5: What will it cost?

Questions of both practice and policy arise in considering the cost of establishing and running a distance-teaching institution. It is necessary to answer practical questions about the budget and about the resources needed to launch an institution or programme, and to establish, as a guide to policy, how the costs of distance education are likely to compare with those of conventional education. Similar methods can be used for both purposes.

The starting point is to consider the purpose of the institution, the anticipated numbers of students to be enrolled and courses to be developed, and the teaching methods to be used; together these will give some idea of the scale of resources needed. It is then helpful to distinguish between the fixed costs, including capital and administrative staff costs, and the variable costs which will vary, particularly with the number of students and the number of courses. Of course in the long run no costs are fixed: you need a larger building to administer 100 000 students than you do for 1000. But the distinction is a convenient and practical one in the short run which facilitates the estimation of start-up and running costs and the preparation of budgets. It also makes it possible to compare the cost of conventional and distance education.

Having distinguished between fixed and variable costs, it is useful to identify the factors which determine the level of variable costs. In some cases it is the number of students: the supply of a booklet on how to study will vary with this number. Other determinants are more complicated: both the number of courses to be offered and the life of a course before it is revised or rewritten, will affect the variable costs for course development and maintenance. The cost per student of any tutorial sessions will vary both with their frequency and with the staffing ratio.

5.1 What will the fixed costs be?

The main elements within a distance-teaching institution's fixed costs are likely to be for capital investment and for full-time staff.

Capital investment may be needed for:

- buildings;
- furniture, fittings, office equipment;
- computers and peripherals for both management and course production;
- printing facilities;
- broadcasting studio, equipment and transmitters;
- vehicles.

While a distance-teaching institution may need access to any of these it may be possible to launch a project with little or no expenditure on capital by making use of existing facilities. Before calculating actual costs, therefore, it is necessary to investigate what buildings and services have spare capacity and may be available. It remains necessary, of course, to make a judgment about the balance of advantage between sharing and controlling facilities. If, for example, a distance-teaching institution has access to a university or government printer, but cannot get the priority it needs, it may wish to invest in its own equipment for at least some stages of the printing process.

The main recurrent elements within the fixed costs will be for salaries. The nature of these salary costs will be determined by the choice of model which will establish, for example, how far the institution will need its own academic staff or full-time field workers, or broadcasting producers. The size of the staff will, of course, also be affected by the scale of the proposed institution and the work it is to do. It is convenient to regard many of the overhead costs of running the office as being fixed although some of these costs will in practice vary with the number of students.

In determining both capital and staff costs the best guide will be the equivalent figures for any enterprise that is broadly comparable.

5.2 What will the variable costs be?

Variable costs are likely to include one group of costs which vary with the number, length and nature of courses to be developed and one group which vary with the number of students. Those varying with the level of course development will include:

- salaries for consultants and outside writers working on the production of teaching materials (which will vary with the amount of course material to be written);
- broadcasting production and transmission costs (which are likely to vary with the number of broadcasting hours);
- preparation of teaching materials, including the costs of editors and graphic artists (where editing costs, for example, will also vary with the length of the material).

Once these costs are expressed in terms of an annual budget, the life of a course affects its cost and it may be necessary to include an element for the revision of courses between the dates at which they are rewritten.

Costs that vary with the number of students will include:

- payment of tutorial staff and associated costs for face-to-face tuition;
- travel;
- production of teaching materials including costs of paper;
- distribution of teaching materials to students (e.g. by post);
- warehousing costs for the storage of materials;
- administrative costs for processing student enrolments and servicing students as they work through their courses.

The first of these elements is slightly more complicated: the costs of tutorial support vary not

only with the number of students but also with the choice of teaching method. If, for example, students are required to attend regular practical sessions, which require generous staffing ratios, then the tutorial cost per student will be higher than it is if they merely have the option to attend an occasional, and less generously staffed, tutorial session.

5.3 How can the budget be calculated?

Once the items that make up the fixed and variable costs have been identified it is possible to begin calculating a budget. The start-up budget is likely to have three elements: capital costs; recurrent costs that can be regarded as fixed; and variable costs. Some parts of this will be straightforward: calculating a budget for salaries or for rent will be little different from doing so for other enterprises.

