for one of its courses either through printed booklets or by means of audio cassettes. Figure 6b illustrates the crossover point when comparing the total costs of these two technologies. Both modes of delivering educational content are a combination of fixed and variable costs, though the fixed expenditure for developing print-based materials to the point where they are ready for reproduction is only about half of that for audio cassettes in this example. However, the average variable cost of printing a booklet is higher than that for reproducing a cassette, with the result that the total costs of the former rise faster than those for the latter. In this example, a higher level of student enrolments is required before audio cassettes become cheaper than printed booklets.

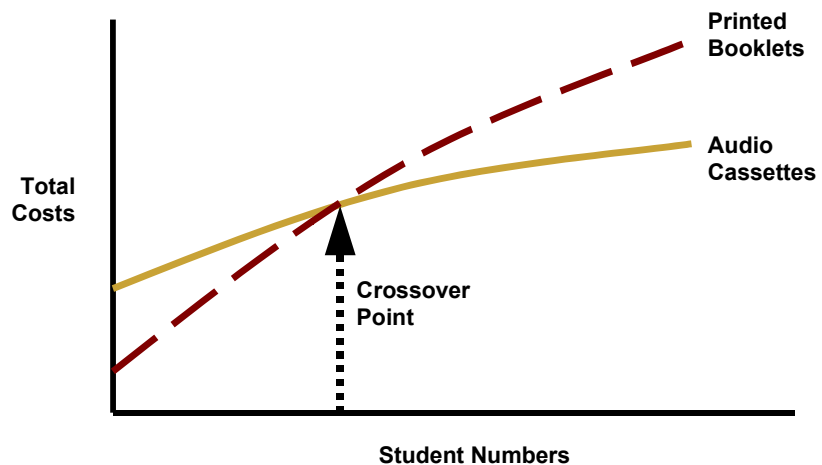


Figure 6b. Comparison of total costs of printed booklets vs. audio cassettes.



## Other Resources

Rumble, G. 1997. *The Costs and Economics of Open and Distance Learning*. Chapter 5, pages 37-41.

Hülsmann, T. 2004. *Costing Open and Distance Learning*. Section 3.2: 'Elements of Cost Analysis, fixed and variable costs', pages 17-18. For a detailed discussion of *Costing Educational Media*, see Section 5, pages 27-52.

## Sample Answers

### Exercise 6.2

#### Income

	Fixed	Variable
Non-Recurrent	Once-off Grants for course development <ul style="list-style-type: none"> <li>• Government</li> <li>• international funding agency</li> <li>• NGO</li> </ul>	Donations from private sector
Recurrent	Annual grants Contributions-in-Kind (e.g. provision of facilities)	Student Fees Scholarships Subsidies, based on: <ul style="list-style-type: none"> <li>• student numbers</li> <li>• FTE students</li> <li>• graduates</li> </ul>

#### Direct Costs

	Fixed	Variable
Non-Recurrent	Feasibility Study/Market Research Pilot Testing of Materials Committed Costs of staff in materials development unit Marketing Campaign to launch course	Course/Script Writing Editing DTP/Layout Illustrations Audio Recording
Recurrent	Re-design of brochure (annually) Design of Newspaper Ad Updating of Study Materials Provision of Study Centres (S-V) Setting Assignments Setting Examination Hiring of examination halls (S-V) Moderation of Exam Marking Graduation Ceremony	Printing of Brochures/Flyers Newspaper Advertisements Printing & Packing of Materials Face-to-Face Tutorials (S-V) Assignment Marking Printing/handling of exam papers Invigilation of examinations (S-V) Marking of Examination Scripts Printing of Certificates

**Indirect Costs**

	<b>Fixed</b>	<b>Variable</b>
Non-Recurrent	Shared Common Costs, such as: <ul style="list-style-type: none"> <li>• capital cost of buildings</li> <li>• capital costs of equipment</li> <li>• training of tutors</li> </ul>	
Recurrent	Committed Common Costs of staff in service units: <ul style="list-style-type: none"> <li>• regional offices</li> <li>• finance</li> <li>• human resources</li> <li>• research &amp; evaluation</li> <li>• senior management</li> </ul> Other Business-Sustaining Costs	Committed Costs for services to Students: <ul style="list-style-type: none"> <li>• data capture &amp; student records</li> <li>• telecommunications</li> <li>• postage/courier services</li> <li>• dealing with student queries</li> <li>• travel to study centres (S-V)</li> </ul> <i>(Note: Where these costs can be identified and attached to a particular course, they may be treated as Direct Costs.)</i>

**Exercise 6.4**

Name of Programme	<b>University Bridging Programme</b>		
Name of Course/Module/Unit	<b>English Communication Skills</b>		
Life-Time upon which Financial Projection is based	6	years	
Total Number of Students over Life of Course	48,000	students	
Fee per Student	250	Malaysian Ringgit	
Total Project Expenditure	12,750,000	MYR	
Average Cost per Student over life of course	265.63	MYR	
<b>CALCULATION OF MARGINAL COST</b>			
Provision of Study Materials	3,750,000	MYR	Variable
Total Variable Costs	3,750,000	MYR	
Marginal (Average Variable) Cost per Student	78.13	MYR	
PROFIT per Student above projected number	171.88	MYR	



# UNIT 7

## Budgeting: Preparing Estimates of Income and Expenditure

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### Objectives of this Unit



By the end of this unit, you will be able to:

- list at least three common approaches to budgeting for public-sector bodies;
- describe in general terms how each of these approaches works in practice;
- discuss the advantages and disadvantages of the different approaches;
- critically reflect on the approach used in your ODL institution to annual budgeting.

### 7.1 Introduction

Budgets are important financial planning and management tools that list all projected revenue and expenditure for a particular period, often a financial year (FY). For many managers of ODL institutions, the annual budgeting exercise is simply a chore and monitoring the draw down of budgeted funds poses unnecessary constraints on how they run their departments.

There appear to be a bewildering array of budgeting models, and each government and ODL institution seems to have its own way of going about it, developed through years of experience. It would be impossible to provide a comprehensive overview of the range of processes currently in use in Commonwealth countries. Instead, this unit aims to introduce a range of basic approaches to budgeting and to suggest ways in which these can be of assistance in managing ODL programmes. These approaches or budgeting models are:

- Incremental budgeting
- Zero-Based Budgeting (ZBB)
- Periodic ZBB

- Service-Level Budgeting (Modified ZBB)
- Performance Based Budgeting (PBB)

The problems associated with securing sufficient funds to finance budget projections are discussed in Units 10 and 11.

## 7.2 Incremental Budgeting



One of the most common approaches to the preparation of estimates is incremental budgeting. Starting with the estimated amounts for the current financial year (or the provisional accounts of actual expenditure in the previous FY), incremental amounts are added or subtracted to accommodate budget increases or cuts for the coming FY. It is possible to calculate the same percentage increase or decrease for all budget lines, and this is not uncommon for national budgets when allocating funds to different ministries. In practice, however, certain items of expenditure (such as salaries) cannot be treated in this way, because of the long-term financial commitment involved in hiring or laying off permanent staff. As a result, budget increases and cuts are usually concentrated on other budget lines.

### Advantages

Incremental budgeting is easy to understand and the calculations required are relatively simple and straightforward. This approach has the advantage of producing budgets that are relatively stable, with gradual changes from year to year. As a result, where multi-annual activities have been planned, this approach provides some assurance that funds will be available in future. Moreover, if all the departments within a ministry or ODL institution are treated in the same way (with guideline amounts incorporating the same incremental increase or cutback), this can reduce inter-departmental conflict.

### Disadvantages

With the incremental budgeting model, the allocation of resources is based on the existing pattern of activities. When the levels or types of activities are subject to significant change, for example, through the introduction of a new course or programme, this may pose problems. As a result, incremental budgeting can create disincentives to developing new programmes or courses. Likewise, when funding for a particular activity in the coming financial year is based on current spending, then there is no incentive to reduce costs. Another drawback of the incremental budgeting approach is that it encourages managers to adopt a ‘use it or lose it’ attitude, spending money towards the end of the financial year simply because it is there. Overall, the incremental budgeting approach is based on the assumption that the existing level of funding is right, whereas in fact it may be too high for the current level of activity or too low to sustain these activities in the long-term.



### Exercise 7.1 – Incremental Budgeting

You are a senior manager in charge of the Programmes and Materials Development Department of the Lagos Institute of Distance Education (LIDE). The annual budgeting process is underway, and you have been given a guideline amount that is 2.00% lower than for the current FY. However, because the Institute cannot afford to lose any of its permanent staff, who are highly trained and experienced, no cutbacks should be made in staff salaries or other benefits. In fact, in terms of existing agreements on pay and conditions of service, salaries will increase by 3.25% in the coming FY. As all other benefits for permanent staff are calculated on the basis of salaries, expenditure on these items will also rise by the same amount. Other budget lines, such as depreciation of computer equipment and rental of office equipment, are fixed for a number of years and cannot be reduced. Using the table below, prepare estimates for your department using the incremental budgeting approach.

All figures are shown in Nigerian Naira.

Budget Line	Description	Approved Expenditure for Current FY	Estimated Expenditure for Coming FY	Increment (percent) Increase	Factor for Calculation
1000	PERSONNEL EXPENSES (Permanent Staff)	3,337,000			
1500	TEMPORARY AND CONTRACT STAFF	935,000			
2000	TRAVEL AND TRANSPORT	349,600			
3000	SUPPLIES AND SERVICES	7,632,700			
4000	PREMISES-RELATED EXPENSES	210,300			
5000	DEPRECIATION (Buildings and Equipment)	323,000			
6000	ADMINISTRATION EXPENSES	194,900			
	<b>TOTAL RECURRENT EXPENDITURE</b>	<b>12,982,500</b>			
	<b>GUIDELINE AMOUNT</b>		<b>12,722,850</b>	<b>-2.00%</b>	<b>0.98</b>



#### Sample Answer

The answers to this exercise can be found in the sample answer on page 84.

## 7.3 Zero-Based Budgeting



Zero-Based Budgeting (or ZBB for short) is an alternative approach to resource planning, decision-making and financial management. Rather than starting with estimates for the current financial year, as with incremental budgeting, the starting point for ZBB is nil or zero. For each product or service, the total estimated costs should be fully offset by projected income. In the context of ODL institutions, this means that estimated expenditure for each course or programme must be balanced out by income from student fees, government grants and subsidies, or other sources.

With the ZBB model, all spending requests must be justified in detail, and these are assessed against requests from other departments before a decision is taken on which should go ahead.

ZBB operates as follows:

### **STEP 1 – Developing Decision Packages**



A *decision package* is a document that explains a proposed activity, its goals and objectives, what benefits are expected, how performance will be measured and all costs that will be incurred. In addition, a decision package should outline what alternative courses of action have been considered and why these were rejected.

### **STEP 2 – Ranking Decision Packages in order of priority**

Before each manager submits the decision packages on behalf of her/his department, they must first be ranked in order of priority. Once all the decision packages have been submitted to a central decision-making body, they are then ranked in terms of the priorities of the institution as a whole. The costings in each decision package are also reviewed to ensure that they are not excessive or unrealistic.

### **STEP 3 – Allocating Funds**

Where activities are not self-financing and require a contribution from central funds, then whatever resources are available can be allocated to the various activities on the basis of their ranking. When this central fund has been exhausted, then no further decision packages are approved.

## **Advantages**

The chief advantage of the ZBB approach is that it combines planning and budgeting into a single process which is focused on a comprehensive analysis of objectives, needs and priorities. ZBB can detect where a budget has been inflated and it thus helps to eliminate waste. It also drives managers to find more cost-effective ways to carry out activities in their departments. When subordinate staff are involved in the process, it creates a greater sense of responsibility for the decision-making process.

## Disadvantages

Perhaps the biggest drawback to ZBB is the amount of work involved in preparing and prioritising decision packages as this process can be extremely time-consuming and exhausting. In effect, ZBB demands a full Activity-Based Cost analysis to be carried out for each course or programme (Levels 2 or 3 in the Taxonomy of Cost Objects). (See Figure 5a, “Hierarchical taxonomy of cost objects at the Namibian College of Open Learning,” on page 57.)

Because of its focus on programme or project spending, ZBB may also lead to micro-management at the expense of things that really matter. In addition, since bidding for central funds and ranking on the scale of institutional priorities is essentially a competitive process, ZBB can increase tension between managers from different departments. Such tension can filter down to subordinate staff leading to inter-departmental rivalries. In particular, production departments tend to benefit at the expense of service units, such as Research and Development, since the outputs of the former are more concrete and have the potential to generate income.

## 7.4 Periodic Zero-Based Budgeting (ZBB)



Because of the work required to produce a ZBB on an annual basis, some institutions carry out this exercise periodically, once every three to five years. Ideally, work on the periodic ZBB is combined with strategic planning activities which follow a similar cycle. In this way, the time demands of the ZBB process can be reduced.

Questions that should be asked as part of a combined Strategic Planning/ ZBB exercise include:

- Is there measurable evidence of the value of this activity?
- What would happen if the activity was not carried out?
- Are there less costly or more effective ways to achieve the same objectives?
- Where does the activity fit into the ranking of institutional priorities?
- Would the benefits be greater if we spend the available funds on another activity?

## 7.5 Service-Level Budgeting



Service-Level Budgeted is a modified form of ZBB. Estimates for the coming financial year are based upon a percentage (generally 85-95%) of approved expenditure for the current FY. This enables existing services to be carried on, while putting managers under pressure to improve efficiency. The remaining funds are set aside in a separate pool to finance new projects or activities, which are bid for through a process similar to decision packages.

The current system of government funding for Irish universities is an example of Service-Level Budgeting in practice. Over a decade or more, the amount set aside in the national budget to support the existing activities of the universities has grown in monetary terms but declined in real value because of inflation. At the same time, additional funding has been made available for innovative projects to address national research and development priorities. All universities in the Republic of Ireland can bid for these funds by submitting detailed project proposals, which are evaluated and prioritised by the Higher Education Authority.

Service-Level Budgeting combines the advantages of the incremental approach by providing a certain level of stability and security in relation to future funding streams. Institutions are not required to engage in a time-consuming exercise to analyse and estimate costs for core activities or on-going operations. At the same time, incentives are provided to increase efficiency and to develop proposals for innovative, new activities.

## 7.6 Performance-Based Budgeting

One final model will be examined before moving on to other topics. The Performance-Based Budgeting (PBB) approach was popularised in the USA with the passage of the Government Performance and Results Act in 1993. PBB is particularly suited to the public-sector environment where income from user fees will never be sufficient to fully offset expenditure, where budgeting processes involve complex and drawn-out liaison with decision-makers in many bodies and where long-term goals require consistency and continuity of funding over a considerable period.

In contrast to the object class budgets that have traditionally been used by government ministries (where the budget for a department is divided into different budget lines similar to those in Exercise 7.1), PBB attempts to integrate performance indicators with the estimated expenditure required to achieve predetermined targets. For example, instead of listing how much will be spent on office stationery, a Performance-Based Budget presents decision-makers with a concrete and measurable target (for example, 800 students will successfully complete a Basic English course) and the amount needed to accomplish this process.

PBB involves defining three different elements:

- Intended outcomes or long-term goals, which may be difficult to measure (e.g. improving the general level of education among rural women);
- Strategies for achieving this final outcome (e.g. providing an alternative secondary education programme using ODL methods);
- Activities, including the quantity, quality and costs of services to be provided in order to achieve the final outcomes (e.g. 2,400 rural women will pass examinations in six subjects at junior secondary level each year).

