INFORMATION TECHNOLOGY PROFESSIONALS:
A SKILLS SHORTAGE ASSESSMENT

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Abstract

The Job Vacancy Monitoring Programme conducts in depth investigations into the supply/demand balance in the labour market for a number of skilled occupations. The Information Technology (IT) professional occupation is assessed every six months. This paper presents the findings from the December 2003 investigation into skills shortages of IT professionals. It provides an assessment of trends in demand for and supply of IT professionals and, an overview of employer's recruitment experience as measured by the Department of Labour's Survey of Employers who have Recently Advertised.

Introduction

The Job Vacancy Monitoring Programme (JVMP) attempts to understand both the supply and demand forces acting on specific labour markets to produce an oversupply, balance or shortage in selected occupations.Due to the volatility of the IT professional market the JVMP assesses the IT occupation every six months. The December 2003 research is the second round of research into IT professionals. The JVMP conducted pilot research in August 2003 into a number of occupations, the results of which were not published. This paper will present the findings from the December 2003 investigation into skill shortages of IT professionals.

Demand for IT Professionals

Employment of IT professionals has grown rapidly since the early 1990s, according to the Household Labour Force Survey[1]. Figure 1 shows the number of employed IT professionals more than doubled between 1991 and 1999 from 3,700 to 9,700. This compares with growth of 21% in all occupations and 16% in professional occupations as a whole. Employment of IT professionals dipped in the year 2000 following Y2K, before increasing to 18,300 IT professionals employed at the end of 2003.

This strong growth in demand for IT professionals looks set to continue over the short and medium term. This view is based on the current positive sentiment of IT recruitment agencies. IT recruitment agents spoken to during the research process were positive about the IT market and felt that the next six to twelve months would see a considerable pick-up. Factors on which they based their positive outlook included: the rise in the number of overseas contracts awarded to New Zealand businesses, the placement of a number of senior level managers for new projects, which normally precedes the employment of team leaders and lower level IT staff to conduct the project work, and the rise in the IT contract market which is normally indicative of a strengthening market. Anecdotal evidence from recruitment agents suggested IT professionals who had previously moved into permanent

Figure 1: Employment of IT Professionals (1991-2003)
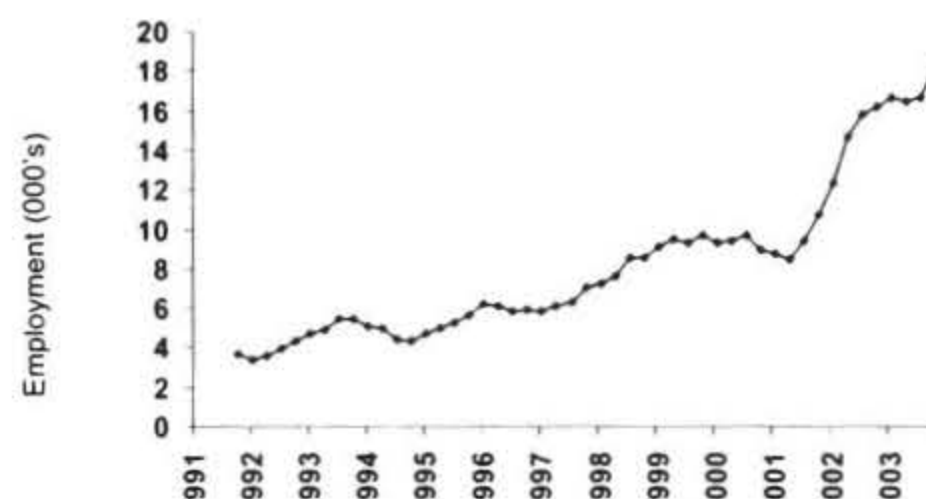
roles after a slowdown in the IT market were shifting back into contracting, gaining higher hourly rates.

Supply of IT professionals

The IT profession in New Zealand has been generously supplied by graduates from tertiary institutions over the last few years. More than 1,800 undergraduate degrees with an IT major were awarded in 2003 according to data from the Ministry of Education (MOE). During 2003 an average of approximately 18,000 IT professionals were employed. A comparison of graduate output with average employment yields a training rate of 9.4%. Training rates for other professional occupations studied were generally between 2-3%. A training rate of 10% would be regarded as extremely high.

The largest pool of available applicants for IT positions are recent graduates. However, a number of IT recruitment agents commented on the reluctance of New Zealand companies to employ recent graduates as this group is perceived to represent a high risk. Risks include the substantial investment in training required to up skill a graduate, poaching once this training has occurred and the perception that graduates are not particularly loyal to businesses. For these reasons the majority of IT recruitment agencies provide graduate placements as a free service. This reluctance to employ new graduates is

of some considerable concern as there are large numbers of new IT graduates entering the market each year.

