1 WHAT RELATIONSHIP EXISTS BETWEEN EDUCATION AND TRAINING OF TOP MANAGEMENT TEAMS AND ORGANISATIONAL PERFORMANCE IN DISABILITY-BASED ORGANISATIONS?

This question was answered by firstly examining the individual constructs prior to determining the nature of the relationship. Two hundred and fifty one managers and supervisors representing one hundred and thirty seven different disability based agencies (one hundred and seventeen from Victoria and twenty from Tasmania) responded to the survey. Of these, one hundred and eleven managers possessed management-specific qualifications, representing eighty-three different organisations.

1.1 Education and Training

Overall *education and training* levels for *individual* managers were examined, broken down by organisational size, organisational location, state, gender, age, years in the disability sector, years as a manager, and years as a manager in the disability sector.

The same procedure was followed for *management-specific education and training* levels for individual managers.

These results were then aggregated according to *top management teams*. Again, overall education and training levels for top management teams preceded an examination of management-specific education and training levels for top management teams. Analysis for teams was by organisational size, location and State.

1.1.1 Overall education and training levels for individual managers

As stated above, two hundred and fifty one managers and supervisors from one hundred and thirty seven organisations responded to the survey. The highest proportion of these agencies (39 per cent) were small, defined as those agencies with between 1 and 10 full-time equivalent staff (see Table 23 below). The highest proportion of respondent managers (97 or 39 per cent) were from medium sized agencies, defined as those agencies with between 11 and 30 full-time equivalent staff. Thirty-four per cent of agencies in the sample were in this category.

Respondents from large (defined as those agencies with between 31 and 100 full-time equivalent staff) and extra large (defined as those agencies with over 100 full-time equivalent staff) agencies comprised 16 and 11 per cent of the sample respectively. Fifty and thirty-one managers (20 and 12 per cent) respectively were from such organisations.

Over one third (92 or 37 per cent) of managers possessed graduate certificate or diploma qualifications, with 230 (92 per cent) having some form of tertiary education as can be seen from Table 23. A higher proportion of managers in

extra large agencies possessed post graduate qualifications (13 per cent as compared to the overall average of 9 per cent), as well as graduate certificate or diploma qualifications (45 per cent as compared to the overall average of 37 per cent).

Small agencies showed the highest proportion of managers with undergraduate degrees (27 per cent as compared to the overall average of 22 per cent), and medium sized agencies contained the highest proportion of managers with tertiary non-degree qualifications (31 per cent as compared to the overall average of 24 per cent).

A Kruskal-Wallis test did not reveal any significant differences between qualifications in the various sizes of agencies (Chi-square value of 3.068, with 3 degrees of freedom, significant at .381), nor did a Chi-square test (suitable for ordinal data although a little less sensitive). Even when qualifications were aggregated, Mann-Whitney and Kolmogorov-Smirnov tests also failed to reveal significant differences between qualifications in the various sizes of organisations although the Mann-Whitney test value of -1.580 between managers in medium and extra large agencies was significant at the .114 level of confidence.

Table 23   **Overall education and training levels by size organisation**
                  (Managers [n=251], organisations [n=137])

Highest educational qualification of individual respondent	Small* (1-10) n=54 (39%)	Medium (11-30) n=46 (34%)	Large (31-100) n=22 (16%)	Extra Large (>100) n=15 (11%)	Totals 137
Post graduate degree	8 11%	6 6%	4 8%	4 13%	22 9%
Graduate certificate/diploma	25 34%	32 33%	21 42%	14 45%	92 37%
Undergraduate degree	20 27%	24 25%	6 12%	6 19%	56 22%
Tertiary non degree	15 21%	30 31%	11 22%	4 13%	60 24%
Year 10-12	5 7%	3 3%	6 12%	3 10%	17 7%
Up to year 10	0	2 2%	2 4%	0	4 1%
	73 100%	97 100%	50 100%	31 100%	251 100.0%

* Size of organisation categories according to Non Government Disability Training Unit (1995). Number of small businesses (as defined: <20 employees – see Chapter 1, p.22) = 75.

When education and training levels were assessed by organisation location (see Table 24 below), three quarters (75 per cent) of managers in the Melbourne Metropolitan area possessed at least an undergraduate degree, while at the other end of the scale the highest educational level attained by any manager in rural Tasmanian agencies was year 12. Managers in the Hobart Metropolitan area showed the highest proportion of managers with tertiary

non-degree qualifications (35 per cent as compared to the overall average of 24 per cent).

Tasmanian managers also showed the highest proportion of those with undergraduate degrees - Provincial Tasmanian city managers showed over twice the overall average in this regard (50 per cent as compared to 22 per cent) as can be seen in Table 24 below.

Table 24   **Overall education and training by organisation location**
                    (Managers [n=251], organisations [n=137])

Highest educational qualification of individual respondent	1* n=66 (48%)	2 n=24 (18%)	3 n=27 (20%)	4 n=10 (7%)	5 n=9 (6%)	6 n=1 (1%)	Totals 137
Post graduate degree	16 12%	2 5%	2 4%	2 10%	0	0	22 9%
Graduate certificate/diploma	54 42%	13 34%	17 36%	4 20%	4 40%	0	92 37%
Undergraduate degree	27 21%	10 27%	9 19%	5 25%	5 50%	0	56 22%
Tertiary non degree	28 21%	11 29%	14 29%	7 35%	0	0	60 24%
Year 10-12	5 4%	2 5%	4 8%	2 10%	1 10%	3 60%	17 7%
Up to year 10	0	0	2 4%	0	0	2 40%	4 1%
	130 100%	38 100%	48 100%	20 100%	10 100%	5 100%	251 100%

*1=Melbourne Metropolitan Area
2=Provincial City (Victoria)
3=Rural Victoria
4=Hobart Metropolitan Area
5=Provincial City (Tasmania)
6=Rural Tasmania

Managers in the Melbourne and Hobart Metropolitan areas possessed postgraduate qualifications above the overall average (12 per cent and 10 per cent respectively as compared to the overall average of 9 per cent), although the Victorian capital outperformed its Tasmanian counterpart in respect of graduate certificate or diploma qualifications (42 per cent and 20 per cent respectively as compared to the overall average of 37 per cent), as can be seen in Table 24 (above).

A Chi-square, Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests all revealed significant differences between the various locations of organisations. The Chi-square test value of 95.137 was significant at .001 but 20 per cent of the cells had an expected count of less than 5 making the chi-square figure suspect. The Kruskal-Wallis test showed that significant differences existed across the various locations, differences that were significant at the .000 level of confidence (value of 22.680, with 5 degrees of freedom).

Mann-Whitney and Kolmogorov-Smirnov tests indicated that these differences were between managers in agencies in the Melbourne Metropolitan Area and Rural Tasmania (significant at the .000 and .000 levels of confidence respectively); between agencies in Victorian Provincial Areas and Rural Tasmania (significant at the .000 and .000 levels of confidence respectively); between agencies in Rural Victoria and Rural Tasmania (significant at the .000 and .001 levels of confidence respectively); between agencies in the Hobart Metropolitan Area and Rural Tasmania (significant at the .000 and .001 levels of confidence respectively); and between agencies in Tasmanian Provincial Areas and Rural Tasmania (significant at the .001 and .003 levels of confidence respectively).

Mann-Whitney tests also found significant differences between agencies in the Melbourne Metropolitan Area and Rural Victoria (significant at the .020 level of confidence), and between agencies in the Melbourne Metropolitan Area and Hobart Metropolitan Area (significant at the .072 level of confidence).

When locations were aggregated into States (see Table 25 below), Victorian managers were more highly qualified at the top end of the spectrum (48 per cent of Victorian managers possessed graduate certificate/diploma or post graduate qualifications compared to 29 per cent of Tasmanian managers), while 23 per cent of Tasmanian managers had reached grade 12 or less compared to 6 per cent of their Victorian counterparts.

A Chi-square test, and Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests all revealed significant differences between the two States of organisations. The Chi-square value of 14.3 was significant at .0138, but 20 per cent of the cells had an expected count of less than 5 making the Chi-square figure suspect. The Kruskal-Wallis test showed that significant differences existed across the two States, differences that were significant at the .020 level of confidence (Chi-square value of 5.394, with 1 degree of freedom). Mann-Whitney and Kolmogorov-Smirnov tests indicated that these differences were significant at the .020 and .199 levels of confidence respectively.

A Chi-square test also revealed significant differences with aggregation at the top two levels of qualification (at the .0033 level of significance), and at the bottom two levels (at the .0082 level of significance) of the qualification spectrum.

Table 25   *Overall education and training levels by State*
                  (Managers [n=251])

Highest educational qualification of individual respondent	Victoria n=216 (86%)	Tasmania n=35 (14%)	Totals 251
Post graduate degree	20 9%	2 6%	22 9%
Graduate certificate/diploma	84 39%	8 23%	92 37%
Undergraduate degree	46 21%	10 28%	56 22%
Tertiary non degree	53 25%	7 20%	60 24%
Year 10-12	11 5%	6 17%	17 7%
Up to year 10	2 1%	2 6%	4 1%
	216 100%	35 100%	251 100%

In relation to the gender aspect of the survey, 67 per cent of the two hundred and fifty one respondents were female. A higher proportion of females than males had attained undergraduate degrees (25 per cent and 17 per cent respectively as compared to the overall average of 22 per cent). However, a higher proportion of males than females had obtained postgraduate qualifications (13 per cent and 7 per cent compared to the overall average of 9 per cent) as can be seen from Table 26 below.

A Chi-square test did not reveal any significant differences between gender (Chi-square value of 5.649 significant at .3419), nor did a Z-test for proportions (Z-value of -1.3405 significant at .1801). Further, a Kruskal-Wallis test did not reveal any significant difference between gender (Chi-square value of 1.604, with 1 degree of freedom, significant at .205), nor did Mann-Whitney or Kolmogorov-Smirnov tests (values of -1.266 significant at .205, and .782 significant at .573 respectively).

Table 26   *Overall education and training levels by gender*
                  (Managers [n=251])

Highest educational qualification of individual respondent	Male (33%)	Female (67%)	Totals
Post graduate degree	11 13%	11 7%	22 9%
Graduate certificate/diploma	33 39%	59 35%	92 37%
Undergraduate degree	14 17%	42 25%	56 22%
Tertiary non degree	18 21%	42 25%	60 24%
Year 10-12	7 8%	10 6%	17 7%
Up to year 10	1 2%	3 2%	4 1%
	84 100%	167 100%	251 100%

As can be seen from Table 27 below, over two thirds (70 per cent) of respondents were aged 40 or more, and almost half (43 per cent) were aged between 40-49. Managers in this latter age category also possessed proportionately more postgraduate qualifications (13 per cent as compared to the overall average of 9 per cent). Managers in the 50+ age category possessed proportionately more graduate certificate/diploma qualifications (43 per cent as compared to the overall average of 37 per cent), while younger managers (20-29) displayed proportionately more undergraduate qualifications (41 per cent as compared to the overall average of 22 per cent).

A Chi-square test did not reveal any significant differences between age (Chi-square value of 19.812 significant at .1793), however a Z-test for proportions between the 20-29 year age group and the 40-49 year age group was significant (Z-value of –2.008 significant at .045).

A Kruskal-Wallis test did not reveal any significant difference between age (Chi-square value of .741, with 3 degrees of freedom, significant at .864), nor did Mann-Whitney or Kolmogorov-Smirnov tests.

Table 27 **Overall education and training levels by age**
(Managers [n=251])

Highest educational qualification of individual respondent	20-29 (13%)	30-39 (17%)	40-49 (43%)	50+ (27%)	Totals
Post graduate degree	3 / 9%	1 / 2%	14 / 13%	4 / 6%	22 / 9%
Graduate certificate/diploma	8 / 25%	17 / 39%	38 / 35%	29 / 43%	92 / 37%
Undergraduate degree	13 / 41%	11 / 25%	22 / 20%	10 / 15%	56 / 22%
Tertiary non degree	7 / 22%	12 / 27%	25 / 23%	16 / 24%	60 / 24%
Year 10-12	1 / 3%	3 / 7%	8 / 7%	5 / 7%	17 / 7%
Up to year 10			1 / 2%	3 / 5%	4 / 1%
	32 / 100%	44 / 100%	108 / 100%	67 / 100%	251 / 100%

With respect to years of experience in the disability sector, over half of the respondents (59 per cent) had been in the disability sector for 10 years or less, and these managers exhibited a higher proportion than average (28 per cent for <5 years and 29 per cent for 5-10 years) of managers possessing undergraduate degrees for which the overall average was 22 per cent. As can be seen in Table 28 below, 40 per cent of managers who had been in the sector for more than 15 years possessed tertiary non-degree qualifications or less.

A Chi-square test did not reveal any significant differences between years in the disability sector (Chi-square value of 18.582 significant at .2333), nor did a Z-test for proportions. Further, a Kruskal-Wallis test did not reveal any significant difference between years in the disability sector (Chi-square value of 3.083, with 3 degrees of freedom, significant at .379), nor did Mann-Whitney and Kolmogorov-Smirnov tests.

Table 28   *Overall education and training levels by years in disability sector (Managers [n=251])*

Highest educational qualification of individual respondent	<5 (27%)	5-10 (32%)	11-15 (13%)	>15 (28%)	Totals
Post graduate degree	9 13%	4 5%	4 13%	5 7%	22 9%
Graduate certificate/diploma	23 33%	27 34%	14 45%	28 39%	92 37%
Undergraduate degree	19 28%	23 29%	4 13%	10 14%	56 22%
Tertiary non degree	10 14%	22 27%	7 23%	21 30%	60 24%
Year 10-12	6 9%	4 5%	1 3%	6 8%	17 7%
Up to year 10	2 3%		1 3%	1 2%	4 1%
	69 100%	80 100%	31 100%	71 100%	251 100%

Almost three-quarters (74 per cent) of respondents had up to and including 10 years of managerial experience within and outside of the disability sector. In only one aspect of that category, <5 years experience, did those managers noticeably outperform other managers in terms of highest educational qualifications achieved, that being undergraduate degrees (29 per cent compared to the overall average of 22 per cent). Managers with more than 10 years managerial experience were better represented proportionately in postgraduate and graduate certificate/diploma areas, and less so in undergraduate degree and tertiary non-degree areas (see Table 29 below).

A Chi-square test did not reveal any significant differences between years of experience as a manager (Chi-square value of 12.771 significant at .6200), nor did Kruskal-Wallis or Kolmogorov-Smirnov tests. However, a Mann-Whitney test showed a significant difference between managers with less than 5 years experience as a manager, and those with between 11-15 years experience as a manager (value of -1.935 significant at .053).

Table 29   *Overall education and training levels by years as manager*
              (Managers [n=251])

Highest educational qualification of individual respondent	<5 (38%)	5-10 (36%)	11-15 (13%)	>15 (13%)	Totals
Post graduate degree	8 9%	6 7%	4 12%	4 13%	22 9%
Graduate certificate/diploma	29 30%	35 38%	16 48%	12 39%	92 37%
Undergraduate degree	28 29%	18 20%	5 15%	5 16%	56 22%
Tertiary non degree	24 25%	25 27%	6 19%	5 16%	60 24%
Year 10-12	5 5%	6 7%	2 6%	4 13%	17 7%
Up to year 10	2 2%	1 1%		1 3%	4 1%
	96 100%	91 100%	33 100%	31 100%	251 100%

Combining years of experience as a manager, with years of experience in the disability sector (see Table 30 below) showed that only 14 per cent of the respondent managers had greater than 10 years of managerial experience in the disability sector. A majority (51 per cent) had less than five years experience as a manager in the disability sector, and the distinguishing characteristic of these managers was that they exhibited a higher proportional representation of managers with undergraduate degrees (27 per cent as compared to the overall average of 22 per cent).

Managers with between 11-15 years of disability-relevant experience possessed higher proportions of postgraduate and graduate certificate qualifications (13 per cent compared to 9 per cent, and 50 per cent compared to 37 per cent respectively). Sixty three per cent of such managers had obtained graduate certificate/diploma qualifications or better (see Table 30 below).

A Chi-square test did not any reveal significant differences between years of experience as a manager in the disability sector (Chi-square value of 10.569 significant at .7825). Further, a Kruskal-Wallis test did not reveal any significant difference between years as a manager in the disability sector (Chi-square value of 2.952, with 3 degrees of freedom, significant at .399), nor did Mann-Whitney or Kolmogorov-Smirnov tests.

Table 30   *Overall education and training levels by years as manager in disability sector (Managers [n=251])*

Highest educational qualification of individual respondent	<5 (51%)	5-10 (35%)	11-15 (10%)	>15 (4%)	Totals
Post graduate degree	12 9%	6 7%	3 13%	1 8%	22 9%
Graduate certificate/diploma	43 34%	33 38%	12 50%	4 34%	92 37%
Undergraduate degree	34 27%	17 19%	3 13%	2 17%	56 22%
Tertiary non degree	28 22%	25 28%	4 16%	3 25%	60 24%
Year 10-12	8 6%	6 7%	2 8%	1 8%	17 7%
Up to year 10	2 2%	1 1%		1 8%	4 1%
	127 100%	88 100%	24 100%	12 100%	251 100%

1.1.1.1   Summary

This section examined the education and training construct from the perspective of individual managers. The major findings according to organisational size, location, gender, age, years experience as a manager, in the disability sector, and as a manager in the disability sector are as follows.

Two hundred and fifty one managers and supervisors from one hundred and thirty seven organisations responded to the survey. The highest proportion of these agencies (39 per cent) were small. The highest proportion of respondent managers (97 or 39 per cent) were from medium sized agencies which comprised 34 per cent of agencies in the sample. Respondents from large and extra agencies comprised 16 and 11 per cent of the sample respectively. Fifty and thirty-one managers (20 and 12 per cent) respectively were from such organisations. Over one third (92 or 37 per cent) of managers possessed graduate certificate or diploma qualifications with 230 (92 per cent) having some form of tertiary education.

Although not statistically significant, this section found that managers in extra large agencies were comparatively better qualified at post graduate degree and graduate certificate/diploma level than those in other sized agencies, and that managers in small agencies were comparatively better qualified at undergraduate level than those in other sized agencies.

There were however significant statistical differences between the educational levels of managers when assessed by the location of their employing agencies, incorporating State and regional differences. These differences were predominantly between managers in Rural Tasmanian agencies and managers in agencies in all other areas, a result that may have been affected by the size of the Tasmanian sample. Statistically significant differences were also found between the educational levels of managers in the Melbourne Metropolitan Area and those in Rural Victoria and the Hobart Metropolitan area.

Although not statistically significant, managers in the Melbourne Metropolitan Area tended to have higher qualifications than managers in other areas, while managers in Tasmanian Rural Areas tended to have the lowest. Further, Victorian managers were better qualified than their Tasmanian counterparts.

Females tended to have a higher proportion than males of undergraduate degrees, although males tended to have a higher proportion than females of postgraduate and graduate certificate/diploma qualifications, however the differences were not statistically significant.

There was a significant statistical difference between the educational levels of managers in the 20 to 29 year age group and the 40 to 49 year age group with the older managers being better qualified. Only 30 per cent of respondent managers were aged 39 or less. The 70 per cent of managers who were aged 40 or more tended to be better qualified beyond undergraduate level than younger managers, however managers under 40 tended to have a higher proportion of undergraduate degrees and tertiary non degrees. These latter differences were not statistically significant.

Managers with more than 10 years of experience in the disability sector were better qualified beyond undergraduate level than managers with less than 10 years of experience, however managers with less than 10 years of experience tended to have a higher proportion of undergraduate degrees. Again, these differences were not statistically significant.

The sector has managers with relatively short durations of managerial experience, with almost 75 per cent of respondents having been a manager for up to 10 years. More managers with less than five years overall managerial experience had undergraduate level qualifications than managers with more experience, but those with more than 10 years experience as a manager were more likely to have qualifications beyond undergraduate level than those with less experience. Although these particular differences were not statistically significant, tests did show a statistically significant difference between the educational levels of managers with less than 5 years experience as a manager, and those with between 11 to 15 years' experience as a manager. Those with less than 5 years experience were more likely to be graduates.