PBB does not constitute a mechanism for budgeting, but rather a framework for presenting this information in a particular way. Activity-Based Costing or another form of cost analysis is required to prepare detailed estimates of expenditure for specific activities on an annual basis. Key performance indicators are then presented side-by-side with estimated costs. This form of presentation enables decision-makers to understand what public funds are being spent on and facilitates an assessment of whether targets have been achieved. The main drawback of this approach is that it requires a considerable amount of time and effort, in addition to normal budgeting processes, to produce a Performance-Based Budget.



## Questions for Consideration

Ideally, this exercise should be carried out with colleagues in your institution.

- What budgeting approach is currently used in your institution?
- In your view, what are the advantages of this budgeting system?
- What are the disadvantages?
- If you could choose, which budgeting system would you prefer?



## Other Resources

Wikipedia article on *Zero Based Budgeting*. Electronic document, accessed on 07 September 2007 at:

[http://en.wikipedia.org/wiki/Zero\\_Based\\_Budgeting](http://en.wikipedia.org/wiki/Zero_Based_Budgeting)

Mercer, John. 2003. *Cascade Performance Budgeting: A guide to an effective system for integrating budget and performance information and for linking long-term goals to day-to-day indicators*. Electronic document, accessed on 30 August 2007 at: [http://www.john-mercero.com/library/cascade\\_pb.pdf](http://www.john-mercero.com/library/cascade_pb.pdf)

Wikipedia article on *Performance Based Budgeting*. Electronic document, accessed on 05 September 2007 at:

[http://en.wikipedia.org/wiki/Performance\\_Based\\_Budgeting](http://en.wikipedia.org/wiki/Performance_Based_Budgeting)

## Sample Answers

### Exercise 7.1

All figures are shown in Nigerian Naira.

Budget Line	Description	Approved Expenditure for Current FY	Estimated Expenditure for Coming FY	Increment (percent) Increase	Factor for Calculation
1000	PERSONNEL EXPENSES (Permanent Staff)	3,337,000	3,445,453	3.25%	1.03
1500	TEMPORARY AND CONTRACT STAFF	935,000	898,081	-3.95%	0.96
2000	TRAVEL AND TRANSPORT	349,600	335,796	-3.95%	0.96
3000	SUPPLIES AND SERVICES	7,632,700	7,331,320	-3.95%	0.96
4000	PREMISES-RELATED EXPENSES	210,300	201,996	-3.95%	0.96
5000	DEPRECIATION (Buildings and Equipment)	323,000	323,000	0.00%	1.00
6000	ADMINISTRATION EXPENSES	194,900	187,204	-3.95%	0.96
	<b>TOTAL RECURRENT EXPENDITURE</b>	<b>12,982,500</b>	<b>12,722,850</b>	<b>-2.00%</b>	
	<b>GUIDELINE AMOUNT</b>		<b>12,722,850</b>	<b>-2.00%</b>	<b>0.98</b>
	Calculations: Cells C22 & D22	3,660,000	3,768,453		
	Calculations: Cells C23, D23 & F23	9,322,500	8,954,398		0.96

# UNIT 8

## Full-Time Equivalent Students: Establishing a Basis of Comparison with Conventional Education

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### Objectives of this Unit



After completing this unit, you will be able to:

- explain why it is important to establish a measure of equivalency with full-time students in schools;
- list at least three different approaches to calculating FTE student numbers;
- discuss the advantages and disadvantages of each;
- calculate FTE student numbers in your own institution using the equations shown in the unit.

### 8.1 Introduction



When comparing open and distance learning with conventional approaches to education, we need to be clear about what we are counting. Both ODL institutions and traditional schools, colleges and universities maintain student records databases, and these can typically provide us with a figure for the total number of individuals currently registered for studies. This is often referred to as a *student head count*.

However, basing our comparison on the student head count measure is likely to be misleading. Many ODL programmes allow learners to progress at their own pace. Some effectively study on a full-time basis, completing the course in the same time as those studying through conventional modes. However, many ODL students are in paid employment or have family obligations that limit the time available for study. For the latter, it may take two or more years to work

their way through a programme that full-time students complete in a single year. For this reason, we cannot assume that ODL learners follow the same programme or have the same course load as students in conventional education.

The concept of full-time equivalency (FTE) is intended to create a common measure for comparing the flexible nature of ODL studies with the workload of full-time students in schools, colleges or universities. This unit discusses four approaches to establishing full-time equivalency between those studying through ODL and those in conventional education.

However, while examining alternative ways of calculating FTE, we must never lose sight of the fact that ODL students are living and thinking human beings with hopes and aspirations. While the student head count measure may not be applicable in most cases, it is relevant when assessing the social benefits of providing opportunities for individuals to develop their full potential.

A student head count is also important when considering the social and political consequences of developing ODL provision. Where alternative services are required to relieve pressure on the formal education system, for each student accommodated by an open school, college or university there is one less young person or adult agitating for change. In addition, the family and friends of each individual student are less likely to feel dissatisfied with the current level of government services. Such an analysis may seem callous or cynical, but it does reflect the political cost-benefit analysis that governments need to take into account when deciding to support the development of open schools, colleges or universities.

## 8.2 Full-Time Equivalency

The notion of FTE is based on a number of assumptions, which are often questioned when the issue is raised.



In the first instance, it is important to establish that what is provided through ODL is of *equivalent quality* to what is available in a conventional education institution. In many countries, public opinion tends to disparage alternative forms of provision as inferior to the formal education system. In such circumstances, it is necessary for providers to establish that the courses they offer through ODL are of a comparable standard and level to those provided through conventional methods. This may be done by submitting to assessment and validation procedures administered by national qualifications authorities.



A second major issue in establishing FTE is *equivalent quantity* of the education provided. For the most part, earners work through an ODL course on their own, which means that the number of hours they devote to such study may not be recognised. When this is compared to the number of hours that

school-based students spend in the classroom, it is easy to jump to the conclusion that ODL students do not have to work as hard. However, if ODL learners were to keep a detailed record of the time required to complete their studies, in many cases this would exceed the total number of hours that full-time learners are occupied both in and out of class.



Finally, the issue of whether ODL provides an *equivalent experience* to institution-based education has also been raised. Some authors have argued that studying at a distance is “deficient in social and cultural learning” and thus cannot be classified as true education (Escotet 1980a, as cited in Rumble 1986, page 74). While it is true that ODL learners may not be able to take part in the range of extra-curricular activities that many full-time students take part in, it is unclear how other aspects of social and cultural learning are impaired by not being on campus.

Measures of FTE can be based upon:

- Inputs – This refers to everything that is provided to students during the course of their study. In conventional education, inputs include classroom teaching, textbooks, laboratory experiments, access to library and computer facilities, etc. In an ODL system, inputs come primarily in the form of courseware (print-based materials, as well as those in other media), tutorials (whether face-to-face or ICT-mediated) and tutor-marked assignments (where these do not form part of the assessment procedures).
- Outputs – Performance in examinations is usually taken as the main indicator of the output of an education system, though this is admittedly a rather crude measure. Nevertheless, in some countries, students from both the formal education system and open schools sit for exactly the same examinations, and these provide a convenient measure for comparison.
- Combination of Inputs and Outputs – Such measures take into account both what is provided to registered students and what impact the experience has on their performance in terms of knowledge and skills.

### 8.3 Provision of Courses

The first FTE measure we need to consider is one based on the inputs made available to ODL students relative to those provided in conventional schools, colleges or universities. These inputs are normally measured in terms of course, subject or module enrolments, since those studying through ODL may not have as heavy a course load (i.e. take as many courses per year) as their counterparts in full-time education. Regardless of whether students make use of what is available to them or complete the courses they have registered for, ODL institutions would argue that they have incurred the bulk of expenditure per student through the provision of course materials and the scheduling of tutorials.

STEPS in applying this method:

- a. Identify the total number of course/subject/module enrolments by ODL students.
- b. Identify average number of courses/subjects/modules taken by FT students per year.
- c. Multiply **b** above by the number of years required to complete the course in conventional education.
- d. Divide **a** by **c**.

EQUATION:

$$FTE_{PC} = TSE_{ODL} \div (ASE_{FT} \times Y_{FT})$$

Where:

- $FTE_{PC}$  = FTE Measure – Provision of Courses  
 $TSE_{ODL}$  = Total Course/Subject/Module Enrolments by ODL students  
 $ASE_{FT}$  = Average Course/Subject/Module Enrolments by Full-Time students  
 $Y_{FT}$  = Number of Years FT Students must study before sitting exam



### Exercise 8.1 – Provision of Courses, Subjects, Modules

The following table is to be used for Exercises 8.1 to 8.4. Exercise 8.1 follows the table.

#### Junior Secondary Certificate Students at Dublin Open School and Conventional Schools

		2003	2004	2005
<b>Dublin Open School</b>				
$TS_{ODL}$	Total Student Numbers (JSC Course)	6,131	6,529	6,637
$TSE_{ODL}$	Total Subject Enrolments	15,972	16,660	17,258
$TESE_{ODL}$	Total Examination Subject Entries	13,112	14,023	14,962
$TESP_{ODL}$	Total Examination Subject Passes	9,788	10,544	11,989
<b>Junior Secondary Schools</b>				
$TS_{FT}$	Total Student Numbers (Grade 10)	32,804	33,013	32,751
$TS_{FT-1}$	Total Student Numbers (Grade 9)		34,122	
$TS_{FT-2}$	Total Student Numbers (Grade 8)	35,418		
$ASE_{FT}$	Average Subject Enrolments per Year	9	9	9
$Y_{FT}$	Number of Years at this Level/Phase	3	3	3
$TESE_{FT}$	Total Examination Subject Entries	286,226	291,147	283,951
$TESP_{FT}$	Total Examination Subject Passes	254,741	262,039	258,963

The Dublin Open School provides courses for those who did not complete their Junior Secondary Certificate (JSC). Since most of these ODL learners are studying on a part-time basis, the institution relies on subject enrolments in order to establish full-time equivalency with learners in schools. Full-time students in schools must take nine subjects per year for three years before they are allowed to sit for the JSC examination.

Calculate FTE student numbers for the Open School based on provision of courses/subjects using the data in the table above.

**EQUATION:**

$$FTE_{PC} = TSE_{ODL} \div (ASE_{FT} \times Y_{FT})$$

Where:

$FTE_{PC}$  = FTE Measure – Provision of Courses

$TSE_{ODL}$  = Total Subject/Course Enrolments by ODL students

$ASE_{FT}$  = Average Subject/Course Enrolments by Full-Time students

$Y_{FT}$  = Number of Years Full-Time students must study before sitting exam



**Sample Answer**

The answers to this exercise can be found in the sample answer on page 98.

The main advantage of this approach to establishing FTE is that it is straightforward and easy to calculate from data that is readily available from the ODL institution's own student records database. However, it does not account for student drop-outs. In general, the rate of early termination (drop-out) is higher for courses offered through ODL, though it can also be quite high in traditional institutions. Likewise, in many cases, the rate of examination failure among ODL students is higher than for those in conventional education, but this approach does not account for this difference in the two modes of provision.

## 8.4 Preparation for Examinations

A second measure of FTE considers the inputs required to prepare students to sit the terminal examinations for a particular phase or level of the education system. For example, in most secondary education systems, full-time students must take a course for several years before they are allowed to sit for an external examination. By way of contrast, students registered with some open schools can sit the exam after a single year. This is because the materials provided by the ODL institution cover the entire curriculum and syllabus, which the formal education system only delivers over two or more years. In such a case, we can say that the course load for ODL learners is twice (or more) as heavy as for those studying through the conventional mode. Because of this, the measure of full-time equivalency should be based on examination subject entries rather than the number of years of coursework (or course/subject enrolments) by students in the two systems.

STEPS in applying this method:

- a. Identify the total number of examination subject/course entries by ODL students in the current year.
- b. Identify the total number of examination subject/course entries by FT students in the current year.
- c. Identify the total number of FT students registered in the current year for the final grade/level before the exam.
- d. Divide **b** by **c**.
- e. Divide **a** by the outcome of **d**.

EQUATION:

$$FTE_{PE} = TESE_{ODL} \div (TESE_{FT} / TS_{FT})$$

Where:

- $FTE_{PE}$  = FTE Measure – Preparation for Exams
- $TESE_{ODL}$  = Total Examination Subject Entries by ODL students
- $TESE_{FT}$  = Total Examination Subject Entries by Full-Time students
- $TS_{FT}$  = Total number of Full-Time Students in exam year cohort



### Exercise 8.2 – Preparation for Examinations

[Refer to the table on page 88.] Although full-time students in Ireland normally take nine subjects in junior secondary school, not all of them enter for nine subjects in the JSC examination. In 2005, a total of 32,751 students in Grade 10 (the final year of the junior phase of secondary education) accounted for a total of 283,951 subject entries for the JSC examination. In the same year, students with the Dublin Open School entered for 14,962 subjects in the JSC examination.

Calculate FTE student numbers for the Open School based on preparation for examinations.

EQUATION:

$$FTE_{PE} = TESE_{ODL} \div (TESE_{FT} / TS_{FT})$$

Where:

- $FTE_{PE}$  = FTE Measure – Preparation for Examinations
- $TESE_{ODL}$  = Total Examination Subject Entries by ODL students
- $TESE_{FT}$  = Total Examination Subject Entries by Full-Time students
- $TS_{FT}$  = Total Number of Full-Time Students in exam year cohort



#### Sample Answer

The answers to this exercise can be found in the sample answer on page 98.

In many cases where both full-time and ODL students sit for an external examination, data on examination subject entries is released to the public. Using this information, it is relatively easy to carry out the calculations required for this measure. However, such data is not always readily available or is only published periodically, which may delay the calculation of full-time equivalency. Another advantage of this FTE measure is that it takes account of differences in the duration and course loads prevailing in ODL and conventional institutions. The chief disadvantage of the Preparation for Examination approach is that it does not take into account differences in educational outcomes between the two modes of delivery. In addition, where registration for the examination is a separate process from enrolling for a course, ODL institutions are likely to be disadvantaged because of the higher rate of drop out in between the start of the academic year and the deadline for signing up for the examination.

## 8.5 Examination Performance

In cases where there is a common system of external examinations, the overall performance of students registered with open schools often lags behind that of their counterparts in conventional educational institutions. ODL learners may not earn as many honour grades (As, Bs and Cs or Distinctions and Merits) and the pass rate for ODL students may also be lower. Some authors argue that any measure of FTE that does not take account of examination results is fundamentally flawed. Thus, a third approach was devised to establish a common basis for comparison between ODL and conventional education using the most concrete and measurable outputs of the educational process – examination subject passes.

However, in some countries, school-based learners may be required to study some subjects that are not examined (e.g. civics or religion). In addition, it is not uncommon for more able students to sit the examination for more subjects than are required to qualify for an award so that they can use their best scores to qualify for entry to university. From an economist's point of view, it is difficult to justify the provision of inputs in excess of what is required to achieve a particular output from a system of production.

As voluntary participants in education, ODL students tend to be more pragmatic in their approach, taking only those subjects/courses for which they can gain credit. Moreover, those studying outside of a conventional institution are unlikely to register for any courses beyond the minimum needed to complete the programme and obtain the qualification. Accordingly, in order to establish FTE on the basis of examination performance, we need to use the actual number of examination subject passes required to 'graduate' rather than the average number of subject passes achieved by full-time students.

