

2003

HIGH TECH STUDY

(The Silicon Vineyard: Okanagan, Similkameen, Shuswap)

And Benchmark Comparisons to May 2001 Study

**Economic Development Commission (EDC) of the Central
Okanagan**

And

Okanagan Science & Technology Council (OSTEC)



Scope and Methodologies

The Okanagan Science & Technology Council (OSTEC) and the Economic Development Commission (EDC) of the Central Okanagan Regional District has adopted an aggressive position to **foster the growth and development of high technology industries in the Okanagan region**. The Okanagan region encompasses the communities, from south to north, of Osoyoos, Penticton, Kelowna, Vernon and Salmon Arm. A map of the study region is found below:



The EDC & OSTEC, together with its partners, contracted in 2001 to assess the impacts, contribution and current challenges facing high technology firms in the Okanagan Valley. One recommendation from the study was to benchmark each two years the state of the industry. This second analysis will cover the following areas:

- The impact of existing technology businesses on the Okanagan economy,
- An understanding of the issues confronting Okanagan technology businesses.

Methodology

A database of technology companies was developed by OSTEC from which to draw respondents to the interviews. This database contained 168 companies meeting the criteria of a 'technology' company within the region (reaching from Osoyoos to Salmon Arm). The entire list of companies was contacted by telephone to respond to the interview questions. Wherever possible, those who were not able to respond immediately were called back at a time arranged by the interviewer. In total, 81 companies provided

responses to the questions contained in the data collection tool. The interview was designed to collect detailed information on ten distinct business issues:

1. General business issues
2. Selection of location/Relocation issues
3. Personnel and staffing
4. Staff demographics
5. Labour mobility issues
6. Personnel recruitment
7. Company sales, markets and prospects
8. Research and development
9. Use of local suppliers
10. Benchmark comparisons to previous research

Frequency tabulations and descriptive statistics were utilized to analyze the quantitative data obtained from the telephone interviews. Responses to qualitative questions were analyzed manually in most cases to derive quantitative results. The total of all percentages presented in the report may not always be 100% due to the rounding of figures. A response rate of 48.2% and a margin of error of +/-5%.

2.1.1 Business Identification

Technology based enterprises were identified and compiled from three databases. These data bases included a data base provided by the EDC and databases of technology businesses provided by OSTEC. From these databases, companies were selected for inclusion in the survey in accordance with definitions of high technology employed by BC Stats¹. A resulting composite database was prepared of 168 technology companies. The database included company name, contact person, and telephone number. This composite database, after review, amendment and approval by the study Steering Committee provided the basis of the telephone survey.

2.1.2 Data Bases

While several organizations produce databases from which technology industries might be identified, available databases represent membership in organizations. Existing databases either do not differentiate or inadequately differentiate between firms by industry classification, type of industry, or product or service provided. The databases do not articulate a definition of “high tech” and hence have no means of distinguishing between “real” high tech firms, and those which would simply like to be considered such.

¹ BC Stats provides a descriptor of high tech industries. These are comprised of two industries: services and manufacturers. Service industries do not make a tangible good and include computer services, engineering, scientific and technical, and medical laboratories. They provide expertise, such as in software creation, information technology system management, bridge design, blood sample analysis, and other services. The manufacturing industries make new products and include aircraft construction, assorted electronic manufacturing, and pharmaceutical manufacturing. *Profile of the British Columbia High Technology Sector: 2000 Edition*, BC Stats and Science, Information, Science and Technology Agency, June, 2000, p.5.

The melding of two data bases and the ultimate selection of 168 companies which appeared to be “high tech” occurred in concert with the client and its partners and reflected personal knowledge of the companies, web site information, the names of the companies and referrals.

As a consequence of the process, we are confident that the 168 technology firms constituting the sample frame represents does not adequately identify most technology firms in the Okanagan region and estimate an underreporting of at least 20%. The Steering Committee feels that the true number of firms lies closer to 200.

2.1.3 Survey Design

In order to provide the EDC and OSTEC with the baseline data required, a survey protocol was developed to provide a profile of the employer and to determine the impact of the industry on the Okanagan region. Survey questions included:

- Employment,
- Wages and Salaries,
- Education and skill attainment,
- Research and development expenditures,
- Recruitment strategies,
- Revenues,
- Markets,
- Size of business,
- Linkages and partnerships,
- Business outlook, and
- Others

2.1.4 Survey Administration

The business survey was conducted during March of 2003. Business contacts were requested to complete the survey at the time of call, or to arrange for a mutually agreeable time to complete the survey. A minimum of three calls were made to potential business respondents.

Executive Summary

General Business Information

The research indicates that in 2003 there is more start-up activity within the region for technology firms than over the past three years (when the latest research was conducted). While this may sometimes be due to restructuring of existing businesses (as for the most part, the well-established organizations are still in operation) the overall tenure of businesses in the region is less than the last time the sector was researched.

Relocation figures are stable at present. With those companies who have relocated from other regions, the most frequent areas from which they relocated were the Lower Mainland and other areas throughout BC.

Human Resources

Staffing levels among technology companies in the region have changed over the past three years. The number of companies with 10 or fewer employees has increased since 2001 figures. This could be due in part to new companies entering the region or downsizing due to recent changes in the technology sector.

The need for qualified promotion and sales personnel is becoming more apparent to technology firms in the region. While these positions top the list of areas in which companies plan to hire, low wages within the region still present a problem in recruiting. The concept of partnering with education and training organizations to hire staff has changed little over the past three years.

The percentage of companies with payrolls under \$100,000 annually has increased since 2001, likely due to the number of smaller and newly established firms.

The research indicates that over the past three years, the average age of employees of technology companies in the region is getting younger. The percentage of employees under the age of 44 has increased since the last research was completed. The number of employees in technology firms in the region is expected to grow over the next year (most commonly among small companies, with fewer than five employees). Approximately half of the technology companies in the region plan to increase the number of staff in their businesses over the next year.

Sales/Key Markets

The percentage of companies with sales under \$500,000 has increased over the last three years, perhaps due in part to the age of companies or the downturn in the technology sector during that time. The total estimated revenue for technology companies in the Okanagan is \$203 million, a decrease of 18.6% from the 2001 study.

