



ANNUAL REPORT – 2012

ANNUAL SNAPSHOT OF CANADA'S DIGITAL ECONOMY

ICT | DIGITAL ECONOMY | TECHNOLOGIES | CANADA

INFORMATION AND COMMUNICATIONS TECHNOLOGY COUNCIL (ICTC)

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Executive summary

The Information and Communications Technology Council (ICTC) is pleased to present its *Annual Report 2012*, exploring broad economic trends with respect to ICT labour market and more. Skilled Canadians are the foundation of economic growth in a globalized, innovative environment. The emergence of new technologies such as cloud services, digital platforms and mobile technologies has challenged policy-makers, educators and industry to adapt. On balance, as demonstrated by this report, all three are meeting that challenge.

In 2012, Canada's ICT sector, with the support of governments and educators, has helped to achieve growth that contributes to our prosperity in a challenging environment:

- ▶ Real GDP produced by the Canadian information and communications technology (ICT) sector grew marginally by 0.4% in 2012. Growth in 2012 was tempered by uncertainties in the global economy and a large decline in GDP in the ICT manufacturing industries (↓15.2%). Please refer to page 1 for more details.
- ▶ Following slow hiring trends mid-year, the digital economy labour market recovered well by the end of 2012. 1,074,000 workers were employed in Canada's digital economy at year-end. Detailed provincial, gender and immigrant composition of the ICT workforce is discussed on page 4.
- ▶ Informatics and business systems analysts, information systems managers, web administrators, and network support technicians were in very high demand in 2012. A significant number of new jobs were created for these occupations along with some others, and more vacancies are currently waiting to be filled. Please refer to page 7 for more details.
- ▶ Adoption of ICTs is vital and Canadian employers in all sectors are anticipating an increase to their ICT staff in 2013. Canadian employers are quickly realizing that having employees with the right blend of skills is a necessary prerequisite for growth.
- ▶ While making hiring decisions, development-tools-related skills (e.g. visual basic, .net, MS SQL), programming, database management, customer relationship management (CRM), open source technology, mobile platforms (e.g. iOS), network administration and desktop support are the set of skills they will need the most. ICTC's annual survey of Canadian employers sheds further light and is presented on page 8.

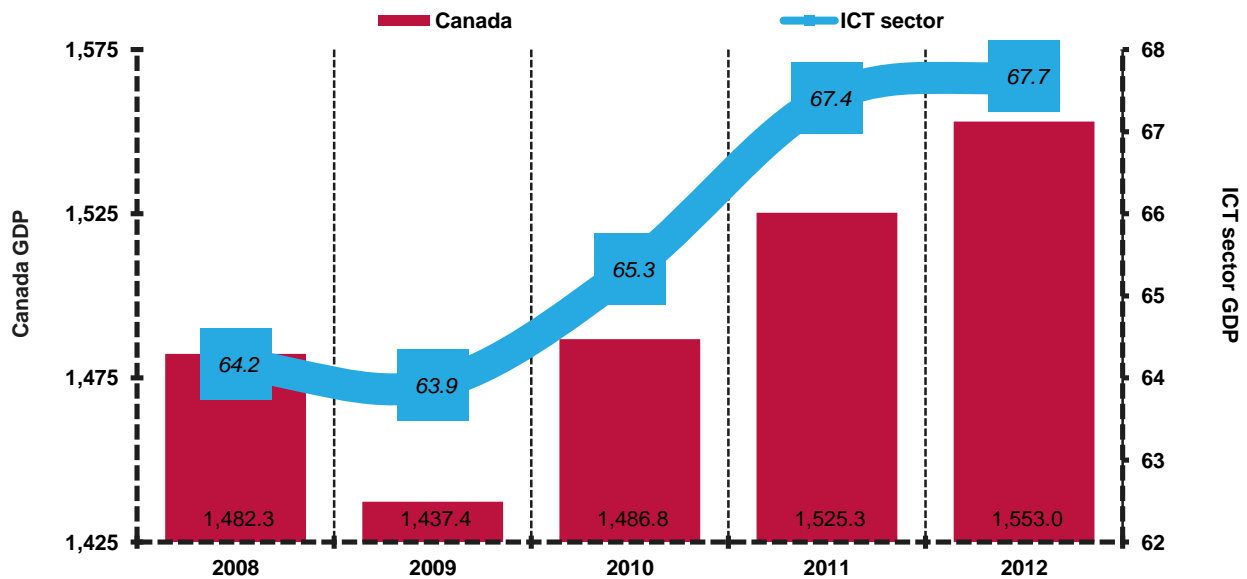
We hope you enjoy reading *Annual Report – 2012*.