The number of IT professionals entering New Zealand through international migration flows has increased rapidly since 2001[2]. The net outflows experienced in the late 1990s and early this century have reversed to a strong net inflow. Although permanent and long-term (PLT) departures of computing professionals have risen slowly from 338 in the 12 months to August 1998 to 421 in the year to August 2003, the larger increase in arrivals has more than compensated for this. Figure 2 shows that permanent and long-term arrivals rose from a low of 133 in the year to August 2000 to a four-year high of 749 in the twelve months to 2003. The net effect of these two forces is that net migration rose from a loss of 182 computing professionals in 1999 to a net gain of 121 in 2002 and 328 in 2003. However, this change does not significantly impact the supply of IT professionals. The combination of negative outflow from 1998 to 2001 was cancelled out by the net inflow for the years 2002 and 2003.

Immigration of IT professionals continues to increase the supply of IT professionals to New Zealand. Despite this, both employers and employment agents are concerned about suitably qualified immigrants' ability to successfully join the workforce, primarily because many immigrant IT professionals have English as their second language. Given the relatively small size of most New Zealand IT businesses, the majority of IT professionals

Figure 2: Annual Arrivals, Departures and Net Migration of Computing Professionals (1998-2003)
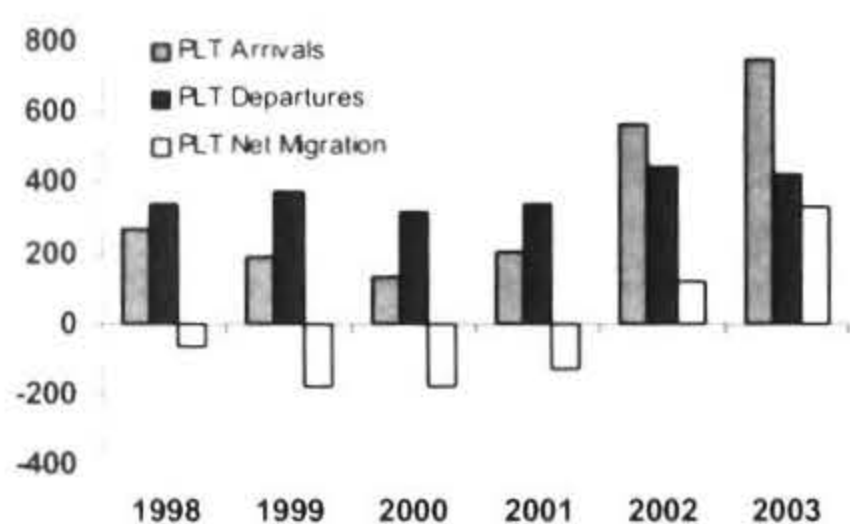
Source: Statistics New Zealand

have to interact with clients. It was noted during interviews with employers and recruitment agents that many IT professional immigrants lack the strong communication and client liaison skills required to do this.

Employer Recruitment Experience

The following analysis draws on the recruiting experiences of employers included in the Survey of Employers who have Recently Advertised (SERA). See Whiteford (2004) for a detailed description of the various components of the JVMP. The quantitative results from

the SERA Intensive and two months of the SERA Extensive (September and October 2003 advertisements) were merged to create a single data set. The data set includes a sample of 37 employers who were trying to fill 61 positions.

Employers in the sample filled 89% of their advertised positions within eight weeks[3] of advertising. This high fill rate suggests that there is no shortage in the IT market as a whole. However shortages do occur in pockets of specialisations. These specialisations in shortage will be discussed later in this paper. The fill rate measured in New Zealand is similar to the Australian fill rate for IT professionals measured by Department of Employment and Work Relations (DEWR) in July 2003.

Fill rates for IT professionals vary slightly across the country with Wellington, Christchurch and other South Island employers able to fill all their vacancies (100%), while Auckland employers were less successful (80%). These findings are consistent with trends emerging from data from the Department of Labour IT Job Vacancy Monitor (see section on *Changes in market conditions*). That data shows that the number of advertisements in Auckland increased in 2003, suggesting a strengthening market, whereas the number of advertisements in Wellington and Christchurch declined, suggesting a weakening IT market.

Employers recruiting for IT professionals had more success (fill rate 89%) in filling their vacancies than did the total sample of employers attempting to fill professional positions (75%) in the 2002 SERA surveys. This in turn was substantially higher than the fill rate of employers trying to fill trade positions (46%). This data suggests that recruitment conditions are more favourable for employers of IT professionals than other professionals and trade occupations.

The SERA results suggest that in general the IT market is generously supplied, with an average of 3.8 suitable applicants applying for each IT vacancy. This compares with 2.4 suitable applicants for each professional position and 0.8 for each trade position. One out of ten IT positions had more than ten suitable applicants. Despite this pockets of shortage remain with 11% of positions unfilled, and 16% of the vacancies receiving two or fewer suitable applicants.