While companies in the region deal with a number of key markets, those identified as being most important are communication and education/training. Another market of growing importance among local technology companies is the finance sector. In addition to an increase in the number of market segments being serviced, more firms are doing business with clients from outside the Okanagan (the research shows increases in international, Eastern Canadian, Western Canadian, and USA business). Within the USA, the most prevalent markets for local technology companies are currently California, New York, Texas, and Florida. Many companies indicated a requirement for help in entering new markets and are looking for specific assistance.

Research & Development

The region shows a slight increase in research and development activity over the past three years. The majority of R&D activities conducted at present revolve around software development and most companies indicated they are currently developing products to introduce to the marketplace. It is estimated that the total contribution made to research and development by local firms is approximately \$24.8 million.

1.0 Benchmark Comparisons

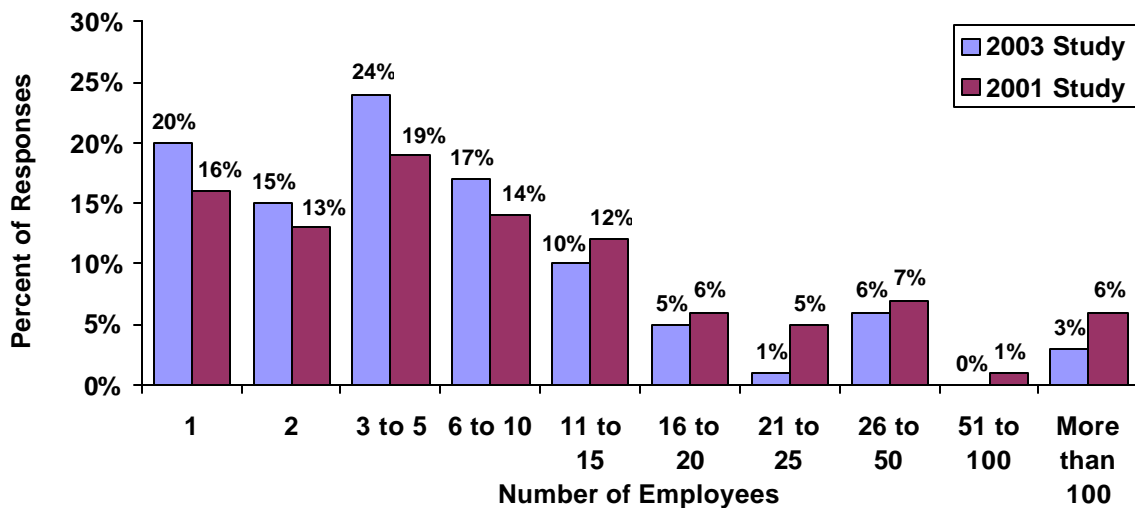
Some comparisons can be made between the results of this study and the one completed in May 2001. These comparisons should be used to determine general trends within the technology industry sector that may be useful in providing assistance to organizations within the region. Some identified trends are outlined below.

Tenure of businesses: The 2003 study reveals more businesses in their infancy than the previous research. In 2003, 27% of the respondents had been in business since before 1995. This number in the 2001 study is much greater (closer to half of the companies responding were this well established). This could indicate more start-up activity within the region for technology firms (sometimes due to restructuring), as for the most part, the well-established organizations are still in operation throughout the region.

Relocation of businesses: The relocation of technology businesses to the Okanagan has been stable since the past research. In 2003, 28% of the respondents had relocated to the Okanagan from another region; this figure was 26% in 2001. The regions from where companies are relocating are also similar within both studies (most often the Lower Mainland and throughout BC).

Number of employees: This area has seen a slight shift since the last study. As the figure below shows, the number of companies with 10 or fewer employees has increased since the 2001 study. This could be due in part to new companies entering the region (typically fewer employees with start-ups) or downsizing due to changes in the technology sector over the past number of years.

Figure 1.1 – Comparison of Employee Count –2001 Study vs. 2003 Study



Recruiting: The importance of promotion and sales personnel has become more apparent in the 2003 study. In the 2001 research, 36% of the respondents indicated plans to increase staff numbers in this area, whereas in 2003 this percentage increased to 73%. This result was similar for technicians/technologists positions (47% planned increases in this area in 2001 compared to 69% in 2003). This is deemed to be a positive trend as the future is deemed to be one with a growing demand for new workers. The most common difficulty in recruiting employees is still the low wages of the region. The percentage of companies that have partnered with education and training organizations has changed little since the last study (51% in 2001 compared to 46% in 2003).

Payrolls: The percentage of companies with payrolls under \$100,000 annually has increased from 33% in 2001 to 42% in 2003, likely due to the number of smaller and newly established firms. The percentage increase in this payroll group is drawn from companies who spend over \$250,000 annually (this percentage decreased from 39% in 2001 to 27% in 2003).

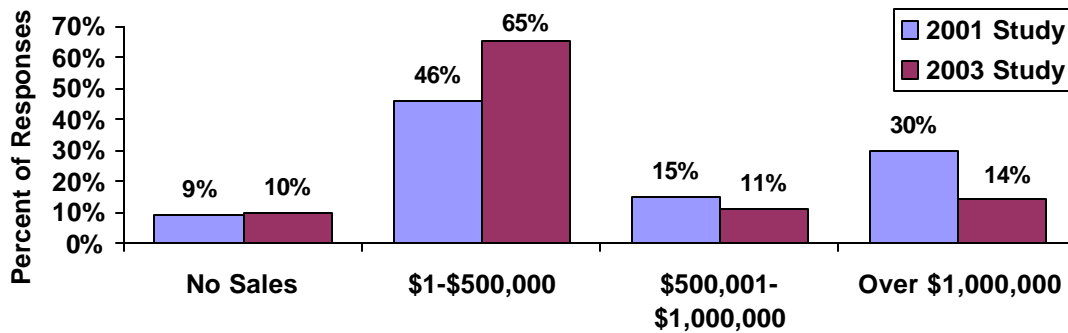
Staff demographics: The average age of employees of technology companies in the region is getting younger according to the data. In the 2001 study, 57% of the respondents had no employees under the age of 24; this number has decreased to 51% in the 2003 study. The increase in employees from the age of 25-44 can be seen below. In 2001, roughly half of the companies interviewed had less than half of their employees in this age range. Today this percentage is over 30%. Similar results are apparent for those with over half of their employees in this age range (see the bolded areas of figure 1.2). This clearly represents a maturing in the industry and with companies requiring and seeking those with more skills and experience.

