

7. COSTING DISTANCE-EDUCATION PROJECTS

There are no intrinsic difficulties to costing any elements of a university's activities provided that the activity of costing is correctly approached and there is a desire to find the results. However, information which management would prefer not to know is unlikely to be prepared.

Table 1 identified in broad terms the typical activities undertaken in a 'two mode' university or other institution of higher education. Each activity involves cost elements which behave in different ways - ie. they are recurrent or non-recurrent, fixed or variable. Note too that the cost structure of a particular activity or course can be varied by changing the way it is organised - for example, the costs are different and behave differently depending on whether one gives each student a video-cassette, loans each student a video-cassette, provides a video-cassette in a local centre where groups or individuals can see it, or transmits the material by broadcast means.

Appendix 1 lists typical costs incurred in developing, producing and distributing distance courses. The list is not exhaustive.

Cost studies may be undertaken for a variety of reasons: to determine the costs of a policy proposal or a change in procedures; to compare the costs of two or more policy options; to establish how existing resources are being used as a preliminary step to the search for economies, either with a view to saving money or with a view to releasing resources for new ventures; and to provide data in support of performance indicators (used to evaluate and monitor performance). The analysis may focus on a whole institution or on a particular part of it. It may be concerned with the identification of full costs or only of the additional costs that will be incurred when a new project is established on the back of an existing one. The purpose of the analysis will affect the way in which the activity of costing is carried out; the extent to which overhead costs are apportioned to activities and programmes; and the extent to which the intention of the analysis is to identify average costs or marginal costs.

7.1 Course development and production costs and the special problem of joint supply

Imagine the situation where there are two lines of study each of which is teaching a number of courses. Each course requires 1000 days of academic

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staff time to develop it. Each line of study is developing three courses:

Programme 1		Programme 2	
Course A	1000 days	Course D	1000 days
Course B	1000 days	Course E	1000 days
Course C	<u>1000 days</u>	Course F	<u>1000 days</u>
TOTAL	3000 days		3000 days

If they go it alone they will spend 3000 days each on course development. However, in discussion they find out that one of the courses will more or less meet both their needs with some adaptation. As a result they can save on the amount of staff time put into course development by sharing the development of a common core (350 days each) and then putting in 300 days each on their own specific materials

Programme 1		Programme 2	
Course A	1000 days	Course E	650 days
Course B	650 days	Course F	1000 days
Course C	<u>1000 days</u>	Course G	<u>1000 days</u>
Total	2650 days		2650 days

As a direct result the institution, instead of spending 6000 days developing six courses, only spends 5300 days on developing what from the students' point of view is still six courses.

The issue of joint supply is central to universities, not least in the interplay between teaching and research (a particular problem which we shall ignore here). However, it raises problems for the costing of conventional and distance-mode programmes where conventional courses are adapted for distance-teaching purposes or where distance-teaching materials are used to instruct on-campus students, thus reducing the direct teaching on a campus-based course.

Imagine a course that has been developed initially for teaching in the conventional mode at a cost of £4500. It is then adapted for use in the distance teaching mode at a cost of an additional £12 000. There are 30 conventional students on the course costing £150 each (this may seem rather cheap but then they are taking a number of courses and this is the

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apportioned cost per student for this course only). There are 175 distance students on the course at a direct cost of £75 each.

The question arises, how do we analyse the costs involved? Broadly speaking we could adopt one of five approaches:

1. We can charge the full cost of developing the original conventional course to the conventional-mode programme (CMP) and the cost of adapting it to the needs of distance students to the distance-mode programme (DMP). This is the kind of approach normally found in Canadian 'two mode' universities.

	CMP	DMP
Development cost	£ 4500	£12 000
Cost/student	£ 150	£ 68.57

2. We could argue that since both programmes benefit from the dual mode course they should share the development costs equally.

