

4. BUDGETING AND ACCOUNTING SYSTEMS FOR COST ANALYSIS

The way in which budgets and accounts are structured may hinder rather than help the proper analysis of costs. The purpose of this section is to outline an approach to budgeting that will enable the accounting system to support cost analysis. More importantly, it shows how budgets and accounts may be analysed in those cases where the budgeting and accounting system has not itself been developed in a way that will facilitate cost analysis.

4.1 Expenditure heads and budgets

In universities and other higher education establishments cost centres are generally associated with departments or with budget allocating committees. Within each cost centre budgets are created and costs are assigned against *heads of expenditure* which are generally further broken down into budget or account codes. Exactly how many heads of expenditure there are will depend on legal requirements (as in Venezuela) or on accounting conventions. Normally expenditure heads will distinguish between *labour costs*, *material costs* (the cost of commodities supplied to a department), and *expenses* (the costs of services supplied to the department including water, electricity, telephone, equipment hire, etc.). The British Chartered Institute of Public Finance and Accounting (CIPFA, 1980) has recommended expenditure heads for use in colleges in the local authority maintained sector. These are very broad and cover (1) employees, (2) premises, grounds and fixed plant, (3) supplies and services, (4) transport and moveable plant, (5) establishment charges, (6) agency services, and (7) miscellaneous. In the United States the National Association of College and University Business Officers has also laid down accounting standards governing higher education institutions (NACUBO, 1975) while the National Centre for Higher Education Management Systems (NCHEMS) studied the theoretical basis for higher education cost accounting with a view to developing a uniform set of standards, definitions and procedures that would use accounting and statistical data to analyse the full cost of resources utilised to achieve institutional objectives (Manning and Romney, 1973). Many of the attempts have been made with a view to facilitating inter-institutional cost comparisons. However, the heads of expenditure defined by, for example, CIPFA are

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really too broad to allow meaningful comparisons of the nature of the expenditure and its relationship with the underlying activities to be made, while experience at NCHEMS indicated that in practice it is extremely difficult to define a standard which can be applied to a wide range of higher education institutions. In general every attempt should be made to adopt the standard practices laid down by governmental or accounting bodies while recognising that inter-institutional and inter-sectoral cost comparisons (the latter covering comparisons between institutions subject to different funding arrangements) are difficult to make and, where made, need to be subject to appropriate qualifications.

The number of budget or account codes established will depend inter alia on the nature of the activities and the preferences of individual budget holders.

4.2 Costing activities and outputs

Governmental and funding body pressures for increased efficiency in higher education in many countries, and the consequential need for improved management in higher education, have led to a demand for the introduction of activity costing. Irrespective of the pressure from funding bodies, there is advantage in management knowing how much a particular activity costs.

The costs of an activity need to be related both to the output and to the functional activities which take place to create it. The definitions of activities and outputs should be in practical, identifiable and controllable terms. The allocation of costs to activities and outputs should cover both staff and non-staff costs. There may be particular problems in allocating staff time (and hence costs) to particular activities and/or outputs. The means of allocating costs between activities and outputs should not be excessively complex. For example, in some cases it may be necessary only to estimate in broad terms the proportion of an individual's time spent on one activity as against another. In other cases it may be possible and desirable to keep detailed time sheets.

Table 1 (which is based on Kaye and Rumble's systems approach) lists some of the functional activities undertaken in distance and conventional education systems. The list has purposely been kept simple. The range of activities identified will depend in part on the complexity of each institution and the range of its outputs, and at least in distance-education

Table 1: Typical functional activities in a 'two mode' university or institution of higher education

- A. Conventional class-based courses
 - a. Course planning and preparation
 - b. Production of any materials required for the course (eg slides, reprographed notes, examination papers)
 - c. Delivery of the course (teaching and instructional costs, expenses and consumables used in instruction such as the cost of field trips, computer time, etc., and the direct costs of examinations)
- B. Distance taught courses
 - a. Development (course planning, media selection, specification of teaching strategies, writing or design of the materials or components, editing, graphic design, developmental testing of components, external assessment of the draft course materials, hire of consultants) including direct administrative costs
 - b. Production of the materials in-house or externally, together with cost of materials bought in
 - c. Storage/warehousing costs
 - d. distribution costs (postage, carriage, transmission of broadcasts)
 - e. Delivery costs (face-to-face tuition, telephone tuition, computer conferencing costs, examinations, computing, laboratory experience, residential school costs, costs of stocks consumed or lost, etc)
 - f. 'Maintenance' of the course including redevelopment or redesign of any of the materials and supervision of courses in their delivery phase.
- C. Student/Learner Support and Services
 - a. Advertising of academic programmes
 - b. Administrative costs of admission and registration of students, their allocation to support facilities and tutors (but not the actual costs of the services), the maintenance of their records, certification and transcription services, etc
 - c. Counselling of students