The disability sector also has managers with relatively short durations of managerial experience in the disability sector, with over three-quarters of respondents having been a manager in the sector for up to 10 years. As with managerial experience generally, managers with less than five years sector managerial experience were more likely to be qualified at undergraduate level than those with more experience, but more of those with between 11 to 15 years experience as a manager in the sector were qualified beyond undergraduate level than those with other levels of experience, however these differences were not statistically significant.

The next section will examine the *management-specific* education and training levels for individual managers.

1.1.2 Management-specific education and training levels for individual managers

Of the total 251 managers who responded to the questionnaire, only 111 had any form of management-specific qualification (see Table 31 below). These managers represented 83 different agencies. As with the overall qualifications, the highest proportion of managers (69 per cent) were from agencies with up to thirty full-time equivalent staff (small and medium sized agencies).

Although the overall average for tertiary non-degree management qualifications in all agencies was high (54 per cent), managers from small and medium sized agencies were substantially above this average (83 per cent for small agencies and 60 per cent for medium sized agencies compared to the overall average of 54 per cent). By comparison, managers from large and extra large agencies outperformed their colleagues in respect of the higher forms of management-specific educational qualifications. These differences were statistically significant (Chi-square test value of 16.071 significant at .0011), however more than 20 per cent of the cells had an expected count of less than 5 making the Chi-square figure suspect.

A Chi-square test also revealed significant differences between the management-specific education and training levels of managers in the various generic sizes of organisations (Chi-square value of 27.078 significant at .0014 but more than 20 per cent of the cells had an expected count of less than 5 making the Chi-square figure suspect).

Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests all revealed significant differences between the various sizes of organisations. The Kruskal-Wallis test showed that significant differences existed across all the various sizes of organisations, differences that were significant at the .000 level of confidence (value of 20.934, with 3 degrees of freedom).

Table 31   Management-specific education and training levels by size organisation (Managers [n=111], organisations [n=83])

Highest management-specific educational qualification of individual respondent	Small* (1-10) n=18 (22%)	Medium (11-30) n=39 (47%)	Large (31-100) n=16 (19%)	Extra Large (>100) n=10 (12%)	Totals 83
Post graduate degree	1 6%	2 3%	3 14%	1 7%	7 6%
Graduate certificate/diploma	2 11%	12 21%	7 34%	10 72%	31 28%
Undergraduate degree		9 16%	3 14%	1 7%	13 12%
Tertiary non degree	15 83%	35 60%	8 38%	2 14%	60 54%
	18 100%	58 100%	21 100%	14 100%	111 100.0%

* Size of organisation categories according to Non Government Disability Training Unit (1995). Number of small businesses (as defined: <20 employees – see Chapter 1, p.22) = 75.

Mann-Whitney and Kolmogorov-Smirnov tests relating to Table 31 (above) showed that significant differences existed between small and medium sized organisations (both at the .000 level of confidence); between small and large sized organisations (at the .006 and .058 levels of confidence respectively); and between small and extra large sized organisations (at the .006 and .011 levels of confidence respectively). A Kolmogorov-Smirnov test also showed that a significant difference existed between medium and extra large sized organisations (at the .099 level of confidence).

Of the managers who had achieved management-specific educational qualifications, almost half (48 per cent) were employed by agencies located in the Melbourne Metropolitan area (see Table 32 below). Of these, 47 per cent possessed graduate certificate/diploma qualifications, well above the overall average of 28 per cent organisations (Chi-square value of 20.212 significant at .0002 but 20 per cent of the cells had an expected count of less than 5 making the Chi-square figure suspect). This general situation is consistent with the general level of qualifications discussed in section 1.1.1.

Table 32 (below) also highlights that managers in provincial and rural areas had attained proportionately more (about 50 per cent more) tertiary non-degree management-specific qualifications than the overall average.

A Chi-square test revealed significant differences between the various locations of organisations (Chi-square value of 23.148 significant at .0265) but 20 per cent of the cells had an expected count of less than 5 making the Chi-square figure suspect. Further, Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests all revealed significant differences between the various locations of organisations. The Kruskal-Wallis test showed that significant differences existed across the various locations of organisations, differences that are significant at the .007 level of confidence (value of 16.065, with 4 degrees of freedom).

Mann-Whitney and Kolmogorov-Smirnov tests indicated that there were significant differences were between agencies in the Melbourne Metropolitan Area and Victorian Provincial Areas (significant at the .005 and .000 levels of confidence respectively); between agencies in Victorian Provincial and Rural Areas (significant at the .012 and .039 levels of confidence respectively); between agencies in the Hobart Metropolitan Area and Victorian Provincial Areas (significant at the .005 and .007 levels of confidence respectively); between agencies in Victorian and Tasmanian Provincial Areas (significant at the .023 and .078 levels of confidence respectively); and between agencies in Victorian Provincial Areas and Rural Tasmania (significant at the .003 and .012 levels of confidence respectively).

Mann-Whitney tests also found significant differences between agencies in the Melbourne Metropolitan Area and Rural Tasmania (significant at the .092 level of confidence), and between agencies in Tasmanian and Victorian Rural Areas (significant at the .098 level of confidence).

Table 32   ***Management-specific education and training by organisation location (Managers [n=111], organisations [n=83])***

Highest management-specific educational qualification of individual respondent	1* n=40 (48%)	2 n=21 (25%)	3 n=14 (17%)	4 n=4 (5%)	5 n=4 (5%)	Totals 83
Post graduate degree	4 8%	2 7%	1 4%			7 6%
Graduate certificate/diploma	24 47%	1 4%	4 19%	1 12%	1 25%	31 28%
Undergraduate degree	6 12%	4 15%	2 10%	1 13%		13 12%
Tertiary non degree	17 33%	20 74%	14 67%	6 75%	3 75%	60 54%
	51 100%	27 100%	21 100%	8 100%	4 100%	111 100.0%

*1=Melbourne Metropolitan Area
2=Provincial City (Victoria)
3=Rural Victoria
4=Hobart Metropolitan Area
5=Provincial City (Tasmania)
6=Rural Tasmania

Of the total number of Victorian respondents to the questionnaire (216 from 75 agencies), 35 per cent also had management-specific qualifications, compared to 23 per cent of the total Tasmanian number of respondents (35 from 8 agencies). In itself, this difference was not found to be statistically significant.

Tasmanian managers exhibited a higher proportion (75 per cent as compared to the overall distribution of 54 per cent) of respondents with tertiary non-degree qualifications as can be seen from Table 33 below, but again this difference was not found to be statistically significant.

Mann-Whitney and Kruskal-Wallis tests however revealed significant differences between the various States of organisations. The Kruskal-Wallis test showed that significant differences existed across the various States of organisations, differences that were significant at the .026 level of confidence (value of 4.982, with 1 degree of freedom). A Mann-Whitney test value of - 2.232 was significant at the .026 level of confidence.

Table 33   *Management-specific education and training levels by State*
                (Managers [n=111])

Highest management-specific educational qualification of individual respondent	Victoria n=75 (90%)	Tasmania n=8 (10%)	Totals 83
Post graduate degree	7 7%		7 6%
Graduate certificate/diploma	29 29%	2 16%	31 28%
Undergraduate degree	12 12%	1 9%	13 12%
Tertiary non degree	51 52%	9 75%	60 54%
	99 100%	12 100%	111 100.0%

The proportions of male and female managers with management-specific qualifications roughly approximated that of overall educational qualifications (See Table 26). Females were proportionately higher with tertiary non-degrees (59 per cent as compared to the overall average of 54 per cent), while males were higher in graduate certificate/diplomas and undergraduate degrees (33 per cent compared to 28 per cent, and 15 per cent as compared to 12 per cent respectively – see Table 34 below). Fifty-five per cent of males possessed undergraduate degrees or better, compared to 41 per cent of females.

A Kruskal-Wallis test did not reveal any significant difference between gender (Chi-square value of 2.547, with 1 degree of freedom, significant at .111), nor did Z-tests for proportions, Mann-Whitney or Kolmogorov-Smirnov tests.

Table 34   *Management-specific education and training levels by gender*
                (Managers [n=111])

Highest management-specific educational qualification of individual respondent	Male (38%)	Female (62%)	Totals
Post graduate degree	3 7%	4 6%	7 6%
Graduate certificate/diploma	14 33%	17 25%	31 28%
Undergraduate degree	6 15%	7 10%	13 12%
Tertiary non degree	19 45%	41 59%	60 54%
	42 100%	69 100%	111 100.0%

As with overall education and training levels, a substantial majority of managers with management-specific educational qualifications were aged 40

or more (70 per cent), and almost half (43 per cent) were aged between 40-49. Table 35 (below) also shows that managers in this category were well qualified in respect of graduate certificate/diploma and postgraduate management-specific qualifications compared to the overall averages. Younger managers (20-29, and 30-39) were comparatively better-qualified in terms of undergraduate degrees.

A Chi-square test did not reveal any significant differences between the various ages of managers (Chi-square value of 6.514 significant at .6875, and no t-tests significant). Further, a Kruskal-Wallis test did not reveal any significant difference between the various ages of managers (Chi-square value of .437, with 3 degrees of freedom, significant at .933), nor did Mann-Whitney or Kolmogorov-Smirnov tests.

Table 35   *Management-specific education and training levels by age (Managers [n=111])*

Highest management-specific educational qualification of individual respondent	20-29 (12%)	30-39 (18%)	40-49 (43%)	50+ (27%)	Totals
Post graduate degree			4 8%	3 10%	7 6%
Graduate certificate/diploma	3 23%	6 30%	15 32%	7 24%	31 28%
Undergraduate degree	3 23%	3 15%	3 6%	4 13%	13 12%
Tertiary non degree	7 54%	11 55%	26 54%	16 53%	60 54%
	13 100%	20 100%	48 100%	30 100%	111 100.0%

Table 36 (below) shows that over half of the respondents (57 per cent) with management-specific educational qualifications had been in the disability sector for 10 years or less. Managers with less than 5 years experience in the sector had comparatively higher postgraduate qualifications (10 per cent as compared to the 6 per cent average), while managers with 5-10 years experience in the sector were comparatively better qualified (22 per cent as compared to the average of 12 per cent) at an undergraduate level. Table 36 (below) also shows that managers with 11 years or over experience possessed a proportionately higher level of tertiary non-degrees (about 10 per cent more than the average).

A Chi-square test did not reveal any significant differences between years in the disability sector (Chi-square value of 7.499 significant at .5853). Further, a Kruskal-Wallis test did not reveal any significant differences between years in the disability sector (Chi-square value of 3.182, with 3 degrees of freedom, significant at .364), nor did Mann-Whitney or Kolmogorov-Smirnov tests generally. However a Mann-Whitney test did find a significant difference between managers with between 11-15 and greater than 15 years of

experience in the disability sector (value of -1.857 significant at the .063 level of confidence).

Table 36   Management-specific education and training levels by years in disability sector (Managers [n=111])

Highest management-specific educational qualification of individual respondent	<5 (28%)	5-10 (29%)	11-15 (16%)	>15 (27%)	Totals
Post graduate degree	3 10%	1 3%	1 6%	2 7%	7 6%
Graduate certificate/diploma	9 29%	9 28%	5 28%	8 27%	31 28%
Undergraduate degree	4 13%	7 22%	1 6%	1 3%	13 12%
Tertiary non degree	15 48%	15 47%	11 60%	19 63%	60 54%
	31 100%	32 100%	18 100%	30 100%	111 100.0%

As with general educational levels, managers with up to 10 years managerial experience made up the largest category of managers with management-specific qualifications (71 per cent). Also as with general educational levels, managers with more than 10 years managerial experience (but particularly >15) were comparatively better qualified at undergraduate or above level than their younger counterparts (see Table 37 below).

A Chi-square test did not reveal significant differences between years as a manager (Chi-square value of 13.313 was significant at .1489), nor did a Kruskal-Wallis test (Chi-square value of 5.939, with 3 degrees of freedom, significant at .115). However, Mann-Whitney and Kolmogorov-Smirnov tests showed that significant differences existed between managers with less than 5 or greater than 15 years of experience as a manager (at the .021 and .082 levels of confidence respectively), and between managers with between 5-10 and greater than 15 years of experience as a manager (at the .052 and .080 levels of confidence respectively).

Table 37   *Management-specific education and training levels by years as manager (Managers [n=111])*

Highest management-specific educational qualification of individual respondent	<5 (29%)	5-10 (42%)	11-15 (14%)	>15 (15%)	Totals
Post graduate degree	1 3%	1 2%	2 13%	3 17%	7 6%
Graduate certificate/diploma	10 31%	10 22%	4 25%	7 42%	31 28%
Undergraduate degree	2 6%	6 13%	2 12%	3 17%	13 12%
Tertiary non degree	19 59%	29 63%	8 50%	4 24%	60 54%
	32 100%	46 100%	16 100%	17 100%	111 100.0%

Of all managers with management-specific educational qualifications, 84 per cent had 10 years or less experience as a manager in the disability sector, a similar figure in relation to general educational levels.   Table 38 (below) highlights the high levels of graduate certificate/diploma management qualifications held by those managers with over 15 years experience as a manager in the disability sector (50 per cent as compared to the overall average of 28 per cent), as well as post graduate qualifications (17 per cent as compared to the overall average of 6 per cent). These managers also show proportionately higher levels of undergraduate management degrees (17 per cent as compared to the overall average of 12 per cent), while managers with between 11-15 years of experience are comparatively better qualified at a tertiary non-degree level (64 per cent compared to the overall average of 54 per cent).

A Chi-square test did not reveal any significant differences between years as a manager in the disability sector (Chi-square value of 6.533 significant at .6857). Further, a Kruskal-Wallis test did not reveal any significant difference between years as a manager in the disability sector (Chi-square value of .386, with 3 degrees of freedom, significant at .943), nor did Mann-Whitney or Kolmogorov-Smirnov tests.

Table 38   *Management-specific education and training levels by years*
as manager in disability sector (Managers [n=111])

Highest management-specific educational qualification of individual respondent	<5 (43%)	5-10 (41%)	11-15 (10%)	>15 (6%)	Totals
Post graduate degree	3	2	1	1	7
	6%	4%	9%	17%	6%
Graduate certificate/diploma	14	11	3	3	31
	29%	24%	27%	50%	28%
Undergraduate degree	5	7		1	13
	10%	15%		17%	12%
Tertiary non degree	26	26	7	1	60
	55%	57%	64%	16%	54%
	48	46	11	6	111
	100%	100%	100%	100%	100.0%

1.1.2.1 Summary

This section examined the education and training construct from the perspective of management-specific education and training of individual managers. The major findings according to organisational size, location, age gender, years experience as a manager, in the disability sector, and as a manager in the disability sector are as follows.

Of the total 251 managers who responded to the questionnaire, only 111 had any form of management-specific qualification. These managers represented 83 different agencies. As with the overall qualifications, the highest proportion of managers (68 per cent) were from agencies with up to thirty full-time equivalent staff (small and medium sized agencies).

There were significant statistical differences between the management-specific educational levels of managers when assessed by the size of their employing agencies. These differences were predominantly between managers in small and those in all other sized agencies, although a statistically significant difference was also found between the management-specific educational levels of managers in medium and those in extra large sized agencies. Managers in smaller agencies were less well qualified in terms of management-specific educational qualifications.

Although not statistically significant, this section also found that, although the overall average for tertiary non-degree management qualifications in all agencies was high (54 per cent), managers from small and medium sized agencies were substantially above this average for (83 per cent for small agencies and 60 per cent for medium sized agencies compared to the overall average of 54 per cent). By comparison, managers from large and extra large agencies outperformed their colleagues in respect of the higher forms of management-specific educational qualifications.

There were however significant statistical differences between the management-specific educational levels of managers when assessed by the

location of their employing agencies, incorporating State and regional differences. These differences were predominantly between managers in Victorian Provincial agencies and managers in agencies in all other areas, with managers in Victorian Provincial agencies being less well qualified than those managers in other agencies.

A statistically significant difference was also found between the management-specific educational levels of managers in Rural Tasmanian agencies and those in agencies in the Melbourne Metropolitan and Victorian Rural Areas. Generally although not statistically significant, managers in the Melbourne Metropolitan area (almost half of the respondents), tended to have higher qualifications than managers in other locations and in Tasmania. Of these, 67 per cent possessed at least undergraduate qualifications. Conversely, managers in provincial and rural areas tended to have higher proportions of tertiary non-degree qualifications. Victorian managers were also (statistically) significantly better qualified than those in Tasmania.

Although differences between educational qualifications based on gender were not found to be statistically significant, male managers tended to have higher qualifications than females, apart from tertiary non-degrees where female managers had a higher proportion. Further, older managers (those over 39 were seventy per cent of the sample) tended to be better qualified (beyond undergraduate degree level) than those under 39. This latter group of managers was much better qualified at an undergraduate level. Again, these differences were not found to be statistically significant.

A statistically significant difference was found however between the management-specific educational levels of managers with between 11 to 15 years of experience in the disability sector and those with greater than 15 years of experience. Generally although not statistically significant, managers with less than 10 years of experience in the disability sector tended to be better qualified than managers with more than 10 years of experience, and in this group managers with between 5-10 years of experience tended to have a much higher proportion of undergraduate degrees compared to managers with other levels of experience in the sector.

There was a significant statistical difference between the management-specific educational levels of managers with less than 5 and greater than 15 years experience as a manager, and between managers with between 5 to 10 and greater than 15 years experience as a manager, with those managers having more than 15 years experience being more likely to have post graduate qualifications. In addition, managers with more than 15 years overall managerial experience tended to be better qualified than those with less experience, but managers with less than 5 years of managerial experience were better qualified than those with greater than 15 years of managerial experience, as were managers with between 5-10 years of managerial experience. These latter differences were not found to be statistically significant.

Only 16 per cent of respondents with management-specific educational qualifications had more than 10 years of managerial experience in the disability sector. Of this group, those managers with between 11 to 15 years' experience as a manager in the sector tended to be much better qualified than those with lesser levels of experience. . Again, these differences were not found to be statistically significant.

The next section will examine the *overall* education and training levels of top management teams, a key variable in this research as distinct from the characteristics of individual managers. As discussed in Chapter 4, the unit of analysis will be by organisation. For this reason, age, gender and experience will not be included further in the discussion.

1.1.3   Overall education and training levels of top management teams

Now that the descriptive statistics for the data relating to the education and training construct have been discussed from the point of view of the *individual* respondents to the questionnaire, this section will now examine the data relating to the education and training construct from the perspective of the *organisation*, or the top management team.

The methodology used was firstly to determine the *highest* level of education and training possessed by any managerial respondent from each organisation. This score was identical to that used in the survey questionnaire. Secondly, the *average* level of education and training for each management team was computed for each organisation.

For ease of reference (reproduced from Chapter 4), the number of respondent managers from each organisation was as shown in Table 20 below.

Table 20   *Overall response rate of managers by size organisation*
              (Managers [n=251], organisations [n=137])

No. of respondents from each organisation	Small (1-10) n=54 (39%)	Medium (11-30) n=46 (34%)	Large (31-100) n=22 (16%)	Extra Large (>100) n=15 (11%)	Totals 137
1	39	18	10	7	74
2	11	15	3	2	31
3	4	9	4	4	21
4		3	3	2	8
5			2		2
6					Nil
7					Nil
8					Nil
9					Nil
10		1			1
	54 *100%*	45 *100%*	22 *100%*	15 *100%*	137 *100.0%*

Again, for ease of reference (reproduced from Chapter 4), the scoring used to calculate the top team averages in all the subsequent tables and figures in this and the next Chapter was as shown in Table 21 below.

Table 21   *Scoring table for calculating top management team means*

Average overall educational qualification of top management team	Score
Post graduate degree	Greater than 8 to10
Graduate certificate/diploma	Greater than 7 to 8
Undergraduate degree	Greater than 6 to 7
Tertiary non-degree	Greater than 3 to 6
Year 10-12	Greater than 1 to 3
Up to year 10	Up to 1

This table reflects a summarised version of that used in the survey questionnaire (See Appendix 1 – Question 17). The scoring method catered for *average* scores that fall in-between integers, as well as grouping for TAFE qualifications (tertiary non-degrees), and masters and beyond (postgraduate). The groupings themselves are consistent with previous research (The Resolutions Group, 1996) in the disability sector. It is recognised that the above scoring table does not represent a ratio (or interval) scale so that a '6' is not twice as good as a '3'.