	CMP	DMP
Development cost	£ 8250	£ 8250
Cost/student	£ 275	£ 47.14

3. We could argue that the costs of adapting the course to distance uses is a proper charge against the DMP, but that since the latter is benefitting from the earlier development work done in the CMP, it should bear a proportion (say half) of the costs originally incurred. This approach effectively loads a lot of the CMP costs onto the DMP. It is hardly equitable since the CMP course would presumably have been developed anyway.

	CMP	DMP
Development cost	£ 2250	£14 250
Cost/student	£ 75	£ 81.43

4. Another approach which will also tend to load costs onto the distance programme is to estimate what the DMP would have cost assuming that it was developed from scratch and not on the back of the CMP. Let us assume that the notional cost is taken to be

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£15 000. The actual cost remains £12 000. The notional saving which results is thus £15 000 - £12 000 = £3000. This saving could be attributed to the CMP, the difference between the notional 'full' and actual 'subsidised' development costs being 'charged' to the DMP programme by the CMP programme so that the apparent costs of the programme are then as follows:

	CMP	DMP
Development cost	£ 1500	£15 000
Cost/student	£ 50	£ 85.91

This approach opens up the possibility of a negative charge to the CMP when the notional cost less the actual cost of the DMP is greater than the cost of the CMP.

5. We could apportion the total costs of developing both the CMP and DMP versions of the course to the programmes on the basis of student numbers, so that, in the case we have specified, 30/205ths. of the cost are attributed to the CMP and 175/205ths. to the DMP.

	CMP	DMP
Development costs	£ 2415	£14 085
Cost/student	£ 80.5	£ 80.49

This approach is the same as ignoring the differences between the CMP and DMP and just treating the development costs of both versions of the course as the total development cost for all students. This approach is found in many Australian 'two mode' systems where no distinction is drawn between distance and campus-based costs.

	System cost
Development cost	£16 500
Cost/student	£ 80.49

The approach chosen may depend on the purpose of the analysis and in

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particular whether or not the intention is to identify average or marginal costs (see the introduction to section 7). However, the first approach has the merit of showing the specific costs of each mode.

7.2 Course presentation and teaching costs

So far as the teaching costs are concerned, there are broadly speaking two ways of analysing costs:

1. The most appropriate way to attribute the costs of teaching, if the aim is to analyse the real costs of each mode, is to assign the teaching costs to the appropriate programme, as follows:

	CMP	DMP
Total teaching cost	£4500	£13 125
Number of students	30	175
Teaching cost/student	£ 150	£ 75

2. An alternative approach, again found in many Australian 'two mode' systems, is to ignore all differences between the costs of teaching. This would give the following:

	System cost
Total teaching cost	£17 625
Number of students	205
Teaching cost/student	£ 85.98

The first option reflects the relative costs of the two modes. The cost per student may be expressed in terms of full-time equivalent (FTE) students. This possibility is discussed in section 8.1 below.

7.3 Costing over the life of a course

Distance education offers the possibility of lower average costs per student for teaching because it substitutes capital for labour. Any analysis of costs must take account of the period over which the capital investment in learning materials is spread (see section 5).

Appendix 1 gives details of typical costs incurred in the development,

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production and presentation of distance taught courses. Course development and production costs are non-recurrent and need to be written off over the life of the course. Stocking costs will be incurred periodically as needed, either to replace damaged or lost components where these are lent to students or to meet future demand where stocks are consumed by students. Storage, distribution and presentation costs will be incurred annually.

Table 3 presents fictional costs for a distance taught course which is developed over an 18 month period and then presented for four years. As far as development and production costs are concerned, the table first establishes the cash position at *constant* price levels. It then looks at these costs from two points of view: their annualisation (or amortization), and their discounting.

