

Strategic directions in New Zealand's tertiary education market

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Abstract

The purpose of this paper is to examine the different ways in which the polytechnics in Auckland in New Zealand have changed their growth strategies since they were given a degree of autonomy in 1990. Since then the three institutions have followed similar, but not entirely identical strategies, which has meant that the three institutions have created for themselves slightly different identities in more recent years.

Introduction

Before 1989 the government-owned polytechnics in New Zealand were administered by the Department of Education and they therefore had little control over their own strategic management and long-term development. The Department tended not to allow the polytechnics to compete directly with each other, but restricted them to providing education and training programmes for a particular centre or region of the country. The polytechnics furthermore were restricted to providing certificate and diploma level programmes and were not permitted to deliver degree or teaching qualifications in competition with the universities and colleges of education.

Since 1990 the New Zealand polytechnics have been granted a degree of institutional autonomy, which has meant that they have been able to develop their own strategic responses to changes in student demand. They have been allowed to do a number of things previously denied to them, such as; expand into the delivery of degree and post-graduate degree programmes, open new campuses away from their 'home' localities and enter into collaboration, not just with domestic institutions but also internationally.

The purpose of this paper is to analyse the strategic development of three of the largest of the New Zealand polytechnics over the 1990s; the UNITEC Institute of Technology, the Auckland Institute of Technology and the Manukau Institute of Technology.¹ All three of these institutions are located in Auckland, New Zealand's largest city, and have developed along slightly different lines since 1990. By concentrating on three institutions in the same city it is possible to get an impression of the different strategies these types of institution can pursue within a similar operating climate. Furthermore as the process of giving tertiary education institutions greater autonomy is becoming a feature of a number of countries the case of the

¹ Each of these three institutions changed their names in the 1990s. In the paper the name used throughout the bulk of the decade is used throughout.

Auckland-based polytechnics gives some indication of the consequences that this may have (Dill 1997, 2000; Mora 2001).

In the first section a general account of the development of the Auckland-based polytechnics will be given. In the following sections the alternative strategies pursued by these three institutions will be explained. In the final section some conclusions will be made.

Background to the development of Auckland's polytechnics

New Zealand's polytechnics trace their origins to the beginning of technical education in that country in the late nineteenth century.² In the first half of the twentieth century vocational education and training in New Zealand was mainly undertaken in technical schools and colleges that provided both education for technical high school students as well as training programmes for post-school students. The technical schools and colleges offered a variety of evening programmes, mainly of a vocational nature, which were attended both by adults and adolescents, many of whom were apprentices studying to gain trade qualifications. Amongst the technical trade classes engineering and the building trades were most prominent. A large proportion of the students, however, were engaged in elementary and advanced commercial subjects. These students studied subjects such as bookkeeping, advertising, secretarial work, accounting, banking and insurance in preparation for sitting either government examinations or those of voluntary associations such as the chambers of commerce. The importance of both the commercial and building classes was a reflection of the basic nature of the New Zealand economy of the time which depended on agriculture, but which also possessed a substantial service sector comprising a large number of public servants, commercial employees and building tradesmen (Nicol 1940).

After the Second World War the number of post-school day students in the technical schools and colleges began to rise steadily. During the 1950s most apprentices attended compulsory day classes and at the same time the expansion of New Zealand's secondary industries meant that the demand for trained technicians between the of level of tradesmen and university educated technologists began to rise. The first technician certificate programme was established in 1955 (engineering) and soon was followed by others in building, draughting, draughting (architectural), science, land surveying, quantity surveying, laboratory technicians and commerce. As Auckland was (an is) New Zealand's largest commercial and industrial centre this meant that a great deal of New Zealand's education and training expansion was in that city.