ICT sector output and outlook

ICT output

Real gross domestic product (GDP) produced by the Canadian ICT sector in 2012 increased by \$264 million compared to 2011, contributing \$67.7 billion to Canadian GDP (figure 1).¹ The ICT sector accounted for 4.4% of Canada's total output of \$1,553 billion. Emerging and non-traditional ICT subsectors are promising new frontiers for innovation and economic growth. ICTs are redefining existing business models and business entities in all economic sectors/subsectors are integrating ICTs into their workflow to improve productivity and efficiencies. The overall impact of ICTs on the Canadian economy as a result is much greater.

Figure 1. Canadian and ICT sector GDP (in billion dollars)



Source: ICTC; Statistics Canada

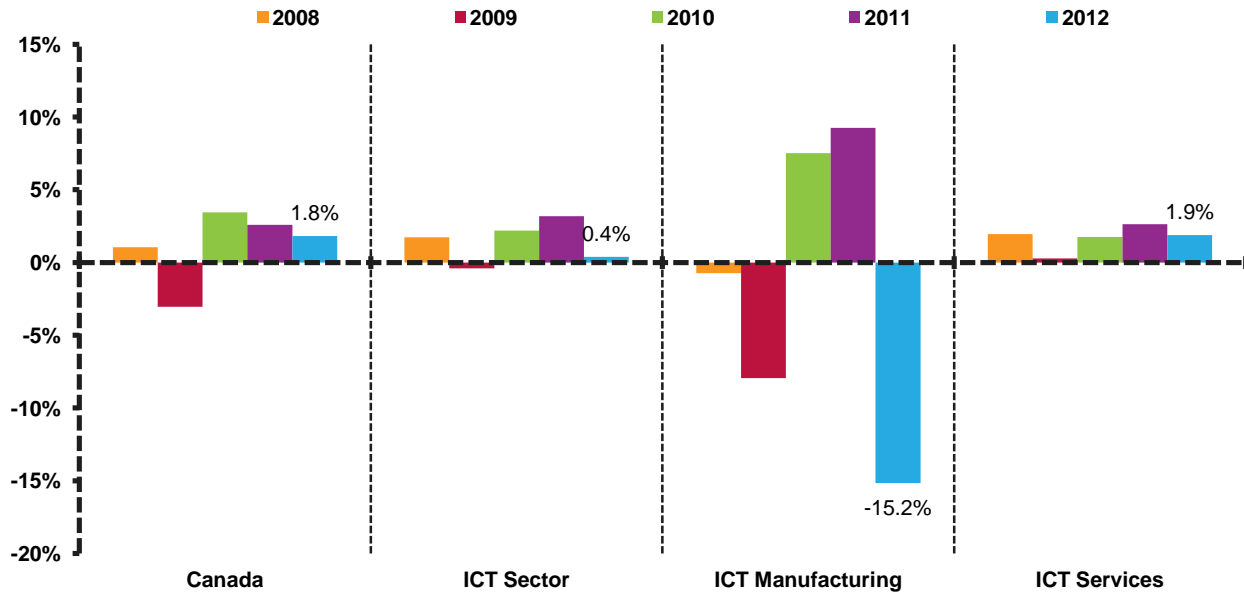
Unlike 2011, when the ICT sector increased significantly and outgrew the overall economy (3.2% to 2.6%), growth in the sector in 2012 was marginal (\uparrow 0.4%). The main contributing factors for this small growth were uncertainties in the global economy stemming from a slowdown in China, Europe and the U.S. as well as a large decline in GDP in the ICT manufacturing industries (\downarrow 15.2%). In contrast, GDP in the ICT services industries increased by 1.9%.