Figure 1.2 – Comparison of Employee Ages – 2001 Study vs. 2003 Study

Percent of Employees	<u>Age 18-24</u>		<u>Age 25-34</u>		<u>Age 35-44</u>		<u>Age 45-54</u>		<u>Age 55+</u>	
	2001	2003	2001	2003	2001	2003	2001	2003	2001	2003
Zero	57%	51%	36%	32%	24%	35%	38%	56%	78%	83%
1-49%	42%	45%	51%	34%	52%	30%	49%	29%	20%	12%
50-100%	2%	6%	14%	34%	24%	36%	14%	14%	2%	6%

Annual sales: Total estimated sales reached approximately \$203 million in 2002. The percentage of companies with sales under \$500,000 has increased since the previous study as the figure below shows. This could be due in part to the age of companies or the downturn in the technology sector over the past number of years.

Figure 1.3 – Comparison of Annual Sales – 2001 Study vs. 2003 Study



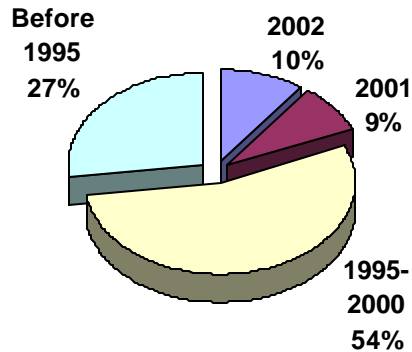
Key markets: The largest markets for technology firms continue to be communications and education/training. The finance market appears to be gaining momentum as one of the primary markets for the technology sector. While the Okanagan region is still an essential client base for technology companies, more firms are doing business with clients from outside the region, and more often outside of BC. In 2001, 27% of the respondents had international clients; this number has climbed to 50% in 2003. Similar results can be seen in other regions: Eastern Canada (34% in 2001 compared to 54% in 2003), Western Canada (44% in 2001 compared to 58% in 2003), and the USA (48% in 2001 compared to 64% in 2003). These results again assist in the conclusion that a maturing is continuing to take place in the sector. Firms either by consequence or desire are finding the need to develop more export related activity and have done so in significant quantities since the previous study in 2001.

Research and development: The percentage of companies that are involved in R&D has increased slightly since the 2001 study (78% compared to 71% in 2001). As a result, a higher percentage of companies are developing products currently than in 2001 (75% compared to 68%). These figures may also be a result of newer firms involved in early stages of development rather than production and marketing of their products/services. Total R & D expenditures are estimated at \$24.8 million, an increase of 33%.

2.0 Overview of Survey Data

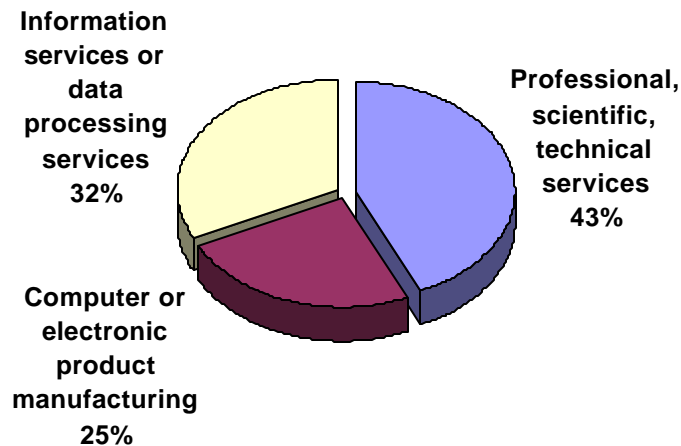
Many of the companies interviewed are well established in the region. As figure 2.1 shows, 27% of the respondents have been established since before 1995. A further 54% began their operation between 1995 and 2000.

Figure 2.1 – Tenure of Businesses Interviewed



Technology companies in the region are diversified as the following figure shows. The percentage of companies meeting the profile of the three main industry segments is each substantial, with slightly more companies involved in the professional, scientific or technical services area.

Figure 2.2 – Industry Categories



Fifty-eight percent of those interviewed produce both a product and a service. Strictly service oriented businesses are also common, with 28% of the responses, compared to 14% of the businesses who only provided products.

Among those companies that produce a physical product, 70% indicated they manufacture the product themselves in the Okanagan. A further 11% use a sub-contractor outside the Okanagan and 9% perform some manufacturing themselves in the Okanagan and subcontract out some work to local companies.