In view of the education and training construct representing ordinal data, there are important implications for data analysis, particularly when combined with the interval data contained in the strategic planning and organisational performance constructs. Spearman's rank correlation was used primarily for analysis, although methods that assume continuous data were used later with some reservations. As regression techniques are not available for ordinal data, this assumption is a little stronger than the data type allows for, however this assumption is one way of obtaining overall measures and relationships for organisations.

Using the *highest* level of education and training possessed by any managerial respondent from each organisation, Figure 14 (below) shows that the median (and mode) of overall education and training of the 137 top management teams was graduate certificate/diploma level. The highest level of education and training was Doctorate level and the lowest was high school year 10 standard.

Figure 14   *Highest education and training levels by top management team (Organisations [n=137])*
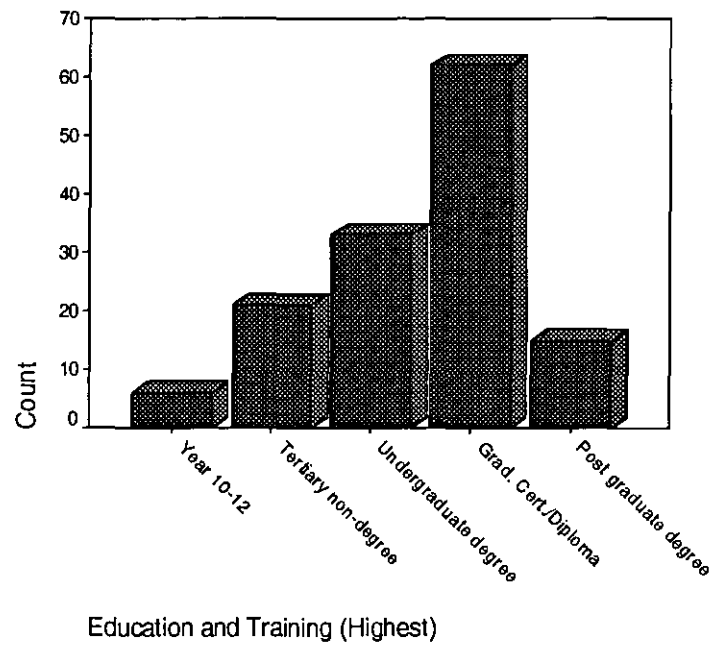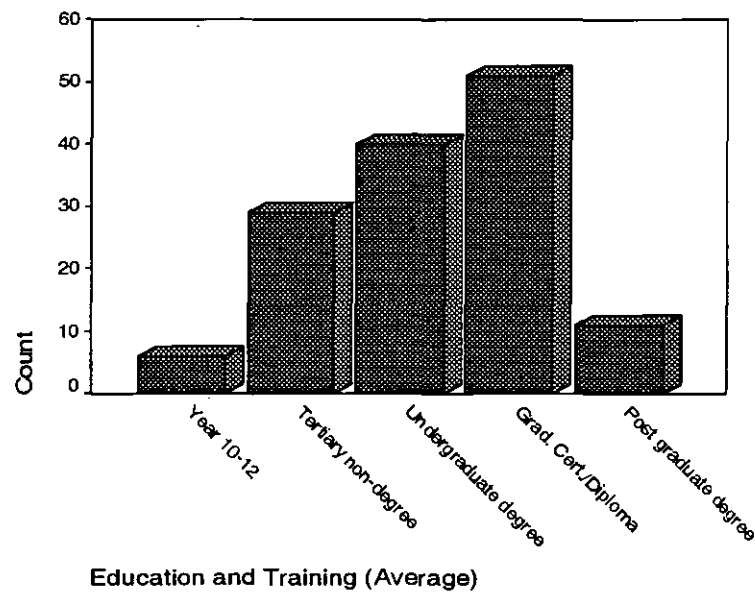

Education and Training (Highest)

Figure 15 (below) shows that the median of the *average* level of overall education and training of the 137 top management teams was undergraduate degree level. The mode was graduate certificate/diploma. The highest level of education and training was Doctorate level and the lowest was high school year 10 standard.

Figure 15   *Average education and training levels by top management team (Organisations [n=137])*

Education and Training (Average)

When considering top management team qualifications in relation to sizes of organisations (see Table 39 below), extra large agencies had particularly well educated top management teams in terms of *highest* education and training levels, with all of those agencies having teams with at least one manager possessing at least an undergraduate degree. Top management teams in medium sized agencies were next best educated on this scale, followed by large, then small agencies. These specific differences were significant at the .0002 (.0356 when large aggregated with extra large) level of confidence, however 20 per cent of the cells had an expected count of less than 5 making the Chi-square figure suspect. As can be seen from Table 39 (below), top management teams in medium sized agencies exhibited a better than average undergraduate educational level. Thirty per cent of such agencies had undergraduate degree level top management teams, compared to the overall average of 21 per cent.

Chi-square, Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests all revealed significant differences between the *highest* top management team educational levels in the various sizes of organisations. A Chi-square test revealed significant differences between the various sizes of organisations (Chi-square value of 20.419 significant at .0596) but 20 per cent of the cells had an expected count of less than 5 making the Chi-square figure suspect. The Kruskal-Wallis test showed that significant differences existed across the various sizes of organisations, differences that were significant at the .019 level of confidence (Chi-square value of 9.992, with 3 degrees of freedom). Mann-Whitney and Kolmogorov-Smirnov tests indicated that these differences were between small and extra large agencies (significant at the .024 and .007 levels of significance respectively), and between medium and extra large agencies (at the .001 and .012 levels of significance respectively).

Table 39   *Highest education and training level in top management teams by size organisation (Organisations [n=137])*

Highest educational qualification in top management team	Small (1-10) (39%)	Medium (11-30) (34%)	Large (31-100) (16%)	Extra Large (>100) (11%)	Totals
Post graduate degree	8 15%	6 13%	4 17%	3 20%	21 15%
Graduate certificate/diploma	21 38%	22 48%	14 64%	11 73%	68 50%
Undergraduate degree	13 24%	14 30%	1 5%	1 7%	29 21%
Tertiary non degree	9 17%	3 7%	1 5%	0	13 9%
Year 10-12	3 6%	1 2%	2 9%	0	6 5%
	54 100%	46 100%	22 100%	15 100%	137 100.0%

Extra large agencies also had particularly well educated top management teams, with 80 per cent of those agencies having teams with an *average* of undergraduate degree or higher. Top management teams in medium sized agencies were next best educated, followed by small, then large agencies. As can be seen from Table 40 (below), top management teams in medium sized agencies exhibited a much better than average undergraduate educational level. Forty six per cent of such agencies had undergraduate degree level top management teams, compared to the overall average of 29 per cent.

Chi-square, Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests did not reveal any significant differences between the *average* top management team educational levels in the various sizes of organisations.

Table 40   *Average education and training levels of top management teams by size organisation (Organisations [n=137])*

Average educational qualification of top management team	Small (1-10) (39%)	Medium (11-30) (34%)	Large (31-100) (16%)	Extra Large (>100) (11%)	Totals
Post graduate degree	6 11%	2 4%	2 9%	1 7%	11 8%
Graduate certificate/diploma	20 37%	14 31%	9 41%	8 53%	51 37%
Undergraduate degree	12 22%	21 46%	4 18%	3 20%	40 29%
Tertiary non degree	13 24%	8 17%	5 23%	3 20%	29 21%
Year 10-12	3 6%	1 2%	2 9%		6 5%
	54 100%	46 100%	22 100%	15 100%	137 100.0%

When assessed according to the *highest* qualification in the team, only top management teams in the Melbourne Metropolitan area, and in Tasmanian and Victorian Provincial cities exhibited better than average undergraduate degree or better qualifications (see Table 41 below). Teams in Provincial Tasmania more than doubled the overall average of undergraduate degree (56 as compared to 21 per cent), while teams in the Melbourne and Hobart Metropolitan areas were well above the average of those teams possessing post graduate qualifications.

Chi-square, Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests all revealed significant differences between the various locations of organisations. The Chi-square value of 95.137 was significant at .0001 but 20 per cent of the cells had an expected count of less than 5 making the Chi-square figure suspect. The Kruskal-Wallis test showed that significant differences existed across the various locations, differences that were significant at the .002 level of confidence (Chi-square value of 19.289, with 5 degrees of freedom).

Mann-Whitney and Kolmogorov-Smirnov tests indicated that these differences were between agencies in the Melbourne Metropolitan Area and Rural Victoria (significant at the .002 and .040 levels of significance respectively); between agencies in the Melbourne Metropolitan Area and Hobart Metropolitan Area (significant at the .010 and .084 levels of significance respectively); and between agencies in the Melbourne Metropolitan Area and Tasmanian Provincial cities (significant at the .032 and .171 levels of significance respectively). A Mann-Whitney test also found significant differences between agencies in the Melbourne Metropolitan Area and those in rural Tasmania (significant at the .030 level of significance).

Table 41   Highest education and training levels of top management teams by organisation location (Organisations [n=137])

Highest educational qualification in top management team	1* (48%)	2 (18%)	3 (20%)	4 (7%)	5 (6%)	6 (1%)	Totals
Post graduate degree	15 23%	3 13%	1 4%	2 20%			21 15%
Graduate certificate/diploma	37 56%	12 50%	12 44%	4 40%	3 33%		68 50%
Undergraduate degree	8 12%	7 29%	7 26%	2 20%	5 56%		29 21%
Tertiary non degree	5 7%	2 8%	5 18%	1 10%			13 10%
Year 10-12	1 2%		2 8%	1 10%	1 11%	·1 100%	6 4%
	66 100%	24 100%	27 100%	10 100%	9 100%	1 100%	137 100.0%

*1=Melbourne Metropolitan Area
2=Provincial City (Victoria)
3=Rural Victoria
4=Hobart Metropolitan Area
5=Provincial City (Tasmania)
6=Rural Tasmania

As most of the extra large and large agencies were located either in the Melbourne Metropolitan area or Victorian provincial cities, and managers in these areas had above average qualification levels, it is not surprising that on average, the top management teams in these areas were more highly qualified than their counterparts in regions 3-6. Only top management teams in Victoria exhibited average qualifications at postgraduate level, with area 1 having almost double the overall average (14 per cent compared to 8 per cent). Eighty per cent of top management teams in the Melbourne Metropolitan area had an average of at least an undergraduate degree (see Table 42 below).

Top management teams in the Hobart Metropolitan area and Tasmanian provincial cities were also highly qualified, with 70 per cent and 89 per cent respectively having at least an undergraduate educational average.

Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests all revealed significant differences between the various locations of organisations. The Kruskal-Wallis test showed that significant differences existed across the various locations, differences that were significant at the .072 level of confidence (Chi-square value of 10.109, with 5 degrees of freedom).

Mann-Whitney and Kolmogorov-Smirnov tests indicated that these differences were between agencies in the Melbourne Metropolitan Area and Rural Victoria (significant at the .021 and .084 levels of significance respectively), and between agencies in the Melbourne Metropolitan Area and Hobart Metropolitan Area (significant at the .095 and .354 levels of significance respectively). Mann-Whitney tests also found significant differences between agencies in the Melbourne Metropolitan Area and those in Rural Tasmania (significant at the .030 level of significance); between agencies in Victorian Provincial cities and those in Rural Tasmania (significant at the .080 level of significance); and between those in Rural Tasmania and Rural Victoria (at the .071 level of significance).

Table 42   *Average overall education and training levels of top management teams by organisation location (Organisations [n=137])*

Average overall educational qualification of top management team	1* (48%)	2 (18%)	3 (20%)	4 (7%)	5 (6%)	6 (1%)	Totals
Post graduate degree	9 14%	1 4%	1 4%				11 8%
Graduate certificate/diploma	27 41%	10 42%	8 30%	3 30%	3 33%		51 37%
Undergraduate degree	17 25%	7 29%	7 26%	4 40%	5 56%		40 29%
Tertiary non degree	12 18%	6 25%	9 33%	2 20%			29 21%
Year 10-12	1 2%		2 7%	1 10%	1 11%	1 100%	6 5%
	66 100%	24 100%	27 100%	10 100%	9 100%	1 100%	137 100.0%

*1=Melbourne Metropolitan Area
2=Provincial City (Victoria)
3=Rural Victoria
4=Hobart Metropolitan Area
5=Provincial City (Tasmania)
6=Rural Tasmania

When the *highest* level of education and training qualification within the top management team is examined by State, Victorian teams appeared better credentialled with a median and mode of graduate certificate/diploma level compared to the Tasmanian mean and mode of undergraduate level. Victorian agencies had better than average proportions of managers beyond the undergraduate degree level, and correspondingly lower than average proportions with year 10-12 qualifications than their Tasmanian counterparts (see Table 43 below).

These differences in the *highest* level of education and training qualification within the top management team were statistically significant. A Chi-square test, and Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests all revealed significant differences between the two States of organisations. The Chi-square value of 10.090 was significant at .0389, but 20 per cent of the cells had an expected count of less than 5 making the Chi-square figure suspect. The Kruskal-Wallis test showed that significant differences existed across the two States, differences that were significant at the .013 level of confidence (Chi-square value of 6.413, with 1 degree of freedom). Mann-Whitney and Kolmogorov-Smirnov tests also indicated that these differences were significant at the .013 and .080 levels of significance respectively.

Table 43   *Highest education and training levels in top management teams by State (Organisations [n=137])*

Highest educational qualification in top management team	Victoria (86%)	Tasmania (14%)	Totals
Post graduate degree	19 16%	2 10%	21 15%
Graduate certificate/diploma	61 52%	7 35%	68 50%
Undergraduate degree	22 19%	7 35%	29 21%
Tertiary non degree	12 10%	1 5%	13 9%
Year 10-12	3 3%	3 15%	6 5%
	117 100%	20 100%	137 100%

Table 44 (below) reinforces the overall impression gained from the previous three tables. The median and mode of Victorian managers' *average* education and training levels were undergraduate and graduate certificate/diploma level respectively, while the Tasmanian equivalent was undergraduate degree level.

Victorian top management teams were qualified to a higher level than their Tasmanian counterparts, but Tasmanian management teams had a solid base with 75 per cent of Tasmanian agencies having management teams with either an undergraduate or graduate certificate/diploma average qualification.

These differences in the *average* level of education and training qualification within the top management team were not statistically significant. A Chi-square test, and Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests all failed to reveal significant differences between the two States of organisations.

Table 44   *Average education and training levels of top management teams by State (Organisations [n=137])*

Average educational qualification of top management team	Victoria (86%)	Tasmania (14%)	Totals
Post graduate degree	11 9%		11 8%
Graduate certificate/diploma	45 38%	6 30%	51 37%
Undergraduate degree	31 26%	9 45%	40 29%
Tertiary non degree	27 23%	2 10%	29 21%
Year 10-12	3 4%	3 15%	6 5%
	117 100%	20 100%	137 100%

1.1.3.1 Summary

This section examined the education and training construct from the perspective of top management teams. Within this analysis, a distinction was made between the *highest* level of top management team educational qualifications, and the *average* level of top management team educational qualifications. The major findings according to organisational size and location are as follows.

In respect of the *highest* level of top management team *overall* educational qualifications:

- statistically significant differences existed between small and extra large agencies with the qualifications in small agencies being lower;
- statistically significant differences existed between medium and extra large agencies with the qualifications in medium sized agencies being lower;
- statistically significant differences existed between agencies in the Melbourne Metropolitan Area and those in Rural Victoria with the qualifications in Rural Victoria being lower;
- statistically significant differences existed between agencies in the Melbourne Metropolitan Area and those in the Hobart Metropolitan Area with the qualifications in the Hobart Metropolitan Area being lower;
- statistically significant differences existed between agencies in the Melbourne Metropolitan Area and those in Tasmanian Provincial cities with the qualifications in Tasmanian Provincial cities being lower;
- statistically significant differences existed between agencies in the Melbourne Metropolitan Area and those in Rural Tasmania with the qualifications in Rural Tasmania being lower;
- statistically significant differences existed between agencies in Victoria and Tasmania with the qualifications in Tasmania being lower;

- although not statistically significant, extra large agencies had the best educated top management teams with no respondent manager having less than an undergraduate degree;

- although not statistically significant, more top management teams in the Melbourne Metropolitan Area and in Tasmanian and Victorian Provincial cities had undergraduate degree level qualifications or better compared to other locations;

- although not statistically significant, approximately twice as many top management teams in Provincial Tasmania had undergraduate degree level qualifications compared to teams in other locations; and

- although not statistically significant, 23 per cent of top management teams in the Melbourne Metropolitan Area had postgraduate degree qualifications compared to the average of 15 per cent.

In respect of the *average* level of top management team *overall* educational qualifications;

- statistically significant differences existed between agencies in the Melbourne Metropolitan Area and those in Rural Victoria with the qualifications in Rural Victoria being lower;

- statistically significant differences existed between agencies in the Melbourne Metropolitan Area and those in the Hobart Metropolitan Area with the qualifications in the Hobart Metropolitan Area being lower;

- statistically significant differences existed between agencies in the Melbourne Metropolitan Area and those in Rural Tasmania with the qualifications in Rural Tasmania being lower;

- statistically significant differences existed between agencies in Victorian Provincial areas and those in Rural Tasmania with the qualifications in Rural Tasmania being lower;

- statistically significant differences existed between agencies in Rural Victoria and those in Rural Tasmania with the qualifications in Rural Tasmania being lower;

- although not statistically significant, extra large agencies had the best educated top management teams with no respondent manager having less than a tertiary sub degree qualifications;

- although not statistically significant, top management teams in Victoria were the only teams to exhibit an average of postgraduate degree level qualifications;

- although not statistically significant, a higher proportion of top management teams in the Melbourne Metropolitan area and in Victorian provincial cities had average qualifications beyond undergraduate degree level compared to other regions; and

- although not statistically significant, the mode of Victorian managers' education and training levels was graduate certificate/diploma level, while the Tasmanian equivalent was undergraduate degree level.

The next section will examine the *management-specific* education and training levels of top management teams.
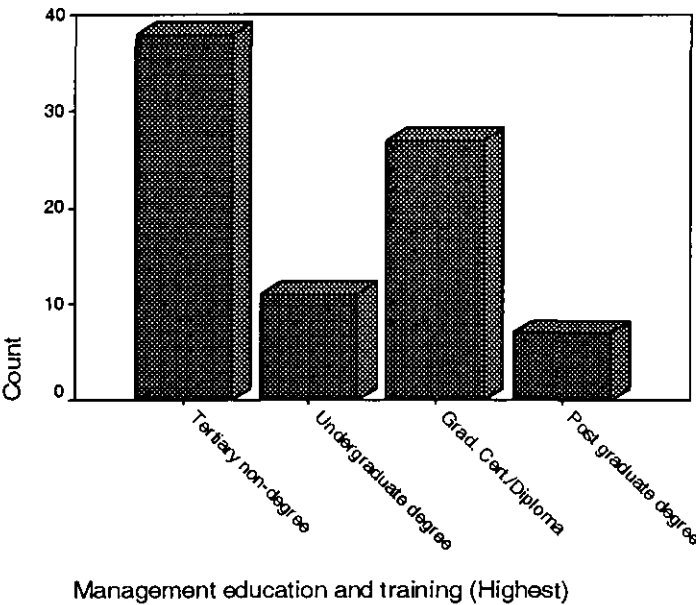
1.1.4 Management-specific education and training levels of top management teams

As with the previous section, the methodology used here was firstly to determine the *highest* level of management-specific education and training possessed by any managerial respondent from each organisation. This score was identical to that used in the survey questionnaire. Secondly, the *average* level of management-specific education and training for each management team was computed for each organisation.

Of the 137 agencies (and their managers) who responded to the survey questionnaire, only 83 (or 61 per cent) of agencies had top management teams with any kind of management-specific educational qualification.