¹ In 2007 chained dollars. Chained dollars are real dollar amounts adjusted for inflation.



On average, annual growth in the ICT sector has been 1.4% over the last five years since 2008, higher than that of the overall economy (1.2%). This growth was achieved by strong performances from the ICT services industries that recorded 1.7% average annual growth in that period, while ICT manufacturing industries experienced 1.4% average annual decline.

Figure 2. Canadian, ICT sector and ICT subsectors GDP growth (%)



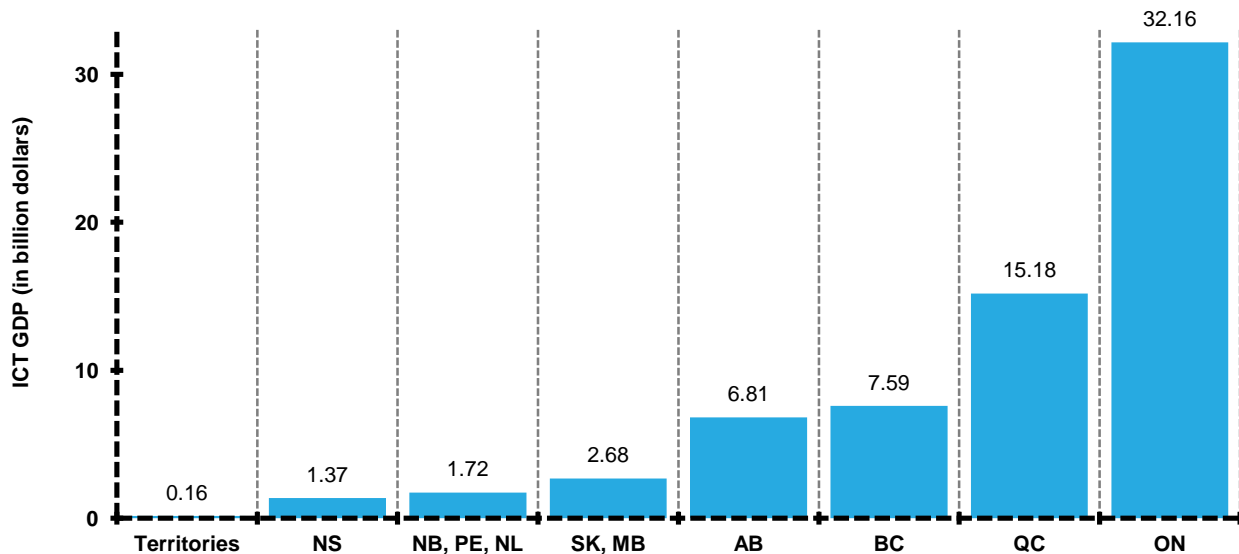
Source: ICTC; Statistics Canada



Provincial comparison

Ontario is Canada's ICT leader and produced 47% of the total Canadian ICT output in 2012. In the same period, other notable ICT output contributors were Quebec (22%), British Columbia (11%), Alberta (10%), the Prairie provinces (SK, MB; 4%), the Atlantic region (NB, PE, NL; 2.5%), and Nova Scotia (2%).

Figure 3. ICT output by province/region (in billion dollars) – 2012



Source: ICTC; Statistics Canada

All these provinces and regions need to have an “own the podium” attitude to take advantage of compelling global opportunities and contribute to local and Canadian GDP. Ontario has a very strong and robust financial services sector and multiple clusters of emerging technologies such as mobile apps development. Similarly, British Columbia has a thriving forestry sector and Alberta has a rich, burgeoning economy thanks largely to its energy sector. Agriculture is a critical sector for Saskatchewan and Manitoba, manufacturing and forestry are both important for Quebec and digital media is emerging as a significant contributor to the Atlantic region. Meaningful collaboration and partnership between ICT service providers and companies in other sectors are necessary to grow their businesses and reach bigger global markets. These cross-sectoral partnerships can only properly flourish if workers in all economic sectors have broad digital competencies and supportive policies are in place.