3.0 Selection of Location

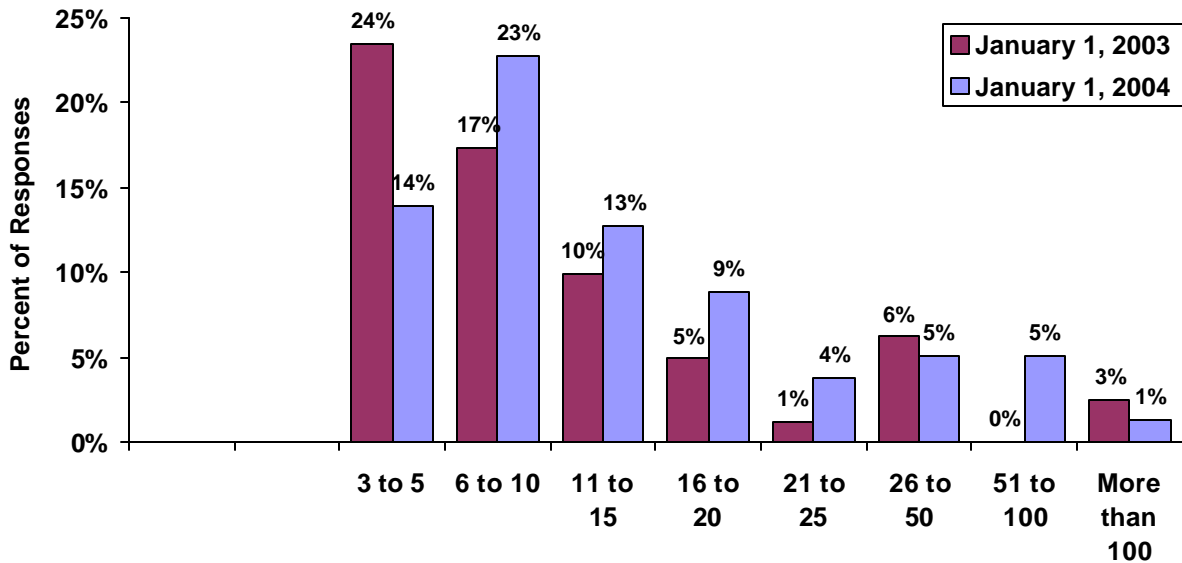
Twenty-eight percent of those interviewed relocated to the Okanagan from another region. These companies are well established within the region; 48% of this group has been in business since before 1995. Most commonly, these businesses relocated from other areas of BC. Almost half of those who relocated to the Okanagan came from the Lower Mainland or Vancouver Island (11 businesses). Other areas of BC such as Prince George were also common. Alberta, Ontario, and Manitoba were also regions that were mentioned as homes to businesses before they relocated to this region. Most businesses (60%) relocated for personal reasons such as lifestyle and family decisions. Some respondents had grown up in the area and wanted to return while others were simply looking for a change (8% each).

The three most important challenges facing high technology companies in the region are acquiring appropriately trained personnel (17% of responses and common among 38% of respondents), increasing sales/collecting revenues (16% of responses and common among 36% of respondents), and acquiring sufficient capital (14% of responses and common among 32% of those interviewed). Other important issues included marketing, keeping up with technology, cash flow, and keeping abreast/ahead of competition.

4.0 Personnel and Staffing

As figure 4.1 shows, the number of employees in technology firms in the region is expected to grow over the next year. The percentage of businesses with a single employee and those with 3-5 employees is expected to decrease, giving way to an increase in the number of operations with 2 employees and those with 6-25 people on the payroll. In total, just over half (53%) of the companies plan to increase the number of staff in their businesses over the next year.

Figure 4.1 – Expected Changes in Number of Employees



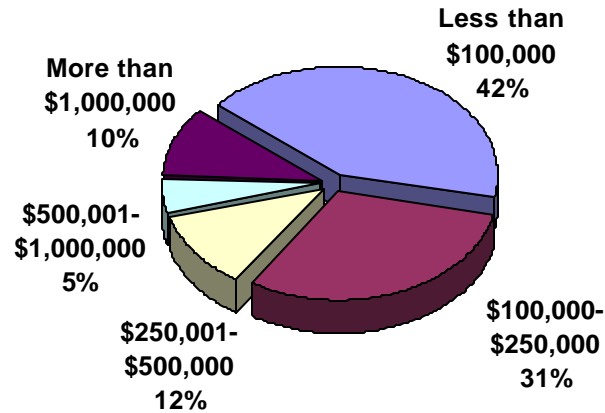
The area where companies are planning on increasing the number of staff the most is promotion and sales. Seventy-three percent of the companies interviewed plan to increase the number of staff in this area in 2003. Technicians/technologists were a close second to this group, where 69% of those interviewed plan to increase this area of staff within the next year. Computer programmers were the next most popular with 51% of the companies planning on adding staff in this area (see figure 4.2).

Figure 4.2 – Expected Areas of Staff Increase

Staff Area:	Percent of Companies Planning to Increase Staff
Promotion & sales	73%
Technicians/technologists	69%
Computer programmers	51%
Administrative/clerical	39%
Management	37%
Professional engineers	33%

The total annual payroll for the majority of technology companies in the Okanagan (73%) is under \$250,000. For a small group of larger organizations (10% of those interviewed), the annual payroll figure is over \$1,000,000.

Figure 4.3 – Annual Payroll of Okanagan Technology Companies



5.0 Staff Demographics

The most common age group of technology staff in the Okanagan is 25-44. As figure 5.1 below shows, 34% of the companies interviewed have over their staff within the 25-34 age group. Thirty-six percent of the companies have over half of their staff within the 35-44 age group.

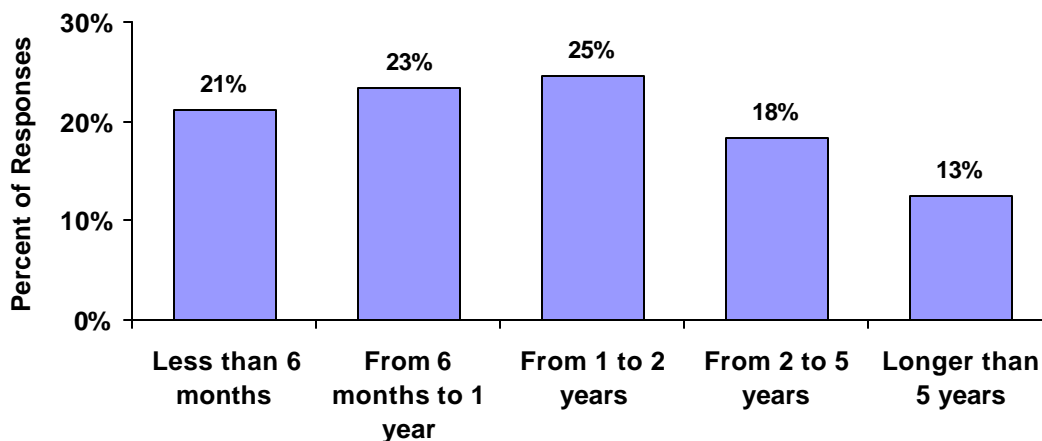
Figure 5.1 – Age Breakdown of Technology Employees

<u>Percentage of Total Employees</u>	<u>Age 18-24</u>	<u>Age 25-34</u>	<u>Age 35-44</u>	<u>Age 45-54</u>	<u>Age 55+</u>
Zero	51%	32%	35%	56%	83%
1-24%	31%	17%	10%	17%	9%
25-49%	14%	17%	20%	12%	3%
50-74%	3%	20%	24%	7%	1%
75-100%	3%	14%	12%	7%	5%

The Okanagan region was the most common location where employees had worked immediately before joining their current employer. Nearly 90% of those interviewed indicated some staff had worked in this region prior to joining their firm. The Lower Mainland was the next most common location with 31% of businesses having employees previously working in the region. Other common areas were elsewhere in Canada (often Alberta) and elsewhere in BC. Numerous companies have indicated that they worry about their talent being lured away from them by another Okanagan based company. Whether this is the reason for the result, or corporate downsizing, it is difficult to ascertain.