**STEPS:**

- a. Identify the total number of examination subject/course passes by ODL students.
- b. Identify the total number of examination subject/course passes required to qualify for a particular award.
- c. Divide **a** by **b**.

**EQUATION:**

$$FTE_{EP} = TESP_{ODL} \div ESP_C$$

Where:

$$FTE_{EP} = \text{FTE Measure – Exam Performance}$$

$$TESP_{ODL} = \text{Total Examination Subject Passes by ODL students}$$

$$ESP_C = \text{Examination Subject Passes required for Certification}$$

**Exercise 8.3 – Examination Performance**

[Refer to the table on page 88.] On average, full-time Grade 10 students in Irish schools enter for between eight and nine subjects in the JSC examination. However, only six subject passes are required for the award of a Junior Secondary Certificate. Since most students enrolled with the Dublin Open School are employed, they tend to take only the minimum number of subjects/courses needed to pass the exam.

Calculate FTE student numbers for the Open School based on examination performance.

**EQUATION:**

$$FTE_{EP} = TESP_{ODL} \div ESP_C$$

Where:

$$FTE_{EP} = \text{FTE Measure – Examination Performance}$$

$$TESP_{ODL} = \text{Total Examination Subject Passes by ODL students}$$

$$ESP_C = \text{Number of Examination Subject Passes required for Certificate}$$

**Sample Answer**

The answers to this exercise can be found in the sample answer on page 98.

When there is a widespread perception that ODL is inferior to conventional education, this approach finds favour because it is based on what is actually achieved. As noted above, the results of learners from open schools in the external examinations tend to lag behind those of full-time students in conventional schools. However, such a comparison is misleading as it does not compare like with like. In most countries, the system for promoting learners

from junior to senior secondary school (or from senior secondary school to university) is based on academic achievement, and this has the effect of ‘creaming off’ the most successful students. Those who have had the least success in education (either through their own limited aptitude or because of social, economic and educational disadvantage) are relegated to the alternative programme offered by an open school, college or university.

For example, consider the situation of two students in the final year of junior/lower secondary. One attains the minimum mark in the English examination for admission to senior/upper secondary school; the other receives a mark just below the minimum and is obliged to continue her education with an open school. When both achieve a ‘C’ symbol in the senior secondary English examination, the learner from the open school has actually achieved more because she started from a lower level. What is remarkable, then, is not that the examination results of open school learners are worse than their counterparts in formal education. What is really remarkable is that open school learners do as well as they do.

Nevertheless, this approach has the advantage of being relatively easy to calculate. Where examinations are conducted by a separate body (a national exam authority), this ensures a common standard of marking and increases public confidence in the impartiality of results. In addition, since only examination results are factored into the calculation, debates about differences between ODL and conventional education in terms of credit- or work-loads, duration of courses and drop-out rates become irrelevant.

## 8.6 Systems Approach

The final FTE method that will be discussed here is based on a combination of input and output measures. Essentially, each phase or cycle of education is conceived of as a closed system, with inputs (in terms of subject/course years of study) and outputs (in terms of examination subject passes). The Systems Approach establishes the productivity factor for conventional education (total outputs ÷ total inputs) and uses this to calculate what the equivalent number of ODL learners would be to maintain the same level of productivity. The Systems Approach is the most comprehensive method of establishing FTE and, arguably, the fairest.

The difficulty in establishing equivalency lies in the fact that learners in the conventional education system often receive inputs for a number of years before any outputs are realised. By way of contrast, those studying with an ODL institution usually produce outputs after only a single academic year of inputs. The concept underlying the Systems Approach is illustrated in Figure 8a below, which compares senior secondary courses offered by the Namibian College of Open Learning (NAMCOL) with those provided in conventional schools in Namibia.

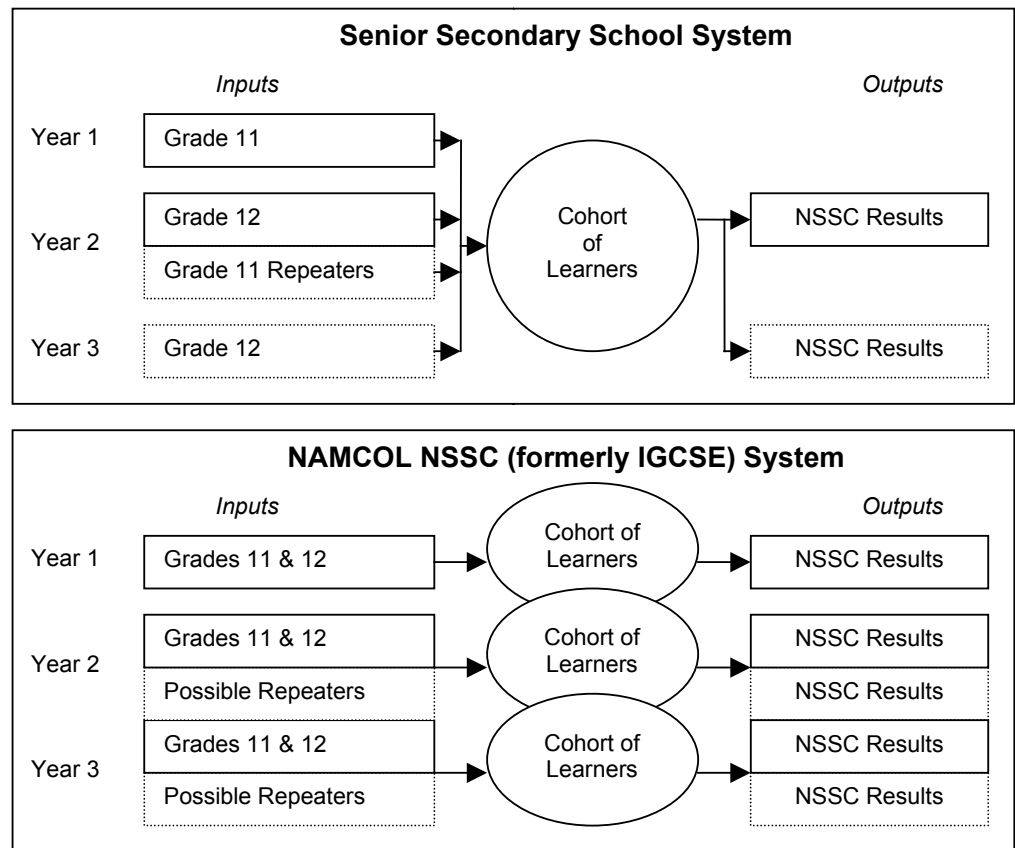


Figure 8a. Systems approach to FTE.

Ideally, we should trace the progress of a single cohort of school-based learners through Grades 11 and 12. Most of these learners will complete the senior secondary phase of their education within a period of two years, but a small number will be allowed to repeat Grade 11. Thus, between two and three years of inputs are required for each learner in the senior secondary phase of the formal education system in order to produce a single set of outputs, measured in terms of the NSSC (Namibian Senior Secondary Certificate) examination results. It is only at the end of Year Two and Year Three that the outputs achieved by this cohort can be measured. We need to add up the number of learners in Grade 12 in the current year and the number in Grade 11 in the previous year to obtain the total inputs, expressed in terms of student years of study. In this example, the repetition rate for Grade 11 in Namibia is extremely low (less than 2%), so it can be conveniently ignored. Where repetition rates within a particular phase of education are higher, it may be necessary to modify the calculation in order to take this into account.

As shown in Figure 8a, the inputs received in a single year by the cohort of NAMCOL students are equivalent to two years of inputs in conventional schools, since the study materials provided to the College's learners cover the curricula for both Grade 11 and Grade 12. The unit for measuring these inputs

is a subject enrolment. At the end of the same academic year, each cohort produces a set of outputs, measured in terms of subject passes. A student who fails the examination and wishes to repeat must register for the same subject the following year. Because those who make up the NAMCOL cohort change from year to year, it is extremely difficult to trace the progress of individual learners and tally their cumulative results. Thus, the inputs and outputs for a single academic year are used for comparison.

STEPS in applying the Method:

- a. Identify the total number of examination subject passes by full-time students at the end of the school year in question.
- b. Identify the total number of full-time students who completed the final year of the cycle/phase (e.g. junior secondary, senior secondary, certificate, diploma, etc.) during the school year in question.
- c. Identify the total number of full-time students enrolled during the next previous year and so forth for each year in the cycle/phase.
- d. Add together **b** and **c**.
- e. Divide **a** by **d**. This is the productivity ratio for conventional education.
- f. Divide the total number of examination subject passes for ODL students by **e**.

EQUATION:

$$FTE_{SA} = TESP_{ODL} \div (TESP_{FT} / (TS_{FT} + TS_{FT-1} + TS_{FT-2} \dots))$$

Where:

- $FTE_{SA}$  = FTE Measure – Systems Approach
- $TESP_{ODL}$  = Total Examination Subject Passes by ODL students in current year
- $TESP_{FT}$  = Total Examination Subject Passes by Full-Time students in current year
- $TS_{FT}$  = Total number of Full-Time Students in current year
- $TS_{FT-1}$  = Total number of Full-Time Students in previous year
- $TS_{FT-2}$  = Total number of Full-Time Students in the next previous year



### Exercise 8.4 – Systems Approach

[Refer to the table on page 88.] Because of concerns about the internal efficiency and cost effectiveness of the Dublin Open School, its Board decided to adopt the Systems Approach to establish equivalency with full-time students in the formal education system.

Calculate FTE student numbers for the Open School based on the systems approach.

#### EQUATION:

$$FTE_{SA} = TESP_{ODL} \div (TESP_{FT} / (TS_{FT} + TS_{FT-1} + TS_{FT-2} \dots))$$

Where:

$FTE_{SA}$  = FTE Measure – Systems Approach

$TESP_{ODL}$  = Total Examination Subject Passes by ODL students in current year

$TESP_{FT}$  = Total Examination Subject Passes by Full-Time students in current year

$TS_{FT}$  = Total number of Full-Time Students in current year

$TS_{FT-1}$  = Total number of Full-Time Students in previous year

$TS_{FT-2}$  = Total number of Full-Time Students in the next previous year



#### Sample Answer

The answers to this exercise can be found in the sample answer on page 98.

The principal argument in support of the Systems Approach is that it is based on what is actually invested (inputs) and what is actually realised (outputs) in both conventional education and ODL programmes. The calculation also takes account of differences in credit- or work-loads, duration of courses and drop-out rates.

One possible drawback of the Systems Approach is that it requires reliable figures for both school enrolments (over a number of years) and examination results. These may not always be easy to obtain, though most Education Ministries collect and publish such statistics. In some countries, repetition rates are relatively high in conventional schools, particularly during the junior secondary cycle, and this may introduce a distortion in the calculation. Likewise, where students fail the examination in a particular subject after several years of formal education and then go on to pass the examination after a year of study in an open school, this has the effect of unfairly inflating FTE student numbers for ODL. In addition, the arguments in relation to student ability and starting levels outlined in Section 8.4 above are also relevant when critiquing the Systems Approach.

## 8.7 Summary

The approach adopted to establish equivalency with conventional education is not simply a matter of academic interest, particularly where funding for an ODL institution is linked to such calculations. The different measures discussed in this unit yield very different numbers of FTE students, as illustrated in Exercises 8.1 – 8.4. Data for the Dublin Open School example is summarised in Table 8a below.

Type of FTE Measure	Statistics Used	Factor/ Divisor	FTE Students
1 Provision of Courses	Subject Enrolments	27	639
2 Preparation for Examinations	Examination Subject Entries	8.67	1,726
3 Examination Performance	Examination Subject Passes	6	1,998
4 Systems Approach	SEs and ESPs	2.53	4,736
5 Total Student Numbers	Student Head Count		6,637

*Table 8a. DOS Junior Secondary Certificate Course, 2005.*

Depending upon how full-time equivalency is defined, FTE student numbers can vary dramatically. For example, choosing the Systems Approach will yield more than seven times as many FTE students as a calculation based on the provision of courses.

This example underlines the importance of this issue for ODL institutions, which must choose the most appropriate approach for calculating FTE and make a strong case for it in any negotiations for government support.

## Sample Answers

### Exercise 8.1 – Provision of Courses, Subjects, Modules

Calculation of FTE student numbers for the year 2005 based on the Provision of Courses:

**EQUATION:**

$$\begin{aligned} \text{FTE}_{\text{PC}} &= \text{TSE}_{\text{ODL}} \div (\text{ASE}_{\text{FT}} \times Y_{\text{FT}}) \\ &= 17,258 \div (9 \times 3) \\ &= 17,258 \div 27 \\ &= \mathbf{639 \text{ FTE Students}} \end{aligned}$$

### Exercise 8.2 – Preparation for Examinations

Calculation of FTE student numbers for the year 2005 based on Preparation for Examinations:

**EQUATION :**

$$\begin{aligned} \text{FTE}_{\text{PE}} &= \text{TESE}_{\text{ODL}} \div (\text{TESE}_{\text{FT}}/\text{TS}_{\text{FT}}) \\ &= 14,962 \div (283,951/32,751) \\ &= 14,962 \div 8.67 \\ &= \mathbf{1,726 \text{ FTE Students}} \end{aligned}$$

### Exercise 8.3 – Examination Performance

Calculation of FTE student numbers for the year 2005 based on Examination Performance:

**EQUATION :**

$$\begin{aligned} \text{FTE}_{\text{EP}} &= \text{TESP}_{\text{ODL}} \div \text{ESP}_{\text{C}} \\ &= 11,989 \div 6 \\ &= \mathbf{1,998 \text{ FTE Students}} \end{aligned}$$

### Exercise 8.4 – Systems Approach

Calculation of FTE student numbers for the year 2005 based on the Systems Approach:

**EQUATION:**

$$\begin{aligned} \text{FTE}_{\text{SA}} &= \text{TESP}_{\text{ODL}} \div (\text{TESP}_{\text{FT}} / (\text{TS}_{\text{FT}} + \text{TS}_{\text{FT-1}} + \text{TS}_{\text{FT-2}} \dots)) \\ &= 11,989 \div (258,963 / (32,751 + 34,122 + 35,418)) \\ &= 11,989 \div (258,963 / 102,291) \\ &= 11,989 \div 2.53 \\ &= \mathbf{4,736 \text{ FTE Students}} \end{aligned}$$

# UNIT 9

## Efficiency and Effectiveness of ODL

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### Objectives of this Unit



After completing this unit, you will be able to:

- define the terms *efficiency*, *effectiveness* and *cost-effectiveness*;
- explain how they differ from one another;
- calculate the efficiency ratio between two ODL programmes or between an ODL institution and conventional education;
- calculate the cost-effectiveness ratio between two ODL programmes or between an ODL institution and conventional education;
- explain how *scale* and *scope* can have an impact on institutional cost-effectiveness;
- list at least four benefits of ODL in addition to its relatively low unit costs.

### 9.1 Introduction

In the latter decades of the 20th Century, education was thought to be the key to unlocking the human potential of developing countries and enabling them to ‘take off’ on a modernising trajectory. In many countries around the globe, significant sums have been devoted to expanding access to education and on improving the quality of inputs. In recent decades, however, this investment in education has increasingly come under scrutiny from economists who question the efficiency and effectiveness of many programmes. Open and distance learning institutions have not escaped this critique and must justify their existence by quantifying their cost-effectiveness relative to conventional education. This unit explores these issues and outlines the calculations that can be made to establish the relative efficiency and effectiveness of ODL.