While it is imperative to have policy support for growth, it is also critical to note that removing policy frictions will be an important factor to attract businesses as well. In a highly competitive environment where various jurisdictions are competing with one another, economic activities will naturally migrate to jurisdictions that have the least policy frictions.



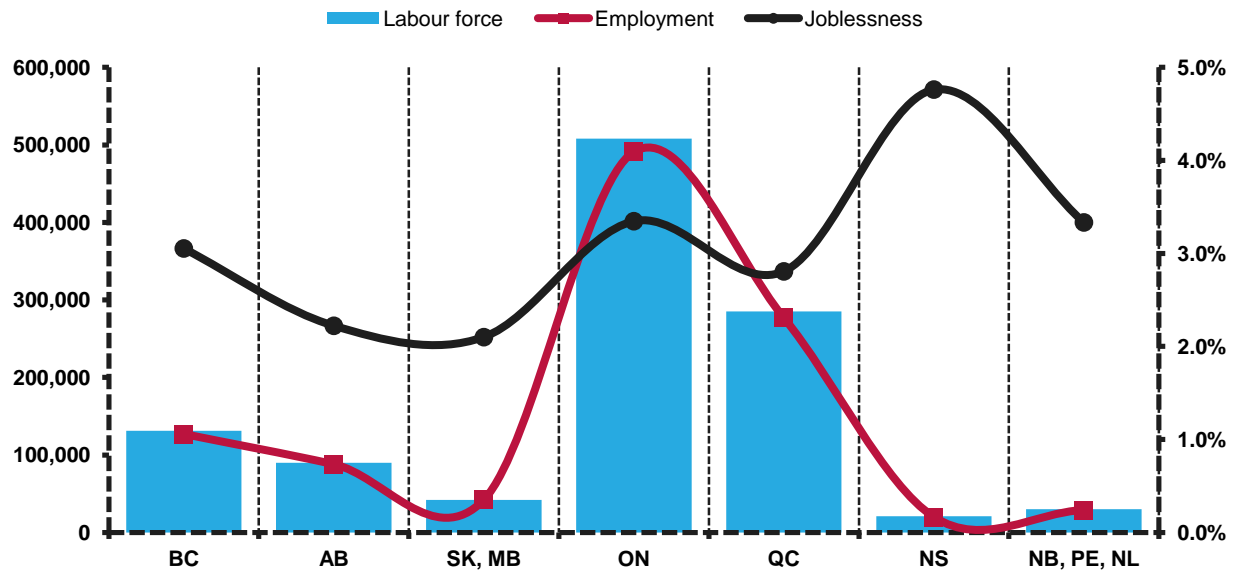
Labour market trends

Employment level and joblessness

ICT workers innovate, operate and maintain technologies that drive all sectors of the economy. Non-ICT workers employed in the ICT sector are key contributors to growth of this sector as well. Consequently, (1) ICT workers that are engaged throughout the Canadian economy; and (2) non-ICT workers that work in Canada's ICT sector are both included in Canada's digital economy:²

1,074,000 workers were employed in Canada's digital economy in 2012. 32,000 new jobs were created in the digital economy in the year and the employment level increased by 3% compared to 2011 (figure 4). New jobs reduced joblessness, and its rate decreased from 3.3% in 2011 to 3.0% in 2012.