As figure 5.2 shows, the tenure of employees with local technology firms is quite low. Nearly half of those interviewed have employees that have been with the company for less than one year, while only 13% have staff with more than five years' experience with the organization.

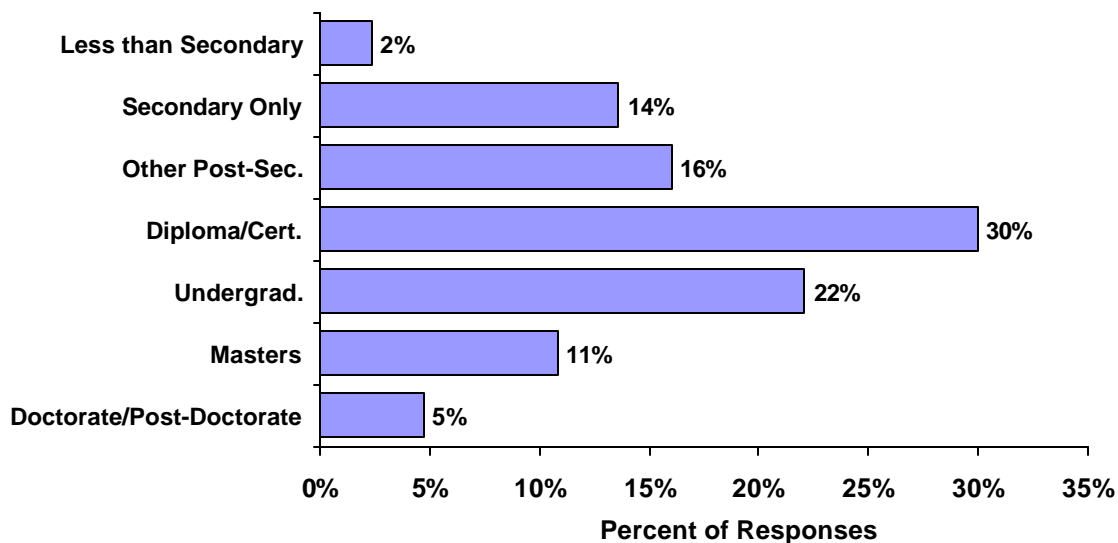
Figure 5.2 – Tenure of Employees



Nearly half (49%) of the companies interviewed indicated that all of their employees had work experience related to their current position before being hired. A further 23% indicated that between 75-99% of their staff had previous experience.

Technology employees in the region are most often educated beyond secondary school. In fact, 68% of the employees in the region have attained at minimum a diploma or certificate. Figure 5.3 shows the educational level of technology employees in the region.

Figure 5.3 – Education of Local Technology Employees



6.0 Labour Mobility

When it comes to turnover, figure 6.1 reveals the percentage of companies who have had employees leave their organization within the past five years and beyond.

Figure 6.1 – Employee Turnover within Local Technology Companies

<u>Employees have left within the past...</u>	<u>Percentage of Companies</u>
Less than 6 months	52.8%
From 6 months to 1 year	54.7%
From 1 to 2 years	64.2%
From 2 to 5 years	50.9%
Longer than 5 years	22.6%

Most commonly, the employees that have left have moved to other positions within the Okanagan region (this was the case 43% of the time). The Lower Mainland (16%), Alberta, and elsewhere in BC (both with 12% of the responses) were the other most common areas where employees who had left relocated themselves.

The most common reasons for employees leaving local technology businesses are involuntary dismissal (34% of the responses), for higher salary/wages (18%), more opportunity for advancement elsewhere (9%), and lack of work/seasonal position only, personal reasons, and other opportunities (each with 7% of the responses).

7.0 Personnel Recruitment

When it comes to recruiting new employees, technical and scientific personnel as well as marketing personnel were identified as the most difficult types of candidates to recruit. These positions could be considered moderately difficult to fill. Figure 7.1 shows the level of difficulty described by respondents and the average/mean rating (where 1=not at all difficult and 5=very difficult to recruit).