It is, however, more difficult to calculate a budget for the production of materials. This part of the total budget is of crucial importance: a distance-education programme needs investment in course development before any students are enrolled in something of the same way as a conventional college needs advance investment in lecture theatres and classrooms. In order to calculate a budget for materials it is necessary to make assumptions about the cost of course development and production, the size of the student body and the number of courses to be developed. To work out the cost of developing materials it is then necessary to estimate how much academic staff time is required for a given amount of teaching material: there is no magic formula which states that a given number of writing hours are needed for each student learning hour. One set of calculations, produced by the Briggs committee that was drawing up plans for The Commonwealth of Learning, appears in box 5 to illustrate the process of estimating staff costs for course development. Further calculations would be needed to estimate costs for the production and distribution of print,

Box 5: Material development costs

There is no standard market rate for acquiring course materials, and development costs for them vary widely between institutions and even within any one institution: the costs for two degree level courses, demanding similar amounts of work from students, can differ by a factor of ten at a single institution.

The following assumptions have been made in order to have a basis for calculation.

(a) A degree will consist of 32 units, each of which would require about 100 hours of study time on the part of the student. (While much of the work may not be for degrees, this provides a convenient working unit.) Each of these units would thus be about the equivalent of one quarter of the British Open University course unit.

(b) Academic staff, generally on secondment to the institution, will do some course writing themselves but also commission materials that are developed by consultants.

(c) In a working year a team of three academic staff members could each write two units and commission and supervise the production of eight units, so that the team would between them arrange the production of 30 units.

(d) Outside consultants will require a fee of £4000 per unit.

(e) Editing and master preparation costs will equal academic staff costs.

(f) Academic salary costs can be estimated at £25 000 p.a. including social security etc. and allowing for some course development work by departmental heads and assistant heads.

On these assumptions the team of three would, in a year, incur the following costs in order to produce 30 units:

Salaries:	3 x 25 000 =	75 000
Commissioning fees	3 x 8 x 4000 =	96 000
Editorial etc. costs @ 100%	=	171 000
		342 000

This would give a cost per unit of £11 400 or a cost per complete degree course of £364 800 or, say, £365 000. Printing and production costs, which would vary with the size of the demand for the course, would be additional to this. This figure is not out of line with such development costs as have been reported.

In addition to the costs of initial course development, there will be costs for course maintenance at, say, 20% of the development costs per annum.

Costs for acquiring courses, or acquiring rights to their use are likely to vary with the number of students following them but, as a rough rule of thumb, it has been assumed that a course can be acquired for one-third of the cost of developing one.

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broadcasts, and any audiovisual materials. Local experience in government, or in educational bodies, or in business is the best guide. A similar exercise is needed in order to estimate the cost of tutorial support, which will depend on the number of students, policy decisions about the amount of tutorial support to be provided, and the rate of pay for tutors.

The budgets of existing distance-teaching institutions vary widely in the proportion of their expenditure devoted to different activities and to different media. As the technology of print, and of audiovisual media, is changing rapidly it is impossible to set down hard and fast rules about the comparative costs of different media beyond a limited number of generalisations. Television has higher production and transmission costs than radio and these may differ by a factor of ten or more. Historically print has shown economies of scale which were marked as the print run rose above about 1000 copies but changes in technology are reducing the significance of this. Radio distribution costs tend to be lower than those for audiocassettes but for small audiences cassettes may prove more economic. Whereas economies of scale may be realised for mass media, such economies are not possible for face-to-face tutorials where costs rise in line with the number of students.

5.4 How will the costs compare with those of conventional education?

We are likely to be concerned with two related questions here: asking whether distance education is cheaper or dearer than conventional education and also how the patterns of cost vary between the two systems. While there are inherent difficulties in making such comparisons a small number of studies yield two conclusions on the cost of producing graduates at a distance. First, while graduation rates for distance-education programmes are generally lower than those for conventional education, both large and small-scale projects suggest that one can achieve graduation rates of between 40 and 60 per cent in tertiary education. Higher success rates have been achieved in a number of vocational programmes, and programmes of continuing professional education. Teacher training courses where students are guaranteed qualified teacher status at the end of their course and MBA courses which markedly enhance students' job prospects show high success rates. Second, both large and small-scale programmes have found that it may be possible to produce graduates at a cost of between half and two-thirds of the cost for students at a conventional institution, but more dramatic savings than these do not appear to have been reported (cf. Perraton 1986).