## 9.2 What's the Difference between Efficiency and Effectiveness ?

Before going any further, it is important to clarify what we mean by these terms.



*Effectiveness* is defined as the extent to which an organisation or programme produces particular outputs (which are concrete and measurable) or outcomes (which may not be measurable). When an organisation or programme meets its own goals, this is generally referred to as *internal effectiveness*. However, there are numerous examples of programmes that have high internal effectiveness yet fail to meet the broader needs of society as a whole. For example, the formal education system may be internally effective by producing a very high pass rate in terminal examinations, but employers often complain that young people are not adequately prepared for the 'world of work'. When an education system produces 'graduates' who are well prepared for the multiple demands placed upon them outside of school, then it is said to have high *external effectiveness*.



In popular usage, *efficiency* is linked with money and is used to express how expensive or inexpensive something is to produce per unit. For the purpose of this discussion, *efficiency* is defined as the extent to which an organisation or programme maintains a particular level of production with fewer resources or increases the level of goods or services it produces with a less than proportionate increase in the resources used (cf. Rumble, 1986, page 211). This definition suggests that efficiency in ODL is concerned not only with resources (materials, labour, equipment and the costs associated with them), but also with what is produced (courses, study materials or student enrolments). It also highlights two different ways of achieving greater efficiency. On the one hand, we can try to reduce the costs incurred to provide the same level of educational services for a given number of students; this is referred to as *economic efficiency*. On the other hand, the term *production efficiency* is used to refer to producing more goods or services without incurring additional costs (or, at least, without increasing costs at the same rate).

## 9.3 Efficiency

The most common way of measuring the efficiency of an education programme, institution or system of delivery is to divide the total costs by the total number of students. This involves using the Average Costs Equation, which was introduced in Unit 2.

Average Costs Equation:

$$AC_s = TC / TN_s$$

Where:

$AC_s$  = average cost per student

$TC$  = total costs for programme or institution as a whole

$TN_s$  = total number of students



### Exercise 9.1

Ideally, this exercise should be carried out with other members of staff in your own institution.

Before you begin, you will need to collect the following information:

- total expenditure by your institution in the previous financial year, and
- total number of students enrolled with your institution for the corresponding period.

Using this information and the average costs equation, calculate the efficiency of your institution.

With your colleagues, brainstorm the limitations of this measure.



### Sample Answers

Clearly, the average cost per student is a relatively crude measure. Where an ODL institution offers a range of courses at different levels, the unit costs can vary considerably between them (see Unit 5). Moreover, since those studying at a distance may not have the same work-load as those studying in a conventional institution, it is unfair to use the average cost per student to compare the two modes of delivery (see Unit 8).



Notwithstanding the limitations of the average cost per student measure, it is commonly used to calculate the efficiency of one programme in relation to another, or of one institution in relation to another. The term *efficiency ratio* is used to refer to the relationship between the average cost per student in one programme, institution or system of education and the average cost per student in another. This measure is commonly used to compare the efficiency of ODL with that of conventional education. However, unless an appropriate calculation is made to establish equivalency between those studying through ODL and full-time students in conventional education, this measure does not compare like with like and is misleading.

Equation for Efficiency Ratio:

$$ER = AC_a \div AC_b$$

Where:

$ER$  = efficiency ratio

$AC_a$  = average cost per FTE student for programme/institution A

$AC_b$  = average cost per FTE student for programme/institution B

When the efficiency ratio equals 1.00, then both modes are equally efficient.

When the efficiency ratio is less than 1.00, then ODL is more efficient.

When the efficiency ratio is greater than 1.00, then ODL is less efficient.



### Exercise 9.2 – Efficiency

A community college in Canada offers its programmes through both conventional, face-to-face classes and paper-based distance education materials. Information for 2004 on total student enrolments, total graduates and total costs for both modes in relation to the Certificate in Cost Accounting programme are given in the table below:

Programme	Delivery Mode	Total Student Enrolments	Total Graduates	Success Rate (percent)	Total Costs (Cdn \$)	Average Cost per Student (Cdn \$)	Average Cost per Graduate (Cdn \$)
Cert in Cost Accounting	ODL	131	43		34,977		
Cert in Cost Accounting	Conventional	954	886		712,433		
Programme as a Whole	Combined	1,085	929		747,410		

Calculate the Average Cost per Student for the ODL and conventional modes of delivering this course, as well as for the programme as a whole. Insert your answers in the blank cells of the above table.

Now calculate the Efficiency Ratio for the ODL versus conventional modes of this programme, using the average costs per student.

#### EQUATION

$$ER = AC_a \div AC_b$$

Where:

ER = efficiency ratio

AC<sub>a</sub> = average cost per FTE student for programme/institution A

AC<sub>b</sub> = average cost per FTE student for programme/institution B



#### Sample Answer

The answers to this exercise can be found in the sample answer on page 110.

In this case study, delivering the Certificate in Cost Accounting programme through paper-based distance education is considerably more efficient than through traditional, face-to-face classes. As discussed in Unit 2, in most cases where sufficient students register for a particular programme and variable costs are controlled, the average cost per student will be lower for ODL systems than for conventional education. This is a key difference in the cost structure between the two modes of delivery.

## 9.4 Cost-Effectiveness

However, we all know from experience that the cheapest product is not always the best. For example, an inexpensive pair of shoes may wear out in only two months, while a pair that costs three times as much will last a year. On the other hand, a programme can be very effective without being efficient. For example, intensive one-to-one tutorials are generally very effective in producing good examination results, but are a very expensive way of doing so. We need another term to express the balance between effectiveness and efficiency.



*Cost-effectiveness* is that term. Hülsmann defines cost-effectiveness as “. . . the most efficient way to achieve a set goal (2004, page 22).” Essentially, it expresses a balance between attempts to keep costs to a minimum while maximising the outcomes/outputs of an educational institution or programme. The most common measure of cost-effectiveness is the average cost per graduate, which is simply a variant of the Average Costs Equation. In this context, the term ‘graduate’ refers to a student who successfully completes a subject/course/programme rather than someone who holds a qualification from an institution of higher education.

Average Cost per Graduate Equation:

$$AC_g = TC / TN_g$$

Where:

- $AC_g$  = average cost per graduate
- $TC$  = total costs for programme or institution as a whole
- $TN_g$  = total number of graduates



### Exercise 9.3

Just as with Exercise 9.1, this activity should be carried out with other members of staff in your own institution.

You should already know the total expenditure for your institution for the previous financial year, but you will also need to have to hand statistics on the total number of students who passed their examinations or successfully completed courses with your institution for the corresponding period.

- Using this information and the average cost per graduate equation, calculate the cost-effectiveness of your institution.
- With your colleagues, brainstorm the limitations of this measure.



### Sample Answers

Unit 8 outlined some of the limitations of using examination performance on its own as a measure for establishing equivalency between full-time students in conventional education and those studying at a distance. In brief, ODL learners may not be starting from the same level as conventional students or they may not have the same aptitude or ability. In addition, those in the formal education system may have studied for a number of years before sitting for an examination, while those studying at a distance usually sit for an examination at the end of each year (or semester) of their course. Thus, any measure that does not take into account the duration and work-load required to complete a course can produce misleading results.



Keeping these reservations in mind, it is possible to compare the cost-effectiveness of one programme in relation to another, or of one institution relative to another. The term *cost-effectiveness ratio* is used to refer to the relationship between the average cost per graduate in one programme, institution or system of education and the average cost per graduate in another programme, institution or system. The equation for calculating the cost-effectiveness ratio is the same as that for the efficiency ratio, but the average cost per graduate is used in place of the average cost per student.

### EQUATION for Cost-Effectiveness Ratio

$$\text{CER} = \text{ACG}_a \div \text{ACG}_b$$

Where:

CER = cost-effectiveness ratio

$\text{ACG}_a$  = average cost per graduate for programme/institution A

$\text{ACG}_b$  = average cost per graduate for programme/institution B

The cost-effectiveness ratio is concerned not only with average unit costs, but also with the relative success rates of different systems. In this respect, it factors in an assessment of positive learning outcomes.

When the ratio equals 1.00, then both modes are equally cost-effective.

When the cost-effectiveness ratio is less than 1.00, then ODL is more cost-effective.

When the cost-effectiveness ratio is greater than 1.00, then ODL is less cost-effective.



### Exercise 9.4 – Cost-Effectiveness

Now calculate the Success Rate and the Average Cost per Graduate for the different modes and insert your answers in the blank cells of the table on page 102.

Once you have finished the above, calculate the Cost-Effectiveness Ratios for the two modes of the Certificate in Cost Accounting Programme. The equation is the same as for the Efficiency Ratio above, but utilises Average Cost per Graduate.

EQUATION for Cost-Effectiveness Ratio

$$\text{CER} = \text{ACG}_a \div \text{ACG}_b$$

Where:

CER = cost-effectiveness ratio

$\text{ACG}_a$  = average cost per graduate for programme/institution A

$\text{ACG}_b$  = average cost per graduate for programme/institution B

In this case study, what factors have influenced the relatively poor cost-effectiveness of the ODL mode of delivery?

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#### Sample Answer

The answers to this exercise can be found in the sample answer on page 110.

In this case, the cost-effectiveness ratio is greater than 1.00, which means that delivering this particular course through ODL methods is less cost-effective than traditional, face-to-face methods. The main reason for this is the low success rate for those pursuing their studies at a distance. The table shows that over two-thirds of ODL students (88 out of 131) did not graduate. They may have dropped out before completing the programme or they may have failed the examination. As noted in Unit 8, it is not uncommon for ODL institutions to have higher drop-out and failure rates than conventional schools, colleges or universities.



### Exercise 9.5

Open the Hülsmann CD-ROM.

- Go to 4: Cost-Effectiveness of ODL.
- Go to Part B: Efficiency & Cost-Effectiveness Ratios.
- ACTIVITY A13.
- ACTIVITY A14.
- Follow the instructions in the MS Excel worksheets.

## 9.5 Cost-Effectiveness of ODL Institutions

In general, it is rare to find a case where the efficiency ratio is not more favourable (less than 1.00) for ODL programmes than for conventional education (Hülsmann, 2004, page 25). In some instances, the cost-effectiveness ratio is also more favourable, but there is no guarantee that ODL will be more cost-effective than conventional provision. Consider the figures presented in Table 9a below, which summarises data from a number of studies that compared the costs of ODL versus conventional education institutions for three different types of programmes: secondary education, teacher training and higher education.

Institution	Efficiency Ratio	Cost-Effectiveness Ratio	Source & Date
<b>Malawi Correspondence College (MCC) vs.</b>			
• Day Schools	0.62	<b>1.60</b>	Wolf & Futagami, 1982
• Boarding School	0.23	0.73	
<b>Primary Teacher Orientation Course at AIOU (Pakistan) vs.</b>			
PTOC in Conventional University	n/a	0.45-0.70	Perraton, 2000
<b>UK Open University vs.</b>			
Conventional University	0.26	0.38-0.45	Wagner, 1977
<b>STOU (Thailand) vs.</b>			
Conventional University	n/a	0.14	Lockheed et al., 1991

**Table 9a.** Efficiency and cost-effectiveness ratios for ODL institutions. (Excerpted from Hülsmann, 2004, Table 10, page 25)

For all of the cases listed in the table, delivering educational programmes through the ODL mode was more efficient than through traditional methods. In the case of the Malawi Correspondence College, the average cost for educating an ODL student was only 23% of the expenditure for a student in a

local boarding school. In most cases as well, ODL proved to be more cost-effective. For example, the average cost per graduate for STOU was only 14% of that for conventional universities in Thailand. However, this is not always the case. The 1982 study of the MCC showed that it cost 60% more to produce a high school 'graduate' through ODL than through a conventional secondary school.

The importance of making an accurate calculation of the cost-effectiveness ratio for ODL institutions is illustrated by a case study of the Alternative Secondary Education Programme (ASEP) provided by the Namibian College of Open Learning.

### Case Study

Shortly after Namibia gained its independence in 1990, a decision was taken to establish a para-statal institution to be called the Namibian College of Open Learning (NAMCOL). NAMCOL aims to provide study opportunities for adults who never had the chance to complete secondary school under the previous dispensation as well as for young people who cannot be accommodated in State-supported secondary schools. Considerable preparatory work was required to realise this goal, but the College was finally launched as an autonomous institution in 1998, which took over responsibility for the Alternative Secondary Education Programme which had previously been provided by different units in the Ministry. Learner enrolments in the ASEP have grown from just over 6,000 in 1991 to more than 28,000 in the 2007 academic year. Over a quarter of all learners who enter for the Junior Secondary Certificate examination and close to half of those who sit the Senior Secondary Certificate examination each year have prepared themselves through ODL studies with the College.

In 2005, the World Bank published a report by a team of consultants (Marope *et al.*) which examined the efficiency and cost-effectiveness of the Namibian education system as a whole, including NAMCOL's ASEP. This document purported to show that the cost per full-time equivalent learner with the College in 1998 was higher than providing comparable education in a State-run secondary school (efficiency ratio of 1.05). The report concluded that: "[i]mproving the quality and coverage of regular secondary schooling may be a more cost-effective option than NAMCOL" (paragraph 6.32, page 84). Given these findings, continued funding for the College's ASEP was called into question.

However, there were a number of problems with the World Bank Report. In the first instance, the figures for expenditure on secondary education reproduced in the report did not correspond with the amounts recorded for either estimated expenditure in the Ministry of Education's budget books or with actual expenditure in the Ministry's accounts. Second, the World Bank consultants reported only the direct, operational costs of secondary schools, but did not include any of the Ministry's overheads or capital expenditure on school buildings. In addition, no attempt was made to account for the hidden

subsidies from other branches of government, in the form of staff benefits, financial management and other professional services, which benefit the Namibian education system. The World Bank consultants also made significant errors in calculating the number of FTE students with NAMCOL.

Two years after the World Bank report was published, another consultant was employed to re-examine these issues. This report (Du Vivier 2007b) found that the World Bank consultants had under-reported the full costs of school-based secondary education by an average of 46%. When this and other errors in their calculations had been corrected, the average efficiency ratio for NAMCOL's ASEP was found to be 0.65 for the period 1999-2005. When the Systems Approach was used to determine the average cost per examination subject pass, the average cost-effectiveness ratio for the ODL Programme was 0.27 for the same period. If the operational costs of hostel accommodation had been taken into account, the cost-effectiveness ratio for the ASEP would have been even more favourable when compared with conventional secondary education.

## 9.6 Making the Case for ODL

Economic arguments about efficiency and cost-effectiveness can have a significant influence on policy makers when deciding whether to support alternative modes of education.



Two principal factors have a bearing on the efficiency of ODL institutions and programmes. The first of these is *scale*, which refers to the number of students registered with the institution or enrolled for a particular course/programme. As discussed in Unit 2, when student numbers fall below the crossover point, then the average cost per student will be higher when using ODL methods than through conventional approaches. Increasing the scale by enrolling more students has the effect of lowering unit costs and increasing efficiency.



