

The competitive vulnerability of distance teaching universities

Greville Rumble of the UK OU's East Anglian Region examines the vulnerability of the 26 or so distance teaching universities around the world to competition both from the increasing number of campus based universities taking initiatives in distance teaching, and the dual mode universities which have worked across a range of methods for some years. The article questions whether there is a future for the single mode university in a competitive environment.

Greville Rumble

It is ten years since Rumble and Harry surveyed the emergence of what they called the distance teaching universities¹ that is, universities set up to teach through the use of various media (print, audio-visual, computer-assisted instruction) students who are physically separated from their teachers. The method of teaching does not mean that students never meet a teacher, but in general the role of those they meet is to support the students' learning from the materials provided them, and not to direct their learning through lectures, seminars and tutorials.

One of the advantages of distance education is that students do not have to go to a central location to attend lectures, seminars and tutorials nor do they need ready access to a library (the course materials coupled with a few set books replace the need to use a library extensively). Most of the students therefore study at or from home. The physical distance separating a student from the university is in a sense immaterial. What is important is the student's ability to receive the materials at the appropriate time from the university; to be able to return assignments to the university or its tutors reasonably easily; and to contact the tutor if need be, again reasonably easily. As a direct result, tutorials - where they are offered - tend to take place in local centres near where students live, while the tutors are usually as remote as the students from the university.

This highly distributed system looks very different to the residential or non-residential campus-based university, which students have to attend for lectures, seminars, and tutorials, and to make use of laboratories, libraries and other facilities.

The vast majority of institutions of higher education are of this latter type. In this article we shall refer to them as campus-based universities (CBUs)². CBU, as defined here, may teach full- or part-time students, but all teaching takes place on-campus, either in the daytime or in the evenings. Teaching methods are based on the lecture, seminar or tutorial, and independent study by the students, using books and other resource materials provided by the university's library, computer centre, laboratories, or audiovisual resource centre. CBUs do not teach off-campus students using distance means.

Given the enthusiasm and interest which distance teaching universities (DTUS) have aroused, it is perhaps surprising that there are relatively few of them. The existing ones are listed in Table 1, together with their date of foundation. One of the purposes of this article is to indicate why there are relatively few DTUs in the world.

Although there are relatively few DTUS, there are now a large number of universities which use distance teaching methods to teach off-campus students, as well as more traditional methods (lecture, seminar, tutorial, laboratory, etc.) to teach on-campus students. These universities, referred to in this article as dual-mode universities (DMUs), may use distance teaching methods for only one or two courses, or alternatively may have a significant proportion of their students studying off-campus by distance means.

Some DMU, recognising the value to students of studying from well-prepared materials, now allow full-time on-campus students to use the materials originally prepared for off-campus students. As we shall see, this may lead to a reduction in the number of contact hours of these on-campus students. Such programmes, called mixed-mode study in Australia, are really a form of on-campus resource-based learning, and are treated here as such.

With the exception of the University of South Africa, all the distance teaching universities date from the late 1960s³. In contrast, many of the DMUs date from the late nineteenth and early twentieth centuries. Among the most early to develop distance as well as on-campus programmes were the Illinois Wesleyan University (1874)⁴, the University of Chicago (1891), the University of Wisconsin (1906), the University of California, Berkeley (1913), all in the USA, the University of Queensland in Australia (1911), and Queen's University, Ontario, Canada (1889).

Table I Distance Teaching Universities

University of South Africa, RSA	1951
Open University, UK	1969
Universidad Nacional de Educación a Distancia, Spain	1972
Free University, Iran	1973*
Fern Universität - Gesamthochschule, Germany	1974
Open University (formerly Everyman's University, Israel	1974
Allama Iqbal Open University (formerly People's Open Universtity), Pakistan	1975
Athabasca University (as reconstituted), Canada	1975
Universidad Nacional Abierta, Venezuela	1977
Universidad Estatal a Distancia, Costa Rica	1977
Sukhothai Thammathirat Open University, Thailand	1978
Radio and Television University of China, People's Republic of China	1979
Sri Lanka Open University (previously the Sri Lanka Institute of Distance Education), Sri Lanka	1980
Open universiteit, Netherlands	1981
Korea Air and Correspondent University, South Korea	1981
Andhra Pradesh Open University, India	1982
University of the Air, Japan	1983
Universitas Terbuka, Indonesia	1984
Indira Gandhi National Open University, India	1985
al-Quds Open University, Jordan	1985
National Open University, Taiwan	1986
Payame Noor University, Iran	1987
Kota Open University, India	1987
Nalanda Open University, India	1987
Yashwantrao Chavan Maharashtra Open University, India	1989
Open Learning Institute, Hong Kong	1989

*closed

Establishing distance teaching universities

The establishment of individual DTUs was often, controversial. Perry recorded the 'profound scepticism garnished with ridicule and hostility'⁵ with which the UK Open University's foundation was greeted. It requires some effort, now, to recall that an institution which is so often seen as one of the most successful and most admired innovations in Britain's post-Second World War educational history⁶ was, at the time of its launch, being referred to as a 'completely bogus institution' and an unlovely centralised colossus.'⁷

Looking back at the planning processes which led to the establishment of the DTUS, it is clear that in many cases there was little attempt to consider whether the needs which they were to meet could, in fact, have been met in other ways.