Of the three main Auckland-based polytechnics that operated in the 1990s only the predecessor of the Auckland Institute of Technology functioned in the first half of the twentieth century. The predecessor of the Auckland Institute of Technology – the Auckland Technical School - was founded in 1895 and operated with both day technical high school classes and post-school evening classes. It later became known as the Seddon Memorial Technical College and in the 1950s was New Zealand's

² For historical accounts of vocational education and training in New Zealand see Nicol (1940), Shaw (2002), Abbott (2000), Williams (1996) and Dougherty (1999).

largest technical college and enrolled the greatest number of certificate students. Across the country the expansion of post-school programmes and the number of post-school day students put pressure on facilities, particularly in Auckland. After 1960 the technical schools and colleges were progressively broken up into separate high schools and “technical institutes”, and the Auckland Technical Institute was formally separated from the Seddon Memorial Technical College in 1964.

The technical institutes in the 1960s and 1970s were still run by the Department of Education, as were schools traditionally in New Zealand, and their funding was based on the total number of student hours of attendance with a weighting in favour of more expensive programmes. This meant that decision-making was heavily centralised with no suggestion at all that institutions should compete with each other for students and government funding.

Continued expansion during the 1960s brought additional pressure to bear on the Auckland Technical Institute and in the early 1970s two additional institutes were established in Auckland, which were eventually to become known as the Manukau Institute of Technology and the UNITEC Institute of Technology. During the 1970s the tendency was for the Auckland Technical Institute to give up its trade related programmes and transfer them to either of the two new institutions. The Manukau Institute of Technology was established in 1970 in Manukau, south of Auckland and quickly specialised in heavy metal industries, which were concentrated in South Auckland. UNITEC, which was originally known as the Carrington Polytechnic, was established in Mount Albert to the west of the city centre in 1976 and initially at least concentrated on the building trades.

During the 1970s the technical institutes enrolled far more part-time students than full time ones, a reflection of their concentration on the provision of part-time and block programmes for working apprentices and technicians in the trades, engineering and building industries. Most of the full-time programmes that did exist at this time were in secretarial and business studies although most of the students studying commercial programmes did so part-time.

During the 1970s and 1980s all three polytechnics in Auckland diversified their enrolments. During these decades nursing education in New Zealand was transferred from the hospitals to the polytechnics and each of the three expanded into this area. Carrington also expanded into architecture and design while Manukau moved into hospitality, maritime, hair and beauty care. All three polytechnics during the 1980s acquired substantial numbers of language, social science and information technology students.

Until 1990 the basic strategies of the three Auckland based polytechnics were determined by the Department of Education. Until this date none of the polytechnics was allowed to provide degree programmes in competition with the universities and all three had areas of specialisation that were not duplicated by the other institutions in Auckland. The reforms of 1990 meant that it became possible for each of them to have greater autonomy in determining their strategic directions.

Autonomy was granted by the *Education Amendment Act 1990* which provided for the allocation of funds annually to each institution, which could then spend these funds

according to the each polytechnics independently determined strategy. Each institution would employ and pay its own staff, own its own buildings and within the limit of its Charter and the funds available, plan its own destiny. Prior to this staff were employed by and buildings owned by the Department. A pool of contestable funds was also established which the polytechnics or private providers could apply for. The purpose of the changes was that it was hoped that by making them autonomous institutions and funding them according to the students they attracted, the polytechnics would become more market orientated and more responsive to the needs of students and industry (Hawke 1988).

As part of the reform a national qualifications authority (the New Zealand Qualifications Authority) was established. This body replaced the government funded bodies, which had previously been responsible for controlling standards, analysing training needs and conducting examinations such as the Trades Certification Board, the Authority for Advanced Vocational Awards and Vocational Training Board. The former boards comprised representatives of professional and technical bodies and educational professionals, and they prescribed programmes and set and marked examinations. The polytechnics conducted the teaching, and successful graduates from each program received New Zealand Certificates. From June 1990 each polytechnic was free to develop its own programs subject to accreditation and audit by the New Zealand Qualifications Authority. Probably the most important change was to give the polytechnics the opportunity to determine which programmes they wished to develop subject to the accreditation of the New Zealand Qualifications Authority. This meant that they could develop and run degree programmes, which greatly changed the character of the Auckland based institutions.