Figure 16 (below) shows the spread of the *highest* management-specific qualifications held by an individual in the top management team. The median was undergraduate degree level, and the mode was tertiary non-degree level.

Figure 16   *Highest management-specific education and training levels by top management team (Organisations [n=83])*

Management education and training (Highest)

As can be seen from Figure 17 (below), the median and mode of the *average* level of top management team, management-specific educational qualifications were tertiary non-degree level.

Figure 17   Average management-specific education and training levels by top
                 management team (Organisations [n=83])

Management education and training (Average)
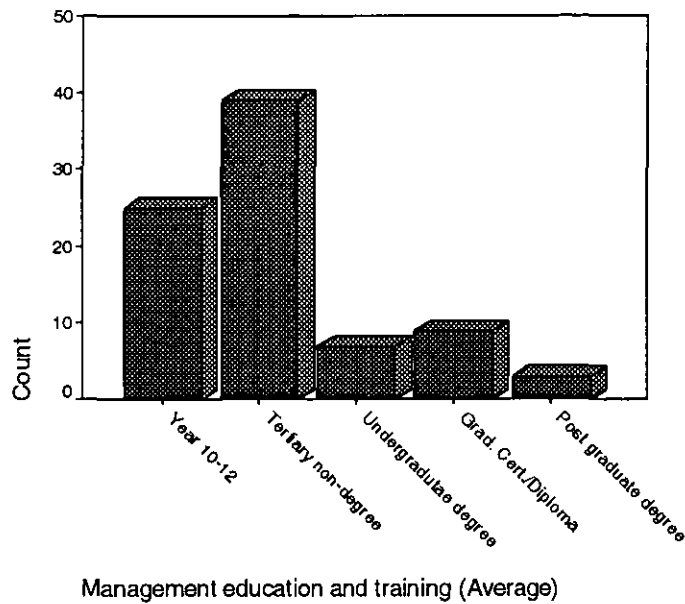
As can be seen from Table 45 (below), large agencies possessed management teams with *highest* management-specific qualifications right across the spectrum, from postgraduate to the lowest levels, with proportions well above the average of postgraduate, graduate certificate, and undergraduate qualifications, although extra large agencies had the best qualified top management teams.

Table 45 (below) also shows that top management teams of small and medium agencies possessed well above the overall average of 58 per cent for the combined categories of undergraduate degree or less standard qualification (83 per cent and 69 per cent respectively). Large and extra large agencies had better than the average of their top management teams qualified to graduate certificate diploma/certificate or better level (62 per cent and 100 per cent respectively as compared to the overall average of 42 per cent).

Chi-square, Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests all revealed significant differences between *highest* management-specific qualifications of the various sizes of organisations. A Chi-square test revealed significant differences between the various sizes of organisations (Chi-square value of 20.419 significant at .0596) but 20 per cent of the cells had an expected count of less than 5 making the Chi-square figure suspect. The Kruskal-Wallis test showed that significant differences existed across the various sizes of organisations, differences that were significant at the .000 level of confidence (Chi-square value of 36.709, with 3 degrees of freedom). Mann-Whitney and Kolmogorov-Smirnov tests indicated that these differences were between small and medium sized agencies (significant at the .000 and .000 levels of significance respectively); small and large sized

agencies (significant at the .000 and .001 levels of significance respectively); and between small and extra large sized agencies (significant at the .001 and .000 levels of significance respectively). A Kolmogorov-Smirnov test also showed a significant difference between medium and extra large sized agencies (significant at the .048 level of confidence).

Table 45   Highest management-specific education and training levels in top management team by size organisation (Organisations [n=83])

Highest management-specific educational qualification in top management team	Small (1-10) (22%)	Medium (11-30) (47%)	Large (31-100) (19%)	Extra Large (>100) (12%)	Totals
Post graduate degree	1 6%	2 5%	2 12%	2 20%	7 8%
Graduate certificate/diploma	2 11%	10 26%	8 50%	8 80%	28 34%
Undergraduate degree		8 21%	3 19%		11 13%
Tertiary non degree	15 83%	19 48%	3 19%		37 45%
	18 100%	39 100%	16 100%	10 100%	83 100.0%

As with the *highest* qualifications, large agencies possessed management teams with *average* management-specific qualifications right across the spectrum, from postgraduate to the lowest levels, as did medium sized agencies. Table 46 (below) also shows that top management teams of small and medium agencies possessed over three quarters (83 per cent and 82 per cent respectively) of tertiary non degree or less standard qualification, statistics which were above the overall average of 77 per cent for the combined categories. Extra large agencies had almost three times more than the average of their top management teams qualified to graduate certificate diploma/certificate level (30 per cent as compared to the overall average of 11 per cent).

Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests all revealed significant differences between the various sizes of organisations. The Kruskal-Wallis test showed that significant differences existed across the various sizes of organisations, differences that were significant at the .000 level of confidence (Chi-square value of 23.068, with 3 degrees of freedom). Mann-Whitney and Kolmogorov-Smirnov tests indicated that these differences were between small and extra large agencies (significant at the .012 and .028 levels of significance respectively); between small and large agencies (significant at the .001 and .016 levels of significance respectively); and between small and medium sized agencies (significant at the .000 and .000 levels of significance respectively).

Table 46   *Average management-specific education and training levels of top management team by size organisation (Organisations [n=83])*

Average management-specific educational qualification of top management team	Small (1-10) (22%)	Medium (11-30) (47%)	Large (31-100) (19%)	Extra Large (>100) (12%)	Totals
Post graduate degree	1 6%		2 12%		3 4%
Graduate certificate/diploma	2 11%	2 5%	2 12%	3 30%	9 11%
Undergraduate degree		5 13%	2 13%		7 8%
Tertiary non degree	9 50%	20 51%	6 38%	4 40%	39 47%
Year 10-12	6 33%	12 31%	4 25%	3 30%	25 30%
	18 100%	39 100%	16 100%	10 100%	83 100.0%

By location, top management teams in the Melbourne Metropolitan Area displayed the *highest* level of management-specific education and training qualifications, with 68 per cent having undergraduate degree or better compared to the overall average of 55 per cent (see Table 47 below).

Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests all revealed significant differences between the various locations of organisations. The Kruskal-Wallis test showed that significant differences existed across the various locations, differences that were significant at the .071 level of confidence (Chi-square value of 10.141, with 5 degrees of freedom).

Mann-Whitney and Kolmogorov-Smirnov tests indicated that these differences were between agencies in Victorian Provincial areas and those in Victorian Rural areas (significant at the .079 and .047 levels of significance respectively); Hobart Metropolitan Area areas (significant at the .028 and .083 levels of significance respectively); and Tasmanian Provincial areas (significant at the .005 and .005 levels of significance respectively). A Mann-Whitney test also found significant differences between agencies in the Melbourne Metropolitan Area and those in the Hobart Metropolitan Area (significant at the .095 level of significance). Further, a Kolmogorov-Smirnov test indicated that significant differences existed between agencies in the Melbourne Metropolitan Area and those in Victorian Provincial cities (significant at the .100 level of confidence).

Table 47   *Highest management-specific education and training levels in top management teams by location (Organisations [n=83])*

Highest educational qualification in top management team	1* (48%)	2 (25%)	3 (17%)	4 (5%)	5 (5%)	Totals
Post graduate degree	4 10%	2 9%	1 7%			7 8%
Graduate certificate/diploma	20 50%	2 9%	4 29%	1 25%	1 25%	28 34%
Undergraduate degree	3 8%	4 19%	3 21%	1 25%		11 13%
Tertiary non degree	13 32%	13 63%	6 43%	2 50%	3 75%	37 45%
	40 100%	21 100%	14 100%	4 100%	4 100%	83 100.0%

*1=Melbourne Metropolitan Area
2=Provincial City (Victoria)
3=Rural Victoria
4=Hobart Metropolitan Area
5=Provincial City (Tasmania)
6=Rural Tasmania

As can be seen from Table 48 (below), top management teams from agencies in areas 1-3 were generally better qualified in respect of their *average* management-specific education and training levels, although agencies in Tasmanian provincial areas also displayed well trained teams, at least in one agency.

Mann-Whitney, Kruskal-Wallis, and Kolmogorov-Smirnov tests all revealed significant differences between the various locations of organisations. The Kruskal-Wallis test showed that significant differences existed across the various locations, differences that were significant at the .010 level of confidence (Chi-square value of 15.131, with 5 degrees of freedom).

Mann-Whitney and Kolmogorov-Smirnov tests indicated that these differences were between agencies in Victorian Provincial areas and those in the Melbourne Metropolitan Area (significant at the .004 and .013 levels of confidence respectively); Victorian Rural areas (significant at the .006 and .004 levels of significance respectively); the Hobart Metropolitan Area (significant at the .003 and .007 levels of significance respectively); and Tasmanian Provincial areas (significant at the .029 and .063 levels of confidence respectively).

Table 48   *Average management-specific education and training levels of top management teams by location (Organisations [n=83])*

Average overall educational qualification of top management team	1* (48%)	2 (25%)	3 (17%)	4 (5%)	5 (5%)	Totals
Post graduate degree	2 5%	1 5%				3 4%
Graduate certificate/diploma	6 15%	1 5%	1 8%		1 25%	9 11%
Undergraduate degree	1 2%	2 9%	3 21%	1 25%		7 8%
Tertiary non degree	18 45%	14 67%	3 21%	1 25%	3 75%	39 47%
Year 10-12	13 33%	3 14%	7 50%	2 50%		25 30%
	40 100%	21 100%	14 100%	4 100%	4 100%	83 100.0%

*1=Melbourne Metropolitan Area
2=Provincial City (Victoria)
3=Rural Victoria
4=Hobart Metropolitan Area
5=Provincial City (Tasmania)
6=Rural Tasmania

The State by State analysis for the *highest* level of management-specific education and training levels (see Table 49 below) shows Victoria with consistent results across the means, while Tasmania had above the average teams with tertiary non-degrees (63 per cent compared to the overall average of 45 per cent), and below the average teams with graduate certificate/diploma degrees (25 per cent compared to the overall average of 34 per cent).

These differences in the *highest* level of management-specific education and training qualifications within the top management team by State were statistically significant.   A Mann-Whitney test was significant (at the .011 level of confidence), as was a Kruskal-Wallis test (Chi-square value of 6.537 significant at .011, 1 degree of freedom), and a Kolmogorov-Smirnov test (at the .117 level of confidence).

Table 49   *Highest management-specific education and training levels in top management teams by State (Teams [n=83])*

Highest educational qualification in top management team	Victoria (90%)	Tasmania (10%)	Totals 83
Post graduate degree	7 9%		7 8%
Graduate certificate/diploma	26 35%	2 25%	28 34%
Undergraduate degree	10 13%	1 12%	11 13%
Tertiary non degree	32 43%	5 63%	37 45%
	75 100%	8 100%	83 100.0%

As with the *highest* statistics, the State by State *average* analysis (see Table 50 below) shows that Victoria, with 90 per cent (or 75 agencies) of the sample exhibited a wider range of *average* results across the spectrum, but also shows that Tasmanian top management teams (with the exception of year 10-12 averages) displayed better than average qualification levels in all other categories.

These differences in the *average* level of management-specific education and training qualifications within the top management team by State were statistically significant. A Mann-Whitney test was significant (at the .045 level of confidence), as was a Kruskal-Wallis test (Chi-square value of 4.022 significant at .045, 1 degree of freedom), and a Kolmogorov-Smirnov test (at the .243 level of confidence).

Table 50 *Average management-specific education and training levels of top management teams by State (Teams [n=83])*

Average overall educational qualification of top management team	Victoria (90%)	Tasmania (10%)	Totals 83
Post graduate degree	3 4%		3 4%
Graduate certificate/diploma	8 11%	1 13%	9 11%
Undergraduate degree	6 8%	1 12%	7 8%
Tertiary non degree	35 47%	4 50%	39 47%
Year 10-12	23 30%	2 25%	25 30%
	75 100%	8 100%	83 100.0%

1.1.4.1 Summary

This section examined the education and training construct from the perspective of *management-specific* education and training levels of top management teams. Within this analysis, a distinction was made between the *highest* level of top management team *management-specific* educational qualifications, and the *average* level of top management team *management-specific* educational qualifications. The major findings according to organisational size and location are as follows.

In respect of the *highest* level of top management team *management-specific* educational qualifications:

• statistically significant differences existed between small and all other sized organisations with the qualifications in small organisations being lower;

- statistically significant differences existed between medium and extra large sized organisations with the qualifications in medium sized organisations being lower;

- statistically significant differences existed between organisations in Victorian Provincial areas and those in Rural Victoria with the qualifications in Victorian Provincial areas being lower;

- statistically significant differences existed between organisations in Victorian Provincial areas and those in the Hobart Metropolitan Area with the qualifications in the Hobart Metropolitan Area being lower;

- statistically significant differences existed between organisations in Victorian Provincial areas and those in Tasmanian Provincial areas with the qualifications in Tasmanian Provincial areas being lower;

- statistically significant differences existed between organisations in the Melbourne Metropolitan Area and those in the Hobart Metropolitan Area with the qualifications in the Hobart Metropolitan Area being lower;

- statistically significant differences existed between organisations in the Melbourne Metropolitan Area and those in Victorian Provincial areas with the qualifications in Victorian Provincial areas being lower;

- statistically significant differences existed between agencies in Victoria and Tasmania, with the qualifications in Tasmania being lower; and

- although not statistically significant, extra large agencies had the best educated top management teams with no respondent manager having less than a graduate certificate/diploma.

In respect of the *average* level of top management team *management-specific* educational qualifications:

- statistically significant differences existed between small and all other sized organisations with the qualifications in small organisations being lower;

- statistically significant differences existed between organisations in Victorian Provincial Areas and those in the Melbourne Metropolitan Area with the qualifications in Victorian Provincial Areas being lower;

- statistically significant differences existed between organisations in Victorian Provincial Areas and those in the Hobart Metropolitan Area with the qualifications in Victorian Provincial Areas being lower;

- statistically significant differences existed between organisations in Victorian Provincial Areas and those in Tasmanian Provincial areas with the qualifications in Victorian Provincial Areas being lower;

- statistically significant differences existed between organisations in Victorian Provincial Areas and those in Victorian Rural areas with the qualifications in Victorian Provincial Areas being lower; and

- statistically significant differences existed between agencies in Victoria and Tasmania, with the qualifications in Tasmania being lower.

The next section will examine the organisational performance construct.

1.2   Organisational Performance

The second of the constructs involved with this first research question is that of organisational performance.   This construct was self-assessed by respondents and measured with five instruments, which, with the exception of profitability, all used a 5-point Likert scale from 'Strongly Disagree' to 'Strongly Agree' ('Poor ' to 'Very good' for Mott, 1972). These instruments were Mott's (1972) index of organisational effectiveness, Ramanujam et al.'s (1986a) index of objective fulfilment, Miskel's (1982) index of job satisfaction, Hoy & Miskel's (1987) index of central life interest, and profitability.   All results and tables using the organisational performance construct were constructed from answers to questions in the survey instrument.

The five measures will now be discussed in turn.

1.2.1   Organisational Effectiveness

Overall organisational effectiveness was measured using a modified (for disability sector organisations) version of Mott's (1972) model of organisational effectiveness. Mott integrated the components of quantity and quality of product, efficiency, adaptability, and flexibility in his index.

The histogram below (Figure 18) shows an approximately normal distribution with a mean of 3.77 (out of 5).

Figure 18   *Mott (1972) index of organisational effectiveness (Organisations [n=137])*
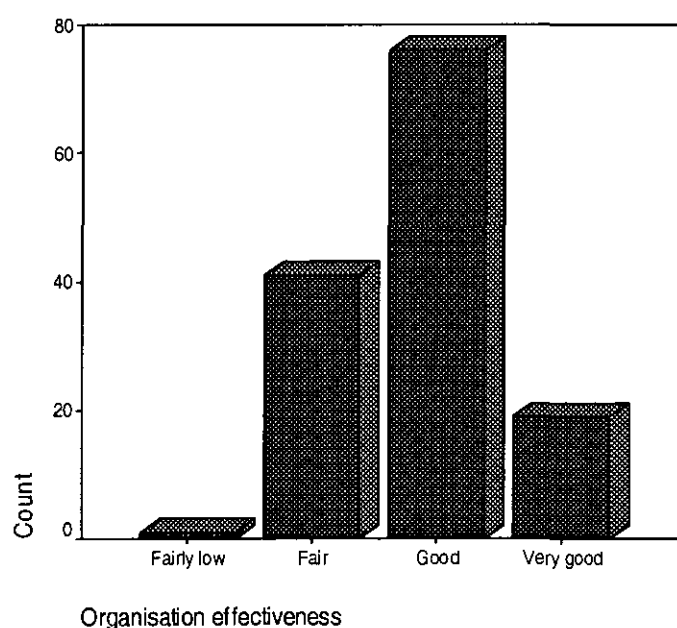
Organisation effectiveness

Internal consistency of the index was assessed and judged using Cronbach's alpha (Cronbach, 1951; Van de Ven & Ferry, 1980). The alpha score for the index was .9069, and the factor loadings were all above .50 (see Table 51 below) indicating that all the factors measured states of organisational performance. Factor scores were calculated for each of the organisational effectiveness dimensions. These assessments provided adequate support for the validity and reliability of the index.

Table 51   *Mott (1972) index of organisational effectiveness*

Index Item	Alpha score	Factor Loadings
Productivity:	.8562	
Quantity		.691
Quality		.797
Efficiency		.835
Adaptability:	.8746	
Anticipating problems		.785
Keeping up to date		.796
Promptness of adjustment		.811
Prevalence of adjustment		.824
Flexibility		.697

Table 52 (below) shows that managers in small organisations (39 per cent of the sample) rated their organisations as having a mean of 4, with managers in extra large organisations close behind with a mean of 3.86. These differences were not statistically significant.

Table 52   *Mott (1972) index of organisational effectiveness by size organisation (Organisations [n=137])*

Mott (1972) index	Small (1-10) n=54	Medium (11-30) n=46	Large (31-100) n=22	Extra Large (>100) n=15
Mean	4.00	3.66	3.64	3.86
Standard Deviation	.64	.71	.51	.61

When effectiveness is judged by location, Tasmanian provincial cities were self-assessed with a mean of 4.06, followed closely by agencies in the Melbourne Metropolitan Area (mean of 3.84). Managers self assessed agencies (according to the Mott index) in rural Tasmania as having a mean of 3.15 (see Table 53 below). These differences were not statistically significant.

Table 53   *Mott (1972) index of organisational effectiveness by location (Organisations [n=137])*

Mott (1972) index	1* n=65	2 n=25	3 n=26	4 n=11	5 n=9	6 n=1
Mean	3.84	3.72	3.59	3.72	4.06	3.15
Standard Deviation	.64	.59	.56	.91	.30	.30

*1=Melbourne Metropolitan Area
2=Provincial City (Victoria)
3=Rural Victoria
4=Hobart Metropolitan Area
5=Provincial City (Tasmania)
6=Rural Tasmania

Table 54 (below) shows that Tasmanian managers generally rated their organisational effectiveness as being higher than their Victorian counterparts, although a t-test revealed that this difference was not significant (value of 2.05 significant at 0.55).

Table 54   *Mott (1972) index of organisational effectiveness by State (Organisations [n=137])*

Mott (1972) index	Victoria (n=117)	Tasmania (n=20)
Mean	3.75	3.84
Standard Deviation	.61	.58

This measure of organisational performance was validated by comparing survey questionnaires completed by employees from the same agencies as the managers. The correlation between the two sets of survey questionnaires was computed as a test of the validity of the subjective measure. The correlation was .154 (significant at the .097 level of confidence).

The organisational effectiveness measure was also validated by comparing the scores obtained from managers and employees with those obtained from personal (confidential) interviews with various (expert) staff of the Commonwealth Department of Health and Family Services. The correlation between the three measures was computed as a test of the validity of the internal questionnaires. The correlation between the manager's scores and those from the Commonwealth Department of Health and Family Services was .109 (significant at the .204 level of confidence). The correlation between the employee's scores and those from the Commonwealth Department of Health and Family Services was .129 (significant at the .132 level of confidence).