Broadly speaking, there were two strands to the arguments favouring the establishment of a DTU. The first was that there existed a pool of individuals who were now past the normal age of entry to the universities, who would benefit personally or professionally from access to a university education, but who at the time they left school had been unable to attend or gain entry to a CBU. In addition, there were a number of adults who had already gained a university-level education, but who needed to update or refresh themselves professionally. With family and job responsibilities, such individuals could only study part-time. But the existing universities were uninterested in part-time students - hence the only way to meet this need was to establish a distance teaching university dedicated to their needs. This kind of approach is seen in the foundation of, for example, the UK Open University and the Dutch Open universiteit⁸.

The second was that there was in the country in question an enormous pool of frustrated demand for entry to the existing universities, from among the population of school leavers. It would be too expensive to expand the existing CBUS, or establish more of them. It was no clear from experience elsewhere (the case *w* cited was usually that of the UK Open University) that the per capita student cost of distance education was significantly less than that of campus-based universities. So, one solution to the problem of insufficient resources to meet demand would be to set up a DTU. This kind of argument was deployed in Andhra Pradesh, Sri Lanka and Venezuela.⁹ Little justification was given for these conclusions. As Dodd and Rumble pointed out in their analysis of the planning processes underpinning the establishment of many of the DTUS, the decision to set up the DTU had usually been taken by the time the planning committee met, and the terms of reference of the committees were therefore constrained to considering *how* to establish a DTU, not *whether* to establish one.¹⁰ The committees were often responsible to, and in the case of Advisory Committee for the UK Open University, actually chaired by a politician who was deeply committed to the project.¹¹

The over-riding impression is that, as an exercise in business planning, the processes which led up to the establishment of the various DTUs was sorely lacking in analysis of the likely market (characteristics of those who would be attracted to the programme and extent of that market), pricing policy, expenditure (Perry, for example, points out that the costs of the UK Open University were seriously underestimated during the planning stage¹²), and perhaps most significantly - in respect of the likely response of competitors.

At the time this probably did not matter, either because there was little likelihood of the CBUs being very interested in the markets at which the DTUs were directed, as in the UK and the Netherlands, or because the level of frustrated demand was so high, and the capacity of the CBUs so limited, as to accommodate the entry of a new competitor. Competition was thus not an issue. (Indeed, in the case of the UK Open University, the initial decision not to teach under 21 year-olds meant that the University was not competing with CBUs for the school leavers' market.)

In retrospect, however, it is clear that the position of a DTU could change if the school leavers' market were ever to be saturated, and if CBUs were to decide that it was feasible and financially worth their while going after the part-time adult learners market. If this happened, one would expect to see growing numbers of CBUs either expanding their on-campus part-time provision, or converting themselves from CBUs into DMUS.

The strengths of distance teaching universities

The arguments in favour of DTUs are based on a particular conception of their academic and organisational strengths.

First, it is said that the administrative structures of CBUs are not suited to the development and management of distance education.¹³ As early as 1968, Perry had argued that a new DTU would be able to 'experiment with new patterns of teaching with a freedom that would be impossible to achieve in established universities,'¹⁴ while Peters' comparison of distance teaching and the industrial production of goods, and his belief that distance education is a quite distinct form of education¹⁵, suggests that distance education may be best carried out in institutions dedicated to distance education.

A second line of argument is to hold that the needs of part-time, adult distance students will be better served in an institution that is wholly dedicated to their needs. The marginalisation of distance teaching and external students in DMUs is often cited as justification for this position. Thus Siaciwena's report that 'at the University of Zambia there has always been some obvious prejudice against correspondence teaching among certain academics'¹⁶; Singh's comment that academics in those Indian universities offering distance education through Correspondence Directorates 'regard correspondence education as a second rate education and look down upon correspondence educators also as second rate'¹⁷; and Hall's comment that in the USA the students served through extension, evening school and correspondence are 'often considered to be peripheral students',¹⁸ are seen as justifications for single-mode DTUS.

A third, closely related argument is that DTUS, once established, develop important strengths in the technology and processes of materials development and the delivery of support services to distant students. This is evidently true in the case of many DTUs - but it does not necessarily follow that these skills cannot be developed or acquired by other institutions - including dual mode institutions.

Yet another argument favouring DTUs is that they are capable of achieving greater economies of scale than universities which teach on-campus. As we shall see, this is potentially true in respect of CBUS. However, it is often assumed that DTUs will be more cost-efficient than dual-mode institutions as well. While it is true that they may be more cost-efficient than the campus-based activities of DMUS, this is by no means true of DMUs' distance-taught programmes, which is where the comparison needs to be made. We shall return to this crucial point later.