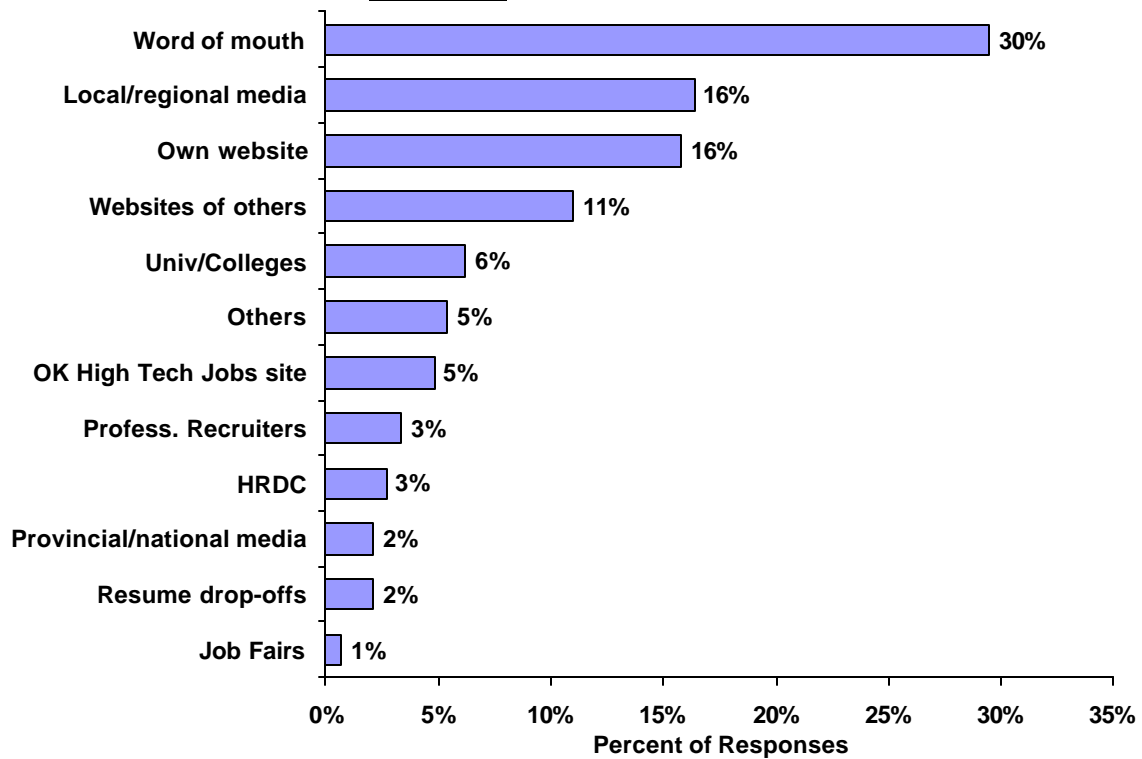
Figure 7.1 – Difficulty in Recruiting Employees

Difficulty in recruiting...	←—————→					Mean
	Not at all Difficult				Very Difficult	
	1	2	3	4	5	
Technical personnel	16%	20%	23%	31%	11%	3.03
Scientific personnel	27%	13%	17%	20%	23%	3.00
Professional marketing personnel	14%	24%	28%	21%	14%	2.97
Computer science personnel	18%	27%	18%	21%	16%	2.91
Production management personnel	11%	28%	31%	25%	6%	2.86
Engineering graduates	19%	25%	28%	16%	13%	2.78
HR management personnel	25%	18%	46%	7%	4%	2.46
Qualified trades personnel	28%	24%	35%	7%	7%	2.41
Financial management personnel	28%	30%	28%	10%	5%	2.35
Admin/support personnel	39%	37%	19%	4%	2%	1.93

The most common difficulties identified when recruiting employees are the low wages offered to prospective employees (42% of the companies interviewed identified this issue). Finding qualified and experienced employees was also a difficulty for 22% of the companies interviewed. Other concerns included the high cost of living, the lack of available work for spouses in the region, and the ‘bright lights’ of other areas.

The most frequently used method of recruitment among technology firms is word of mouth. This method is used by 62% of those responding. Other common methods include local/regional media, corporate websites, and other websites (such as ostec.ca, okjobs.com, and HRDC’s site). Figure 7.2 on the following page provides a complete breakdown of recruiting methods used by technology companies.

Figure 7.2 – Methods of Recruitment

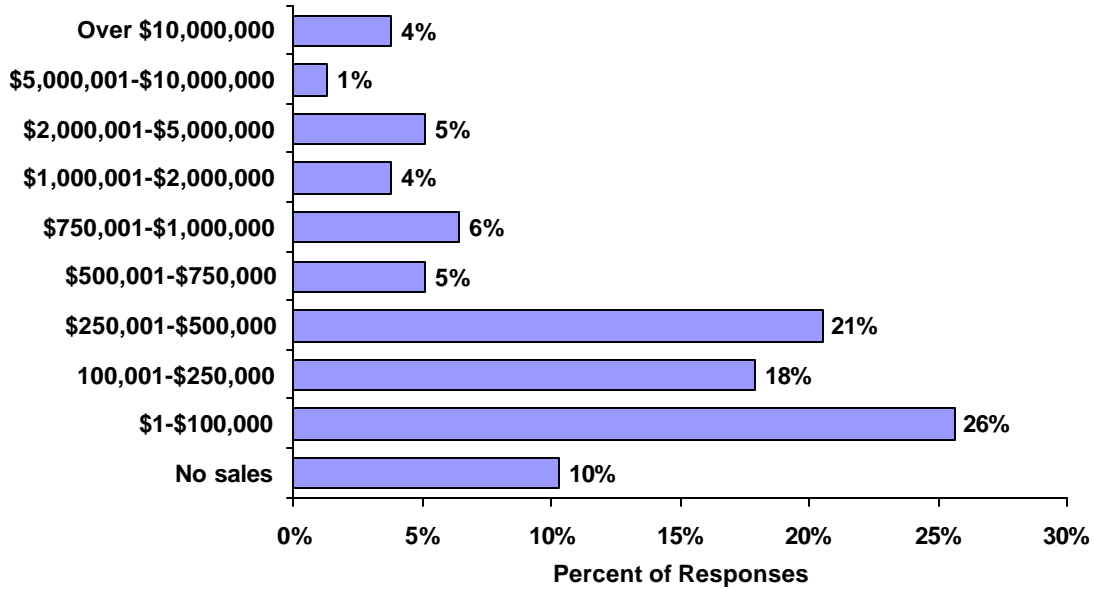


Just under half (46%) of those interviewed have partnered with education and training organizations to acquire appropriately trained personnel. These groups include OUC (37% of responses, 23 companies), OSTEC (11 companies), HRDC and the University College of the Caribou (7 companies each).

8.0 Company Sales, Markets and Prospects

The survey suggests that the Technology Industry in the Okanagan had gross sales of over \$203 million in 2002. One-quarter of the technology companies interviewed reported annual sales figures of more than \$500,000. A similar percentage reported revenues of up to \$100,000. Figure 8.1 provides a complete breakdown of sales figures.

Figure 8.1 – Annual Sales Figures



By the end of 2007, 87% of those interviewed expect their sales to have increased (6% expect no change).

The sectors that composed the largest markets for most of those surveyed were communications (21% of businesses), education/training (16%), and finance (13% of those interviewed). Total sales in key sectors are expected to increase in the next five years according to respondents. Twenty-two percent of those interviewed anticipate an increase in sales to the communication sector, followed by 15% for education/training markets and 12% for financial clients.