IT Specialisations in Shortage

The previous section drew the conclusion that there was a balance in the market for IT professionals, but qualified this by stating that there were still pockets of shortage. This section describes the areas of specialisation that are in shortage. This section of the report is informed by the survey of a number of IT recruitment agencies in New Zealand.

This research enabled a better understanding of the specialised pockets of shortages currently occurring and the nature of the IT market as a whole. Eighteen IT recruitment agencies were interviewed regarding their general impressions about the market for IT

professionals. In addition they were provided with a list of approximately 124 specialisations and were asked to identify those specialisations in which they had experienced difficulty filling vacancies. In this report specialisations in shortage are those that were identified as being in shortage by more than 40% of agencies. The list of specialisations in shortage is shown below in Table 3. Due to the rapidly changing nature of the IT market and the continual emergence of new technologies it is possible that this list understates the number of specialisations in shortage.

Table 1: IT Specialisations in Shortage

C	Embedded C
C#	.net
C#.net	Oracle
Citrix	PeopleSoft
Cisco	SAP
Data Warehousing	Visual Basic.net
Delphi	

Changes in Market Conditions

The number of job advertisements tells us something about the balance between demand for and supply of labour. A rise in the number of job advertisements suggests that an increasing number of employers are unable to fill their vacancies through word of mouth and instead must resort to advertising. This in turn suggests that demand has been growing faster than supply. Conversely, a drop in the number of advertisements suggests that supply has been growing stronger than demand. Against this context we examine the number of IT vacancies advertised on three major job websites.
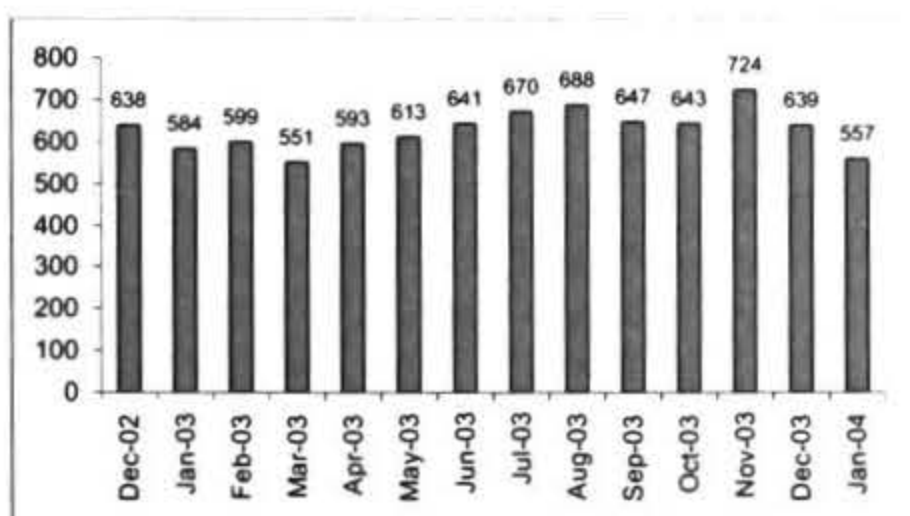
From Figure 3 it appears there has been a rise in the number of job advertisements during 2003. However, this rise may be due to seasonal factors (e.g. there may be typically an increase in recruitment at the end of the year) and without seasonal adjustments it is difficult to interpret the month-on-month data. In the absence of seasonal adjustment it would be more reliable to compare data from the same months of the previous year. As there is more than 12 months of data we are able to make two such comparisons. Figure 3 shows that the number of job advertisements was constant between December 2002 (638) and December 2003 (639) and declined slightly between January 2003 (584) and January 2004 (557). This information enables the tentative conclusion that recruiting conditions at the end of 2003 and beginning of 2004 were similar to the same period twelve months before. This was confirmed anecdotally by representatives from a number of IT recruitment companies who refer to a stagnant IT recruitment market.

While it has already been noted that employment has risen dramatically over the twelve months under review, it would appear that this rapid growth in demand has been adequately met by generous outflows from the higher education system and migratory inflows. A balance between supply and demand has been maintained over this period.

There has been some stability at the national level in the number of IT job advertisements (measured on a year-on-year basis) but there has been considerable change in the geographical share of advertisements (Figure 4). At the beginning of 2003 the highest percentage (50%) of advertisements were for Wellington based positions. This had fallen to 47% by July and to 39% by December 2003. Christchurch followed a similar trend with its share dropping from 7% in January 2003 to 4% by the end of the year. In contrast Auckland's share rose from 41% in January to 56% by December 2003. According to this measure Auckland replaced Wellington as New Zealand's major IT centre in 2003.