The changes in 1990 worked to open up the tertiary education sector to much competition. The basic national strategy in tertiary education before 1990 was to operate monopoly government institutions in each major locality and at each educational level. Colleges of education concentrated on teaching qualifications, universities on degree and post-graduate qualifications and polytechnics on vocational education and training qualifications. Only Wellington and Auckland had more than one polytechnic and no centre in New Zealand had more than one university or college of education. The 1990 changes gave polytechnics more freedom. One example of this process is the case of degree programmes in business and commerce. In 1990 the University of Auckland was the only institution that provided a business degree in Auckland. By 2004 there were six institutions in Auckland that provided this type of qualification (Auckland University of Technology, Massey University, UNITEC, Manukau Institute of Technology, University of Auckland, and AIS St Helens).

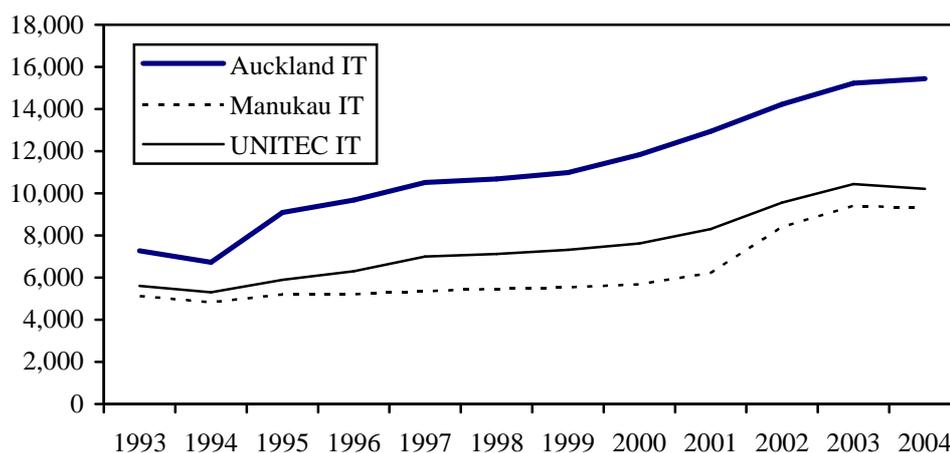
The granting of autonomy to the polytechnics has meant that since 1990 the three Auckland-based polytechnics have diverged in their basic strategic directions. The abolition of departmental control has meant that each has been able to adapt more to market conditions than was previously allowed. This has meant that the three institutions have become different in character, a divergence that certainly existed before 1990 but has become more pronounced.

Alternative strategies

The different strategies pursued by the three polytechnics are illustrated in Figures 1 and 2 and Tables 1 to 3. First of all from Figure 1 it is clear that all three attempted to increase their enrolments. Institutional expansion is generally regarded as a good thing for variety of reasons. In the private sector institutional expansion normally means greater revenue, and therefore higher profitability (assuming cost rises are restrained). Profitability is particularly encouraged if an expansion of sales means that fixed costs can be spread over a greater number of outputs. Although government polytechnics are not profit maximising firms, they might still be encouraged to grow if there is a possibility that economies of scale can be achieved which in turn generates a reduction in average unit costs. This will become even more important if, as occurred in the 1990s, real government grants to educational institutions per student falls. The possibility of achieving of economies of scale is not the only rationale for pursuing growth. Expansion might also be pursued because it leads to greater opportunities for career advancement of both academic and general staff. An expanding institution generally means that a greater number of middle management positions are created, which creates opportunities for career advancement. Expanding revenues also mean that the number of programmes can be expanded, additional facilities for students provided and extra administrative support for academics. Institutions that stagnate in size, or even shrink, generally find it more difficult for staff to enjoy advancement.