Figure 4. Employment in Canada's digital economy by province/region – 2012



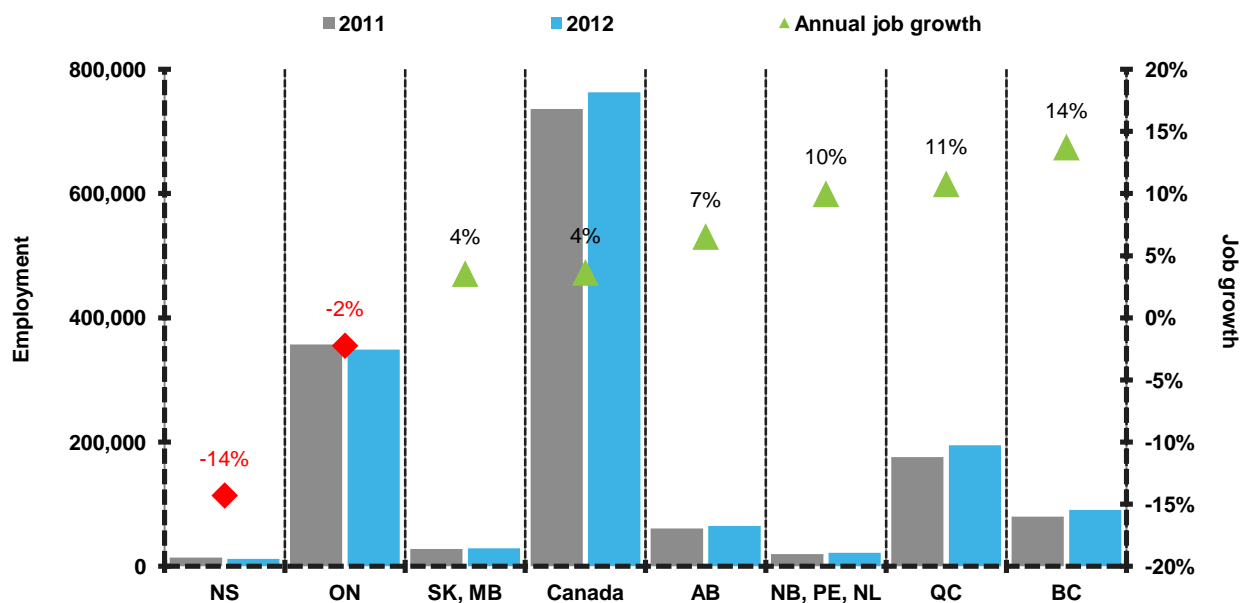
Source: ICTC; Statistics Canada

The direct as well as indirect impact of technological advances and innovation in the ICT sector and the resulting efficiency and productivity gain in the overall Canadian economy is considerable and remains instrumental in generating wealth and sustainable growth.

² A detailed discussion is available at the end of this report.

The majority of digital economy employment was in ICT occupations (71%) and there was 4% growth (↑27,000) in ICT jobs in 2012. Despite being Canada's largest ICT employer employing 349,000 (46%) of all ICT workers in Canada, ICT jobs declined in Ontario in 2012 (↓2%). Nova Scotia also experienced a reduction in ICT employment (↓14%). All other provinces/regions experienced notable growth in ICT occupations, with British Columbia (↑14%) and Quebec (↑11%) witnessing highest such growth.

Figure 5. Employment level and growth in ICT occupations by province/region – 2011 to 2012



Source: ICTC; Statistics Canada

Employment in ICT occupations in 2012 was 195,000 (26%) in Quebec, 91,000 (12%) in British Columbia, 65,000 (9%) in Alberta, 29,000 (4%) in Manitoba and Saskatchewan 22,000 (3%) in the Atlantic region other than Nova Scotia (NB, PE and NL), and 12,000 (2%) in Nova Scotia.

Job growth

Although demand for ICT skills is robust in general, demand for specific skills rises and falls cyclically. In 2012, the following ICT occupations saw the highest annual increases in Canada, in line with ICTC's Outlook for Human Resources in the ICT Labour Market, 2011–2016:

- ▶ informatics / business systems analysts (↑18,000)
- ▶ information systems managers (↑15,000)
- ▶ web / network support technicians/administrators (↑11,000)