The strengths of dual-mode universities

Dual-mode universities, unlike DTUs and CBUS, have a mandate to teach both on- and off-campus (external or distant) students. With the growth in interest in part-time higher education, there has been a rapid growth in the number of DMUs as CBUs have begun to target part-time adult students, and to recognise that distance education methods give them a powerful means of reaching this market. This market is significant. For example, by the autumn of 1988, 43 per cent or 5.5 out of the 12.8 million degree credit students in the USA were enrolled part-time, reflecting a 'dramatic shift from first-time, full-time, usually residential students, to part-time, usually commuting, almost always older students';¹⁹ and, in the UK, 38 per cent of the total number of students in higher education were studying part-time in 1986/87.²⁰

In countries with a long history of dual-mode provision, the growth of off-campus part-time studies has been matched by a growth in the number of DMUS. In Australia, for example, only one university (the University of Queensland) taught off-campus until the mid- 1950s. Between then and 1980, four more universities opened external studies programmes (New England in 1955, Macquarie in 1967, Murdoch in 1975, Deakin in 1977). Even in 1980, only 8.7 per cent (14,109) of university enrolments were external students. During the 1980s, however, there was a substantial growth in the number of institutions teaching external students, ultimately leading to government intervention to limit the number of producers of distance education programmes to eight institutions.

Although consideration was given to the establishment of an Australian DTU, this option was rejected by the Karmel Committee, whose Report (1975) argued that such a centralised approach might actually inhibit existing institutions from adopting innovative practices²¹. Very similar conclusions were reached by the Swedish Committee for Television and Radio in Education in 1975, which also rejected the establishment of a DTU in favour of a decentralised model based on existing universities or colleges, arguing that this was likely to show a higher degree of adaptability to needs.²²

It is clear that, given the right conditions, campus-based institutions of higher education can adapt themselves to meet the demands of part-time students. But, equally, it is clear that those CBUs which convert themselves into DMUS, or are established from the very beginning as DMUS, have a number of advantages over DTUS.

Firstly, DMUs have a much wider choice of teaching strategies to meet the needs of their part-time students. They may, for example:

- allow a small number of part-time students into a full-time degree course. This is not always satisfactory for the would-be part-time students. Classes are generally held in the day-time when it is difficult for many potential part-timers to attend; there is rarely any attempt to adapt the curriculum or style of teaching to the needs of part-timers, who tend to be mature students; and there may be few other students with whom the individual part-timer can relate. But, for some individuals, the approach works well. A major limitation is that students need to live reasonably near the campus (in terms of commuting times).
- set up a special free-standing part-time degree programme, either in the day-time or, more usually, in the evening. Here, part-time students can mix with other part-timers, in larger groups, and the curriculum and style

of teaching can be adapted to their needs. Not all potential students find attendance either in the day-time or evening easy. As with the previous model, students need to live reasonably near the campus. However, if there is a concentration of students in a particular area, the university may be able to send the lecturers to the students - thus greatly extending the range and hence area over which teaching can take place.

- adopt resource-based learning, so that most of the study is done by part-time students at times of their own choosing, either in college or in their own homes, using learning resources of various kinds. A wide range of fairly inexpensive approaches towards the development of learning resources is available, including the video-taping of lectures delivered to full-time campus-based students for subsequent viewing by part-timers, the printing of lecture notes, etc. While quality is variable, it is the total mix of support and, in particular the integration of learning materials, books and personal contact, that is important and which makes many of the programmes as effective as, on the one hand, traditional campus-based programmes and, on the other, distance education programmes based on carefully designed learning materials backed by correspondence and other forms of tuition.

The more resource-based the programme, the more similar it is to a distance education programme, and the less important it is that the students live near the campus.

Secondly, DMUs can at least potentially provide part-time students with a much wider spectrum of courses than can DTUS. The number of course options available at universities teaching campus-based students is almost invariably greater than the number of courses which DTUs can afford to develop. Indeed, DTUs such as the UK Open University and the Universidad Nacional Abierta found that the cost of developing courses was such that the number of specialist higher level courses and degree options had to be restricted.²³

Thirdly, it is argued that in those institutions where external students are taught by the same lecturers as the internal students, as in the Australian integrated model, one achieves a Parity of academic standards between the internal and external systems which benefits the external students.²⁴ This is not always the case. The academics teaching external students may be of poor quality - or at least be perceived that way,²⁵ or they may have little interest in teaching external students and direct most of their attention to the full-time students.²⁶ But the potential for parity with the very best that higher education has to offer is there.

Finally, DMUs may have distinct economic advantages over DTUS. We shall now explore this issue.

The economic vulnerability of DTUs in the face of DMU costs

In the late 1980s and early 1990s, the pressure for expansion of higher education is not, in general, being matched by a commensurate increase in resources. In this respect, this new wave of expansionism differs significantly from that of the 1960s, when most governments supported expansion by investment. In both the UK and Australia, for example, the emphasis is on increased efficiency coupled with a search for alternative sources of funds - most notably from the students themselves. There also appears to be a distinct preference for larger institutions and for consortia. In Australia, the number of universities and colleges has fallen from its pre-1987 level of 64 to some 30 institutions, virtually all of which are called universities.²⁷ Many observers believe that similar developments will occur in the UK, in the wake of the merging of the Universities and Polytechnics and Colleges Funding Councils. In the US, too, funds are more difficult to attract. And in many Third World countries, higher education is desperately underfunded, notwithstanding relatively high levels of investment and subsidy put into higher education, vis-a-vis primary and secondary education.²⁸