Expansion of UNITEC was the greatest of the three in the period 1993 to 2004, rising by 119.0 percent in equivalent full-time students. Although the expansion of Manukau and Auckland was more modest they both grew at the rates of 105.0 and 110.1 percent respectively (Figure 1).

Figure 1: Student numbers (equivalent full time students); 1993 to 2004



Source: *Tertiary education statistics*

These rates of growth were higher than the national average both for polytechnics and government tertiary education institutions as a whole.³ This was both a product of the

³ Over the same period the student numbers across all government tertiary education institutions (universities, colleges of education, polytechnics and wangana) rose by approximately 50 percent.

status of the Auckland-region as one of New Zealand's fastest growing regions as well as each institution's desire to expand its programmes. In addition to increasing the numbers of their New Zealand students, both Auckland Institute of Technology and UNITEC bolstered their student numbers substantially by attracting overseas students. At the beginning of the 1990s overseas student numbers were negligible in the three institutions, as they were in New Zealand polytechnics as a whole. By 2003 as many as a quarter of the students at UNITEC were from overseas (Table 1).

Table 1: Overseas student numbers 2003

	Overseas EFTS	Total EFTS	Overseas %
Auckland University of Technology	2,575	15,226	16.9
Manukau Institute of Technology	1,011	9,421	10.7
UNITEC Institute of Technology	2,729	10,436	26.2
Total government tertiary education institutions	29,953	266,674	11.2

Source: *Tertiary education statistics*

One strategy pursued by New Zealand's polytechnics during the 1990 was for them to open new campuses in new localities to attract additional students. Generally the tendency has been for small polytechnics to open new campuses either in small regional centres or in the larger cities of New Zealand (Auckland and Christchurch). Although the Auckland based polytechnics have opened new facilities in Auckland they have not ventured outside Auckland as the tertiary education market in Auckland is the largest in New Zealand. Auckland Institute of Technology, UNITEC and Manukau have not felt it necessary to spread their operations to other parts of the country instead trying to attract greater numbers of Auckland based students and those from other parts of the country and from overseas.

The attraction of the degree programmes and the city of Auckland itself compared to other centres in New Zealand means that all three institutions have a far higher proportion of their students from overseas compared to other government tertiary education institutions. From Table 1 it can be seen that only 11.2 per cent of the students enrolled in New Zealand's government tertiary education institutions are from overseas compared to 16.9 per cent for Auckland Institute/University of Technology, 10.7 for Manukau and 26.2 per cent for UNITEC.

Strongly coupled to growth in overseas student numbers has been the growth in the number of students in degree programmes. After 1990 both Auckland and UNITEC moved quickly and strongly into delivering degree programmes. Manukau moved more slowly in this direction and did so later mainly in partnership with the University of Auckland. From Table 2 the relative size of the student numbers in degree and non-degree programmes can be seen. In the case of the Auckland Institute/University of Technology the number of degree students now vastly outweighs the number of certificate and diploma level students.

Table 2: Degree and post-graduate student numbers 2002

	Degree and Post graduate	Other
Auckland University of Technology	11,683	6,104
Manukau Institute of Technology	1,386	5,672
UNITEC Institute of Technology	4,505	5,781