Figure 8.2 – Largest Customer Sectors of Technology Firms

<u>Largest Sectors</u>	<u>Total sales expected to increase most in:</u>
Communications	Communications
Education/training	Education/training
Finance	Finance
Health	Health
Manufacturing	Manufacturing
Tourism/recreation, transportation, agriculture/food processing	Tourism/recreation, agriculture/food processing

In the past fiscal year, most businesses (90% of those interviewed) have done business with clients in the Okanagan. Beyond this base of business, three-quarters have also dealt with firms elsewhere in the province, 64% have done business with US operations, and 63% have dealt with other Western Canadian businesses. As for the next five years, the amount of business done with clients in regions outside the Okanagan is expected to increase. Over half of the businesses interviewed feel the amount of business done with

clients in regions outside the Okanagan (from other parts of BC to international locations) will increase in that time (see figure 8.3).

Figure 8.3 – Client Base of Technology Companies

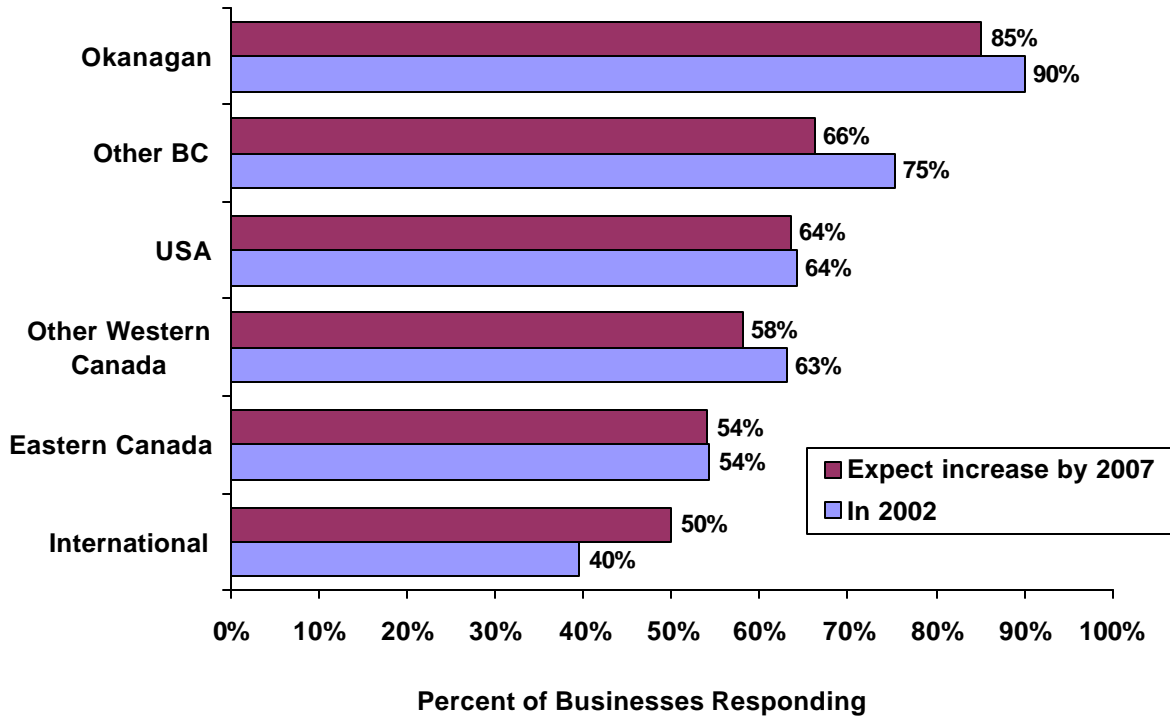
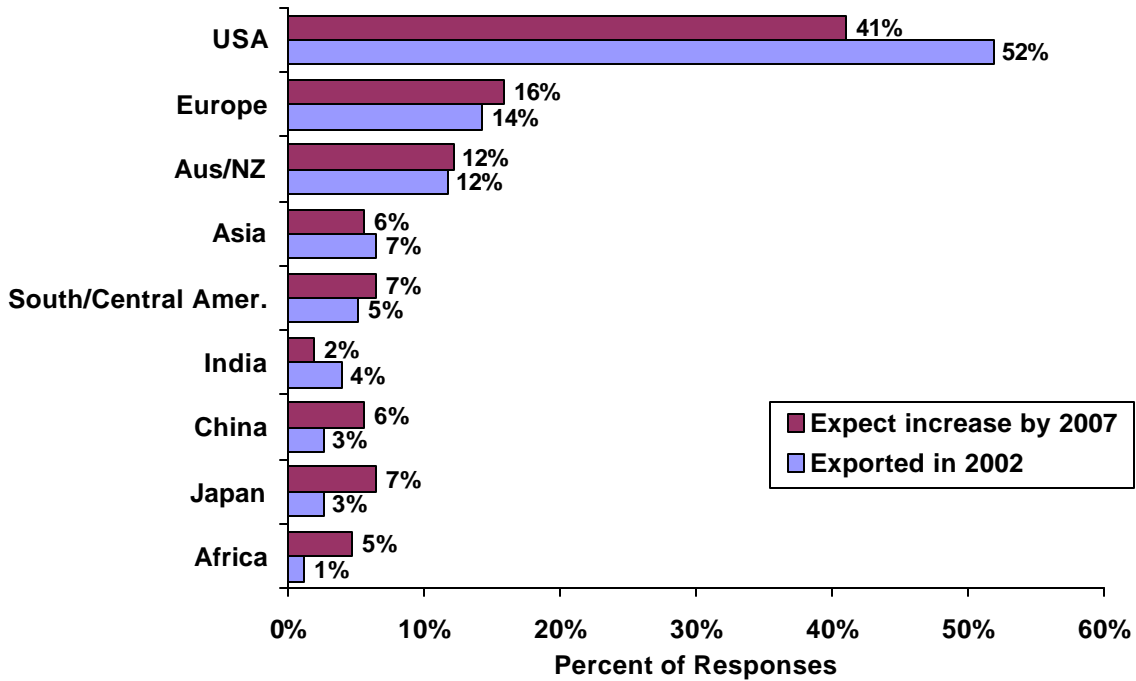


Figure 8.4 shows the major regions to which local technology companies are exporting at present. The USA is the primary export market, making up 52% of the total in 2002. This is followed by Europe (16%) and Australia/New Zealand (12%). Within the next five years, increases in exports are expected in many regions. The figure shows expectations for large increases in the USA, Europe, and Australia/New Zealand as well as a smaller percentage within other regions such as Japan and South/Central America.