A second important factor is *scope*, which refers to the number of courses offered. When an ODL institution expands the range or scope of its offerings by developing increasingly specialised courses, each course tends to attract fewer students. As a result, unit costs will be higher and institutional efficiency will decline.

The logic underlying a drive for greater efficiency suggests that ODL institutions should concentrate on a relatively small number of 'best-selling' or popular courses and eliminate low-entry courses. However, a narrowly-economic perspective may overlook the institution's mandate to address the broader needs of society. For example, when open schools offer courses in physical science, these tend to attract fewer students than courses in the arts or social sciences, but eliminating physical science courses would undermine government attempts to produce more graduates in the fields of science and technology. Likewise, there may not be enough students to provide an

economic justification for offering a course in a minority language, even though the national policy seeks to promote local languages to facilitate reconciliation or social inclusion. Moreover, reducing the scope by offering too limited a range of courses may damage an institution's prestige and create the popular impression that it is inferior to conventional education.

Rather than focusing exclusively on economic arguments to support the case for ODL, it is important to consider benefits other than low average costs. An increasingly popular approach in assessing the worth of development projects involves attempts to measure the *social return on investment*. This approach aims to go beyond simply quantifying the monetary returns for a particular project by assessing its value in terms of improved social conditions and public well-being.

Rumble (2001, page 5) has argued that the introduction of ODL can be justified on the basis of improvements in:

- Quantitative Access – by dramatically increasing enrolments in all levels of the education system and providing alternative pathways to further and higher education;
- Equality of Access – by enabling people living in rural communities, those with jobs or family commitments, and those experiencing socio-economic disadvantage to take part in education;
- Quality of Educational Experience – by providing study materials that are frequently of a higher quality than conventional classroom teaching;
- Other Benefits to Students – although little research has been done, studies suggest ODL graduates do benefit by developing higher levels of personal initiative and self-reliance.

The existence of alternative forms of provision may also have what Rumble (1986, page 212) refers to as 'ripple effects' on conventional education systems. The quality of teaching in traditional institutions may actually improve as teachers and lecturers borrow best practice models and techniques from ODL sources. In addition, there is a tendency to re-think policies across the education sector as a result of questioning assumptions about educational need, how people learn and the most effective means of meeting these needs.



## Other Resources

Hülsmann, T. 2004. *Costing Open and Distance Learning*. Section 4: 'Cost Effectiveness of ODL', pages 21-26.

Rumble, G. 1986. *Planning and Management of Distance Education*. Chapter 4: 'The Economic Perspective', pages 63-85.

## Sample Answers

### Exercise 9.2

Programme	Delivery Mode	Total Student Enrolments	Total Graduates	Success Rate (percent)	Total Costs (Cdn \$)	Average Cost per Student (Cdn \$)	Average Cost per Graduate (Cdn \$)
Cert in Cost Accounting	ODL	131	43		34,977	267	
Cert in Cost Accounting	Conventional	954	886		712,433	747	
Programme as a Whole	Combined	1,085	929		747,410	689	
<b>Efficiency Ratio</b>						<b>0.36</b>	

### Exercise 9.4

Programme	Delivery Mode	Total Student Enrolments	Total Graduates	Success Rate (percent)	Total Costs (Cdn \$)	Average Cost per Student (Cdn \$)	Average Cost per Graduate (Cdn \$)
Cert in Cost Accounting	ODL	131	43		34,977	267	813
Cert in Cost Accounting	Conventional	954	886		712,433	747	804
Programme as a Whole	Combined	1,085	929		747,410	689	805
<b>Cost-Effectiveness Ratio</b>							<b>1.01</b>

# UNIT 10

## Funding Open and Distance Learning

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### Objectives of this Unit



By the end of this unit, you will be able to:

- list six potential sources of funding for ODL programmes in your institution;
- discuss the advantages and limitations of different approaches to government subsidisation of ODL, including:
  - normal budget negotiations,
  - budgetary framework document,
  - funding formula;
- critically reflect on the current arrangements for funding your institution.

### 10.1 Introduction

Finding sufficient funds to finance ODL programmes or courses is seldom an easy task. The international trend appears to favour increased ‘cost sharing’ through student fees, but Rumble (2006, page 89) notes that, where students are expected to meet the full costs of a course, this can restrict access for those living on low incomes and may also reduce completion rates. For these reasons, financial support for education from national, regional/provincial and/or local government bodies is likely to be a central component in the budgetary calculus of most ODL institutions. This unit explores international practice with regard to the funding of open schools and other forms of distance education.

## 10.2 Sources of Funding

Rumble (2006, pages 87-91) outlines a variety of mechanisms for funding open and distance learning (ODL) programmes, including:

- government grants and subsidies,
- student fees or other user charges,
- community contributions (often in kind),
- sales of materials and other services,
- donations from private-sector bodies,
- grants from non-governmental organisations,
- grants from international funding agencies.

In addition, soft loans (with rates of interest below commercial rates) may be available from international development banks, though these are normally restricted to capital investment in buildings or equipment. Alternatively, if a particular programme or project is economically viable, it may be possible for an ODL institution to obtain a loan from a commercial bank.

Many ODL institutions obtain their funding from a variety of sources and the balance between them varies widely from institution to institution. Table 10a below illustrates the different sources of funding that have been accessed to support ten teacher-training projects:

	Sources of funding				
	Government	Student Fees	Community	Private sector and NGOs	Funding agency
Brazil: Television based in-service programme			●	●	●
Burkina Faso: Specialist project for head teachers					●
Chile: In-service programme on computer education		●			
China: Television Teachers Training College	●	●	●		
India: Open University programme on guidance	●	●			
Mongolia: Reorienting primary teachers to new approaches	●				●
Nigeria: National Teachers' Institute initial training programme	●	●			
South Africa: OLSET radio project for schools and teachers					●
South Africa: University degree programme	●	●			
United Kingdom: Open University postgraduate certificate in education	●				

**Table 10a.** Sources of funding for teacher-training projects. (Adapted from Perraton & Lentell 2004, page 104)

## 10.3 Government Funding

In many countries, governments have supported the establishment of open schools and other ODL institutions in order to improve access for those who would otherwise be unable to attain educational qualifications. Open schools can also relieve pressure on the formal education system by accommodating young people for whom there are insufficient places in secondary schools. They also play a valuable role as a ‘safety net’ by providing an alternative pathway for disadvantaged individuals to improve their general education and employment prospects.

Government support for ODL can take a number of different forms in order to assist with:

- operational expenditure,
- capital costs,
- buildings and equipment,
- course development costs,
- project-based funding,
- provision of facilities,
- secondment of staff, and
- loans, scholarships and bursaries to students to cover their fees.

Few secondary schools achieve full cost recovery and, in most countries, national, regional/provincial and/or local government bodies provide continuing support for education at this level. Subsidisation is also important for open schools and other ODL institutions in order to enable them to fulfil their social mandate. There are four broad approaches to the provision of subsidies:

- Normal Budget Negotiations
- Budgetary Framework Document
- Funding Formula
- Service Agreement

Each of these will be discussed separately below.

### Normal Budget Negotiations

Where open schools have their origins in organisational units within education ministries, managers and other staff may already have experience of government budgeting processes. Although the overall budget for a ministry of education or higher education authority is typically shaped by sectoral

priorities and advanced planning, the final preparation of estimates and allocation of funds often takes place under severe time pressure and in an environment of competition between different units and interests. In such a situation, the core business of the ministry (formal, school-based education) or higher education authority (conventional third-level education) may be given priority at the expense of peripheral activities, such as ODL.

In reality, the process of preparing estimates within this framework involves very little negotiation. Rumble (2006, page 103) describes normal budgetary negotiations as a ‘maelstrom’ – a whirlpool-like situation of confusion and turbulence that overpowers any attempt to impose order. Open schools or other ODL institutions are often given a guideline amount within which they must tailor their budgets. In cases where open-ended or unlimited estimates are entertained, the ministry or higher education authority may impose cutbacks that (from the point of view of the ODL institutions) appear arbitrary, impossible to implement and unsustainable. Multi-annual budgeting processes may provide greater security with regard to future streams of funding, but rarely ensure additional resources.



### Exercise 10.1

Ideally, this brainstorming exercise should be carried out in a small group with others in your institution. List your answers on a flipchart pad or A4 sheet.

- What are some of the positive aspects of normal budget processes?
- What are the limitations of this approach?



### Sample Answer

The answers to this exercise can be found in the sample answer on page 119.

## Budgetary Framework Document

A second major approach to determining the level of government subsidies to ODL institutions is through a budgetary framework document, which outlines clearly what the institution plans to do and presents estimates of the average costs of such activity. The model used for funding the UK Open University up to the 1990s is an example of such a framework (Rumble 2006, pages 126-133). The annual subsidy to UKOU was calculated on the basis of the following variables:

- business-sustaining costs (unattached overheads)
- student course enrolments
- variable costs per course enrolment
- number of courses offered
- average course maintenance costs

- number of new courses in development
- average course development costs
- average life of a course.

Although Rumble refers to this model as a funding formula, in fact it simply produced estimates of expenditure that were open to subsequent negotiation and scrutiny by the UK Department (Ministry) of Education and Science. In this respect, it differs little from the normal budgetary process.

The main advantage of a budgetary framework approach is that it makes clear to both parties exactly what changes need to be made if the available subsidy differs from the amount requested. In cases where cutbacks need to be made, the institution's management can demonstrate which activities will need to be sacrificed to live within a reduced guideline. Where the subsidy exceeds the amount requested, it is also easy to identify which activities can be expanded to take advantage of the additional funds.

However, the budgetary framework approach is still subject to many of the constraints and limitations of normal budget negotiations. All areas of the institution's expenditure would be open to scrutiny and ministry officials may still demand reductions in costs without any reduction in the services provided. Where ODL institutions have been given a high degree of autonomy, as is the case with many universities (either in law or by tradition), concerns may also arise about the potential impact of this model on the institution's freedom to take decisions on the basis of academic criteria, as opposed to purely economic ones.

In addition, the calculations required for the budgetary framework document are normally derived from Activity-Based Cost analysis. As noted in other units, this is a demanding, expensive and time-consuming process that would need to be carried out at least once every two or three years. At the end of the day, there is no guarantee that additional funds will be made available to the ODL institution despite the very considerable amount of work that goes into preparing a budgetary framework document. Moreover, if student enrolments fall below those used to calculate the annual grant-in-aid, the implication is that this amount should either be refunded to the ministry or deducted from the following year's subsidy.

## **Funding Formula**

Perhaps the most common way of subsidising the provision of educational services by autonomous ODL institutions is through a funding formula. This model differs from the budgetary framework approach in that, once agreement has been reached on the principles and method of calculation enshrined in the formula, no further negotiation is required. Both parties should accept the figures arising from the formula without demur, though provision can always

be made to review its operation after a given period. A funding formula has the advantage of providing a certain degree of predictability for both the institution and the ministry. Where more than one institution is competing for funding from a limited pool, the formula approach ensures that all institutions and requests for subsidy are treated equitably.

Rumble (2006, pages 92-99) outlines a range of options for formula-type funding of ODL institutions, and these may be categorised on the basis of two separate variables:

- **How Students are Counted** – Are student numbers based on a simple head count, on the number of subject/course enrolments, on their relative ‘credit loads’ or on another measure for establishing equivalency with full-time students? These issues have been discussed in Unit 8.
- **What is Measured** – Should we count the inputs (courses) provided to registered students, the outputs of the system (usually measured in terms of examination passes or graduates), or a mixture of inputs and outputs? Each of these options is considered below.

### *Input-Based Formulas*

From the perspective of the ODL institution, an input-based formula is preferred since all of the major costs associated with providing a course are incurred in making available study guides or other courseware and tutorials. Regardless of what results learners achieve, or even whether they avail of the services provided, the ODL institution has lived up to its obligations in relation to registered learners. In this respect, the institution is not penalised for high rates of drop-out or failure which may be the result of factors outside its control. Governments, on the other hand, are concerned with actual outputs. If ODL programmes are less efficient and cost-effective than conventional education, it is difficult to justify continued funding for alternative forms of provision, despite their potential to produce benefits for wider society.

The agreed mechanism for subsidising the Alternative Secondary Education Programme (ASEP) offered through the Namibian College of Open Learning (NAMCOL) is an example of an input-based funding formula. Because all of the students registered for the ASEP are technically-classified as part-time learners, subject enrolments are employed as the measure for establishing FTE on the basis of courses provided. The Ministry of Education pays NAMCOL a percentage of the cost of educating an equivalent number of full-time learners in government secondary schools. In this example, the funding formula is open to criticism because there is no guarantee that ODL programmes will be more efficient than conventional education. While the average cost per student of providing the ASEP is currently lower than formal schooling, if the number of students were to fall significantly, there is no guarantee that it would continue to be cheaper. In addition, the formula makes

no provision for the costs associated with the development of new courses/materials, which must be met from operational expenditure.

### ***Output-Based Formulas***

Governments understandably favour output-based formulas because payment is contingent on the results achieved. The rationale for calculating funding on the outputs of the educational system is that it creates incentives to improve the services provided by rewarding success in examinations. However, if such an approach is used to determine the level of government funding for open schools, in fairness it should also be applied to the formal education system. On the contrary, however, when students from a particular school perform poorly in public examinations, there is a tendency to provide extra supports (in the form of advice from subject inspectors, further training for teachers or additional resources) in order to bring the standard up.

From the point of view of ODL institutions, funding formulas based solely on outputs are unfair. As discussed in Unit 8, ODL programmes tend to have higher rates of early withdrawal and examination failure than conventional education, though this is not always the case. Yet, the same level of resources must be expended for each registered student regardless of whether they drop out, pass or fail. Moreover, relatively small changes in the pass rates of either school-based or ODL learners from year to year can have a significant impact on the total amount of funding received in a particular financial year. For this reason, it may be preferable to utilise figures averaged over a number of years in order to ensure a certain level of predictability, while still enabling the formula to reflect longer-term trends.

### ***Mixture of Inputs and Outputs***

In order to ameliorate the shortcomings of both the approaches outlined above, formulas combining a mixture of input and output measures have been devised in various places. The calculations required to establish equivalency between the ODL system and conventional education are more demanding and the administration of such funding is more complex, since a portion of the payment may be retained until after the examination results have been published. From the perspective of ODL institutions, such contingent payments undermine the security of funding arrangements and complicate financial planning and management.

### **Service Agreement**

A service agreement is a legally-enforceable contract for the provision of specified services that must be paid for at specified rates. Such agreements between private-sector companies and government departments are common in certain situations (for example, when leasing photocopying equipment), but less so in relation to the provision of educational services. Nevertheless, if a ministry of education were to engage a commercial company to provide

alternative education programmes, it would most likely be on the basis of a service agreement.

The chief advantage of this mechanism for funding such services lies in its predictability. All terms and conditions are negotiated before the document is signed, and the service agreement (if it is well drafted) spells out in detail what is expected of both parties under all conceivable circumstances. This enables the ODL institution to proceed with the agreed programme without any concern about payment, while the ministry can set aside adequate funds to cover its liabilities. Provisions are often put in place to deal with disputes between the parties, should these arise.

The main drawback of the service agreement approach is the problem of continuity. Even when multi-annual agreements are in place, there may be a gap between the end of one contract and the signing of the next, and this can pose problems for learners who wish to continue their studies in order to complete a course or programme. Another potential problem is that, where a particular course would not be economically viable without government subsidies, the ministry holds a dominant position in any negotiations with the ODL institution, as it is the only body likely to fund such a course. In addition, it is not uncommon for governments to insist on a *force majeure* clause in any service agreement, which would enable it to renege on its financial obligations when some unforeseen event arises that is beyond its control (e.g. natural disaster or war).