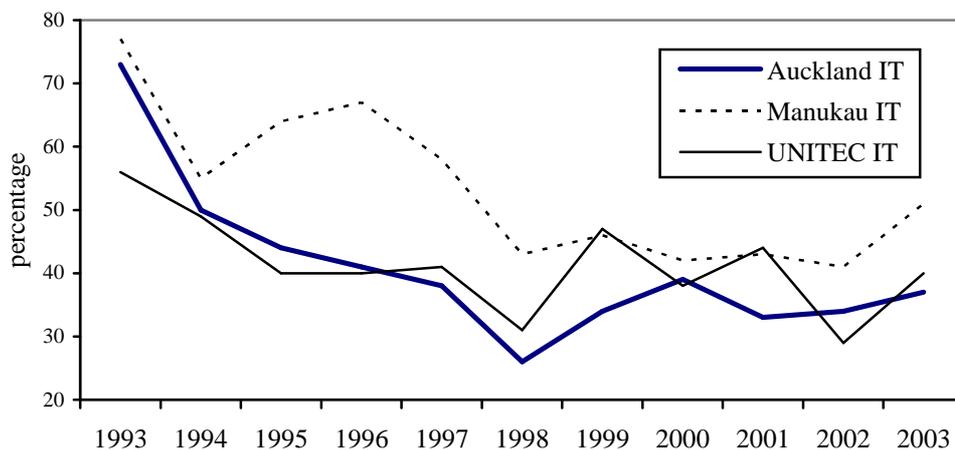
Source: *Annual reports; Tertiary education statistics*

This has had important implications for the attractiveness of an institution to overseas students, as most of these students are uninterested in sub-degree programmes except as an avenue into a particular degree programme. The late rise in student numbers at Manukau was probably due to the late development of degree programmes at that institution. Once these degree programmes were developed, however, overall student numbers and overseas student numbers began to rise sharply.

The predominance of degree students at the Auckland Institute of Technology meant that it soon sought conversion to university status, which it achieved in 1999. UNITEC also sought university status; however, Auckland has a far higher ratio of higher education to vocational education and training students than UNITEC.⁴ In 2002 Auckland had almost twice as many higher education students compared to vocational education and training students, in contrast to UNITEC where there are still more vocational level student than higher education students. Manukau to an even greater degree than UNITEC has retained the character of a polytechnic where higher education students are a small minority.

A couple of other significant changes have occurred to the student bodies at the three institutions. The proportion of students who are enrolled as part-time fell. Traditionally the main role of the polytechnics was to provide training programmes for people in the workforce. This was still the case in the early 1990s as can be seen in Figure 2.

Figure 2: Percentage of student enrolled part-time; 1993 to 2003



Source: *Tertiary education statistics*

In 1993 well over 50 percent of students at each institution were enrolled part-time. By 2003 in each case the proportion was well under 50 per cent. In the case of Manukau the proportion studying part-time held up longer and only began to fall

⁴ UNITEC first applied for re-designation in 1996 and renewed its application in 1999, but it has never been processed and was suspended in 2000.

permanently in 1997. The drive into degree programmes, plus the enrolment of overseas students has meant that the number of full-time, pre-work students has climbed substantially.

Finally it is possible to look at the student numbers in the various disciplines to determine how much these have changed over the decade of the 1990s (Table 3).

Table 3: Student numbers in discipline areas: 1995 and 2002.