Figure 8.4 – Export Markets for Technology Companies



At present, the states with the greatest level of local technology companies doing business are California, New York, Texas, and Florida. Within the next five years, these markets will continue to be strong along with Washington, which is expected to generate new opportunities for local firms.

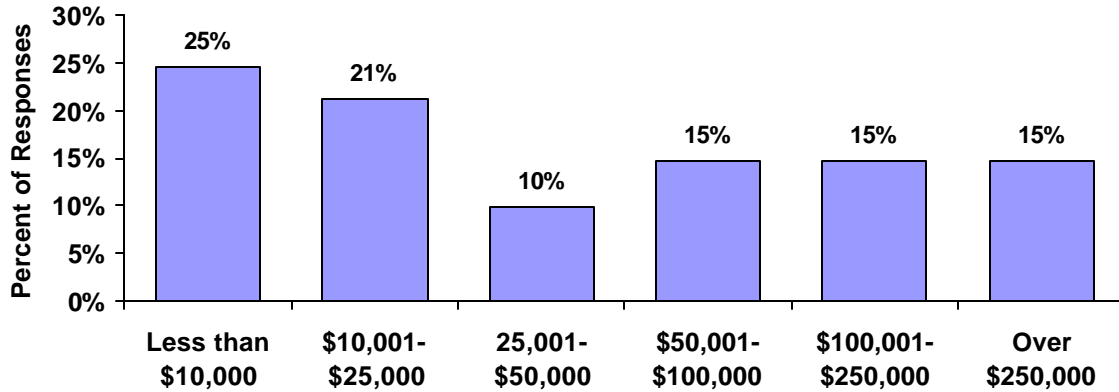
Sixty-one percent of the technology companies interviewed would like to enter new markets and feel they require help in doing so. The most commonly identified markets for entry are the USA and Europe. Some companies are looking for assistance in entering distinct industry segments such as government and military contracts or specific market segments like e-commerce and wireless data transfer. In total, 34 companies would like to be contacted by someone who can assist with market entry issues.

9.0 Research and Development

Seventy-eight percent of the companies interviewed are involved in research and development. Of those who are not presently involved, only 6% plan to be doing R&D within the next five years.

Fifteen percent of those conducting R&D spent over \$250,000 on this area in 2002. Other companies are less extensive in their R&D, with 25% spending less than \$10,000 last year (see figure 9.1).

Figure 9.1 - Total R&D Expenditures for Last Fiscal Year



Within the next five years, 71% of those currently conducting R&D plan to spend more on their work, while 11% expect no change in their expenditures.

Eighty-four percent of the companies interviewed conduct their research and development in-house while 5% use contract R&D companies. The remaining firms use a blend of in-house and contract work to perform their R&D.

The most commonly known and utilized programs for R&D assistance among technology companies are NRC/IRAP (54% of respondents are aware of the program and 27% use the funding) and Scientific Research & ED Tax Credits (known by 54% and used by one-quarter of those interviewed). Figure 9.2 shows the familiarity of programs among technology firms. This is both troubling and encouraging. A question is raised as to the validity of the programs or the lack of awareness around them, with some tremendous opportunities for some organizations to make technology companies aware of programs that might positively impact the bottom line.

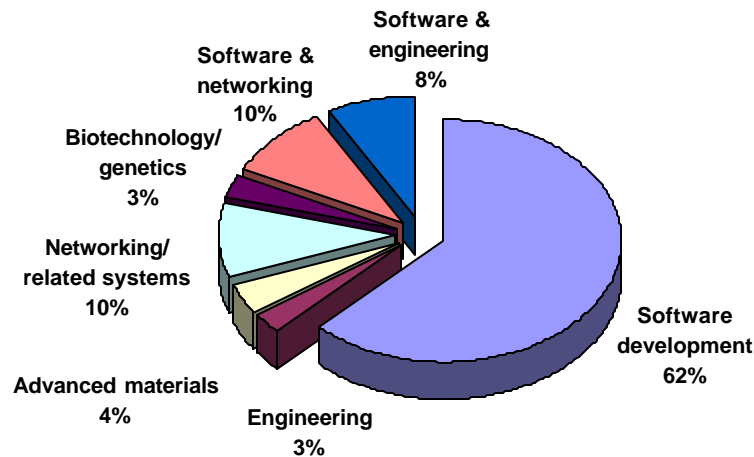
Figure 9.2 – R&D Program Awareness and Participation

<u>Aware of programs:*</u>		<u>Use programs:*</u>	
NRC/IRAP	54%	Scientific research & ED tax credits	27%
Scientific research & ED tax credits	54%	NRC/IRAP	25%
Technology Partnerships Canada	20%	Others	5%
Natural Resources Canada	12%	Natural Resources Canada	2%
Others	9%	Technology Partnerships Canada	1%
Agriculture & Agri-Food Canada	4%		

*Others included PEMD, Federal Industry, and a parent company in the USA.

Most of the R&D interests of the companies interviewed (63%) revolve around software development. A further 10% are interested in networking and related systems (see figure 9.3).

Figure 9.3 – Interests in R&D



Three-quarters of the responding companies are currently developing products. These products are most commonly in the market testing/evaluation stage at present (40% of those developing new products). Thirty-five percent are at the product development and design stage, while 19% have reached production with their new products. The remaining 7% are still in the research phase.

10.0 Use of Local Suppliers

The most common element that keeps technology firms from purchasing more from local or regional suppliers is the lack of availability of the product or service they require (40% of the responses). Cost is also an important factor keeping firms from making more local purchases (31% of the responses). The remaining reasons most often revolve around the lack of knowledge/expertise regarding the needs of businesses or the perception of inadequate service, reliability, or quality.