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- d. Libraries
 - e. For on-campus students, residential facilities, health care, catering and recreational facility costs
 - D. Research
 - E. Community Services including non-instructional costs such as consultancy service costs, etc. (See Crosson [1984] for a taxonomy.)
 - F. Administration where it is not specifically related to course development, production or distribution, or students.
 - G. Maintenance of premises and grounds
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systems on the range of media utilised. Table 2 lists outputs. Again the list has been kept simple.

4.3 Budget coding systems for financial analysis

The approach taken here assumes that the budgeting and accounting system is computer based but even if this is not the case the approach towards the analysis of costs could be applied to a manual budgeting system provided it was accepted that the resulting analysis would be relatively crude.

Budget codes would normally assign costs to a cost centre, an expenditure head, and a particular budget

eg Department of Physics; Staffing costs; Temporary staffing budget

giving a coding structure which might resemble the following:

Cost Centre	Account Code	Expenditure Head Code
CC	XX	0000

where, for example:

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Table 2: Typical higher education outputs

		(Course credits
		(Diplomates
		(Graduates:
	(Conventional	(- first degree
	(mode	(- higher degree
	(	(Contract
	(	(teaching programmes
(Teaching	(	(delivered
(programme	(	
(	(	(Course credits
(	(	(Diplomates
(	(	(Graduates
(	(	(- first degree
(	(Distance	(- higher degree
(	(mode	(Educational
(		(courses and packs
(		(of materials, and in-
(		(dividual materials
Outputs (	(	
(	(Academic	(Specific projects
(	(research	(Personal research
(Research	(	
(programme	(	
(	(Institutional	(Specific
(	(research	(projects
(		
(		(Consultancy and
(		(advisory services
(Public		(Professional and
(Service		(subject area act-
(programme		(ivities
		(Service on public
		(bodies

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CC	= Department of Chemistry
XX	= Salaries
0000	= academic salaries.

This will allow simple analysis of total expenditure by cost centre and expenditure head. The utility of this kind of analysis is likely to be limited.

The budget code can be extended to reflect functional activities but this requires the identification of activities (see Table 1) and their coding:

eg Code A001	Course development
Code A002	Course production

giving a coding structure which might resemble the following:

Accounting System Code	Activity Analysis Code
CC XX 0000	A000

This would extend quite considerably the kind of analysis that could be done, by helping to identify the cost of functional activities undertaken in each cost centre.

Finally the coding system might be extended to cover outputs (which would need to be clearly identified [see Table 2] and coded by programme, mode and course or project):

eg Teaching programme, Distance-education mode, Course
7324 The Latin American Novel

giving an overall coding structure as follows:

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Accounting System Code	Activity Analysis Code	Output Analysis Code
CC XX 0000	A000	TD7324

This would provide a systematic way of analysing the costs of the institution in a number of ways:

1. By activity and cost centre
2. By output and cost centre
3. By activity and output
4. By activity, cost centre and output

At times there would be a direct relationship between a budget/account code, an activity and an output; at other times this would not be the case. The system would need to be capable of allowing cross analysis between accounts, activities and outputs as necessary, but this should be very easy given a computer-based system, as follows:

Accounting System Code	Activity Analysis Code	Output Analysis Code
CC XX 0000	A000	TD7324
CC XX 0001	{ A001 } A002	TC5412
CC XX 0002		{ TD7324
CC XX 0003	A003	{ TD1659
CC XX 0004		{ TD3860

For example, assume that CC XX 0002, CC XX 0003 and CC XX 0004 are salary costs (XX) for academic, course support and secretarial staff in cost centre CC; the activity code A003 is course delivery; and the outputs are three distance-taught courses. The analysis enables costs to be analysed by cost centre, by expenditure heads, by activity and by output.