1.2.2 Objective fulfilment

This dimension was measured using a 5-point Likert scale from 'Strongly Disagree' to 'Strongly Agree'. All results and tables using this dimension were constructed from answers to questions in the survey instrument.

The histogram below (Figure 19) shows an approximately normal distribution with a mean of 3.54 (out of 5).

Figure 19   *Ramanujam et al. (1986a) index of objective fulfilment*
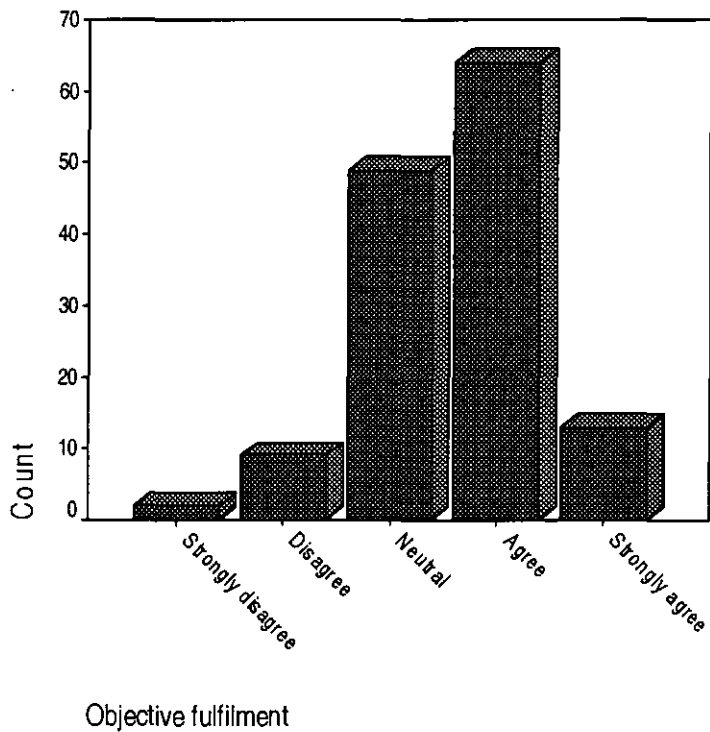
Objective fulfilment

Internal consistency of the index was assessed and judged using Cronbach's alpha (Cronbach, 1951; Van de Ven & Ferry, 1980). The alpha score for the index was .9332, and the factor loadings were all above .50 (see Table 55 below) indicating that all the factors measured states of organisational performance. Factor scores were calculated for each of the organisational effectiveness dimensions. These assessments provided adequate support for the validity and reliability of the index.

Table 55   *Ramanujam et al. (1986a) index of objective fulfilment*

Index Item	Alpha score	Factor Loadings
Objective fulfilment:	.9332	
Improvement in short-term performance		.900
Improvement in long-term performance		.912
Predicting future trends		.907
Evaluating alternatives		.896
Enhancing management development		.830

As with the Mott (1972) index, Table 56 (below) shows that managers in small organisations (39 per cent of the sample) rated their organisations as being effective in terms of the Ramanujam et al.'s (1986a) index of objective fulfilment (mean of 3.59), with managers in medium sized agencies also tied on that score. These differences were not statistically significant.

Table 56   *Ramanujam et al. (1986a) index of objective fulfilment by size organisation (Organisations [n=137])*

Ramanujam et al. (1986a) index	Small (1-10) n=54	Medium (11-30) n=46	Large (31-100) n=22	Extra Large (>100) n=15
Mean	3.59	3.59	3.37	3.40
Standard Deviation	.83	.76	.85	.88

When objective fulfilment is judged by location, as with the Mott (1972) index, Tasmanian provincial cities were quite effective (mean of 3.73) as were agencies in the Hobart and Melbourne Metropolitan areas (means of 3.64 and 3.63 respectively). Managers adjudged agencies in rural Tasmania (according to the Ramanujam et al. (1986a) index) as having a mean of 1.56 (see Table 57 below). These differences were not statistically significant.

Table 57   *Ramanujam et al. (1986a) index of objective fulfilment by location (Organisations [n=137])*

Index	1* n=65	2 n=25	3 n=26	4 n=11	5 n=9	6 n=1
Mean	3.63	3.43	3.35	3.64	3.73	1.56
Standard Deviation	.87	.82	.63	.64	.74	n/a

*1=Melbourne Metropolitan Area
2=Provincial City (Victoria)
3=Rural Victoria
4=Hobart Metropolitan Area
5=Provincial City (Tasmania)
6=Rural Tasmania

Table 58 (below) shows that Tasmanian managers rated their agencies level of objective fulfilment as being similar to their Victorian counterparts with a mean of 3.60 compared to 3.53. A t-test showed that this difference was not significant (value of 2.05 significant at .715).

Table 58   *Ramanujam et al. (1986a) index of objective fulfilment by State*

Index	Victoria (n=117)	Tasmania (n=20)
Mean	3.53	3.60
Standard Deviation	.811	.773

This measure of organisational performance was also validated by comparing survey questionnaires completed by employees from the same agencies as the managers. The correlation between the two sets of survey questionnaires was computed as a test of the validity of the subjective measure. The correlation was .081 (significant at the .384 level of confidence).

1.2.3   Job satisfaction

This dimension was measured using a 5-point Likert scale from 'Strongly Disagree' to 'Strongly Agree'. All results and tables using this dimension were constructed from answers to questions in the survey instrument.

The histogram below (Figure 20) shows an approximately normal distribution with a mean of 3.29 (out of 5).

Figure 20   *Miskel's (1982) index of job satisfaction*

Job satisfaction

Internal consistency of the index was assessed and judged using Cronbach's alpha (Cronbach, 1951; Van de Ven & Ferry, 1980). Factor scores were calculated for each of the job satisfaction dimensions. The alpha score for the index was .5692, and the factor loadings were all above .50 (see Table 59 below) indicating that all the factors measured states of job satisfaction. These assessments provided adequate support for the validity and reliability of the index.

Table 59   *Miskel's (1982) index of job satisfaction*

Miskel's (1982) Index	Alpha score	Factor Loadings
Job satisfaction:	.5692	
Future in agency		.625
Satisfaction with job		.867
Changed circumstances		.503
Changing jobs		.793
Personal satisfaction		.530
Overall satisfaction		.854
Compared to other people		.550

Managers in extra large agencies were satisfied with their jobs according to the Miskel (1982) index, as were managers in medium sized agencies (means of 3.47 and 3.46 respectively). Table 60 (below) also shows that managers in small organisations (39 per cent of the sample) were barely satisfied with their jobs in terms of the Miskel (1982) index. These differences were not statistically significant.

Table 60   Miskel's (1982) job satisfaction index of organisational performance by size organisation (Organisations [n=137])

Miskel's (1982) Index	Small (1-10) n=54	Medium (11-30) n=46	Large (31-100) n=22	Extra Large (>100) n=15
Mean	3.081	3.463	3.311	3.470
Standard Deviation	.496	.517	.443	.532

When job satisfaction is judged by location, managers in Victorian provincial cities were quite satisfied (mean of 3.43) as were managers in agencies in the Hobart and Melbourne Metropolitan areas (each with a mean of 3.31). Managers in agencies in rural Tasmania were barely satisfied (as judged by managers according to the Miskel, 1982), as can be seen in Table 61 below. These differences were not statistically significant.

Table 61   Miskel's (1982) job satisfaction index of organisational performance by location (Organisations [n=137])

Miskel's (1982) Index	1* n=65	2 n=25	3 n=26	4 n=11	5 n=9	6 n=1
Mean	3.313	3.437	3.170	3.313	3.081	2.91
Standard Deviation	.508	.607	.484	.485	.592	N/a

*1=Melbourne Metropolitan Area
2=Provincial City (Victoria)
3=Rural Victoria
4=Hobart Metropolitan Area
5=Provincial City (Tasmania)
6=Rural Tasmania

Table 62 (below) shows that Victorian managers rated their level of job satisfaction as having a mean of 3.30. Their Tasmanian counterparts had a mean of 3.19. A t-test showed that this difference was not significant (value of 2.05 significant at .36).

Table 62   *Miskel's (1982) job satisfaction index of organisational performance by State (Organisations [n=137])*

| Miskel's (1982) Index	Victoria (n=117)	Tasmania (n=20)
Mean	3.305	3.19
Standard Deviation	.5274	.5445

This measure of organisational performance was validated by comparing survey questionnaires completed by employees from the same agencies as the managers. The correlation between the two sets of survey questionnaires was computed as a test of the validity of the subjective measure. The correlation was .114 (significant at the .220 level of confidence).

1.2.4   Central life interests

This dimension was measured using a 5-point Likert scale from 'Strongly Disagree' to 'Strongly Agree'. All results and tables using this dimension were constructed from answers to questions in the survey instrument.

The histogram below (Figure 21) shows a skewed distribution with a mean of 2.82 (out of 5).

Figure 21   *Hoy & Miskel's (1987) index of central life interests*
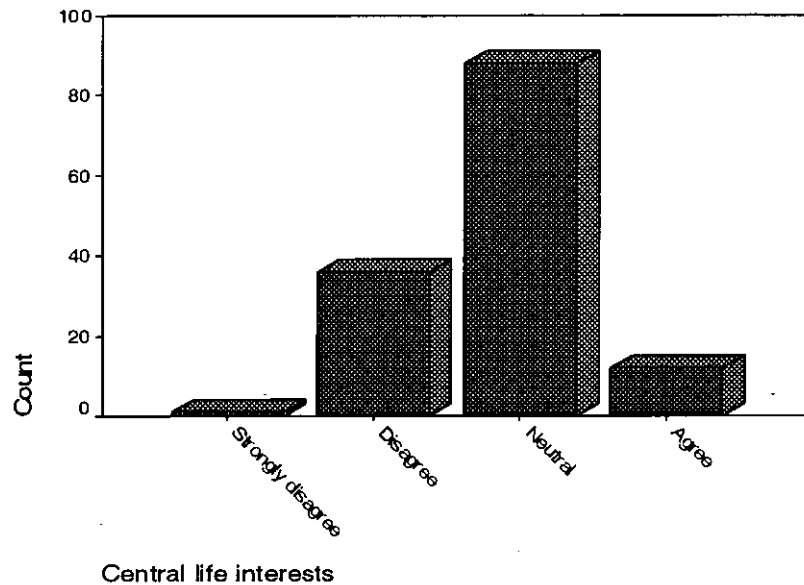
Central life interests

Internal consistency of the index was assessed and judged using Cronbach's alpha (Cronbach, 1951; Van de Ven & Ferry, 1980). The alpha score for the index was .6598, and the factor loadings were all above .50 (see Table 63 below) indicating that all the factors measured states of central life interest. Factor scores were calculated for each of the central life interest dimensions. These assessments provided adequate support for the reliability of the index.

Table 63   *Hoy & Miskel's (1987) index of central life interests*

Hoy & Miskel's (1987) Index	Alpha score	Factor Loadings
Central life interests:	.6598	
External interests		.756
Job related interests		.816
Worry focus		.786
Importance of interests		.539
Energy direction		.567
Conversation topics		.611
Central concerns		.755

Table 64 (below) shows that managers in large organisations (16 per cent of the sample) rated their central life interests as being most closely allied to their jobs/agencies in terms of the Hoy & Miskel (1987) index of central life interests (mean of 2.95), with managers in medium sized agencies having a rating of 2.85. Although the means were marginally above neutral, there were no categories of agencies in which managers' central life interests were negative to their jobs/agencies. These differences were not statistically different.

Table 64   *Hoy & Miskel's (1987) central life interest index of organisational performance by size organisation (Organisations [n=137])*

Hoy & Miskel's (1987) Index	Small* (1-10) n=54	Medium (11-30) n=46	Large (31-100) n=22	Extra Large (>100) n=15
Mean	2.768	2.855	2.955	2.709
Standard Deviation	.464	.532	.557	.461

When central life interests is judged by location, the central life interests of managers in Tasmanian rural agencies as related to their jobs/agencies had a mean of 3.03, a similar rating to managers in agencies in Victorian provincial cities (mean of 3.03). Managers whose central life interests were marginally related to their jobs/agencies (as judged by managers according to the Hoy & Miskel (1987) index) were in the Hobart Metropolitan area (see Table 65 below). These differences were not statistically different.

Table 65   *Hoy & Miskel's central life interest index of organisational performance by location (Organisations [n=137])*

Hoy & Miskel's (1987) Index	1* n=65	2 n=25	3 n=26	4 n=11	5 n=9	6 n=1
Mean	2.798	3.028	2.761	2.693	2.742	3.030
Standard Deviation	.5398	.52548	.460	.3697	.5205	n/a

*1=Melbourne Metropolitan Area
2=Provincial City (Victoria)
3=Rural Victoria
4=Hobart Metropolitan Area
5=Provincial City (Tasmania)
6=Rural Tasmania

Table 66 (below) shows that Victorian managers rated their central life interests with a mean of 2.84, while their Tasmanian counterparts rated a mean of 2.72. A t-test showed that this difference was not significant (value of 2.03 significant at .22).

Table 66   *Hoy & Miskel's (1987) central life interest index of organisational*
   *performance by State (Organisations [n=137])*

Hoy & Miskel's (1987) Index	Victoria (n=117)	Tasmania (n=20)
Mean	2.837	2.72
Standard Deviation	.5246	.5065

This measure of organisational performance was validated by comparing survey questionnaires completed by employees from the same agencies as the managers. The correlation between the two sets of survey questionnaires was computed as a test of the validity of the subjective measure. The correlation was .082 (significant at the .378 level of confidence).

1.2.5   Profitability

The final measure of organisational performance used in the study was profitability. The histogram below (Figure 22) shows that managers from only 97 agencies provided a profitability figure at all. Of these, 40 reported a zero profit result. Of the 97 that did respond, the mean profit (income less expenditure) was 3.2 per cent. Many comments were made on the survey questionnaires relating to this item. Comments such as 'we are not supposed to make a profit', 'we are a not-for-profit organisation', 'we don't have to worry about keeping costs down', 'all our money comes from the government', and 'we spend all we make', were common.

Figure 22   *Profitability measure of organisational performance*
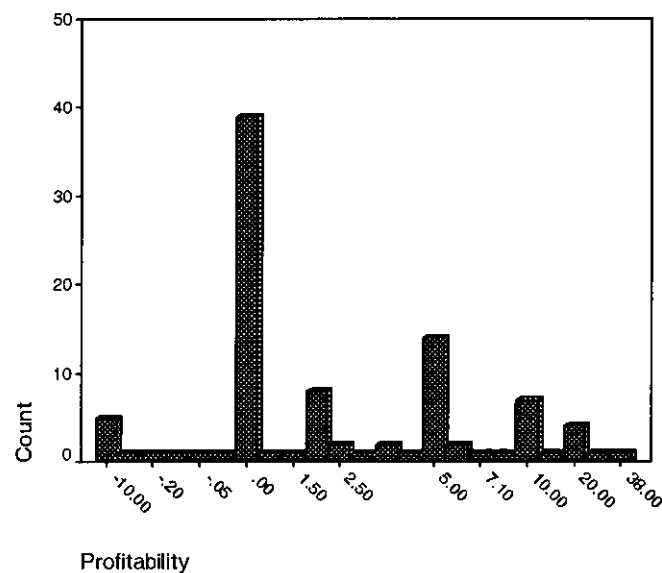
Profitability

Given the above comments, it is not surprising that profitability figures for all sizes of agencies were low, with high standard deviations. One standard deviation from the mean for all agencies would result in a loss situation with small agencies the worst affected. Table 67 (below) also shows large agencies as being the most profitable, twice as much as medium sized agencies and almost six times as much as extra large agencies.

Table 67   *Profitability of organisations by size organisation*
              (Organisations [n=137])

Profitability	Small (1-10) n=54	Medium (11-30) n=46	Large (31-100) n=22	Extra Large (>100) n=15
Mean	2.458%	3.166%	6.386%	1.195%
Standard Deviation	7.528%	5.875%	9.142%	5.674%

When profitability is evaluated by location, Victorian rural agencies were somewhat profitable (mean of 5.22 per cent) as were agencies in Tasmanian rural areas and Melbourne Metropolitan areas (mean profit figures of 4 and 3.09 per cent respectively). Agencies in provincial Victorian towns showed an average return of 1.85 per cent (see Table 68 below). These differences were not statistically different.

Table 68   *Profitability of organisations by location (Organisations [n=137])*

Profitability	1* n=65	2 n=25	3 n=26	4 n=11	5 n=9	6 n=1
Mean	3.09	1.85	5.22	2.125	2.5	4
Standard Deviation	n/a	n/a	n/a	n/a	n/a	n/a

*1=Melbourne Metropolitan Area
2=Provincial City (Victoria)
3=Rural Victoria
4=Hobart Metropolitan Area
5=Provincial City (Tasmania)
6=Rural Tasmania

Table 69 (below) shows that Victorian agencies showed an average surplus of 3.34 per cent compared to their Tasmanian counterparts with 2.38 per cent. A t-test showed that this difference was not significant (value of 2.04 significant at .47).

Table 69   *Profitability of organisations by State (Organisations [n=137])*

Profitability	Victoria (n=117)	Tasmania (n=20)
Mean	3.341%	2.385%
Standard Deviation	7.48	3.66

This measure of organisational performance was validated by comparing survey questionnaires completed by employees from the same agencies as the managers. The correlation between the two sets of survey questionnaires was computed as a test of the validity of the subjective measure. The correlation was .404 (significant at the .077 level of confidence).

The profitability measure was also validated on a subset of 10 agencies for which accounting data were available for the most recent complete year. The correlation between this measure was also computed as a test of the validity of the subjective measure. The correlation was .224 (significant at the .015 level of confidence).

1.2.6 Summary

The organisational performance construct was measured with respondents self assessing their organisations using five instruments. These instruments were Mott's (1972) index of organisational effectiveness, Ramanujam et al.'s (1986a) index of objective fulfilment, Miskel's (1982) index of job satisfaction, Hoy & Miskel's (1987) index of central life interest, and profitability. With the exception of profitability, all used a 5-point Likert scale from 'Strongly Disagree' to 'Strongly Agree' ('Poor ' to 'Very good' for Mott, 1972).

Validity and reliability for each of the five measures was assessed and established by using Cronbach's alpha (Cronbach, 1951), and factor loadings, and by comparing survey questionnaires completed by employees from the same agencies as managers. Further, the organisational effectiveness measure was also validated by comparing the scores obtained from managers and employees with those obtained from personal (confidential) interviews with various (expert) staff of the Commonwealth Department of Health and Family Services.

With respect to organisational performance, although none of the measures were found to be statistically significantly different in terms of agency size and location (but see section 1.3.1 of this Chapter next), the data revealed the following:

- small (with a mean of 4) Tasmanian provincial (with a mean of 4.06) organisations had very high manager ratings in terms of the Mott (1972) index of organisational effectiveness;
- small (with a mean of 3.59) Tasmanian provincial (with a mean of 3.73) organisations had quite high manager ratings in terms of Ramanujam et al.'s (1986a) index of objective fulfilment;
- extra large (with a mean of 3.470) agencies in Victorian provincial cities (with a mean of 3.437) had quite high manager ratings in terms of Miskel's (1982) index of job satisfaction; and
- large (with a mean of 2.955) Tasmanian Rural (with a mean of 3.030) agencies had high manager ratings in terms of Hoy & Miskel's (1987) index of central life interests.

Profitability did not prove to be a reliable measure of performance due to the not-for-profit characteristics of such organisations. This measure of organisational performance will not be included further in this Thesis.

The next section will examine the relationship between the education and training and organisational performance constructs as they apply to top management teams in disability-based organisations.

1.3   The Relationship between Education and Training of Top Management Teams and Organisational Performance

Now that the data relating to the two constructs, education and training and organisational performance have been described and shown to be fundamentally reliable and valid, this section describes the relationship between the two constructs.