Table 3: Fictional costs for a distance taught course (£s)

Year	1	2	3	4	5	6
Development/ production costs						
a) Cash flow	23 000	130 000	16 000		7 000	
b) Annualised cost			42 250	42 250	45 750	45 750
c) Discounted cost						
- £169 000			53 235	53 235	53 235	53 235
- £ 7 000			-	-	4 032	4 032
- Sub-total			53 235	53 235	57 262	57 262
Stocking cost		43 000		8 500		3 500
Presentation cost			99 615	81 490	84 535	59 885

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The annualisation of the development and production costs presents some minor conceptual problems. The development and production costs incurred in years 1 to 3 relate to the presentation of the course in years 3 to 6 respectively. The cost in year 5 relates to the presentations in years 5 and 6 respectively. Annualised, these costs could be attributed to the relevant years quite easily, as follows:

Total development costs, years 1 to 3: £169 000
Total development cost, year 5 : £ 7 000

Annualised cost of development, attributed to years of presentation

- years 3 and 4	$(1/4 \times £169\,000)$ = £42 250
- years 5 and 6	$(1/4 \times £169\,000) + (1/2 \times £7000)$ = £45 750

This approach is reflected in line 2 of Table 3.

If opportunity costs are taken into account the picture changes somewhat. The third line of Table 3 discounts the development and production costs, assuming a 10% rate of interest. The initial development money of £169 000 which was spent over a three year period has been discounted over the four years the course is going to be presented., while the additional £7000 put in in year 5 has been discounted over two years.

Table 4 uses the information given in Table 3 to derive a cost per student. The cost per student of development and production costs are shown in two ways: (1) as the annualised cost divided by the number of students registered in that year, and (2) as the discounted cost, divided by the number of students registered in that year. The stocking cost is fixed at £24.50 per student, and in our example all the stocks are used by the end of the four years. In practice it is likely that there would be unused stocks left over which would then have to be written off. The cost of presentation is a variable per capita cost equivalent to £145 per student. The table ends by showing the cost per student assuming (1) annualised development and production costs, and (2) discounted development and production costs.

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Table 4: Cost per student on a fictional distance taught course, assuming data derived from Table 3

Year	3	4	5	6
Number of students	687	562	583	413
Development/ production costs				
Annualised cost/ student	£61.50	£75.18	£78.47	£110.77
Discounted cost/ student	£77.49	£94.72	£98.22	£138.65
Stocking cost/ student	24.50	24.50	24.50	24.50
Presentation cost/student	145.00	145.00	145.00	145.00
Total cost/ student				
- annualised method	231.00	244.68	247.97	280.27
- discounted method	246.99	264.22	267.72	308.15

In some systems, particularly where there are small numbers of students and where the media utilised are consumed by the students (in the sense that they are given to the students rather than loaned to them or held by the institution), the materials may be produced annually and hence there may be no need to amortise the costs of the materials. However, the development costs (particularly the cost of staff time involved in the planning and preparation of the course) should still be annualised or discounted.

It is worth noting that the development and production cost per student and hence the total cost per student would fall if student numbers were

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to rise. For example, if the number of students rose to 950 in the final sixth year of the course then the annualised cost per student of development and production in that year would be £48.16 and the total cost per student using the annualised method would be £217.66 (against £110.77 and £280.27 respectively); and the discounted cost per student for development and production would be £60.28 giving a total cost per student using this method of £229.78 (against £138.65 and £308.15 respectively).

One other point needs to be made. Throughout this section the assumption has been made that at the end of an agreed period of time, normally associated with the end of the planned life of the course, the materials will cease to have any value. Further, it has been assumed that the period of amortisation or discounting is fixed in relation to the life of the course. In practice this may not be the case. Course lives may be extended; different courses may have different lives; and some materials may be incorporated into replacement courses or continue to be sold.

The adoption of a standard course life over which the development and production costs of the course or of particular components are annualised or discounted may under-estimate or over-estimate the costs of a distance project relative to those of a conventional programme. In general the aim should be to annualise or amortise the development and production costs of courses or materials over their full life.