## Questions for Consideration

- If your institution currently receives funding from the Ministry of Education or Higher Education Authority, what approach is used to determine the annual subsidy?
- Are there mechanisms to request additional funds for capital projects?
- What advantages can you see in the current system of funding ODL programmes?
  - From the point of view of ODL institutions?
  - From the Government's perspective?
- There are rarely sufficient funds to meet all of the needs of any education system. Apart from this, what problems arise from the current approach to funding ODL in your country?



## Other Resources

Hülsmann, T. 2004. *Costing Open and Distance Learning*. Section 6.2: 'Business models and models of cooperation', pages 53-54.

## Sample Answer

### Exercise 10.1

Advantages of the normal budgeting processes might include:

- In order to be successful, this approach demands close liaison between managers in the ODL institution and officials in the ministry or higher education authority. While there are no guarantees that this will improve the financial position, it opens up the possibility of creating improved understanding of the unusual economic structure and benefits of ODL operations, as well as building support among ministry officials. As a result, ODL institutions are less likely to be marginalised in determining priorities for the sector.
- Where ministers, deputy ministers and other political appointees have a say in the allocation of funds, this approach enables ODL institutions to build public support and exercise political influence to secure their financial position.

Some of the Limitations or Drawbacks of normal budget negotiations are:

- ODL tends to be seen as the 'poor relation' of formal education and may lose out where funding is limited.
- Factors other than demonstrable need and reasoned argument may drive budget decisions. For example, even though you may be able to prove that increasing ODL places is more cost-effective than expanding formal education, building a new school in an office-holder's constituency may well win out in a contest for funding. Examples of political influence in the allocation of government funds may be found not just in developing countries, but also in highly-developed economies.
- A significant advantage of most ODL systems is their capacity to accommodate students in excess of expected numbers (though this only applies for a particular range (see Unit 6). However, where budget estimates are based on incremental increases for all departments, a rapid expansion in the number of people seeking to study with an ODL institution can pose particular challenges.
- Even though ODL institutions may live within the constraints of the funding provided by government, it is not uncommon for them to suffer the consequences of over-spending by other units within education ministries or by governments as a whole. When cutbacks are imposed, institutions dependent upon government funding must usually follow suit.
- Budgets are also used for financial management, and inflexibility in this system may constrain an ODL institution from making optimal and timely use of the funds available. Some aspects of open learning systems tend to require concentrated expenditure at particular times of the year. For example, where inputs are being provided primarily through text-based materials, the bulk of this printing takes place during certain months so that they can be packed and distributed to new students. However, most government financial management systems allow only a quarter of budgeted funds to be expended every three months.



# UNIT 11

## Student Fees: Determining Fee Levels and Devising a Fee Structure

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### Objectives of this Unit



After completing this unit, you will be able to:

- suggest at least three principles to guide decision-making in relation to student fees;
- explain at least three different approaches to determining fee levels and discuss the advantages and disadvantages of each;
- outline the options in relation to how fees are structured;
- identify potential sources of information for further consideration of the problem of whether students are able to pay increased fees;
- explain how the price of goods or services can influence demand and the potential influence of this phenomena on student enrolments;
- select the most appropriate mechanism to ensure that those who are worst off can continue to avail of opportunities to study through ODL.

### 11.1 Introduction

As noted in Unit 10, there appears to be a global trend towards increasing levels of cost recovery through user charges as part of a wider strategy of ‘cost-sharing’ in relation to public services. Such charges are justified on the basis that it would be unfair to require those who do not avail of such services to shoulder the burden of paying for them. The implication is that such services are optional and that members of the public should have a choice whether or not they wish to make use of them. This argument breaks down when the State has a near monopoly on a particular service (for example, elementary education) and where use of the service is not discretionary (as is the case with laws compelling young people to attend school).

Nevertheless, student fees are currently an important source of income for open schools, colleges and universities. Fees are often justified on the basis that paying for a service encourages students to take it seriously. Where students pay a substantial fee for an ODL course, they are less likely to drop out and more inclined to apply themselves to their studies. In addition, those who feel they are ‘buying’ a service are more likely to complain when it does not live up to their expectations, and such feedback can prove useful in highlighting where improvements are needed in an ODL institution.

In countries where there is a tradition of imposing user charges for education, levying fees for ODL programmes may not be controversial. In others, however, education is widely viewed as a public service that should be provided free of charge. In such circumstances, the process of determining what is an appropriate and acceptable level of fees for those studying at a distance requires careful consideration. This unit introduces some of the issues that may influence decisions on student fees.

## 11.2 Legal Basis and Policy Issues

Before an ODL institution levies fees or other charges on the users of the services it provides, the following must be established:

- *What legal provisions empower the ODL institution to collect fees?*  
Where an open school, college or university has been established by an act of parliament, it is usual to include specific clauses in these statutory instruments empowering the institution to make such charges. In other cases, authorisation to collect fees may be granted in terms of regulations issued under another act (e.g. national education acts, state finance acts). In countries whose constitutions make reference to the provision of free education for young people up to a certain age, care must be taken to ensure that the fees charged by State-supported ODL institutions do not conflict with such constitutional provisions.
- *What legal mechanisms are in place to regulate fee levels?*  
Even when no specific statutory reference is made to fees, it is normal for legal mechanisms to be put in place to regulate the amount of such charges and to ensure that they are not excessive. In some cases, a change in the level of fees requires approval by the minister of education; in others, it may need to be sanctioned by the permanent secretary, an advisory body or a separate authority (for example, a higher education authority).
- *What consultations or consents are required in order to raise fee levels?*  
Raising the level of fees can be politically sensitive, evoking strong responses from students and their families. Because of this, it is advisable to consult widely among all stakeholders in order to assess the likely reaction to fee increases and to explain why they are necessary.

Clear policies are instrumental in assisting any deliberations on what is considered to be an ‘appropriate’ level of fees and on what mechanisms should be adopted to structure and collect them. The following principles are suggested as a starting point for devising a policy framework for ODL institutions:

- Fees should be based on clearly-defined principles that are accepted as fair by learners and other stakeholders.
- Fee levels should reflect the cost of providing the service.
- Fees should be set at a level that ensures the long-term sustainability of the ODL institution.
- Provision should be made to ensure that the most disadvantaged learners are able to access the service.
- Any mechanism adopted for structuring and collecting fees should be efficient to administer.



### Exercise 11.1

The purpose of this exercise is to review the existing legal and policy framework in respect of fees for State-funded ODL institutions. It designed to be carried out as a group activity by the following:

- senior managerial and professional staff of ODL institutions,
- members of governing bodies or advisory committees for ODL institutions, and/or
- political office holders and senior officials in ministries of education.

Prior to getting together, one participant should be assigned the task of collecting the relevant legal and policy documents, and of making photocopies of the relevant sections.

#### Questions for discussion

- What legal provisions (if any) are in place in the jurisdiction to authorise or regulate the level of fees? Are further legal instruments required?
- What market research or consultations have taken place about existing fee levels or proposals to increase fees? What are different stakeholders likely to say if they are asked about these issues?
- How have fee levels been determined in the past?
- Is there a written or unwritten policy currently in force that guides decision-making on this issue?
- In relation to each of the policy principles suggested above, how practical or ‘appropriate’ would each be in relation to State-funded ODL institutions in your country?
- What other principles can you suggest for inclusion in a national or institutional policy on fees?

## 11.3 Determining Fee Levels

Deciding what is an ‘appropriate’ amount for students to pay is essentially a value judgement. However, there are three main approaches to thinking about this problem:

- Market-Related fees
- Cost Recovery models
  - recovering a percentage of costs
  - recovering particular cost elements
- Linking fees to the Index of Inflation.

Each of these is discussed separately below.

### Market-Related Fees

Commercial concerns often survey the market and determine the prices they will charge not only on the basis of production costs, but also on what the market will bear. Although many ODL institutions have public service mandates, it is important to consider the fees charged by other educational institutions, both public and private, when determining charges for their courses. A survey of the market for alternatives to the courses offered by an open school might include some or all of the following:

- State-run secondary schools
- private colleges
- university feeder or bridging courses
- other ODL institutions (local or foreign).

If the fees for studying at an open school are higher than those for comparable courses offered by private education institutions or in conventional schools or colleges, then learners may feel that they are being overcharged. Furthermore, enrolments are likely to decrease as potential students opt for cheaper alternatives.

Any comparison between an ODL institution and State-run secondary schools should account for the other costs of taking part in full-time education. In addition to fees, students in conventional education may be required to pay for some or all of the following:

- textbooks,
- uniforms,
- stationery,
- laboratory fees for science subjects,

- daily transportation to and from school,
- hostel fees, or
- other ‘voluntary’ contributions to school funds.

In many cases, those studying through the ODL mode are not obliged to pay such charges or (at least) do not pay as much as full-time students. As a result, the total costs of studying at a distance are often lower than those incurred for attending a conventional school, college or university.

### ***Advantages***

The principal benefit of adopting a system of market-related fees would be to sensitise the staff of ODL institutions to the economic realities of a commercial operation. Awareness of the institution’s market position and of what is offered by its competitors could contribute to greater cost-consciousness and improved efficiency among its employees. If an open school, college or university were to compete directly with other institutions to attract students, the rationale for enhancing a culture of customer service would become more evident to staff members.

### ***Disadvantages***

The distribution of household income in many countries is very imbalanced, and this suggests a fragmented and restricted market for commercial education services. While a private institution may have no difficulty filling a relatively small number of places at fees that recover all costs and yield some profits, the market for such a premium service is likely to be extremely limited. In many countries, such charges are beyond the means of the vast majority of potential students, who are looking for a basic and affordable service at the lower end of the market. In view of the social mandate of many public-sector open schools, colleges and universities, any comparison of fees for their courses with those charged by private institutions must be treated with caution.

## **Cost Recovery Models**

Commercial entities must recover the full costs of producing their goods or services, plus a minimum level of surplus, if they are to remain profitable. However, in the case of public service delivery, governments often provide subsidies to ensure that those citizens who cannot afford the full cost may still avail of the services on offer. In many cases, attempts are made to recover at least some of the cost of providing the service. Setting fees to recover either a proportion of costs or to recoup specific cost elements are two alternative models for determining what is an appropriate level for students to pay.

### **Percentage Cost Recovery**

With this model, fees are set at a level intended to recover a proportion or fixed percentage of the actual costs of providing the service. In some cases, the percentage chosen may be set by government as part of a sector-wide policy; in others, it may be a decision taken by the board or management of the ODL institution. Where information on the practice in other countries is available, this may be useful in guiding the development of policy on this issue, but international comparisons must be treated with caution because of the specific circumstances prevailing in each country. At the end of the day, however, the actual percentage used to calculate fee levels is arbitrary, though it does reflect value judgements about what is fair, reasonable and ‘appropriate’.

However, in order to implement a cost recovery approach, it is necessary to analyse the institution’s expenditure and calculate the unit costs of providing different courses. As discussed in Unit 5, crude methods such as Backflush Costing (which yields only the average cost per student for the institution as a whole) can mask considerable variations in unit costs for courses at different levels. Special requirements for certain subjects (such as audio tapes/CDs for language courses) can also add a considerable amount to the unit cost of delivery. Another factor affecting unit costs is the number of students enrolling for a particular subject or course. All other things being equal, more popular subjects will always be cheaper per learner to provide than courses with few enrolments because it is possible to achieve economies of scale. Likewise, the cost of developing new study materials can be spread among a larger pool of learners in subjects where enrolments are high, thus lowering unit costs. For all these reasons, it may be necessary to carry out a more detailed analysis of costs by programme, by course or by subject/module. These correspond to Levels 2, 3 and 4 in the hierarchical taxonomy of cost objects shown in Figure 5a on page 57.

### **Advantages**

The principle of percentage cost recovery is both transparent and fair. Though disagreements may arise about the appropriate percentage to be recovered, the concept itself is easy to explain to students, their families and other stakeholders. It also provides a basis to compare the performance of an ODL institution with other bodies in the education and training sector. It is desirable for governments to institute and enforce a sector-wide policy in order to avoid situations where State-funded institutions adopt conflicting approaches to the issue or even compete with one another to attract students through lower fees. A further advantage of the percentage cost recovery model is that fees can be calculated on the basis of estimated costs, and this encourages institutions to thoroughly investigate the viability of a particular course before it is launched. Finally, a unit cost approach also provides a sound basis for negotiating with donors or the government on subsidies for new initiatives.

**Disadvantages**

In general, the main disadvantage of a system of proportionate cost recovery is that it does not encourage improvements in the efficiency of an institution. As long as a fixed percentage of costs is guaranteed, there is no incentive to change how things are done, especially if lowering costs will result in lower fees. Furthermore, if fee increases result in decreased subject enrolments, then unit costs will rise. Where charges are determined as a fixed percentage of the actual cost of providing courses, then fees will also increase, resulting in a further drop in enrolments. This creates a self-perpetuating spiral of rising fees and falling enrolments that ultimately undermines the viability of a course.

**Recovering Specific Cost Elements**

As an alternative to percentage cost recovery, fees can be set at a level intended to recover specific elements or categories of cost. Table 11a illustrates a series of options proposed by Rumble (2006, pages 107-108) which are graded from the lowest to highest level of cost recovery.

Option	Fees set at a level intended to cover the following:
A	Student-related variable costs, including all direct expenditure for: <ul style="list-style-type: none"> <li>• reproduction and distribution of study materials</li> <li>• face-to-face or other forms of tuition</li> <li>• tutor-marked assignments</li> <li>• examination setting, administering and marking</li> </ul>
B	Student-related variable costs, plus Annual depreciation of fixed costs of course development
C	Student-related variable costs Annual depreciation of fixed costs of course development Controllable committed costs
D	Student-related variable costs Annual depreciation of fixed costs of course development Controllable committed costs Indirect common costs
E	All of the institution’s costs for the course, including: <ul style="list-style-type: none"> <li>Student-related variable costs</li> <li>Annual depreciation of fixed costs of course development</li> <li>Controllable committed costs</li> <li>Indirect common costs</li> <li>Appropriate contribution to business-sustaining expenses</li> </ul>

*Table 11a. Options for recovering specific categories of costs.*

Of these methods, the last is essentially the same as the proportionate cost recovery model, with fees set to achieve 100% repayment of the expenses incurred in providing services. Where government or donor funding is specifically ear-marked for certain categories of expenditure (for example, course development costs, institutional overheads), then this approach facilitates the calculation of the level of student fees required to make up the difference. Option A represents the marginal cost of providing services for each additional student, and Rumble suggests that it is the ideal for ODL institutions which are funded partly by student fees and partly by government grants. If fees are set at a level that recovers all student-related variable costs, then additional students may be accommodated (within the manageable range) without incurring any extra costs for staff or overheads.

### **Advantages**

Many of the advantages identified above in relation to the percentage cost recovery model also apply where fees are set at a level intended to recover specific cost elements. The main advantage of the latter approach is that it tends to focus the attention of managers on the need to control costs and generate sufficient income for the organisation to sustain itself. Whereas in a commercial concern, the drive to increase profits is the incentive underlying such efforts to control costs, it is not clear what might provide similar motivation in a not-for-profit organisation. Where fees are designed to recover specific cost elements, reducing costs will only result in a reduction in fees.