Obviously, in these circumstances, distance education, with its much vaunted economies of scale, becomes an attractive proposition. DTU planners in Venezuela, Andhra Pradesh, Israel and elsewhere all hoped that the average cost per student would be lower in the DTU, *relative to that in campus-based institutions, and*, indeed, so it has often proved. Study after study of the relative cost per student and cost per graduate concluded that their costs are or could be, assuming high enough numbers of students, lower in DTUs than in CBUS.²⁹ But is this the right comparison? Muta and Sakamoto extended the study of the relative costs of the Japanese University of the Air (UJA) to cover the costs of evening and correspondence programmes at private universities, as well as other programmes (Table 2).³⁰ These figures show that while the annual revenue cost per student at the UJA is generally lower than other forms of provision, it is higher than the cost of the evening programme at a private university, and much higher than the cost of a correspondence programme at a private university. Furthermore, the relatively high drop-out rate at UJA erodes this cost advantage when one comes to compare the cost per credit awarded and cost per graduation.

Table 2 Ratio of Japanese University of the Air revenue costs to that of other higher education in Japan

	Annual cost per student	Cost per credit awarded	Cost per graduate
UAJ			
yen (thousands)	395.4	40.9	4372.5
= base figure	1.0	1.0	1.0
National university			
-liberal arts	2.40	0.75	1.09
-science/technology	3.23	1.04	1.14
Public university			
-liberal arts	2.07	0.66	0.87
-science/technology	1.83	1.55	1.79
Private university day programme			
-liberal arts	1.38	0.45	0.54
-science/technology	1.97	0.71	0.80
Private university evening programme			
-liberal arts	0.89	0.41	0.43
-science/technology	0.93	0.57	0.62
Private university correspondence programme	0.15	0.22	0.52

The significance of Muta's figures is *not* that they will necessarily transfer to other contexts, but that they indicate the need to compare the costs of DTUs with other kinds of provision, including part-time day and evening provision, and other kinds of distance provision,

We now know a considerable amount about the behaviour of costs in DTUS.³¹ Basically, the total revenue cost of any distance education system is a function of four elements:

- the average direct cost per student including the costs of materials supplied to the student and of distributing them to each student, the cost of tuition and examination for each student, etc. - times the number of students in any one year.
- the average direct investment cost of each course being developed - that is the salary costs of academics, producers, editors, designers etc. who develop them; the costs of copyrights, graphics, production set up, etc. - times the number of courses being developed in any one year.
- the average annual direct cost of presenting each course - that is, the cost of transmitting radio and television programmes, the cost of rewriting assignment and examination papers, the costs of monitoring a course, etc. - times the number of courses being presented in any one year.
- the overhead costs of the institution's management and administration, premises, capital replacement from revenue, etc.

All of these cost elements can be affected by management decisions and practices, which in turn affect the behaviour of the average cost curve in distance education, relative to campus-based education. Basically, distance education systems incur high fixed costs which are then spread over a large number of students to result in a relatively low average fixed cost per student. To this is added the direct cost per student. This is generally much lower than is the case in campus-based education - thus providing distance education with its cost advantage.

The actual cost curve in any system can be affected by a large number of factors:

- each medium has its own cost structure, affecting its development and delivery costs, relative to other media and to the number of students it will serve. Thus the use of television increases development costs sharply, but the cost of transmission is unaffected by the number of students served within the transmission area. However the total costs of providing video cassettes to each student rises sharply with student numbers, making this method of distributing video generally too expensive, except for courses with very small numbers, or where students buy the videos at or above cost price.
- the level of student support offered has a major effect on the direct cost per student and hence on the relative cost advantage of distance education viz a viz campus-based education. The economies of scale of distance education depend heavily on its low direct cost per student, relative to campus-based education. The more direct

support given to students, the less likely it is that distance education will be able to offset its higher fixed costs over the student body to obtain a lower average total cost.

- individual systems can affect the costs of developing materials markedly by relying on consultant authors, editors and designers and not supporting a full-time staff in these areas. Institutions which have adopted this transformer model are more like publishing houses than academic communities - but they have much lower costs.
- the more courses that are developed, the higher the total investment costs. The number of courses which need to be developed will depend on the size of the course profile and the number of years a course will be offered once it is developed. The more courses, the higher the development cost to start up *and replace* ageing courses. The longer one allows courses to last, the more the costs of development can be annualised, and hence the lower the annualised cost of development.
- the more students in the system, the more the development and fixed costs can be spread and the lower the average development and fixed costs per student. Having high student numbers is thus very important if average costs are to come down. However, the average fixed cost curve, while it falls quickly to start with, begins to flatten out - so that economies of scale tend to be gained in the early years of a project. Eventually, further expansion of student numbers ceases to have a significant effect on average costs, and the economic justification for expansion loses its force.

To summarise, then, the economic strength of distance education rests on two major pillars: firstly, the high cost of developing materials can be justified because they can be used to teach very large numbers of students; secondly, substitution of learning from materials for classroom activity (with its high labour costs) brings down the direct cost of teaching. As Wagner ³² put it, distance education offers 'a mass production alternative to the traditional craft approach of classroom-based education'.