	AIT	AIT %	MIT	MIT %	UNITEC	UNITEC %
1995						
Natural & Applied Science	671	4.7	82	0.7	152	1.4
IT	695	4.9	249	2.1	496	4.7
Engineering	543	3.8	83	0.7	84	0.8
Industrial Trade	925	6.5	1,938	16.6	1,874	17.8
Architectural & town planning	0	0.0	0	0.0	791	7.5
Agricultural	0	0.0	90	0.8	374	3.5
Health	1,431	10.0	651	5.6	713	6.8
Education	543	3.8	83	0.7	84	0.8
Business	4,614	32.3	2,864	24.5	3,172	30.0
General	0	0.0	0	0.0	247	2.3
Literacy & Numeracy	860	6.0	468	4.0	394	3.7
Art & Music	340	2.4	318	2.7	574	5.4
Humanities	755	5.3	119	1.0	72	0.7
Social	510	3.6	1,263	10.8	283	2.7
Law	138	1.0	0	0.0	0	0.0
Maths	69	0.5	54	0.5	0	0.0
Transport & Commerce	695	4.9	249	2.1	496	4.7
Services trades	763	5.3	1,047	9.0	535	5.1
Mass	351	2.5	12	0.1	18	0.2
Sport & Recreation	159	1.1	76	0.7	0	0.0
Foundation	335	2.3	545	4.7	165	1.6
Other	0	0.0	0	0.0	134	1.3
Total	14,270	100.0	11,674	100.0	10,557	100.0
2002						
Natural & Physical	916	4.3	17	0.1	0	0.0
IT	875	4.1	932	8.0	1,066	7.2
Engineering related	1,957	9.1	3,165	27.2	1,414	9.5
Architecture and building	69	0.3	206	1.8	1,557	10.5
Agricultural	0	0.0	77	0.7	135	0.9
Health	3,165	14.7	656	5.6	914	6.1
Education	1,002	4.7	462	4.0	497	3.3
Business	5,772	26.9	2,391	20.6	4,057	27.3
Society & Culture	2,743	12.8	1,749	15.0	3,096	20.8
Creative arts	1,887	8.8	361	3.1	1,144	7.7
Food & Hospitality	596	2.8	438	3.8	0	0.0
Other	2,500	11.6	1,180	10.1	1,006	6.8
Total	21,482	100.0	11,634	100.0	14,886	100.0

Source: *Tertiary education statistics*

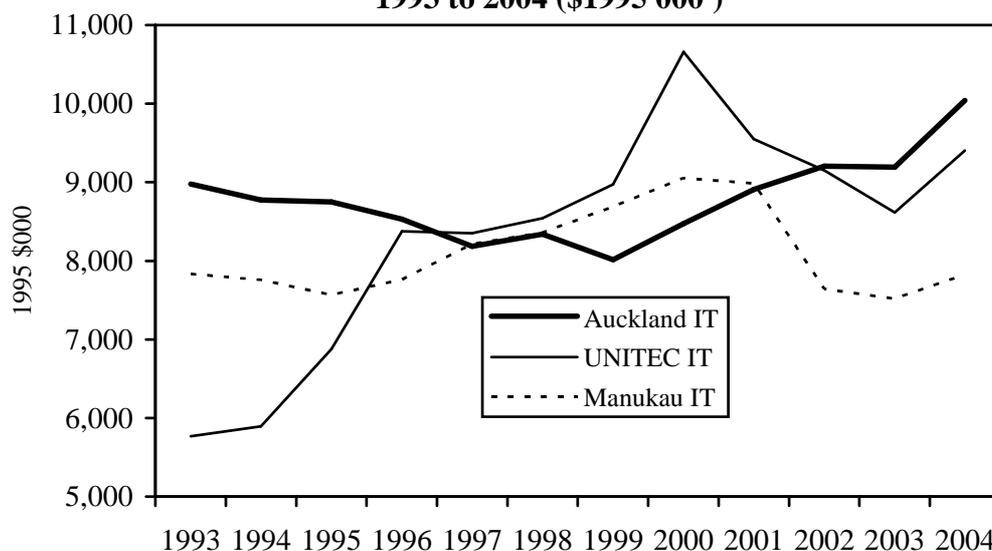
Unfortunately the manner in which students were classified into discipline changed over the period however it is still possible to make some comparisons. In the early part of the 1990s in each case business was the largest section in each of the three institutions. This was still the case in 2002 although the relative importance of business in each institution fell over the period. In each case the humanities and social sciences have become relatively more important. Manukau has retained its engineering and industrial trade orientation and UNITEC has retained its building and architecture emphasis. The three institutions have tended, therefore, not to discard their previous specialisations but instead build degree programmes on top of their existing programmes.

In summary the general trend of the polytechnics in Auckland has been to: expand student numbers, both New Zealand and overseas students. This process has been enhanced by the development of degree programmes, which are more attractive to overseas students than the traditional polytechnic certificates and diplomas. The expansion of degree numbers has meant that the proportion of full-time students has increased and finally the tendency has been for each institution to concentrate on developing its existing strengths rather than to expand too far beyond these. The changes that have occurred at the three institutions over the 1990s have had important implications for the structure of their costs and revenue.