### **Disadvantages**

The principal disadvantage of this model for setting fees lies in the complexity of the activity-based cost analysis process which it would be necessary to carry out on a regular basis in order to adjust fees to changing costs. Whereas it is relatively easy to determine unit costs for courses (Level 3 in the hierarchical taxonomy of cost objects), it becomes increasingly time-consuming to continue the analysis at lower levels. In addition, the concerns raised in the discussion of the disadvantages of the percentage cost recovery approach also apply to this model.

### ***Index-Linked Fees***

The final basis for determining what is an appropriate amount for students to pay is to start with the current level of fees and adjust these in line with inflation. The rationale for this approach is both straightforward and fair. The operating costs of the ODL institution tend to rise at roughly the same rate as inflation in the economy as a whole. Like any other business, it can be argued that the open school, college or university needs to raise its fees to cover these additional costs.

The calculation of annual fee increases can be based on either of two figures. The central bank in each country normally publishes a Consumer Price Index (CPI). The CPI records the rate of price inflation over the preceding twelve-

month period, and this provides an actual basis for adjusting fees. Alternatively, it may be possible to obtain a projection of the rate of inflation over the coming year from the ministry of finance, though economic projections should always be treated with some caution.

### Advantages

The principle advantage of this mechanism for reckoning fee increases is that it is objective and simple to calculate. It is also manifestly transparent and easy to explain to students, their parents and other stakeholders. Though no one is happy when prices are increased, such index-linked adjustments are commonplace and have come to be accepted (often with resignation) by the public. Furthermore, since wages and salaries also tend to increase in line with inflation (though often lagging behind), fees for studying with the ODL institution should remain constant relative to household disposable income.

### Disadvantages

In times of high inflation, there is the danger that fee increases may not keep pace with the actual cost of providing the service. In order to prepare publicity materials, fee adjustments will need to be approved well in advance of the academic year to which they relate even though real costs may have increased dramatically by the time tuition commences. Furthermore, this approach assumes that the existing charges represent an appropriate level of cost recovery. If the current fees for a course are inadequate to make up for shortfalls in income from government subsidies or other sources, then linking them to inflation from here on out will simply perpetuate an unsatisfactory situation and endanger the long-term sustainability of the ODL institution.



## Exercise 11.2 – Determining Fee Levels

The Solomon Islands School of the Air (SISA) provides courses at senior primary level through a combination of printed study guides and radio broadcasts. These courses are targeted at adults who never had an opportunity to finish their schooling, as well as at young people who live in remote areas and cannot attend school on a regular basis. Though the courses are heavily subsidised, learners are still expected to make a contribution towards the cost of studying with SISA.

### Market-Related Fees

The annual fees at government primary schools are SI\$ 1,300 (Solomon Island Dollars). Primary schools run by religious groups charge between SI\$ 1,500-2,500 per annum.

If the policy at SISA is to charge fees that are 85% of the cost of comparable education at a government school, calculate the annual fee for the coming year.

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**Recovering Specific Cost Elements**

The costs associated with the senior primary course at SISA are as follows:

**Solomon Islands School of the Air: Annual Costs of Senior Primary Course**

Cost Category	Expenditure (SI\$)
Student-Related Variable Costs	1,870,000
Depreciated Costs of Course Development	1,960,000
Controllable Committed Costs	502,000
Indirect Common Costs	336,000
Contribution to Business-Sustaining Costs	125,000
<b>Total Costs per annum for Course</b>	<b>4,793,000</b>
Annual Student Intake	1,200

What is the marginal cost of enrolling each student beyond the projected intake of 1,200?

\_\_\_\_\_

If the policy of SISA is to set fees at a level intended to recover all student-related variable costs, calculate the fee per learner for the coming year.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Percentage Cost Recovery**

What fee must SISA charge for the Senior Primary Course in the coming year in order to recover 30% of the total cost of providing a course?

\_\_\_\_\_

**Index-Linked Fees**

For the current academic year, fees for the Senior Primary Course at SIS were SI\$ 1,050 per learner. The Consumer Price Index rose at a rate of 8.92% over the last twelve months. Calculate the annual fee per learner that SISA should charge in the coming year to compensate for the rise in costs due to inflation.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



### Sample Answer

The answers to this exercise can be found in the sample answer on page 140.

## 11.4 Deciding on a Fee Structure

Once the basis for determining fee levels has been decided, it is necessary to think about how these charges should be structured and administered. There are several options for doing this.

### Flat Rate charges



Where a single, uniform charge is levied for all courses/subjects/modules in a particular programme, this is referred to as a *flat rate fee*. A flat rate fee structure is the easiest to administer, since arithmetical calculations are kept to a minimum and there are fewer opportunities for clerical mistakes. Part-time staff require a minimum of training to enable them to enrol learners and collect the correct fees. The main drawback of a single fee for all subjects or courses within a particular programme is that it does not achieve a uniform level of cost recovery, regardless of whether this is measured in terms of a percentage of actual expenditure or specific cost elements. Under the flat rate system, the fee would be set on the basis of the average for all of the subject offerings, and this means that some courses will end up cross-subsidising others that are more expensive to provide.

### Itemised charges

Many educational institutions break down their fees into separate charges for the different components provided, such as application, registration, tuition, development fund, examinations, etc. The principal advantage of such itemised charges is that learners can see exactly what they are paying for. They also enable the institution to set different rules for different components, for example, by deciding that the registration fee is not refundable, while other components may be. A certain portion of fees may also be set aside for a specific purpose, such as the use of textbooks, which encourages learners to take responsibility for looking after what they have paid for.

The main drawback of this approach is that itemised charges give the impression that some components of the course are optional (e.g. attendance at workshops or tutorials) when, in fact, these are compulsory or form part of the overall package. For this reason, the presentation of itemised charges in any information or publicity must be handled with care in order to avoid misunderstandings. As with any system of charges other than flat rate fees, the chances of clerical errors arising from miscalculating what the learner must pay are increased.

## Different fees for different Levels

It is a widely-accepted principle in conventional institutions that the level of fees should increase in a step-like fashion as a student progresses through the various levels of the education system. Fees at senior secondary schools are almost invariably higher than those for junior secondary, while those who advance to tertiary education expect to pay more than they did in high school. In part, this reflects the higher costs associated with higher level studies. Although different fees for different levels may be more complex to administer, the possibility of clerical errors is reduced if registration for the different levels takes place at different times or on different days.

## Different fees for different Subjects

A fourth option is for ODL institutions to impose higher fees for subjects that are more expensive to deliver. This is an accepted practice at tertiary level, where faculties in some institutions are allowed to charge different amounts which reflect variations in the unit costs of providing different courses or the earnings potential of graduates. Where the cost recovery approach has been adopted, applying this option involves calculating the unit costs of developing and delivering each subject/course. As discussed above, low-entry courses, as well as language and science subjects, may have considerably higher unit costs. Fees are then set at different levels to recover the same percentage of actual costs or cost elements for all subjects. Where fee levels are determined on the basis of what the market will bear, higher fees are generally charged for subjects where demand is high (for example, courses in business management or ICTs).

There are a number of serious drawbacks to this approach. Higher fees may well discourage learners from taking socially- and economically-important subjects such as mathematics or the sciences, and this might well have a detrimental effect for the country as a whole. Different fees for different subjects might also lead students to select subjects by price rather than on the basis of their interests or academic abilities. In addition, such an approach tends to discriminate against low-entry subjects, such as “. . . minority languages where student numbers are naturally low, and economies of scale less realisable” (Rumble 2006, page 109). Inevitably, some limits will have to be imposed to ensure at least a minimum level of uniformity in the charges for similar subjects and to avoid the need to change fees every year as a result of fluctuations in the number of learners enrolling from year to year. From an institutional perspective, a system of different fees for different subjects is the most complex to administer and it is likely to result in a large number of clerical errors.

## Higher fees for Repeat Candidates

As noted in previous units, the rate of drop-out and failure among ODL students tends to be higher than among their counterparts in conventional education. In many cases, responsibility for this should not be placed entirely upon the shoulders of the learner, as deficiencies in the education system and other socio-economic factors also come into play. Nevertheless, it is valid to ask whether the public purse should continue to subsidise learners who do not complete the courses they enrolled in or who fail their examination on their first attempt. The principle that those seeking a second chance at education should bear a larger part of the cost is widely accepted in popular discourse. The final option for structuring fees would be to impose higher fees in situations where a learner has failed a particular subject and enrolls or re-enrolls with an ODL institution in order to repeat the course and re-sit the examination.

The major pitfall associated with this approach to structuring fees relates to the potential for falsification. Where learners fail examinations after studying in a secondary school, there is an incentive for them to hide this fact. If they decide to enrol with an ODL institution claiming to be first-time candidates, it can be difficult to check the veracity of their claims. Like any of the options outlined above, where different fees apply only in certain circumstances, then the potential for clerical errors increases.



### Exercise 11.3 – Existing Fee Structure

The purpose of this activity is to review the existing fee structure for a specific ODL course. As with Exercise 11.1, it is designed to be carried out as a group activity by the following:

- senior managerial and professional staff of ODL institutions, and/or
- members of governing bodies or advisory committees for ODL institutions.

#### Questions for discussion

The group should choose an existing course or programme and discuss the following:

- In terms of the options discussed above, how are fees for this course currently structured?
- What problem(s) does the institution have in administering these fees?
- What are the advantages of structuring fees in this way?

## 11.5 Can Students Afford It?

The preceding discussion has, for the most part, taken no account of the financial position of learners (and their parents/relatives) or their ability to pay for education, both of which are extremely important considerations in setting fee levels.

The major parameter associated with the affordability of educating relates to the disposable income available to the learner. While general statistics, such as Gross Domestic Product per capita, are generally available for many countries, such figures may mask considerable differences in the distribution of income. For example, in the 2006 Human Development Report, the UNDP listed a relatively high GDP for Namibia at US\$ 7,418 (approximately N\$ 55,000) per capita. However, as can be seen in Figure 11a, the wealthiest two percent of Namibians have an income almost forty times greater than the poorest half of the population.

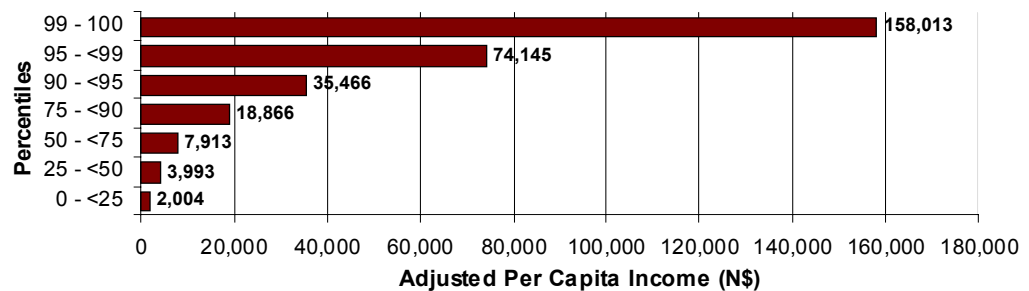


Figure 11a. Distribution of household income in Namibia, 2003/2004.

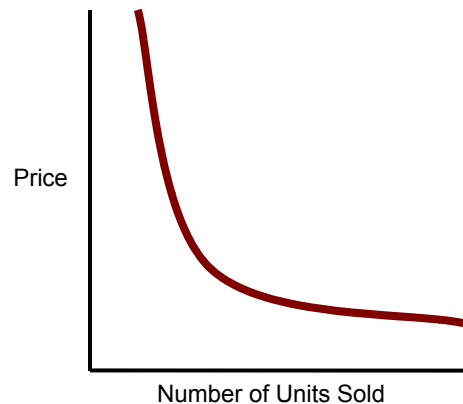
Even where total household income appears adequate, much of it may be accounted for through consumption-in-kind of produce from subsistence agriculture. In many countries, periodic surveys of household income and expenditure are carried out by government bodies and these can provide more in-depth information on the disposable income available to students to pursue their education.

As discussed in Section 11.3.1 above, fees are not the only costs incurred by learners in pursuing their education. With the help of their families, they must find money for a variety of other expenses which, when taken together, exceed the amount paid as fees or contributions to school development funds. By eliminating the need for school uniforms, books and daily travel or boarding fees, ODL institutions can reduce the cost of education by a considerable amount. However, students may not appreciate the cost effectiveness of this approach if fees must be paid in full at the time of enrolment. By way of contrast, expenditure for those attending school can be spread more evenly throughout the year.

## 11.6 Influence of Price on Demand

In practice, the effective demand for any product in the marketplace will be influenced by a whole complex of variables. These include the price of the product itself, whether substitute products are available and at what cost, the disposable income and tastes of potential customers, the availability of credit and how the product is promoted (Bates & Parkinson 1982, page 70). However, in terms of an individual's decision to enrol for studies with an ODL institution, price is the variable that is likely to have the greatest impact on demand. Figure 11b illustrates a typical demand curve which, in its ideal form, resembles a hyperbola.

As can be seen, a drop in the price of any product normally results in an increase in the number of units sold, whereas raising the unit price has the effect of decreasing sales. The effect of price changes on demand is referred to as 'elasticity', and this depends upon which part of the curve we are considering. In the upper left-hand part of the diagram, relatively large changes in the price of a product are required to effect significant changes in demand. This would be the case with a luxury item such as diamond jewellery, where large discounts would need to be offered in order to increase sales by even a few percentage points. On the other hand, with some low-cost products, relatively small changes in price result in dramatic changes in demand, as can be seen in the lower right-hand part of the curve. Thus, for example, a supermarket may be able to double its sales of a non-perishable product, such as milk powder, if it lowers the price by only 10-20%.



*Figure 11b.* Demand curve.

For any particular product and price structure, empirical methods must be used to determine the relative elasticity of demand. While it may be difficult to test the impact of different fees on the demand for services, it may be possible to extrapolate the elasticity of demand by tracing historical changes in charges for ODL courses. In a situation where the disposable income available to

students is limited and fees are at a level close to the maximum they can afford, then the ODL institution may be reaching a ‘tipping point’. The idea is loosely borrowed from Gladwell’s best-selling book (2000) that analyses how small changes in fashion, politics and health can have surprisingly large effects on public attitudes and social behaviour. Under such circumstances, a relatively small increase in fees can give rise to a disproportionate decrease in student numbers.

A significant fall-off in enrolments for an ODL course or programme can also have serious consequences for the institution’s financial position. In the first instance, the amount collected in fees may actually decrease even though the fee per subject/course increases. Furthermore, the unit cost of providing these services will go up considerably, because a large component of this expenditure arises from the committed cost of employing full-time staff. If fees are formally linked to the real cost of providing courses, the institution will be trapped in a spiral of rising fees, falling learner numbers and increased costs. Under such circumstances, the only option open to the institution would be to lay off permanent staff. While it is difficult, at best, to make accurate predictions of how the public will react to different situations, nevertheless, any decision to raise fees should be taken in full knowledge of the potential consequences.