Most DTUs can currently point to their economic efficiency, viz a viz CBUS, but the price which they have paid is that they have had to limit (1) the range of subjects and (2) the level of student support services.

Perry drew attention to the first limitation in his book describing the initial years of the UK Open University when he admitted that the University had grossly underestimated the time and effort needed to produce one course, and concluded that in striving to have a large profile of courses with many honours level options, it was 'in danger of abandoning something we could do very well [the provision of a general education at university level] for something we could do only poorly, if at all [the provision of specialized honours degrees]'. ³³ Jevons, however, sees this limitation as a source of potential weakness: 'I believe that the future lies at least as much with mixed institutions, if only because [DTUS] cannot provide the full range of subjects'.³⁴ The second limitation is more obvious - since any attempt to increase the level of direct student support increases the direct cost per student, and rapidly erodes the cost advantages of a DTU.

Some measure of the importance of this can be gained by studying a recent report³⁵ on costs at the University College of Southern Queensland, which underlines the vulnerability of DTUs to competition from DMUS. The study provides information on the relative costs of teaching the same group of four courses in three different ways, viz (1) traditional campus-based teaching, in which a typical semester course has 56 hours of face-to-face contact, divided evenly between lectures and tutorials; (2) external studies by distance means, with the students learning from print, videotapes, audiotapes and computers, together with some face-to-face support and (3) campus-based resource-based learning, in which full-time students studied the courses using the materials prepared for the external studies programme students, but had in most cases a significantly reduced amount of face-to-face teaching (namely 20, 26 and 28 hours on three of the courses, with one course maintaining the full 56 hours of contact). Table 3 ³⁶ summarizes the costs involved.

Although the main thrust of Taylor and White's study is to explore the viability of utilising the distance teaching materials developed by a DMU for resource-based on-campus teaching, the study also has implications for the relative costs of distance teaching in DTUs and DMUS.

The first point is that the amount of teaching given to the UCSQ off-campus students appears to be quite high (possibly nearly 24 contact hours) compared with that available in most DTUS. This stems from UCSQ's basic philosophy that 'approximately equal budget allocations should be made to the teaching of all students, notwithstanding whether they are taught in an on- or off-campus mode'.³⁷ The UCSQ off-campus cost per student for teaching could probably be reduced if necessary, by up to 50 per cent. But, far more significantly, the costs of developing the materials are based on the charging out, at daily rates, of the time actually spent on this activity. This marginal costing approach can be justified on the grounds that the staff are already employed to support the on-campus activities of the university.³⁸

Table 3 Comparative costs of three teaching modes at University College of Southern Queensland

	Cost per student in Australian \$			Notes (1)
	Off-campus distance programme	On-campus face-to-face	On-campus resource- based learning	
Development of materials and infrastructure of distance education system	137	NIL	137	(2)
Production	44	NIL	30	(3)
Delivery				
-Teaching	208	308	246	(4)
-Exams, postage, handling, student support, library, capital, equipment, management and infrastructure	304	392	395	
Total	693	700	803	

Notes to Table 3

- (1) The costs for off-campus students are based on a population of 90 students.
- (2) Development costs have been shared across all students using the materials.
- (3) Production costs for materials used by on-campus students are recovered because these students have to buy the materials, and hence the costs of production for this group of students is ignored in the original study. The authors suggest that since the production runs have to be set up for the distance students anyway, the cost of providing materials to the on-campus students in the marginal cost of the additional print run, which is about \$30. Since cost recovery cannot be guaranteed in every case, this cost is included here.
- (4) Number of hours teaching not given for off-campus students; normally 56 contact hours per semester course for on-campus students; and weighted average of 28.16 hours for on-campus resource-based learners, derived from data in the original study. Given this, and assuming an equivalent cost per student hour for teaching in the off-campus programme, it would appear that off-campus students have access to a fairly high number of hours of teaching ($\$208/246 \times 28.16$ hours = 23.8 hours).

This is the approach normally taken in exercises costing this kind of provision, so that the potential ability for any CBU to turn conventional lectures into basic distance teaching materials at very low marginal cost has been well known for many years.³⁹ DTUs have tended to ignore this fact - but others, notably politicians and those in CBUs and DMUs seeking to justify their entry into distance education, have begun to point out the advantage which they have. One of the threads of this paper is that DTUs can no longer ignore this fact.

Much of this cost advantage stems from the way in which costs are allocated to the on-campus and distance programmes. Rumble⁴⁰ has discussed the problems of apportioning joint-supply costs in dual mode institutions, and drawn attention to the implications for average costs per student of:

1. charging the distance-based system of a DMU with only those additional costs incurred in its development (marginal costing approach). This kind of approach is normally found in Canadian DMUS, and is the approach used in the UCSQ study discussed above.
2. taking the total development costs of the on-and off-campus programmes and dividing them equally between the on-campus and distance programmes.
3. Charging the distance programme with the additional costs (on the grounds that these have arisen only because of the move into distance education), while dividing the development costs of the on-campus programme equally between the on- and off-campus programmes (on the grounds that the latter has benefitted from the prior investment in the former).