Figure 3: Job Ad Index of Major Centres

Source: JVMP

Figure 4: Job Ad Index of Major Centres

···· Auckland — · – Wellington — — Christchurch ——— New Zealand
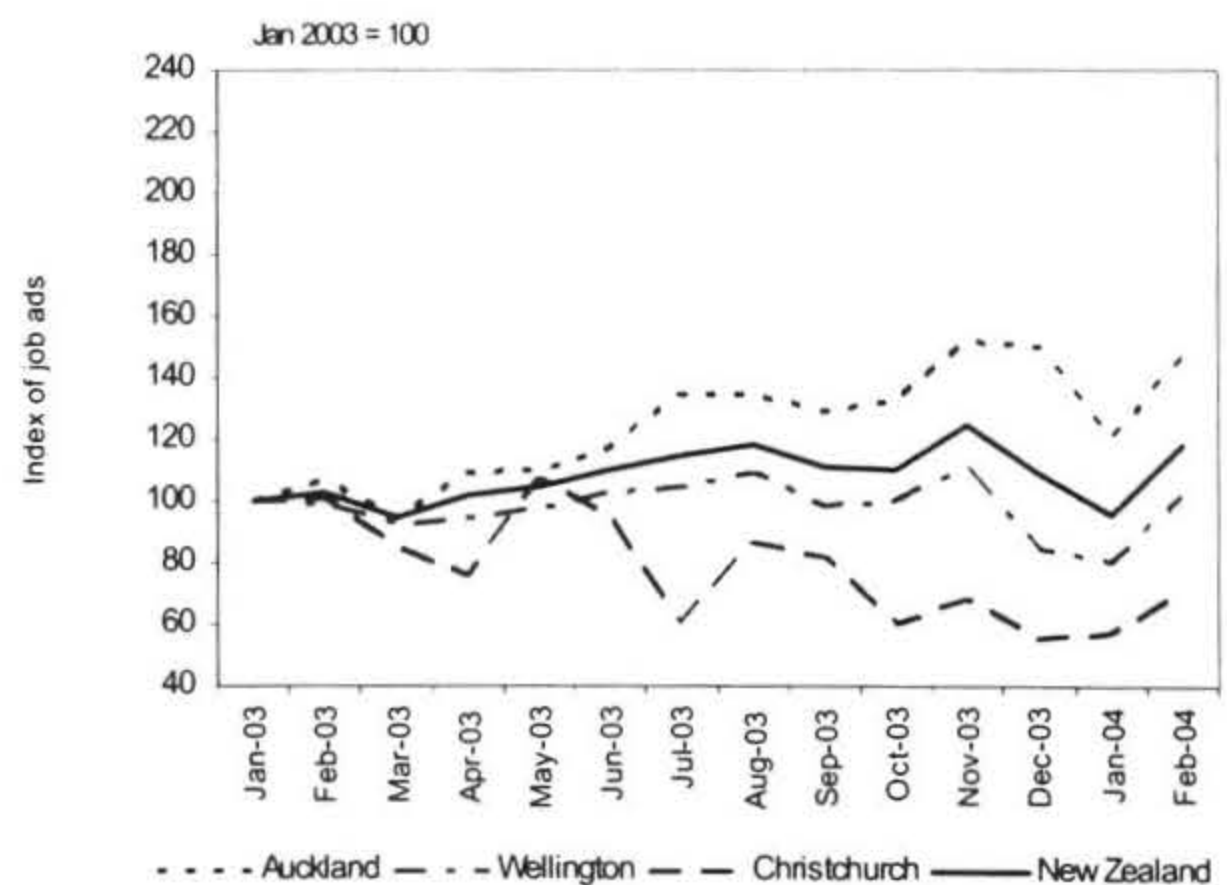
Source: JVMP

Conclusion

Employment data from the Household Labour Force Survey shows that there has been a rapid growth in demand for IT professionals since the early 1990s. The data suggests that growth in demand has accelerated during the early years of this decade. This rapid growth in demand has been accompanied by extremely generous outflows from the tertiary sector, as well as net migratory inflows. SERA surveys suggest this supply has adequately met the rapid growth in demand, as almost nine out of ten employers were able to fill their vacancies within eight weeks of advertising. This supports the conclusion that there is no shortage in the IT market as a whole. However, this conclusion should be qualified by stating that pockets of specialisations in shortage do exist. And attempts to identify those specialisations in shortage have been made.

Notes

1. All figures are annual averages of four quarters' data. This approach smoothes the data and removes any seasonal variation.

2. It should be noted that these estimates could underestimate the migrant flows of computer professionals as the occupations of approximately 40% of persons entering and leaving New Zealand are not recorded or are not identifiable.

3. Employers are approached approximately eight weeks after advertising a vacancy. If they have not completed their recruitment process after eight weeks, employers are approached at a later stage when the process has been completed.

References

Whiteford, A. (2004). JVMP: An Overview, *Proceedings of the 11th LEW Conference.*