Costs and revenues

The data in Figure 3 have been converted to constant dollars and divided by the equivalent full-time students to provide average cost figures that are not distorted by inflation or growing student numbers.

**Figure 3: Average expenses per equivalent full-time students;
1993 to 2004 (\$1995 000')**



Source: *Tertiary education statistics; Annual reports; Ministry of Education 2002*

From Figure 3 it can be seen that the general trend has been for the average real cost per equivalent full-time student to rise for the three institutions over the period 1993 to 2004. In some sub-periods each of the three institutes has been able to constrain average costs. These tend to coincide with periods of strong enrolment growth; however, there is no evidence from these figures that the achievement of far greater scales has led to substantially lower average unit costs. Manukau appears to have achieved the greatest cost constraint, which may be the product of it maintaining its emphasis on certificate and diploma qualifications rather than expanding too far into degree and post-graduate degree qualifications. It may also be the product of the significant raising of student staff ratios that occurred at Manukau during the 1990s. From Table 4 it can be seen that the student (equivalent full-time) to staff (full-time equivalent) ratio at Manukau rose from 13.5 in 1995 to 22.7 in 2004.

Table 4: Student-staff ratios, 1995 and 2004

	Students/ Academics	Students/ General staff	Students/ Total staff
1995			
Auckland IT	14.1	18.1	7.9
Manukau IT	13.5	21.4	8.3
UNITEC IT	14.8	22.2	8.9
2004			
Auckland UT	16.3	19.4	8.9
Manukau IT	22.7	18.8	10.3
UNITEC IT	15.3	19.7	8.9

Source: *Annual reports; Tertiary education statistics*

UNITEC in comparison saw a much slighter rise from 14.8 to 15.3. The difference between the two probably explains the greater ability of Manukau to constrain average cost increases compared to UNITEC.

In view of the rise in student staff ratios at the three institutes in the 1990 there must be some underlying factors that increasing average cost levels. Ordinarily it would be expected that if staff to student ratios rise (both for academic and general staff) then average cost per student should fall. As this has not been the case then there must be some other factors that have counterbalanced the savings made from rising student-staff ratios. The most obvious candidate for this would be if there were greater costs associated with the delivery of degree as opposed to sub-degree programmes. This is probably the case given that degree teaching staff is generally higher paid than certificate/diploma staff and as well expects greater support in terms of research facilities etc. In order to accommodate these requirements student staff ratios and demands for additional revenue have risen.

In terms of revenue the three institutes still have available to them similar levels of real funding in 2003 from all sources compared to 1993. Although the real level of grants per student from the New Zealand government has fallen across the government tertiary education sector during the 1990s the increase in fee income during the decade, both from New Zealand and overseas students, has meant that each of the three polytechnics have in actual fact higher levels of funding per EFTS at the end of the period examined than at the beginning. Table 5 provides the breakdown in funding for the tertiary education institutions in 2003.

Table 5: Revenue of Auckland' Tertiary education institutions 2003

	Government	NZ fees	International	Research	Other	Total
	%	%	fees %	%	%	\$000'
Auckland UT	48.4	18.8	17.5	0.6	8.8	168,011
Manukau IT	54.9	29.4	13.4	0.0	2.2	88,434
UNITEC	44.6	18.9	26.9	0.9	8.8	112,225
GTEIs	50.7	17.0	11.9	8.5	11.8	3,119,813

Source: *Tertiary education statistics*

As can be seen from the table around one half of the funding of the institutions comes from government sources. The bulk of the rest comes from student fees with the Auckland based polytechnics getting a disproportionate amount from overseas students compared to New Zealand tertiary education institutions in general. Auckland and UNITEC had any small amounts of research funding, as well as a number of other sources of income. Overall Manukau depends most heavily upon government sources of funding which probably puts greater pressure on it to keep its costs as low as possible compared to the other two institutions.