4. Apportioning the total costs of both programmes between the programmes, pro-rata to the number of full-time equivalent students on each programme.
5. Charging all the additional costs to the distance programme, while apportioning the on-campus programme development costs to the two programmes, pro-rata to student numbers.

Similarly, the costs of delivery can also be apportioned in at least two ways. One approach is to identify the direct costs of teaching and support for the on-campus and off-campus student, and charge accordingly. Since the direct costs of distance programmes is generally lower than that of campus-based ones, this approach favours the distance programme. However, many Australian dual-mode systems ignore this difference, and merely apportion the total costs of teaching and support across all students, thus giving the same average cost for teaching and support for on- and off-campus students.

Which approach is taken is far from a matter of academic interest. Table 4 shows the approximate costs of an unidentified dual-mode programme. Tables 5 and 6 show how the cost per student can be affected radically, depending on the approach used. In general, however, a marginal costing approach is justifiable while the distance programme is relatively small in size - thus favouring the formation of new competitors, and enabling many competitors to enter the field in a small way, while the more equitable approach of shared costs is more likely in cases where the distance programme constitutes a significant proportion of total activities.

Table 4: Costs of an unidentified dual-mode programme

	On-Campus	Off-campus	Total
Development costs – teaching	790,000	400,000	1,190,000
Central computing and support services and production costs	294,000	187,000	481,000
Sub-total, development	1,084,000	587,000	1,671,000
Student services, teaching and postage costs	55,000	232,000	287,000
Total	1,139,000	819,000	1,958,000
Number of students	280	510	790

Table 5: Apportioning development costs

	Total costs apportioned to		Development cost per student (see note 1)	
	On-campus	Off-campus	On-campus	Off-campus
Method 1	1,084,000	587,000	3871	1151
Method 2	835,500	835,500	2984	1638
Method 3	542,000	1,129,000	1936	2214
Method 4	592,253	1,078,747	2115	2115
Method 5	384,203	1,286,797	1372	2523

Note 1. This assumes that development costs are spread over one year. It is more likely that they would be amortised over a number of years.

Table 6: Apportioning delivery costs

	Total costs apportioned to		Delivery cost per student	
	On-campus	Off-campus	On-campus	Off-campus
Method 1	55,000	232,000	196	455
Method 2	101,722	185,278	363	363

The ability of DM-Us, quite legitimately, to adopt different approaches to the costing of their on- and off-campus programmes provides them with considerable flexibility in responding both to the costs of the programmes, the funding they attract, and the pricing strategies which they can deploy.

Finally, DMUs have one other advantage which stems from the greater flexibility they have to choose between different teaching modes. The point was made above that each medium - including the various kinds of face-to-face teaching - has a different cost structure. Some have relatively high fixed costs and low variable costs. Such methods are most economical where student numbers on a particular course are high. Some have relatively low fixed costs,

and high variable costs. Such methods are most economical on courses with low student numbers. Because DMUs have a greater potential range of choice including that of adding the odd part-time student to a normal full-time campus-based course, they can draw on a wider range of methods than DTUs and hence maximise the economic advantage of the different teaching methods they employ.

The strategic vulnerability of DTUS: the current position

Until recently, DTUs have been able to assume that CBUs are not competing with them. In the UK, for example, the number of part-time degree level students in universities and polytechnics has been small, and the number of these being taught by distance means even smaller. Where competition has existed, it has been geographically patchy (limited by the catchment area for day- and evening part-time programmes and by the locations of the providing institutions⁴¹), and often limited in respect of the breadth of studies being taught at a distance. The threat from other distance providers has been small - and actually fell during the 1970s with the running down of the London External Degree. Since then, however, the London External Degree system has been revitalised and is now expanding rapidly, and other providers have entered the distance learning field to challenge the Open University.

As Tight has remarked, the situation is far from stable:

'Ever since the establishment of a monolithic and well-resourced Open University in the late 1960s, subsequent governments ... have been understandably reluctant either to break it up or create a competitor. The latter option has been left to other institutions to pursue, both individually and in consort.

Initially, such competition has not been direct, focusing on subject areas in which the Open University has lacked a presence until recently (e.g. business studies, languages, law). However, if the proposals for an Open Polytechnic mixing face-to-face provision at local institutions with distance materials - gets underway, the Open University will be put on its mettle...' ⁴²

In Australia, the level of competition in external studies has been limited more by government action than by the wish of the individual institutions.

It has long been clear that, at least in principle any CBU may launch a cost-effective distance programme, thus transforming itself into a DMU which can take advantage of the cost characteristics of the dual-mode approach, and the access to a much wider profile of courses, to challenge a DTU. Such distance teaching can also be combined with a growth in more traditional part-time provision (day- and evening programmes) and on-campus resource-based teaching to make the most effective use of the total resources available to the DMU.

The evident growth, for social and demographic reasons, in the part-time market has led to changes which may well affect those DTUs which, to date, have enjoyed a monopoly position. For CBUS, there is an evident market which they can enter with confidence, in the knowledge of the advantages which DMUs already have in many parts of the world. Although the danger of over-provision exists, the total risk to the DMU is relatively small, leaving the DMU with a distinct competitive edge over the CBU, Why this is so is discussed below.