The analysis firstly examines the *overall* relationship between *education and training* levels of top management teams and the five measures of organisational performance, but excluding profitability as in this Thesis, profitability did not appear to be a meaningful measure of performance. This section then examines the specific relationship between education and training levels of top management teams and each of the four remaining measures of organisational performance.

The same methodology was used in relation to *management-specific education and training* before concluding with a brief summary of the results of the data as they apply to the first research question which was:

What relationship exists between education and training levels of top management teams and organisational performance in disability-based organisations?

1.3.1   Overall relationship between education and training levels of top management teams and the four measures of organisational performance

The discussion here is in two sections. Part (a) used the *highest* level of education and training possessed by the management team from each organisation. Part (b) used the *average* level of education and training for each management team. Due to the nature of the data (previously mentioned), correlations between the education and training and organisational performance constructs were carried out using Spearman's rho, the results of which are shown in Appendices 4-6.

(a) Highest level of education and training

All the measures of organisational performance were measured on a 5 point Likert scale. The statistics in Table 70 (below) are therefore comparable, and show that agencies with a *highest* qualification of post graduate degree in their top management teams performed better than all other agencies on two of the four measures. On the other hand, agencies with top management teams with a *highest* educational average of year 10-12 performed worst on all criteria except central life interests.

When the high school data were aggregated, this situation did not change significantly. Those teams with a *highest* qualification of high school level still performed worst on three of the four criteria, and all but last on the

fourth, job satisfaction (means and standard deviations of 3.129/.612, 3.226/1.11, 3.01/.684, and 2.65/.289 respectively).

Table 70   *Descriptive statistics for highest education and training levels of top management teams by individual measures of organisational performance (Organisations [n=137])*

Highest education and training levels in top management teams		Org. effect-iveness	Obj. fulfil-ment	Job satis-faction	Central life interests
Post graduate degree n=21	Mean	3.906	3.552	3.405	2.738
	St. Dev.	.5888	1.181	.463	.571
Graduate certificate/diploma n=68	Mean	3.777	3.502	3.374	2.843
	St. Dev.	.648	.763	.505	.461
Undergraduate degree n=29	Mean	3.892	3.583	3.210	2.859
	St. Dev.	.429	.603	.547	.598
Tertiary non degree n=13	Mean	3.538	3.731	2.965	2.832
	St. Dev.	.583	.629	.457	.482
High school year 12 n=5	Mean	3.56	3.03	2.572	3.839
	St. Dev.	.841	.763	.247	.219
High school year 10 n=1	Mean	3.15	1.6	2.9	3
	St. Dev.	n/a	n/a	n/a	n/a

In relation to the correlations (shown in Appendix 4), although the correlations were weak, the results of the correlation showed that (*highest*) education and training was (as one would expect) positively correlated to a number of other measures.

Correlations were found with (*highest*) management-specific education and training (at the .01 level of significance); with Mott's (1972) index of organisational effectiveness (at the .01 level of significance); and with Miskel's (1982) job satisfaction index (at the .01 level of significance). Education and training (*highest*) was also positively correlated to organisational size (at the .05 level of significance).

As regards location, education and training (*highest* was negatively correlated with this factor (at the .01 level of significance). In other words, as agencies grow more remote from the Melbourne Metropolitan area (provincial then rural) followed by Hobart Metropolitan agencies (Tasmanian provincial then rural), the level of training and education decreased. There was a distinct (p<.005) regional effect, in which education and training levels of metropolitan and provincial managers are half a point higher than rural managers. When this is accounted for, there was a weak State effect (p<0.1) where Victorian education and training levels were a quarter of a point higher.

There were also significant correlations between the various measures of organisational performance. Overall organisational effectiveness (Mott, 1972)

was positively correlated to <u>objective fulfilment</u> (Ramanujam et al., 1986a) and was significant at the .01 level; <u>job satisfaction</u> (Miskel, 1982) is positively correlated to <u>objective fulfilment</u> and was significant at the .01 level; and <u>central life interests</u> (Hoy & Miskel, 1987) was positively correlated to <u>job satisfaction</u> and was significant at the .05 level.

When the data for Victoria and Tasmania were analysed separately (see Appendices 5 and 6), the results show that in Tasmania, the correlation between <u>education and training</u> (*highest*) levels and <u>organisational effectiveness</u> was comparatively weaker than in Victoria and overall (.541 significant at .05 as to .301 significant at .01, and as to .315 significant at .01).

However, in relation to <u>education and training</u> (*highest*) and <u>objective fulfilment</u>, only Tasmanian agencies showed a positive correlation (significant at the .05 level of confidence) compared to Victoria and overall.

In Tasmania, <u>job satisfaction</u> was also negatively correlated with <u>organisational effectiveness</u>, (-.537 significant at the .05 level of significance). In Victoria, the relationship was reversed and was significant at the 99 per cent level of confidence. Also in Victoria, <u>objective fulfilment</u> was positively correlated with <u>job satisfaction</u> (at the .05 level of confidence), and with <u>organisational effectiveness</u> (at the .01 level of confidence). This latter relationship was also significant in Tasmania, but at a weaker level when compared to Victoria and overall (.05 as to .01).

There was no significant correlation between <u>education and training</u> (*highest*) levels and <u>management-specific education and training</u> (*highest*) levels in Tasmania (in Victoria and overall, the correlation is positive and significant at the .01 level), neither was there a significant correlation between <u>education and training</u> (*highest*) levels and <u>job satisfaction</u> in Tasmania as there was in Victoria and overall (at the .01 level of significance).

Further, there was no significant correlation between <u>job satisfaction</u> and <u>central life interests</u> in Tasmania, but in Victoria this relationship was significant at the .05 level of confidence. Victoria also showed a negative, significant (at the .01 level) correlation between <u>education and training</u> (*highest*) and <u>location</u>.

The small sample size in Tasmania may have affected the results.

(b) *Average* level of education and training

As previously stated, all the measures of organisational performance were measured on a 5 point Likert scale. The statistics in Table 71 (below) are therefore comparable, and show that agencies with an *average* of post graduate qualifications in their top management teams performed better than all other agencies on three of the four measures. On the fourth measure they ranked fourth by .02 per cent. On the other hand, agencies with top

management teams with an overall educational average of year 10-12 performed poorly on most criteria.

When the high school data were aggregated, this situation did not change significantly. Those teams with an *average* qualification of high school level still performed worst on three of the four criteria, and all but last on the fourth, job satisfaction (means and standard deviations of 3.129/.612, 3.226/1.11, 3.01/.684, and 2.65/.289 respectively).

Table 71   *Descriptive statistics for average education and training levels of top management teams by individual measures of organisational performance (Organisations [n=137])*

Average education and training levels of top management teams		Org. effect- iveness	Obj. fulfil- ment	Job satis- faction	Central life interests
Post graduate degree n=11	Mean	4.254	3.691	3.509	2.865
	St. Dev.	.559	1.537	.463	.754
Graduate certificate/diploma n=51	Mean	3.91	3.621	3.346	2.805
	St. Dev.	.644	.773	.528	.470
Undergraduate degree n=40	Mean	3.769	3.502	3.34	2.88
	St. Dev.	.442	.650	.511	.557
Tertiary non degree n=29	Mean	3.465	3.473	3.112	2.801
	St. Dev.	.549	.627	.477	.413
High school year 12 n=5	Mean	3.56	3.03	2.572	3.839
	St. Dev.	.841	.763	.247	.219
High school year 10 n=1	Mean	3.15	1.6	2.9	3
	St. Dev.	n/a	n/a	n/a	n/a

As with the *highest* level of qualifications, although the correlations for the *averages* were weak, the results of the correlation showed that education and training (*average*) was (as one would expect) positively correlated to a number of other measures.

Correlations were found with (*average*) management-specific education and training (at the .05 level of significance); with Mott's (1972) index of organisational effectiveness (at the .01 level of significance); with Ramanujam et al.'s (1986a) objective fulfilment index (at the .01 level of significance); and with Miskel's (1982) job satisfaction index (at the .05 level of significance).

As regards location, location was negatively correlated with (*average*) education and training (at the .05 level of significance). In other words, as agencies grow more remote from the Melbourne Metropolitan area (provincial then rural) followed by Hobart Metropolitan agencies (Tasmanian provincial then rural), the level of training and education decreased. As with the *highest* level of education and training, there was a distinct (p<.005) regional effect, in which education and training (*average*) levels of

metropolitan and provincial managers were half a point higher than rural managers. When this was accounted for, there was a weak State effect (p<0.1) where Victorian education and training levels were a quarter of a point higher.

Size of agencies was also important in the relationship. Organisational size was positively correlated to job satisfaction (at the .01 level of significance). In other words, the bigger the organisation, the greater the job satisfaction.

When the data for Victoria and Tasmania were analysed separately (see Appendices 5 and 6), the results showed that in Tasmania and Victoria, the correlation between education and training (*average*) levels and organisational effectiveness remained significant at .01, whereas the correlation between education and training (*average*) levels and objective fulfilment (significant at .05) was comparatively weaker than overall (.05 as compared to .01).

There was no significant correlation between education and training (*average*) levels and management-specific education and training (*average*) levels in Tasmania (in Victoria and overall, the correlation is positive and significant at the .05 level), neither was there a significant correlation between education and training (*average*) levels and job satisfaction in Tasmania. In Victoria and overall, this latter relationship was positive and significant (at the .05 level of significance).

Further, there was no significant correlation between job satisfaction and central life interests in Tasmania, but in Victoria and overall this relationship was significant at the .05 level of confidence. Victoria also showed a negative, significant (at the .05 level as is the overall value) correlation between education and training (*average*) and location, a relationship not found in Tasmania. Victoria also demonstrated that organisational size was positively correlated to job satisfaction (at the .01 level of significance), a result not found in Tasmania. Again, the small sample size in Tasmania may have affected the results.

The next section will examine the *overall* education and training effects on the various measures of organisational performance (organisational effectiveness, objective fulfilment, job satisfaction, and central life interests) in more detail.

1.3.1.1 Overall education and training levels of top management teams and organisational effectiveness

As with the previous section, the results for this and the following bivariate relationships were analysed in two ways. Part (a) used the *highest* level of education and training possessed by the management team from each organisation. Part (b) used the *average* level of education and training for each management team.

(a) *highest* level of education and training

The scatterplot of the two variables is shown below in Figure 23. The figure generally shows a positive linear slope, reflecting the Spearman's rho correlation of .315 that was significant at the .01 level.

Figure 23 *Highest education and training and Mott's (1972) index of organisational effectiveness*
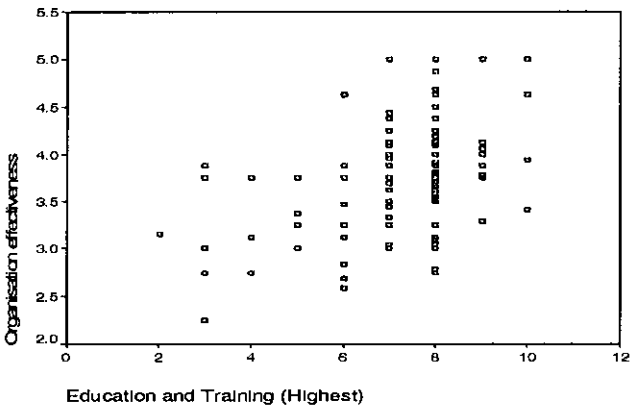
Education and Training (Highest)

For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 7.

The results showed that education and training explained 14.9 per cent of the variance in Mott's (1972) organisational effectiveness measure of organisational performance, which was highly significant as indicated by the p-value (.000). As education and training moves up a level, the explanatory level of organisational effectiveness was increased by .157 of an organisational effectiveness unit.
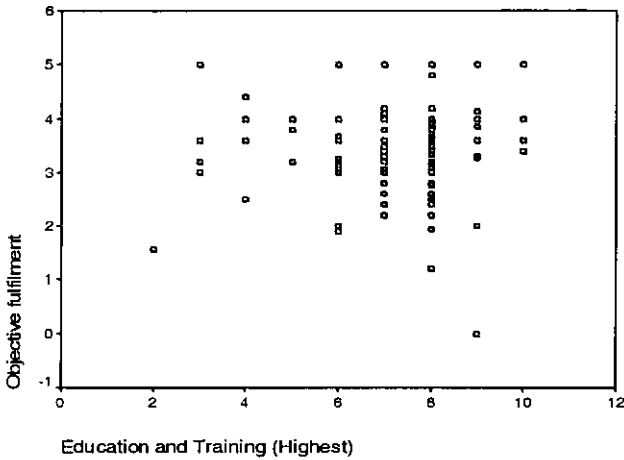
(b) *average* level of education and training

The scatterplot of the two variables is shown below in Figure 24. The figure generally shows a positive linear slope, reflecting the Spearman's rho correlation of .411 that was significant at the .01 level.

Figure 24   *Average education and training and Mott's (1972) index of*
                   organisational effectiveness
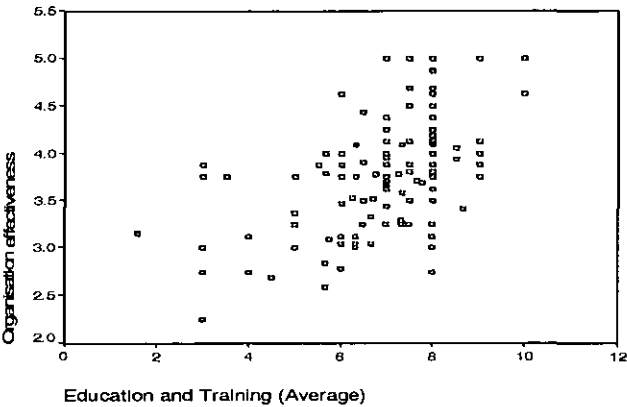
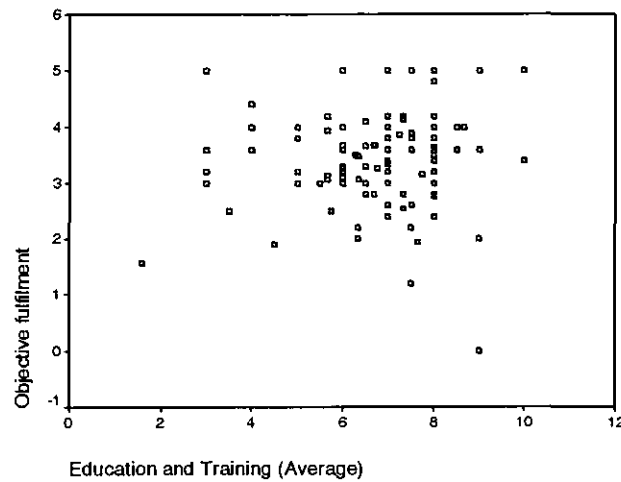
Education and Training (Average)

For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 8.

The results showed that education and training explained 21.7 per cent of the variance in Mott's (1972) organisational effectiveness measure of organisational performance, which was highly significant as indicated by the p-value (.000). As education and training moves up a level, the explanatory level of organisational effectiveness was increased by .192 of an organisational effectiveness unit.

1.3.1.2 Overall education and training levels of top management teams and objective fulfilment

As with the previous section, the results for this and the following bivariate relationships were analysed in two ways. The first set of correlations used the *highest* level of education and training possessed by the management team from each organisation. The second set used the *average* level of education and training for each management team.

(a) *highest* level of education and training

The scatterplot of the two variables is shown below in Figure 25. The figure shows a slightly positive slope that would be accentuated by the removal of the several outliers, reflecting the Spearman's rho correlation of .162 that was not significant.

Figure 25   *Highest education and training and Ramanujam et al.'s (1986a) objective fulfilment measure of organisational performance*

Education and Training (Highest)

For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 7.

The results showed that education and training explained approximately 1.7 per cent of the variance in Ramanujam et al.'s (1986a) objective fulfilment measure of organisational performance, which was not significant as indicated by the p-value (.132).

(b) *average* level of education and training

The scatterplot of the two variables is shown below in Figure 26. The figure shows a slightly positive slope that again would be accentuated by the removal of the several outliers, reflecting the Spearman's rho correlation of .243 that was significant at the .01 level.

Figure 26   *Average education and training and Ramanujam et al.'s (1986a)*
                   objective fulfilment measure of organisational performance
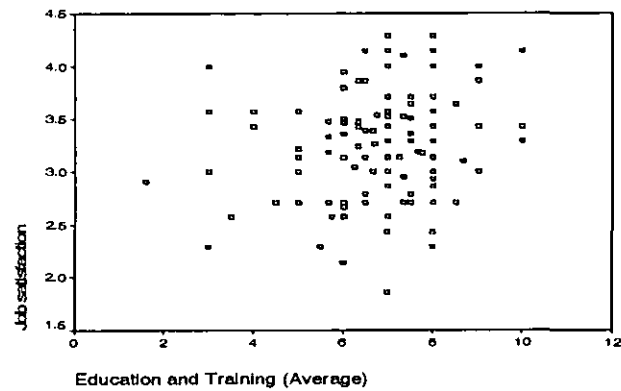

For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 8.

The results showed that education and training explained approximately 3.5 per cent of the variance in Ramanujam et al.'s (1986a) objective fulfilment measure of organisational performance, which was highly significant as indicated by the p-value (.028). As education and training moves up a level, the explanatory level was increased by .103.

1.3.1.3 Overall education and training levels of top management teams and job satisfaction

As with the previous section, the results for this and the following bivariate relationships were analysed in two ways. The first set of correlations used the *highest* level of education and training possessed by the management team from each organisation. The second set used the *average* level of education and training for each management team.

(a) *highest* level of education and training

The scatterplot of the two variables is shown below in Figure 27. The figure generally shows a positive linear slope, reflecting the Spearman's rho correlation of .252 that was significant at the .01 level.

Figure 27 *Highest education and training and Miskel's (1982) job satisfaction measure of organisational performance*

Education and Training (Highest)
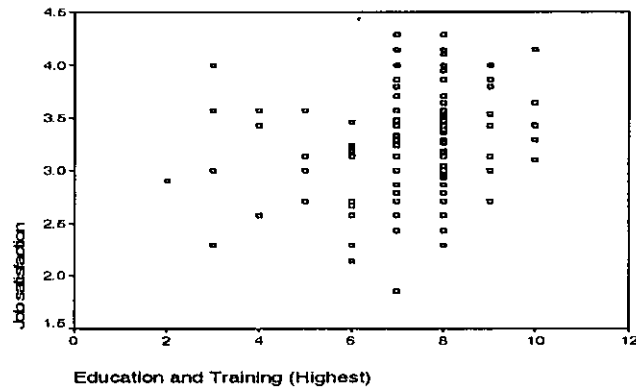
For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 7.

The results showed that education and training explained approximately 6.2 per cent of the variance in Miskel's (1982) job satisfaction measure of organisational performance, which was significant as indicated by the p-value (.003).
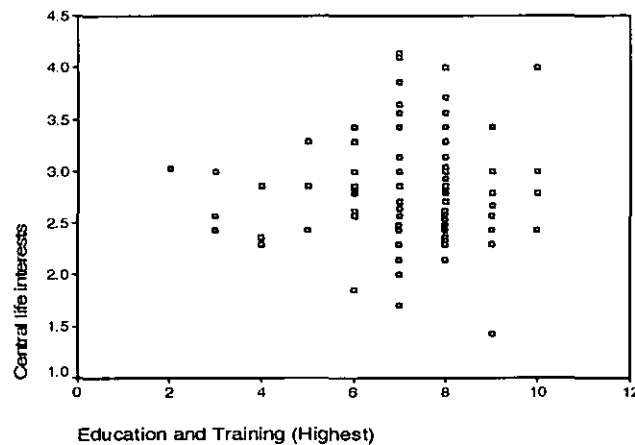
(b) *average* level of education and training

The scatterplot of the two variables is shown below in Figure 28. The figure generally shows a positive linear slope, reflecting the Spearman's rho correlation of .218 that was significant at the .05 level.