Over the period there has been a substantial change in the funding of New Zealand's polytechnics. At the beginning of the 1990s over 90 per cent of funding came from the government, a figure which today stands at around 50 per cent. Despite this fall in real government contributions per student the polytechnics have higher level of real income than they did at the beginning of the 1990s. The Auckland based

polytechnics in particular enjoyed a steadily increased flow of income from domestic and overseas student fees which has enabled them to spend a great deal on the upgrading of facilities, increased salaries for degree teaching staff and reduced teaching loads for active researchers. A part of this increase in spending would appear to have also come from the raising of teaching loads and class sizes.

Conclusion

Since the granting of additional autonomy there has been some points of difference and similarity between the strategies pursued by the three Auckland based-polytechnics. All three have expanded, in student numbers, moved into the delivery of degree programmes and greater attraction of students from overseas. All three now rely more heavily on student fees and all three rely more heavily on the fees of overseas student compared to institutions elsewhere. As well, the proportion of students enrolled as part-time has fallen substantially over the 1990s as the three institutions become more geared toward the delivery of programmes for pre-work students rather than employed workers.

The main difference between them is that they have all retained their original specialised areas of expertise and developed degree courses on top of them. As well both Auckland and UNITEC moved earlier and more decisively into the delivery of degree programmes and the attraction of overseas students than Manukau. The latter would appear to have retained the character of a pre-1990 polytechnic more than the other two institutions, with Auckland most resembling a university, a trend which of course led to its conversion to university status in 1999.

It would appear that Manukau has been the most successful at restraining growth of costs although whether this is due to its retaining sub-degree programmes or alternatively experiencing deterioration student staff ratios it is difficult to determine. Overall the three institutions have been able to more than counterbalance the fall in real government grants per students by increasing their income sources.

The future of the three institutions will ultimately be decided by the change in the nature of demand by New Zealanders for tertiary education and the manner in which the three institutions will react to these changes. Although tertiary education institutions in New Zealand have always been influenced by demand of students and industry in the more open and competitive climate of the New Zealand tertiary education market and the globalisation of the industry, these three institutions will need to be even more sensitive to demand changes than they were in the past. What strategies they devise to respond to these changes will ultimately determine whether these institutions survive and prosper or stagnate and decline.

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References

Abbott, Malcolm, 2000. 'The development of vocational education and training in New Zealand', *Education research and perspectives*, 27(1), 90-108.

Auckland Institute of Technology/University of Technology, various issues, *Annual report*, Auckland.

Dougherty, Ian, 1999. *Bricklayers and mortarboards: a history of New Zealand polytechnics and institutes of technology*. Palmerston North; N.Z Dunmore Press, Historical Branch, Dept. of Internal Affairs.

Hawke, G.R., 1988. *Report of the working group on post-compulsory education and training*. prepared for the Cabinet Social Equity Committee, Wellington: Office of the Associate Minister of Education (Hawke Report).

Manukau Institute of Technology, various issues, *Annual Report*, Manukau.

New Zealand. Ministry of Education, 2002, *New Zealand's tertiary education sector: profile and trends 2002*, Wellington : Ministry of Education, 2002.

New Zealand, Ministry of Education, various issues, *Tertiary education statistics*, Wellington: Ministry of Education.

Nicol, J., 1940, *The technical schools of New Zealand: an historical survey*, NZCER.

Shaw, Louise, 2002, *Learning for life: the origins of Auckland University of Technology 1895-2000*, AUT/Ministry of Culture and Heritage.

UNITEC Institute of Technology, various issues, *Annual reports*, Auckland.

Williams, Bob 1996, *Manukau Institute of Technology: the first 25 years*, MIT, Auckland.