The fact that many DTUs rely on the facilities and staff of CBUs (for teaching space and tutors) puts them in a weak position, should a CBU, in developing its own distance taught system, decide to refuse to allow its facilities to be used to support the DTU's programmes. Here, too, DTUs are peculiarly vulnerable.

Further, there is no reason why a CBU should necessarily go it alone. One particular model is to establish a small, centralised organisation which provides a framework for the delivery of distance-mode versions of on-campus courses developed by a number of institutions. In the UK, the Open Polytechnic 'sees itself as a consortium of institutions providing distance learning packages for use in conjunction with other teaching methods within collaborating institutions and integrating national provision through a coherent system of credit accumulation and transfer'. It will actually act as a publishing company, by commissioning distance-taught versions of on-campus courses, and distributing them.⁴³ Combined with strong tutorial and student support systems, located in the local polytechnic or in colleges of higher education franchised for the purpose, this could prove to be an attractive alternative within the UK to the Open University.

Another example is provided by the National Technological University in the USA. Opened in 1984, NTU provides a mechanism to deliver distance courses developed by the engineering departments 'of a number of leading US universities to practising engineers working for companies which subscribe to receive NTU's educational services. The average cost per course is highly competitive with the cost which firms would have to pay if they were to release their employees for fulltime, on-campus training and professional updating, and is available nationwide.'⁴⁴

These models have all the advantages of DMUS, while providing CBUs with the support and expertise of a centralised coordinating body, and a ready-made collaborative framework with which to facilitate the Movement of students between participating institutions. They thus enable a CBU to move beyond the limitations of campus-

based day and evening part-time programmes, and benefit from the advantages of having a distance taught option, without having to bear the full risk of establishing its own administrative and production facilities in support of the distance programme. A collaborative framework will also help prevent the emergence of an over-fragmented and duplicated provision by a multiplicity of providers, which has been seen by so many Australian commentators as a danger, preventing - so it is claimed - the achievement of economies of scale.⁴⁵

These developments, if widespread, would leave DTUs in a vulnerable position. In essence, the strategic dilemma now facing DTUs has been characterised by Ohmae⁴⁶ as one of relative superiority. Although many DTUs appear monolithic, none of them are as large as the combined strength of the CBUs should the latter, or a significant proportion of them, decide to enter the distance market. Moreover, the DTUs ability to compete is made more difficult by the fact that it is competing with the established institutions not in their primary business (on-campus studies) but in a business that they can regard as secondary, or one into which they have moved for the sake of diversification. Thus while DTUs may appear to have a dominant market, they can be undercut by DMUs using marginal costing as a basis for pricing, and outsold by DMUs using their ability to offer a wider range of courses with a wider range of teaching strategies to the potential students.

Strategic options in a competitive environment

DTUs have a number of options in the face of competition.⁴⁷ One option is to do nothing. This, however, is a dangerous strategy when change is required. One thrust of this article is to suggest that this is not an option.

A second option is to concentrate on doing better what one is already doing well. This option, which corresponds to Peters and Waterman's strategy of 'sticking to the knitting'⁴⁸ argues for the continued and profitable growth of the existing products in the same market using existing technologies. But DTUs offering a general degree, or, as some do, a very limited number of specialist degrees, will find it difficult to compete with DMUs offering a significantly wider range of broad and specialised degrees, using a wider range of teaching strategies, and aimed at much the same market. In this situation, DTUs need to maintain and improve the quality of their materials in terms of their pedagogy, attractiveness, and packaging (where DTUs have real strengths), and - more significantly compete locally. DTUs such as the UK Open University already have a local support network which is acknowledged to be better than that which can be offered by providers of small part-time degree programmes,⁴⁹ but they are vulnerable to what local DMUs can do. There is nothing to prevent a CBU committed to part-time higher education, or a DMU, from vigorously pursuing the adult learner. It is thus likely that the excellence of and ease of access to local support services and the ease with which an individual can move between on- and off-campus studies will be major areas in which competitor institutions will seek to establish relative superiority. Unfortunately for DTUS, the 'former will affect direct student costs, and hence cost-efficiency vis-a-vis DMUS, while the latter is something that can only be done with the express agreement of CBUs or DMUS.

To an extent, DTUs will be able to develop their markets by modifying and extending the range of their existing products. So far as courses are concerned, this will require further investment in course development and modification, and this is, as we have noted, an area in which DTUs are already constrained. Fortunately for DTUS, it seems likely that DMUs will also find the development of distance-teaching versions of their on-campus courses a further burden on the scarce resource of academic staff time. Thus DMUs may also find that they are constrained. However, DMUs working within the framework of a consortia may well get round this limitation.

A more fruitful development for DTUs might be to gain further students by internationalising their business. A number of DTUs (for example, the Universidad Nacional de Educaci6n a Distancia, the Fern Universitt, and the UK Open University) and DMUs (e.g. Deakin University, Australia) enrol out-of-country students.