Figure 28   *Average education and training and Miskel's (1982) job satisfaction measure of organisational performance*
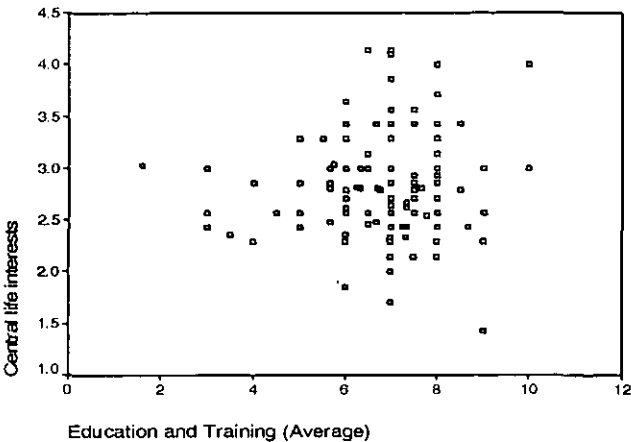

Education and Training (Average)

For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 8.

The results showed that education and training explained approximately 5.6 per cent of the variance in Miskel's (1982) job satisfaction measure of organisational performance, which was significant as indicated by the p-value (.005).

1.3.1.4 Overall education and training levels of top management teams and central life interests

As with the previous section, the results for this and the following bivariate relationships were analysed in two ways. The first set of correlations used the *highest* level of education and training possessed by the management team from each organisation. The second set used the *average* level of education and training for each management team.

(a) *highest* level of education and training

The scatterplot of the two variables is shown below in Figure 29. The figure generally shows a neutral slope, reflecting the insignificant Spearman's rho correlation of -.056.

Figure 29   *Highest education and training and Hoy & Miskel's (1987) central life interest measure of organisational performance*

Education and Training (Highest)

For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 7.

The results showed that education and training explained approximately .2 per cent of the variance in Hoy & Miskel's (1987) central life interest measure of organisational performance, which was not significant as indicated by the p-value (.597).

(b) *average* level of education and training

The scatterplot of the two variables is shown below in Figure 30. The figure generally shows a neutral slope, reflecting the insignificant Spearman's rho correlation of .021.

Figure 30   *Average education and training and Hoy & Miskel's (1987) central life interest measure of organisational performance* .

Education and Training (Average)

For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 8.

The results showed that education and training explained approximately .9 per cent of the variance in Hoy & Miskel's (1987) central life interest measure of organisational performance, which was not significant as indicated by the p-value (.262).

The next section will examine the effects of *management-specific* education and training on the various measures of organisational performance (overall organisational effectiveness, objective fulfilment, job satisfaction, and central life interests) in more detail.

1.3.2 Management-specific education and training levels of top management teams and organisational performance

This section examines the relationship between management-specific education and training levels of top management teams and the four measures of organisational performance.

1.3.2.1 Management-specific education and training levels

The discussion here is in two sections. Part (a) used the *highest* level of management-specific education and training possessed by the management team from each organisation. Part (b) used the *average* level of management-specific education and training for each management team. Due to the nature of the data (previously mentioned), correlations between the (management-specific) education and training and organisational performance constructs were carried out using Spearman's rho, the results of which are shown in Appendix 4.

(a) *Highest* level of management-specific education and training

All the measures of organisational performance were measured on a 5 point Likert scale. The statistics in Table 72 (below) are therefore comparable, and showed that agencies with a *highest* qualifications level of post graduate degree in their top management teams performed better than all other agencies on three of the four measures. On the other hand, agencies with top management teams with a *highest* educational average of tertiary non degree performed poorly on all criteria except job satisfaction, where they were ranked second.

Table 72   *Descriptive statistics for highest management-specific education and training levels of top management teams by individual measures of organisational performance (Organisations [n=83])*

Highest management-specific education and training levels in top management teams		Org. effect-iveness	Obj fulfil-ment.	Job satis-faction	Central life interests
Post graduate degree n=7	Mean	4.143	3.649	2.838	4.043
	St. Dev.	.826	.323	.566	.646
Graduate certificate/diploma n=28	Mean	3.597	3.439	2.848	3.629
	St. Dev.	.72	.432	.408	.524
Undergraduate degree n=11	Mean	3.6	3.413	2.92	3.871
	St. Dev.	.671	.447	.578	.439
Tertiary non degree n=37	Mean	3.45	3.36	2.91	3.64
	St. Dev.	.715	.572	.488	.500

When the above levels were aggregated into teams with *some* management-specific education and training compared to those with *none*, and at least undergraduate level compared to tertiary non degree and those with *none* at

all, the results were as expected. The higher the level of management-specific education and training qualification, the higher the performance on all criteria.

In relation to the correlations (shown in Appendix 4), although the correlations were weak, the results of the correlation showed that (*highest*) management-specific education and training was positively correlated to (*highest*) education and training (at the .01 level of significance), and to job satisfaction (at the .01 level of significance).

Size and location of agencies were also important in the relationship. Organisational size was positively correlated to (*highest*) management-specific education and training (at the .01 level of significance). In other words, the bigger the organisation, the higher the levels of (*highest*) management-specific education and training. Management-specific education and training (*highest*) was also correlated (negatively) with location (at the .05 level of significance). In other words, the further the organisation from the metropolitan area, the lower the levels of (*highest*) management-specific education and training.

When the data for Victoria and Tasmania were analysed separately (see Appendices 5 and 6), the results showed that in Tasmania there were no significant correlations because of the small sample size. Victoria's correlations were almost identical to the overall set of correlations (positively and significantly correlated with size, (*highest*) education and training, and job satisfaction), although (*highest*) management-specific education and training ceased to be significantly correlated with location.

(b) *Average level of management-specific education and training*
As previously stated, all the measures of organisational performance were measured on a 5 point Likert scale. The statistics in Table 73 (below) are therefore comparable, and showed that agencies with an *average* of post graduate management qualifications in their top management teams performed better than all other agencies on all of the four measures. On the other hand, agencies with top management teams with an overall management educational average of year 10-12 performed worst on all criteria.

As with the *highest* levels of management-specific education and training, when the above *average* levels were aggregated into teams with *some* management-specific education and training compared to those with *none*, and at least undergraduate level compared to tertiary non degree and those with none at all, the results were as expected. The higher the level of qualification, the higher the performance on all criteria.

Table 73   *Descriptive statistics for average management-specific education and training levels of top management teams by individual measures of organisational performance (Organisations [n=83])*

Average management-specific education and training levels of top management teams		Org. effect- iveness	Obj. fulfil- ment.	Job satis- faction	Central life interests
Post graduate degree	Mean	4.583	5	3.81	3.19
n=3	St. Dev.	.722	0	.358	.734
Graduate certificate/diploma	Mean	4	3.622	3.604	2.983
n=9	St. Dev.	.864	.441	.461	.556
Undergraduate degree	Mean	3.839	3.671	3.499	3.073
n=7	St. Dev.	.752	.585	.502	.658
Tertiary non degree	Mean	3.747	3.566	3.4	2.885
n=39	St. Dev.	.579	.792	.516	.426
Year 10-12	Mean	3.545	3.384	3.316	2.757
n=25	St. Dev.	.415	.622	.468	.426

In relation to the correlations (shown in Appendix 4), although the correlations were weak, the results of the correlation showed that (*average*) management-specific education and training was positively correlated to (*average*) education and training (at the .05 level of significance), and to job satisfaction (at the .01 level of significance). Management-specific education and training (*average*) was also positively correlated to size (at the .01 level of significance).

When the data for Victoria and Tasmania were analysed separately (see Appendices 5 and 6), the results showed that in Tasmania there were no significant correlations because of the small sample size. Victoria's correlations were almost identical to the overall set of correlations i.e. management-specific education and training was positively correlated to (*average*) education and training (at the .05 level of significance), to job satisfaction (at the .01 level of significance), and to size (at the .01 level of significance).

The next section deals with the relationship between *management-specific* education and training levels of top management teams and each of the four measures of organisational performance (organisational effectiveness, objective fulfilment, job satisfaction, and central life interests) in more detail.

1.3.2.2 Management-specific education and training levels of top management teams and organisational effectiveness

As with the previous section, the results for this and the following bivariate relationships were analysed in two ways. The first set of correlations used the *highest* level of management-specific education and training possessed by the management team from each organisation. The second set used the *average* level of management-specific education and training for each management team.

(a) *highest* level of management-specific education and training

The scatterplot of the two variables is shown below in Figure 31. The figure generally shows a neutral slope, reflecting the Spearman's rho correlation of .008 that was not significant.

Figure 31   *Management-specific highest education and training and Mott's (1972) index of organisational performance*

Management education and training (Highest)
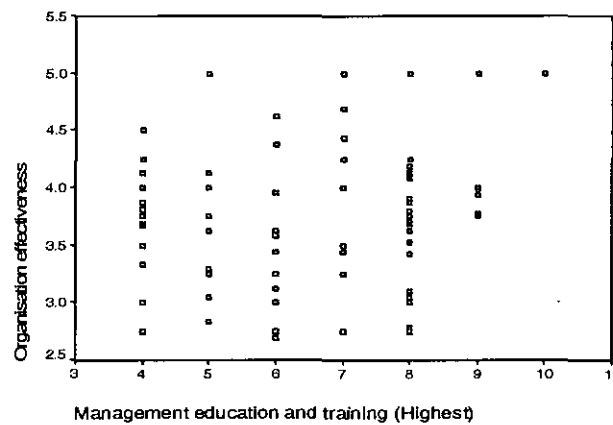
For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 9.

The results showed that education and training did not explain any of the variance in Mott's (1972) measure of organisational performance, which was not significant as indicated by the p-value (.811).

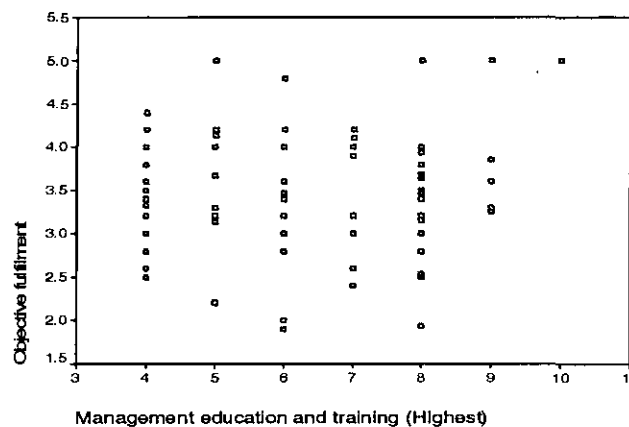(b) *average* level of management-specific education and training

The scatterplot of the two variables is shown below in Figure 32. The figure generally shows a neutral slope, reflecting the Spearman's rho correlation of .028 that was not significant.

Figure 32   *Management-specific average education and training and Mott's (1972) index of organisational performance*

Management education and training (Average)
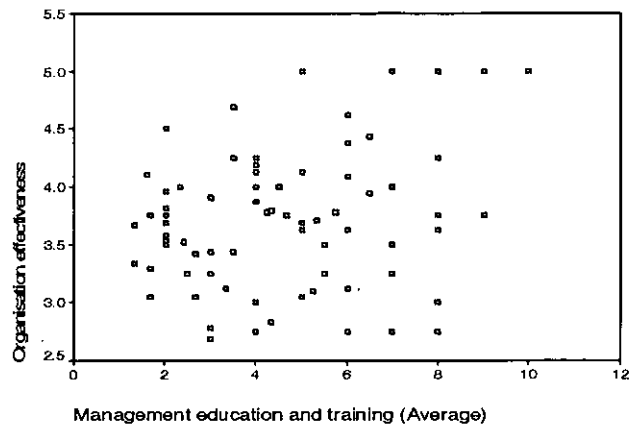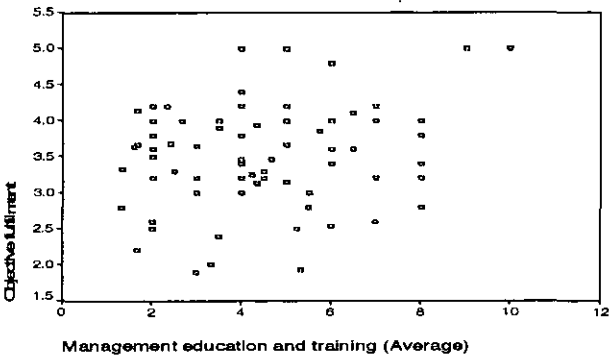
For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 10.

The results showed that education and training explained approximately 1.1 per cent of the variance in Mott's (1972) measure of organisational performance, which was not significant as indicated by the p-value (.223).

1.3.2.3 Management-specific education and training levels of top management teams and objective fulfilment

As with the previous section, the results for this and the following bivariate relationships were analysed in two ways. The first set of correlations used the *highest* level of management-specific education and training possessed by the management team from each organisation. The second set used the *average* level of management-specific education and training for each management team.

(a) *highest* level of management-specific education and training

The scatterplot of the two variables is shown below in Figure 33. The figure generally shows a neutral slope, reflecting the Spearman's rho correlation of .087 that was not significant.

Figure 33   *Management-specific highest education and training and Ramanujam et al.'s (1986a) objective fulfilment measure of organisational performance*

Management education and training (Highest)

For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 9.

The results showed that education and training explained approximately 1.2 per cent of the variance in Ramanujam et al.'s (1986a) objective fulfilment measure of organisational performance, which was not significant as indicated by the p-value (.201).
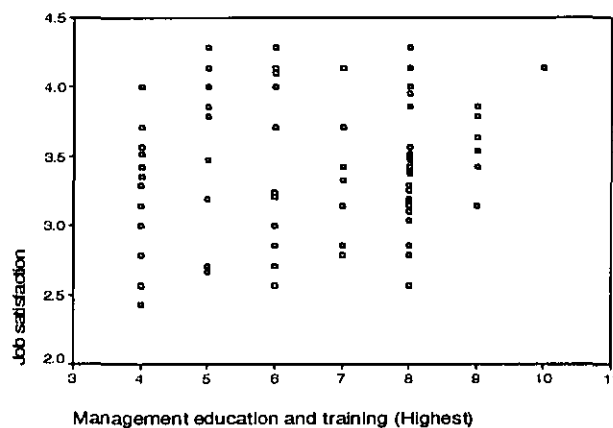
(b) *average* level of management-specific education and training

The scatterplot of the two variables is shown below in Figure 34. The figure generally shows a neutral slope, reflecting the Spearman's rho correlation of .104 that was not significant.

Figure 34   *Management-specific average education and training and Ramanujam et al.'s (1986a) objective fulfilment measure of organisational performance*

For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 10.

The results showed that education and training explained approximately 2.5 per cent of the variance in Ramanujam et al.'s (1986a) objective fulfilment measure of organisational performance, which was significant as indicated by the p-value (.063).

1.3.2.4 Management-specific education and training levels of top management teams and job satisfaction

As with the previous section, the results for this and the following bivariate relationships were analysed in two ways. The first set of correlations used the *highest* level of management-specific education and training possessed by the management team from each organisation. The second set used the *average* level of management-specific education and training for each management team.

(a) *highest* level of management-specific education and training

The scatterplot of the two variables is shown below in Figure 35. The figure generally shows a positive (though not linear) slope, reflecting the Spearman's rho correlation of .316 that was significant at the .01 level of confidence.

Figure 35   *Management-specific highest education and training and Miskel's (1972) job satisfaction measure of organisational performance*

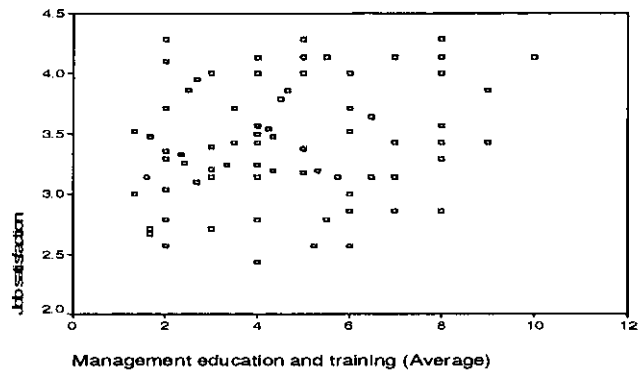Management education and training (Highest)

For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 9.

The results showed that management-specific education and training explained approximately 11.4 per cent of the variance in Miskel's (1972) job satisfaction measure of organisational performance, which was highly significant as indicated by the p-value (.000).

(b) *average* level of management-specific education and training

The scatterplot of the two variables is shown below in Figure 36. The figure generally shows a positive (though not linear) slope, reflecting the Spearman's rho correlation of .324 that was significant at the .01 level of confidence.

Figure 36   *Management-specific average education and training and Miskel's (1972) job satisfaction measure of organisational performance*

Management education and training (Average)

For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 10.

The results showed that management-specific education and training explained approximately 11.4 per cent of the variance in Miskel's (1972) job satisfaction measure of organisational performance, which was highly significant as indicated by the p-value (.000).
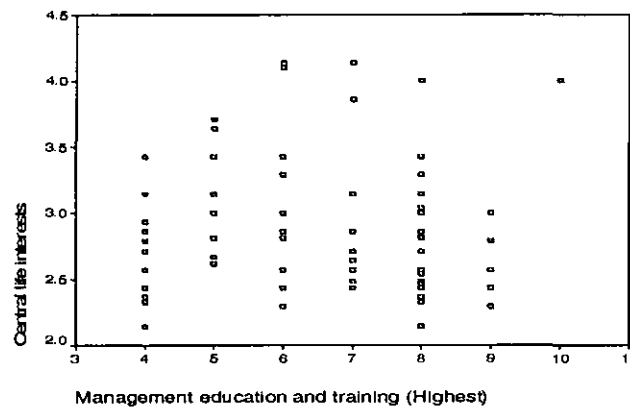
1.3.2.5 Management-specific education and training levels of top management teams and central life interests

As with the previous section, the results for this and the following bivariate relationships were analysed in two ways. The first set of correlations used the *highest* level of management-specific education and training possessed by the management team from each organisation. The second set used the *average* level of management-specific education and training for each management team.

(a) *highest* level of management-specific education and training
The scatterplot of the two variables is shown below in Figure 37. The figure generally shows a neutral slope, reflecting the Spearman's rho correlation of .119 that was not significant.

Figure 37   *Management-specific highest education and training and Hoy & Miskel's (1987) central life interest measure of organisational performance*

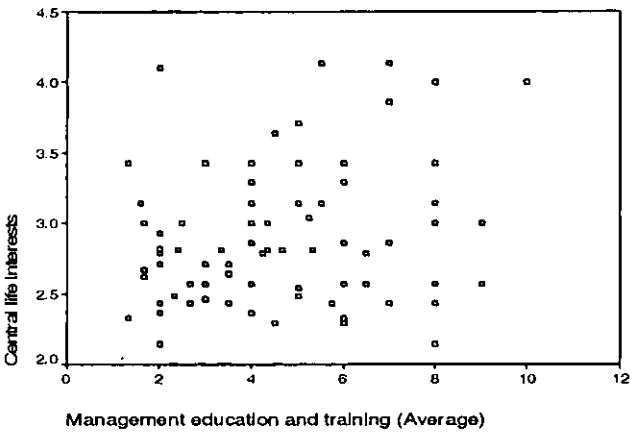Management education and training (Highest)

For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 9.

The results showed that management-specific education and training explained approximately 2.3 per cent of the variance in Hoy & Miskel's (1987) central life interest measure of organisational performance, which was highly significant as indicated by the p-value (.076).

(b) *average* level of management-specific education and training
The scatterplot of the two variables is shown below in Figure 38. The figure generally shows a positive (though not linear) slope, reflecting the Spearman's rho correlation of .197 that was significant at the .05 level of confidence.

Figure 38   *Management-specific average education and training and Hoy & Miskel's (1987) central life interest measure of organisational performance*

Management education and training (Average)

For the purposes of the following analysis, the variables were treated as being continuous, and bivariate regression analysis was undertaken as summarised in Appendix 10.

The results showed that management-specific education and training explained approximately 5.2 per cent of the variance in Hoy & Miskel's (1987) central life interest measure of organisational performance, which was significant as indicated by the p-value (.007).

The next section will examine the data relating to this first research question by using multiple regression techniques involving all the independent variables.