## 11.7 Providing for the Neediest Students

Where an ODL institution has been established by government to provide wider access to education for those who have been historically excluded, this is referred to as a ‘social mandate’. Many of those who fall into this target group (e.g. rural dwellers, women, unskilled men, minorities) have very low levels of disposable income that can be used to pursue their education. Where an open school, college or university is under pressure to increase cost-sharing through higher student fees, there is the danger that the most disadvantaged learners will, once again, find themselves excluded. For this reason, consideration should be given to ways of providing for the neediest learners. There are several different options for achieving this objective.

### **Reduce fees across the board**

From an administrative point of view, it is easiest to reduce fees across the board for all students, but this is not advisable. In terms of income foregone, this approach is an expensive way of supporting disadvantaged students. For at least some of those who enrol for ODL studies, paying fees does not pose a significant hardship. Instead of targeting those students who are in greatest need of assistance this option benefits all students equally, even if they can afford to pay full fees.

## **Concessionary Fee Scheme**

In many countries, there are schemes in place so that students from very poor families are not required to pay the full fee for attending a conventional school. ODL institutions can adopt such a concessionary fee scheme, but there are a number of drawbacks. In the first instance, the procedures for claiming this concession can involve a considerable amount of time and added expense, which tend to undermine the purpose of the scheme. In addition, if there is no independent mechanism for verifying the information supplied by applicants, there is always the potential for falsification. Once it becomes known that one person had benefited even though they did not qualify, then others are tempted to try, and the system can break down. Third, processing the additional paperwork generated by the scheme can increase the administrative burden on full-time and part-time staff of the ODL institution during the registration period, which is one of the busiest times of the year. Finally, where levels of disposable income are low, the majority of potential learners may qualify for the scheme.

## **Payment by Instalments**

Dividing the total amount due for fees into a series of smaller instalments and allowing students to pay these over time is another approach to address this problem. However, while most students find it easier to find the cash to make small payments periodically, those who are severely disadvantaged may still be unable to raise the required amount. Inevitably there are problems with the collection of fees with this approach. Once students have registered and received their study materials, they may be slow in making subsequent payments. Dividing study materials into a number of batches and withholding them until instalments have been paid will result in increased administrative costs for the ODL institution.

## **Student Loan Scheme**

Student loan schemes are a common means for governments to assist promising but needy students to further their education at institutions of higher learning. In most cases, lending money for tertiary education is feasible, since graduates can usually find employment at salaries which enable them to repay the loan. Unfortunately, the same is not true for those studying for a junior or senior secondary certificate, because these qualifications are often the minimum requirement for entry-level posts. Furthermore, in many countries significant numbers of school leavers remain unemployed for considerable periods, since the formal sector of the local economy rarely grows fast enough to absorb all high school 'graduates'.

## Scholarship Scheme

The final option for enabling disadvantaged learners to access education would be to introduce a scholarship scheme. This is the strategy adopted by many countries to support needy students at tertiary level. Such schemes ensure that the available funds are targeted at those who are most disadvantaged.

Providing scholarships need not involve any money changing hands. Instead, they can take the form of fee remission for successful applicants. The level of scholarship/fee remission would need to be determined, but scholarship students should not be exempted from the payment of all charges since it is desirable that they contribute to the cost of their own education. In order to ensure that the process is transparent, written criteria for the selection of candidates need to be drawn up and publicised in advance. The main emphasis should be placed on economic disadvantage rather than scholastic aptitude or academic achievement, though applicants would need to be learners in good standing. Special consideration might also be given to orphans and vulnerable children, those living with HIV/AIDS or other severely disadvantaged groups.

One mechanism that has been suggested for screening candidates and awarding scholarships is to utilise local committees that may already be in place to advise on the management of tutorial or study centres. Membership of such committees should include one or more elected student representatives, a tutor, community leaders and the Head of Centre. Since members of these committees are residents of the locality, they are in a good position to know the family circumstances of applicants.

Procedural shortcomings on the part of some committees will almost certainly lead to complaints of favouritism or nepotism and these will need to be investigated by officials from the ODL institution. Nevertheless, a scholarship scheme will enhance the status and responsibilities of centre committees, which can also be empowered to solicit funds from local companies and individuals to support promising learners who would not otherwise be able to continue their education. In this way, people can contribute to the development of human resources in their communities, thus increasing their stake and sense of ownership of ODL programmes at the local level.



### **Exercise 11.4 – Existing Fee Structure**

The purpose of this activity is to clarify the attitudes and values with regard to assisting disadvantaged learners. As with Exercise 11.3, it is designed to be carried out as a group activity by the following:

- senior managerial and professional staff of ODL institutions, and/or
- members of governing bodies or advisory committees for ODL institutions.

#### **Questions for discussion**

- Have student enrolments been affected by fee increases in the past?
- Is there any evidence (statistical, empirical or anecdotal) to suggest that some prospective learners are currently being excluded because they cannot afford to pay full fees?
- What provisions (if any) has the institution made to accommodate severely disadvantaged learners?
- If additional provisions are required, which of the above options is most feasible?

## Sample Answers

### Exercise 11.2 – Determining Fee Levels

Solomon Islands School of the Air, Senior Primary Course  
Sample Answers

Method Used	Annual Fee per Learner (SI\$)	Calculation
Market-Related Fees	1,105	$1,300 \times 0.85$
Recovering Specific Cost Elements		
• Marginal Cost	1,558	$1,870,000 \div 1,200$
• Recovering Student-Related Variable Costs	1,558	same as above
Percentage Cost Recovery	1,198	$(4,793,000 \div 1,200) \times 0.30$
Index-Linked Fees	1,144	$1,050 \times (1 + 0.0892)$

# Glossary

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<b>ABC</b>	abbreviation for Activity-Based Costing, an alternative to traditional systems of cost accounting (see Unit 4)
<b>activity</b>	in the Activity-Based Costing system this term is defined as any process or procedure that causes work to be done.
<b>actual costs</b>	the exact amount spent in the past, as reflected in an institution's accounts, whether provisional or audited
<b>annualization</b>	a method for calculating the decrease in the value of a capital asset based on simple depreciation and interest foregone, averaged over its working life
<b>appreciation</b>	an increase in the value of a capital asset over its working life
<b>backflush costing</b>	a rough measure of unit costs, calculated by using the Average Costs Equation. Backflush costing is appropriate where the ODL institution produces only a limited number of courses with uniform inputs and outputs.
<b>business-sustaining costs</b>	residual overheads arising from activities that cannot be associated meaningfully with particular cost objects
<b>capital costs</b>	any expenditure for things whose value continues to be used over more than one financial year. Examples of capital assets include buildings, furniture, equipment and courseware.
<b>committed costs</b>	any expenditure (fixed or semi-variable) that cannot be eliminated or cut back without a major negative impact on the institution's objectives or profits
<b>cost absorption</b>	the process whereby apportioned costs are attached to a particular product and are ultimately reflected in the price charged for it
<b>cost allocation</b>	the process of assigning or attaching costs to the product or activity they 'belong to'

<b>cost apportionment</b>	the process of dividing costs between two or more products in proportion to the estimated benefit received by each
<b>cost driver</b>	anything that causes an overall increase (or decrease) in expenditure when it increases (or decreases)
<b>cost-effectiveness</b>	a measure of the of the costs incurred to produce a unit of output. In the context of ODL institutions, cost-effectiveness is normally expressed as the cost per graduate or examination subject/course pass.
<b>cost-effectiveness ratio</b>	an expression of the relationship between the cost-effectiveness of one course, programme or mode of educational delivery relative to the cost-effectiveness of another
<b>cost object</b>	term used in the Activity-Based Costing system to refer to the reason for carrying out an activity. Cost objects may be products, services or customers.
<b>cross-over point</b>	the point on a graph of costs (either total or average) vs. student numbers corresponding to the particular level of enrolments where one mode of delivery becomes cheaper than another
<b>decision package</b>	in a Zero-Based Budgeting system, this is a document that explains a proposed activity, its goals and objectives, what benefits are expected, how performance will be measured and all costs that will be incurred. In addition, a decision package should outline what alternative courses of action have been considered and why these were rejected.
<b>depreciation</b>	a decrease in the value of a capital asset over its working life
<b>direct cost</b>	any expenditure that can be directly related to a particular product or service
<b>DTP</b>	abbreviation for desk-top publishing – use of a desk-top computer to design and lay out print-based materials to a standard suitable for printing
<b>economy of scale</b>	a situation where the cost of producing an additional unit of output of a good or service decreases as the volume of output (the scale of production) increases.
<b>effectiveness</b>	the extent to which an ODL institution or programme produces outputs that meet its own goals (internal effectiveness) or the broader goals of society as a whole (external effectiveness)

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<b>efficiency</b>	the extent to which an ODL institution or programme keeps up the same level of outputs with fewer resources (economic efficiency) or increases the level of outputs with the same amount of resources (production efficiency)
<b>efficiency ratio</b>	the relationship between the efficiency factor (total costs divided by number of students or course/subject enrolments) of an ODL programme and the efficiency factor for a comparable programme delivered through conventional means. This measure can also be used to compare two different ODL programmes using different media (e.g. print-based materials vs. TV broadcasts)
<b>fixed cost</b>	any expenditure that does not increase or decrease with changes in the level of activity or product produced
<b>FT</b>	full-time, referring to students in conventional schools, colleges or universities
<b>FTE</b>	full-time equivalency/equivalent, used to refer to measures that enable comparison of ODL students and courses with those in conventional education
<b>FY</b>	abbreviation for Financial Year
<b>indirect cost</b>	any expenditure that CANNOT be directly related to a particular product or service. Indirect costs are often referred to as Overheads
<b>ICTs</b>	information and communication technologies
<b>managed costs</b>	expenditure that can be reduced or postponed without an immediate major disruption to the institution or programme
<b>marginal cost</b>	the additional expenditure incurred to produce one more unit of a product or service, for example, the cost of accommodating each student in addition to the number in cost projections for a course
<b>mean value</b>	another term for the average value. The arithmetic mean is calculated by adding together all of the values for a particular variable (e.g. prices charged for an item at different stores) and dividing by the total number of cases (stores) in your sample.
<b>median value</b>	the middle value for a particular variable, when all of the values are placed in rank order from lowest to highest. The median is the actual value that appears at the midpoint of this series. Half of the remaining cases will be higher than and the other half lower than the median.

<b>NGO</b>	non-governmental organisation
<b>non-recurrent</b>	either income or expenditure that happens only once and does not recur every year
<b>notional</b>	ideal or average figures that are used to estimate future income or expenditure
<b>ODL</b>	open and distance learning
<b>operating costs</b>	any expenditure for things whose value is consumed within the same financial year. Examples of operating costs include staff salaries, printing costs, leasing of buildings or vehicles, consultancy services.
<b>overheads</b>	another term for Indirect Costs
<b>productivity factor</b>	the amount of output (in terms of goods or services) created per unit of input used
<b>range</b>	the level of productive activity within which a semi-variable cost remains fixed
<b>recurrent</b>	either income or expenditure that recurs every year
<b>revenue costs</b>	another name for Operating Costs, so-called because such expenditure is normally met through income (revenue) for the business in the current financial year
<b>ring-fenced</b>	funding that has been given on the condition that it be used only for a specified purpose
<b>scale</b>	the number of students enrolled for a particular course
<b>scope</b>	the number or range of courses/subjects offered by an ODL institution
<b>semi-variable cost</b>	any expenditure that is fixed within a given range of activity, but increases in a step-like fashion when the activity exceeds the given range
<b>simple depreciation</b>	a method for calculating the decrease in value of a capital asset based on the assumption that equal amounts of its value are used up each year of its working life
<b>social discount</b>	a method for calculating the decrease in the value of a capital asset based on simple depreciation and interest on the un-depreciated value of the asset, which changes over the its working life.
<b>study guide</b>	print-based, self-instructional materials usually bound in the form of a booklet. Also referred to as a workbook or 'block'.
<b>taxonomy</b>	a scheme for classifying things, in this case, cost objects

<b>total costs</b>	the sum of fixed costs, variable costs and semi-variable costs
<b>unit cost</b>	all expenditure associated with the production of a single, measured amount of a product or service
<b>variable cost</b>	any expenditure that varies in proportion to a change in the level of activity or product produced
<b>written down value</b>	a notional figure used in calculations of depreciation to represent the residual, un-depreciated value of a capital asset at the end of each year of its working life



# Bibliography

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- BATES, J. & J.R. PARKINSON. 1982. *Business Economics*, Third Edition, revised by J. Bates, B. Chiplin & M. Wright. Oxford: Basil Blackwell Publishers.
- Du VIVIER, Ed[ward F.]. 2007b. *Financing NAMCOL into the Future: A study of the College's efficiency, cost-effectiveness, fee structure and funding formula*, unpublished consultancy report. Windhoek, Namibia: Namibian College of Open Learning.
- GLADWELL, Malcolm. 2000. *The Tipping Point: How little things can make a big difference*. London: Abacus.
- HÜLSMANN, Thomas. June 2004. *Costing Open and Distance Learning*. Vancouver, British Columbia, Canada: Commonwealth of Learning. Electronic document available as a CD-ROM and as a PDF download from: <http://www.col.org/trainingresources/costingodl/>
- JAMISON, D.T. 1982. 'An Introduction to the Methods of Cost Analysis'. In Perraton, Hilary (ed.), *Alternative Routes to Formal Education: Distance teaching for school equivalency*. Baltimore, Maryland, USA: Johns Hopkins University Press.
- KAYE, Anthony & Greville RUMBLE (eds). 1981. *Distance Teaching for Higher and Adult Education*. London: Croom Helm in association with Open University Press.
- PERRATON, Hilary. 1982a. *The Costs of Distance Education*.
- RUMBLE, Greville. 2006. *Report of a Short-Term Advisory Mission to conduct a Study on the Costs and Funding of the Namibian College of Open Learning (NAMCOL)*, unpublished consultancy report. Cambridge: International Research Foundation for Open Learning, dated 08/10/2006.

- \_\_\_\_\_. 2001. *Analysing Costs/Benefits for Distance Education Programmes*, Knowledge Series. Vancouver, British Columbia, Canada: Commonwealth of Learning. Accessed as electronic document on 29 July 2007 at: [http://www.col.org/colweb/webdav/site/myjahiasite/shared/docs/KS2001-02\\_costs.pdf](http://www.col.org/colweb/webdav/site/myjahiasite/shared/docs/KS2001-02_costs.pdf)
- \_\_\_\_\_. 1997. *The Costs and Economics of Open and Distance Learning*. London: Kogan Page in association with the Institute of Educational Technology, Open University.
- \_\_\_\_\_. 1986. *The Planning and Management of Distance Education*. London: Croom Helm.
- \_\_\_\_\_; Michael NEIL & Alan TOUT. 1981. 'Budgetary and Resource Forecasting', Chapter 13 in Kaye, Anthony & Rumble (eds), *Distance Teaching for Higher and Adult Education*.
- SAIDE (South African Institute for Distance Education). January 2004. *Costing Distance Education and Open Learning in Sub-Saharan Africa: A survey of policy and practice*, Final Report of the Working Group on Distance Education and Open Learning, Association for the Development of Education in Africa (ADEA). Vancouver, British Columbia, Canada: Commonwealth of Learning, accessed as electronic document on 31/07/2007 at: <http://www.col.org/colweb/webdav/site/myjahiasite/shared/docs/04CostingDEinSSA.pdf>
- TURNEY, Peter B.B. 1996 [1991]. *Activity-Based Costing: The performance breakthrough*. London: Kogan Page, originally published in Portland, Oregon, USA by Cost Technology Inc.