The constraints under which DTUs operate may also limit significant product development defined here as the substantial modification of or additions to existing products in order to increase market penetration within existing consumer groups. Nevertheless, this will obviously be an option. An example is the UK Open University's development of language courses. DTUs may also make even more extensive, innovative changes to the products and services which they offer, akin, perhaps, to the UK Open College's switch from a market aimed at individual learners to one aimed at corporate trainers⁵⁰ or to a switch from printed and audio-visual materials to electronic media at the point of delivery. While innovation can be risky, those DTUs which are faced by increased competition will need to dissect the market imaginatively in order to identify its key segments and then capitalise on this by concentrating resources on a strategically key function (such as delivery).

In reviewing strategic options, it is important to recognise that any institution may have been led to a position of stagnation or relative decline by adhering to what had earlier constituted the key to success in respect of a given product or market.⁵¹ For example, one of the strengths of DTUs has been the excellence of their courses, based on the careful development of course materials. A consequence of this has been long development time-scales. But this

very strength may constitute a weakness in the face of competitors who provide adequate materials more quickly in response to changing market needs. The point of this remark is not to focus on course development, *per se*, but to argue for a thorough going challenge to the accepted common sense of the industry'.⁵² However, it remains the case that DMUs can charge only the actual time used on course development to the distance course, while DTUs with full-time academic staff have to charge the full cost of staff time to the development. DTUs could, by moving to a transformer model, in which materials are produced by consultants, reduce the costs of development - but at the certain cost of destroying the community of academics and hence the sense of being a university, and also, probably, at the cost of a reduction in the quality of materials.⁵³

A particularly fruitful development for DTUs might be to establish campus-based operations of their own, thus giving themselves some of the strengths of DMUS. Such concentric diversification would hopefully result in synergy between the two businesses, as has happened in Australia with the use of distance materials to teach on campus students.

Other developments could come from acquisition, merger, joint ventures (collaboration and consortia), or franchising. Horizontal integration, involving the acquisition of or merging with a competitor, has not been practised by DTUS, though it has occurred in the commercial correspondence field. For example, the UK-based National Extension College has over the years gained business through acquisition and merger.⁵⁴

Joint ventures - for example, the sharing of courses in order to reduce the burden of development costs - could also be an important factor. One can see this happening among European DTUS, and also between Australian DMUS,⁵⁵ though only to a limited extent. Another possibility is the sharing of study centres - as in Düsseldorf where the FernUniversität and UK Open University share facilities. However, DMUs can also play this game by, for example, sharing production and distribution facilities (through ventures such as the National Technological University and the Open polytechnic) and study centres (as in Australia).

One possibility would be for a DTU to offer distance teaching versions of campus-based courses, paying a royalty to the providing institutions. This would give the DTU access to a wider range of courses, acquired at far less cost than would be the case if it had to develop the course itself. The Open Learning Agency's Open University programme in British Columbia, Canada, is a good example. The Agency offers a number of degree level courses drawn from three BC universities (British Columbia, Simon Fraser and Victoria) as well as some of its own courses.

Finally, there are franchising options. Agreements between the UK Open University and a number of institutions around the world for 'whole course use' pave the way for full-bodied franchising agreements, in which the franchise might be given exclusive rights to teach the parent institution's courses in a particular area, and be provided with the know-how, material training and advice to enable this to happen, and a one-for-one credit transfer agreement as a mark of quality against a background of quality control.

Many of these strategies - which can of course, be used in combination, can be seen in action among DTUS, DMUS, and CBUS, as they seek competitive advantage. What this article has done is to focus on some of the strengths and vulnerabilities of DTUS, relative to DMUs and, by extension, CBUS. 'In conventional, Reciprocal', head-on competition, one responds to competitors' price-cuts or new products by price-cuts or new products of one's own. It seems clear that such tactics will not work for DTUS, given their competitive vulnerability. DTUs will need to seek means of protecting their positions and satisfying their users' needs, which are realistic within the resources available, imaginative and synergistic. This final section has pointed towards some of the Possibilities open to DTUS. There is no formula for success. There are ways forward, for those creative enough to come up with a winning strategy.

Conclusion

This article has sought to show how many of the DTUs were set up in a competitor-less environment. Not surprisingly, in the absence of competitors, members of planning committees did not look at the potential strength of competition from CBUs which might adopt distance teaching methods. Demographic and social changes have increased the part-time student market, and increasing numbers of CBUs are seeking to exploit the opportunities. One way of doing so is to become a DMU, teaching both on- and off-campus. This may explain why countries with a long tradition of dual-mode teaching have tended not to establish DTUS.

Early studies of the cost advantages showed that DTUs could be more efficient than CBUS, provided they constrained their academic profile, kept direct student costs low, and had large markets. But DMUS, because they could exploit the advantages of marginal costs and hence develop courses cheaper, can provide more varied distance education more cheaply than DTUS. They can also use the materials to lower the costs of their on-campus teaching, thus achieving a synergy between their on- and off-campus programmes. DTUs are thus in a competitively vulnerable position.

While there are a number of strategies which DTUs can adopt, nearly all of them can also be copied by a CBU once it has adopted distance teaching. Thus the most effective response for a DYU may well be to turn itself into a DMU, either by establishing an on-campus programme, or by merging with a CBU.

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