2   MULTIPLE REGRESSION

Three major regression models were used in this section – standard or simultaneous regression, hierarchical regression and stepwise regression. These models differed in two ways: in the treatment of overlapping variability due to correlation of the independent variables; and in terms of the order of the entry of the independent variable into the equation (Coakes & Steed, 1999).

In the standard or simultaneous model, all independent variables entered the regression equation at once so as to examine the relationship between the whole set of predictors and the dependent variable.

In stepwise regression, the number of independent variables entered and the order of entry was determined by statistical criteria generated by the stepwise procedure. Method of entry could be forward, backward, or a combination of both.

In hierarchical multiple regression, the order of entry of the independent variables was determined by the researcher.

As with the previous sections in this chapter, the results were analysed in two ways. The first set of regressions used the *highest* level of education and training possessed by the management team from each organisation. The second set used the *average* level of education and training for each management team.

2.1   Standard or simultaneous regression
(a) *highest* levels of education and training
As can be seen from Appendix 4, management-specific education and education and training were highly correlated (at the .01 level of confidence). Standard or simultaneous regression was used to determine that the independent variables of management education and training, education and training , size, and location together explained 17.4 per cent of the variance in organisational effectiveness, which was highly significant (p=.000). An examination of the p-values showed that only education and training was a significant predictor of organisational effectiveness, (p=.000).

Similarly, the independent variables of management education and training, education and training, size, and location together explained 4.7 per cent of the variance in objective fulfilment which is not significant (p=.174). An examination of the p-values showed that none of the independent variables were significant predictors of objective fulfilment.

Further, the independent variables of management education and training, education and training, size , and location together explained 14.4 per cent of the variance in job satisfaction which was highly significant (p=.000). An

examination of the p-values showed that management education and training was a significant predictor of job satisfaction, (p=.006).

Finally, the independent variables of management education and training, education and training, size, and location together explained 2.5 per cent of the variance in central life interests which is not significant. An examination of the p-values showed that management education and training was a significant predictor of central life interests (p=.097).

(b) *average* levels of education and training

As can be seen from Appendix 4, management-specific education and education and training were highly correlated (at the .05 level of confidence). Standard or simultaneous regression was used to determine that the independent variables of management education and training, education and training , size, and location together explained 22.5 per cent of the variance in organisational effectiveness, which was highly significant (p=.000). An examination of the p-values showed that only education and training was a significant predictor of organisational effectiveness, (p=.000).

Similarly, the independent variables of management education and training, education and training, size, and location together explained 6.8 per cent of the variance in objective fulfilment which is significant (p=.05). An examination of the p-values showed that none of the independent variables were significant predictors of objective fulfilment.

Further, the independent variables of management education and training, education and training, size , and location together explained 16.1 per cent of the variance in job satisfaction which was highly significant (p=.000). An examination of the p-values showed that management education and training was a significant predictor of job satisfaction, (p=.006), although the p-values for size and education and training were .076 and .055 respectively.

Finally, the independent variables of management education and training, education and training, size, and location together explained 5.4 per cent of the variance in central life interests which is not significant. An examination of the p-values showed that management education and training was a significant predictor of central life interests (p=.015).

2.2   Stepwise regression

(a) *highest* level of education and training

Stepwise regression was used to determine that the only significant independent variable to be entered into the regression equation using organisational effectiveness as the dependent variable was education and training. This variable explained 14.9 per cent of the variability in organisational effectiveness, (p=.000). The independent variables of size, location, and management education and training, failed to meet the selection criteria and were all excluded from the regression equation.

However, none of the independent variables were entered into the regression equation using <u>objective fulfilment</u> as the dependent variable. The independent variables of <u>size</u>, <u>location</u>, <u>education and training</u> and <u>management education and training</u> all failed to meet the selection criteria and were all excluded from the regression equation.

Further, the only significant independent variable to be entered into the regression equation using <u>job satisfaction</u> as the dependent variable was <u>management education and training</u> which explained 11.4 per cent of the variability in <u>organisational effectiveness</u>, (p=.000). The independent variables of <u>size</u>, <u>location</u>, and <u>education and training</u>, failed to meet the selection criteria and were all excluded from the regression equation.

Finally, no independent variable was entered into the regression equation using <u>central life interests</u> as the dependent variable. The independent variables of <u>size</u>, <u>location</u>, <u>management education and training</u> and <u>education and training</u> all failed to meet the selection criteria and were all excluded from the regression equation.

(b) *average* level of education and training

Stepwise regression was used to determine that the only significant independent variable to be entered into the regression equation using <u>organisational effectiveness</u> as the dependent variable was <u>education and training</u>. This variable explained 21.7 per cent of the variability in <u>organisational effectiveness</u>, (p=.000). The independent variables of <u>size</u>, <u>location</u>, and <u>management education and training</u>, failed to meet the selection criteria and were all excluded from the regression equation.

Similarly, the only significant independent variable to be entered into the regression equation using <u>objective fulfilment</u> as the dependent variable was <u>education and training</u> which explained 3.5 per cent of the variability in <u>organisational effectiveness</u>, (p=.028). Again, the independent variables of <u>size</u>, <u>location</u>, and <u>management education and training</u>, failed to meet the selection criteria and were all excluded from the regression equation.

Further, the only significant independent variable to be entered into the regression equation using <u>job satisfaction</u> as the dependent variable was <u>management education and training</u> which explained 11.4 per cent of the variability in <u>organisational effectiveness</u>, (p=.000). The independent variables of <u>size</u>, <u>location</u>, and <u>education and training</u>, failed to meet the selection criteria and were all excluded from the regression equation.

Finally, the only significant independent variable to be entered into the regression equation using <u>central life interests</u> as the dependent variable was <u>management education and training</u> which explained 5.2 per cent of the variability in <u>organisational effectiveness</u>, (p=.007). The independent variables of <u>size</u>, <u>location</u>, and <u>education and training</u>, failed to meet the selection criteria and were all excluded from the regression equation.

2.3   Hierarchical multiple regression

(a) *highest* level of education and training

Hierarchical multiple regression was used to determine that location only contributed .2 per cent of the variance in organisational effectiveness. Education and training and location together contributed 15.8 per cent of the variance in organisational effectiveness, with education and training making a significant unique contribution of 15.6 per cent of the variance (p=.000). The independent variable of management education and training only added a further 1.5 per cent of explanation.

Similarly, the independent variable of location only contributed .6 per cent of the variance in objective fulfilment. Education and training and location together contributed 1.2 per cent of the variance in objective fulfilment, with the independent variable of management education and training adding a further 1.0 per cent of explanation.

Also, the independent variable of size was a significant predictor (p=.004) and contributed 5.8 per cent of the variance in job satisfaction. Location added a further .9 per cent of explanation (p=.010). Education and training on its own contributed a further 3.6 per cent of explanation (p=.002), while management education and training added a further 4.1 per cent of explanation (p=.000). When all the other independent variables were added, size was no longer a significant predictor. In the same way, when management education and training was entered into the regression equation, the effect of education and training became insignificant. These phenomena indicated significant correlations between the variables.

Finally, the independent variable of location only contributed .3 per cent of the variance in central life interests. Education and training added nothing further in explanatory value, but management education and training added a significant unique contribution of 2.1 per cent of explanation (p=.097).

(b) *average* level of education and training

Hierarchical multiple regression was used to determine that location only contributed .2 per cent of the variance in organisational effectiveness. Education and training and location together contributed 22.4 per cent of the variance in organisational effectiveness, with education and training making a significant unique contribution of 22.2 per cent of the variance (p=.000). The independent variable of management education and training only added a further .1 per cent of explanation.

Similarly, the independent variable of location only contributed .6 per cent of the variance in objective fulfilment. Education and training and location together contributed 3.6 per cent of the variance in objective fulfilment, with education and training making a significant unique contribution of 3.0 per cent of the variance (p=.042). The independent variable of management education and training added a further 1.2 per cent of explanation.

Also, the independent variable of size was a significant predictor (p=.004) and contributed 5.8 per cent of the variance in job satisfaction. Location added a further .9 per cent of explanation but was not a significant predictor. Education and training on its own contributed a further 4.4 per cent of explanation (p=.011), while management education and training added a further 5.0 per cent of explanation (p=.006). When the other independent variables were added, the effect of size became insignificant. In the same way, when management education and training was entered into the regression equation, the effect of education and training became insignificant. These phenomena indicated significant correlations between the variables.

Finally, the independent variable of location only contributed .3 per cent of the variance in central life interests. Education and training and location together contributed 1.0 per cent of the variance in central life interests, with management education and training adding a significant unique contribution of 4.3 per cent of explanation (p=.015).

2.4 Regression summary

This section examined the relationship between education and training and organisational performance using three regression models. The major findings are as shown below.

(a) Standard or simultaneous regression

Education and training (*highest* and *average*) and management education and training (*highest* and *average*) were significant predictors of organisational effectiveness and job satisfaction. Further, management education and training (*highest* and *average*) was a significant predictor of central life interests.

None of the independent variables were significant predictors of objective fulfilment.

(b) Stepwise regression

Education and training (*highest* and *average*) was a significant predictor of organisational effectiveness and job satisfaction. Further, management education and training (*highest* and *average*) was a significant predictor of job satisfaction.

Education and training (*average*) was a significant predictor of objective fulfilment, and management education and training (*average*) was a significant predictor of central life interests.

(c) Hierarchical multiple regression

Education and training (*highest* and *average*) made a significant unique contributions towards explaining the variance in organisational effectiveness.

Education and training (*average*) made a significant unique contribution towards explaining the variance in objective fulfilment, while size, location (but only when highest levels of education were considered), education and training (*highest* and *average*), and management education and training (*highest* and *average*) each made significant unique contributions towards explaining the variance in job satisfaction. In this latter relationship, management education and training (*highest* and *average*), size, and education and training (*highest* and *average*) were significantly correlated.

Management education and training (*highest* and *average*) made a significant unique contribution towards explaining the variance in central life interests.

3   SUMMARY

This Chapter was restricted to presentation and analysis of the collected data, without drawing general conclusions or comparing results to those of other researchers which were discussed in Chapter 3 (Perry, 1995). The Chapter presented and analysed the data in three ways. Firstly, descriptive statistics were used to get a 'feel' for the data. Secondly, measures of reliability (Cronbach's alpha and principal components) were used to demonstrate the 'goodness' of the data (Cronbach, 1951; Van de Ven & Ferry, 1980). Factorial validity was also established by submitting the data to factor analysis. Convergent validity was established by testing effectiveness measures between managers and staff, and by comparing external (expert) rankings of organisations. And thirdly, appropriate statistical manipulation (including bivariate, multivariate, and regression techniques) was conducted in relation to hypothesis testing.

The Chapter examined the results of the data as they related to the first research question:

What relationship exists between education and training levels of top management teams and organisational performance in disability-based organisations?

Each construct in the question was examined individually, prior to discussing the relationship between the constructs in the research question. Overall education and training levels were discussed for individual managers/supervisors and then for organisations, followed by management-specific education and training levels for individuals and organisations.

Organisational performance was examined from the five perspectives of overall organisational effectiveness, objective fulfilment, job satisfaction, central life interests, and profitability.

There were significant statistical differences between the *overall* educational levels of *individual* managers when assessed by the location of their employing agencies, incorporating State and regional differences. These differences were predominantly between managers in Rural Tasmanian agencies and managers in agencies in all other areas, with managers in Rural Tasmanian agencies being less well qualified than managers in all other areas.

Statistically significant differences were also found between the educational levels of managers in the Melbourne Metropolitan Area and those in Rural Victoria and the Hobart Metropolitan area, with managers in Rural Victorian and Hobart Metropolitan agencies being less well qualified than managers in the Melbourne Metropolitan Area. In statistically significant terms, there was also a difference between managers in Victoria and Tasmania, with managers in Tasmania being less well qualified.

There was also a significant statistical difference between the *overall* educational levels of *individual* managers in the 20 to 29 year age group and the 40 to 49 year age group, with managers in the 40 to 49 year age group being better qualified than managers in the 20 to 29 year age group. A statistically significant difference was also found between the *overall* educational levels of managers with less than 5 years experience as a manager, and those with between 11 to 15 years experience as a manager, with managers with less than 5 years experience as a manager being less well qualified than those managers with between 11 to 15 years experience as a manager.

Further, there were significant statistical differences between the *management-specific* educational levels of managers when assessed by the size of their employing agencies. These differences were predominantly between small and all other sized agencies with managers in small agencies being less well qualified than those in other sized agencies. However, a statistically significant difference was also found between the *management-specific* educational levels of managers in medium and those in extra large sized agencies with managers in medium sized agencies being less well qualified than those managers in extra large sized agencies.

There were also significant statistical differences between the *management-specific* educational levels of managers when assessed by the location of their employing agencies, incorporating State and regional differences. These differences were predominantly between managers in Victorian Provincial agencies and managers in agencies in all other areas, with managers in Victorian Provincial agencies being less well qualified than those in other locations. However, a statistically significant difference was also found between the *management-specific* educational levels of managers in Rural Tasmanian agencies and those in agencies in the Melbourne Metropolitan and Victorian Rural areas, with managers in Rural Tasmanian agencies being less well qualified than those managers in the Melbourne Metropolitan and Victorian Rural areas.

A statistically significant difference was also found between the *management-specific* educational levels of managers with between 11 to 15 years of experience in the disability sector and those with greater than 15 years of experience in the disability sector, with managers having greater experience in the sector being less well qualified than those with lesser levels of experience in the sector.

There was also a significant statistical difference between the *management-specific* educational levels of *individual* managers with less than 5 or greater than 15 years experience as a manager, and between managers with between 5 to 10 and greater than 15 years experience as a manager, with managers with more managerial experience having greater levels of *management-specific* educational qualifications than those with lesser levels of managerial experience.

In respect of the *highest* level of *top management team overall* educational qualifications, statistically significant differences existed between small and extra large agencies with the qualifications in small agencies being lower, and between medium and extra large agencies with the qualifications in medium sized agencies being lower.

Statistically significant differences also existed between top management teams in agencies in the Melbourne Metropolitan Area and those in all other areas excepting Victorian Provincial areas with the qualifications in all other areas being lower.

In addition, statistically significant differences existed between agencies in Victoria and Tasmania with the qualifications in Tasmania being lower.

In respect of the *average* level of top management team *overall* educational qualifications, statistically significant differences existed between agencies in the Melbourne Metropolitan Area and those in Rural Victoria, the Hobart Metropolitan Area, and those in Rural Tasmania with the qualifications in the latter three areas being lower. Statistically significant differences also existed between agencies in Victorian Provincial areas and those in Rural Tasmania with the qualifications in Rural Tasmania being lower, and between agencies in Rural Victoria and those in Rural Tasmania with the qualifications in Rural Tasmania being lower.

In respect of the *highest* level of top management team *management-specific* educational qualifications, statistically significant differences existed between small and all other sized organisations with the qualifications in small organisations being lower, and between medium and extra large sized organisations with the qualifications in medium sized organisations being lower.

Statistically significant differences existed between organisations in Victorian Provincial areas and those in Rural Victoria, in the Hobart Metropolitan Area, and with those in Tasmanian Provincial areas with the qualifications in the

latter three areas being lower. Statistically significant differences also existed between organisations in the Melbourne Metropolitan Area and those in the Hobart Metropolitan Area, and those in Victorian Provincial areas with the qualifications in the latter two areas being lower.

Further, statistically significant differences existed between agencies in Victoria and Tasmania, with the qualifications in Tasmania being lower.

In respect of the *average* level of top management team *management-specific* educational qualifications, statistically significant differences existed between small and all other sized organisations with the qualifications in small organisations being lower. Statistically significant differences also existed between organisations in Victorian Provincial Areas and those in all other areas with the exception of those in Tasmanian Rural areas with the qualifications in Victorian Provincial Areas being lower.

Statistically significant differences also existed between agencies in Victoria and Tasmania, with the qualifications in Tasmania being lower.

With respect to organisational performance, although not statistically significant, small Tasmanian provincial organisations were rated by managers as performing very well in terms of the Mott (1972) index of organisational effectiveness, while small Tasmanian provincial organisations were rated by managers as also performing very well in terms of Ramanujam et al.'s (1986a) index of objective fulfilment. Extra large agencies in Victorian provincial cities were rated by managers as performing highly in terms of Miskel's (1982) index of job satisfaction, and large Tasmanian Rural agencies were rated by managers as performing quite well in terms of Hoy & Miskel's (1987) index of central life interests.
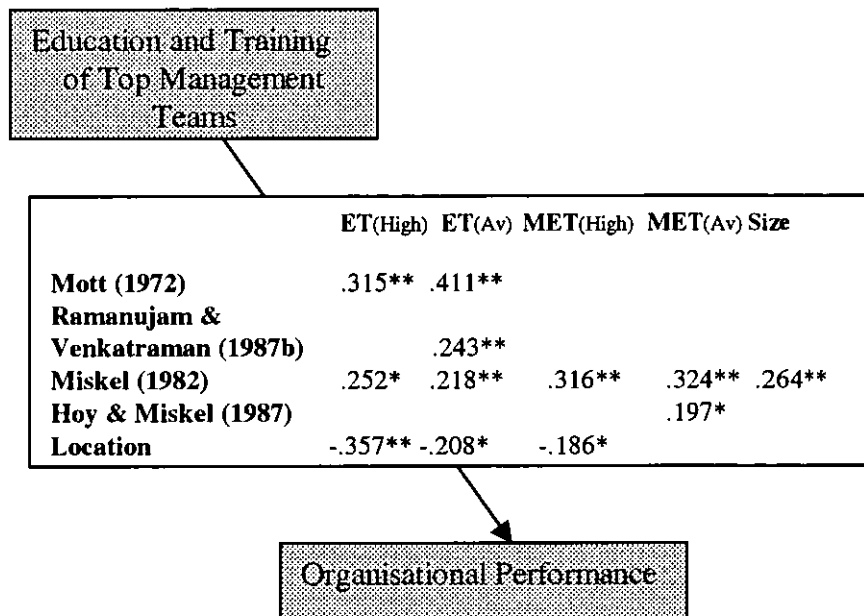
Profitability did not prove to be a reliable measure of performance due to the not-for-profit characteristics of such organisations and will not be included further in the Thesis.

The overall results of the data analysis as they relate to the first research question are shown in Figure 39 below.

As can be seen, there were statistically significant correlations between the *highest* education and training levels of top management teams in disability based agencies and their respective organisations' performance on two out of the four measures of organisational performance used in this research. These two statistically significant correlations (with organisational effectiveness and job satisfaction) were supported by the *average* education and training levels of top management teams, which in itself also demonstrated a statistically significant correlation with objective fulfilment.

From both a *highest* and an *average* perspective, management-specific education and training parallelled these correlations with job satisfaction.

Figure 39   *Relationship (Spearman's rho correlation) between education and training levels of top management teams and organisational performance*

	ET(High)	ET(Av)	MET(High)	MET(Av)	Size
Mott (1972)	.315**	.411**			
Ramanujam &					
Venkatraman (1987b)		.243**			
Miskel (1982)	.252*	.218**	.316**	.324**	.264**
Hoy & Miskel (1987)				.197*	
Location	-.357**	-.208*	-.186*		

* Correlation is significant at the .05 level (2-tailed)
** Correlation is significant at the .01 level (2-tailed)

In Tasmania, there were statistically significant correlations between education and training levels (both *highest* and *average*) and organisational effectiveness, and objective fulfilment, but none with management-specific education and training and any measure of organisational performance. On the other hand, Victorian levels of education and training levels (both *highest* and *average*) were positively and significantly correlated with organisational effectiveness and objective fulfilment, as were management-specific education and training levels with job satisfaction.

In Victoria and overall, size was also positively and significantly correlated with job satisfaction.

The regression analyses generally corroborated the above correlations, with education and training (both *highest* and *average*) being a significant predictor of organisational effectiveness. Education and training (*average*) was also a significant predictor of objective fulfilment. Further, management education and training (both *highest* and *average*) was a significant predictor of job satisfaction and central life interests.

The next Chapter, Chapter 6 will examine the data relating to the second research question.