While many governments have been attracted to distance education by this prospect of its cutting costs, there is no particular reason why it should be expected to do so. An alternative approach that might yield benefits in terms of quality and equity would be to allocate the same resources for each full-time equivalent student regardless of the method of study, or to fund institutions in proportion to their likely production of graduates. There is some experience in Australia of funding distance education within a bimodal institution in such a way that the costs for on and off-campus teaching, per full-time equivalent student, are virtually the same.

Whether a particular programme compares favourably with a conventional alternative or not, some generalisations are possible about the structure of costs which is different from that for conventional institutions. It may be possible to reap economies of scale that are not possible conventionally. Where distance education has low variable costs then, even with relatively high fixed costs in the form of investment in course material, the more students we have the lower the cost per student. (The cost curve flattens off, however, as enrolments reach a level beyond which there are no further significant economies.) Economies may be possible where distance education enables greater use to be made of existing facilities, such as university premises in the vacation, thus also increasing the return on a national capital investment. Costs per successful student may, however, show a quite different picture from costs per student as distance education, like other forms of part-time education, tends to have lower success rates than conventional full-time education. Thus a programme may look a remarkable economic success if we ask about the cost per student and quite different if we look instead at the cost per successful student.

While these conclusions are fairly robust, it is necessary to recognise the difficulty of making the comparisons on which they rest. There are four major problems in doing so. First, comparisons relating costs and effects would be fairly straightforward if we had matched groups of students studying at a distance and studying conventionally. In practice, audiences using different methods of study often differ in other respects as well. Second, distance-education students often follow courses with a different structure from those in conventional institutions. Where a distance-teaching institution uses a course-credit system but its neighbour does not, comparison between the two is difficult. Third, while it is convenient to talk generally about distance-teaching institutions, there are wide differences between them and between their teaching methods. As the cost of a distance-education programme is, in part, a function of its choice of teaching media, so it may be misleading to lump together evidence from quite different programmes. Fourth, if we want to compare costs and effects, or to assess benefits, we may want to do so from the standpoint of society in general, rather than from that of any one institution. This will force us to consider costs that may not be reflected in an institution's budget, such as the costs of radio transmissions where these are met by a broadcasting authority, to consider the opportunity cost of students' time, and to consider the intangible social benefits of having part-time educational opportunities available to the public.

5.5 How can it be funded?

Programmes of distance education have generally been funded from four sources: grants or loans,

government funds, student fees, and payment by employers.

Both public and private institutions have provided start-up funds for distance education or support for existing distance-teaching institutions. Major international foundations, for example, have provided funding for distance education in both developing and industrialised countries. The World Bank has funded the building of headquarters for distance-teaching institutions in Africa while the Asian Development Bank has expressed interest in funding new distance-education programmes.

Many distance-teaching institutions, however, rely on government funding for their normal recurrent expenditure and for much of their capital expenditure.

Policy on student fees varies widely from country to country and policy within any one country may differ for full-time and for part-time students. As a result, some institutions draw a significant proportion of their income from these fees, and a lower proportion from government, while others charge nominal fees to students or, in the case of inservice training for teachers for example, may charge no fees at all. Where a high proportion of costs are met from student fees this may discourage enrolment; alternatively student support services may be deliberately limited in an attempt to keep down the cost. In practice many institutions have sought a balance between income from student fees and from government grants. The Indira Gandhi National Open University, for example, draws about 80 per cent of its funds from government and 20 per cent from student fees.

To a modest extent employers have funded distance education. In Britain, the government-backed Open College runs programmes of vocational education and expects the greater part of the cost to fall on employers. Courses of teacher education have been widely funded by ministries of education out of a budget for staff development. Funding of this kind may be expected to grow but is more likely to meet the cost of vocational education, of direct interest to employers, than of general education, or of education that may lead an employee to a different kind of job or to a different employer.

Summary

In order to prepare a budget for distance education it is useful to look separately at the need for capital investment, at staffing costs for the central administration, and at variable costs that will vary, particularly with the number of students and the number of courses.

While there are difficulties in comparing the costs of conventional and distance education, some distance-education programmes have achieved satisfactory graduation rates and done so at a cost per graduate of between a half and two-thirds the rate of conventional institutions.

Distance-education programmes have been funded by grants and loans, regular government funding, student fees, and payments from employers.