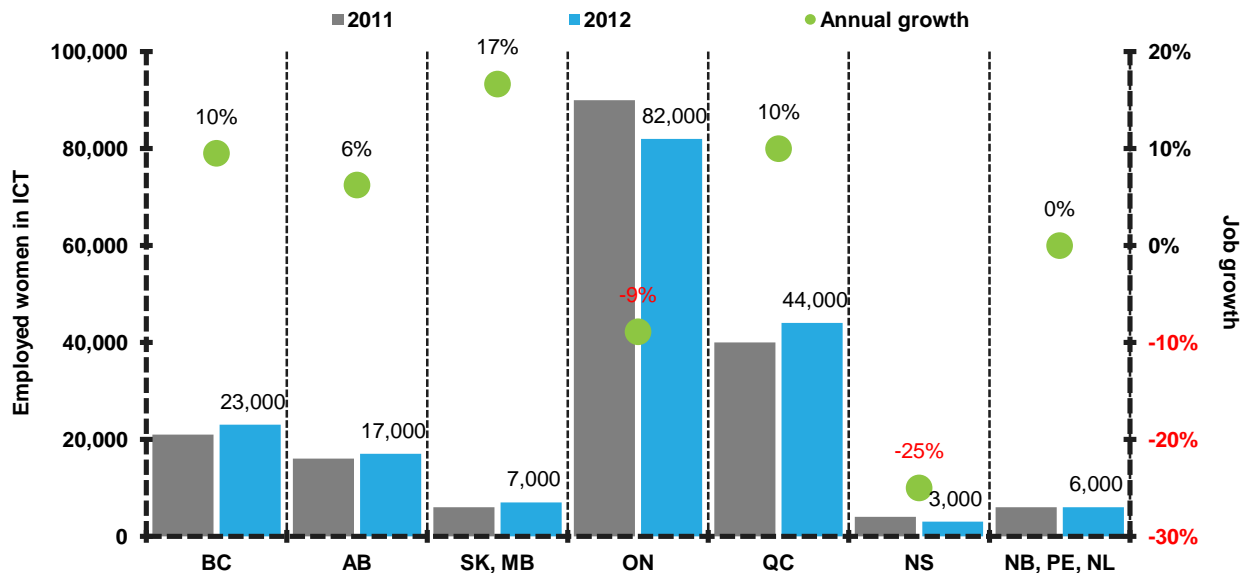
Diversity in ICT professions

Women

182,000 women worked in ICT occupations in Canada in 2012, marginally reduced (↓1%) compared to 2011. 82,000 (23%) of Ontario's core ICT workers were women in 2012, a reduction of 9% compared to 2011. By comparison, the number of women employed in ICT occupations were 44,000 (↑10%) in Quebec, 23,000 (↑10%) in British Columbia, 17,000 (↑6%) in Alberta, 7,000 (↑17%) in the Prairie provinces (↑MB and SK), 6,000 (unchanged) in the Atlantic region (NB, PE and NL), and 3,000 (↓25%) in Nova Scotia (figure 3).

Most ICT occupations continue to be male-dominated. In discussion with ICTC, many Canadian ICT employers say that they recognize the need for and importance of increased diversity in this profession. It will still be a while before strategies to address this need bear fruit. Outdated stereotypes, misperceptions, few role models and outdated workplace practices are some of the major barriers to achieving greater gender diversity in ICT occupations.

Figure 6. Employed women in ICT occupations by province/region – 2011 to 2012



Source: ICTC; Statistics Canada

Immigrants

Of total employed workers in core ICT occupations in 2012, 286,000 (37%) were landed immigrants. Compared to 2011, that was an 11% (↑29,000) employment growth among immigrants in ICT jobs. The highest number of immigrant workers in ICT jobs worked in Ontario (165,000), followed by Quebec (47,000), British Columbia (46,000) and Alberta (21,000).



Immigrants are increasingly becoming a major source for ICT skills in Canada. A more responsive immigration system will address ICT skills shortages even more effectively and integrate skilled newcomers. Streamlining the process to improve one-to-one matching with industry needs and employability in Canada can be made fast-tracking criteria in the selection process.

Youth

Participation in the labour force among those aged 25 or younger saw a large annual decrease (↓7%) in 2012, while among those aged between 25 and 44 remained unchanged. In contrast, the ICT labour force aged between 45 and 54 grew by 7% and among those 55 and older grew by 19% compared to 2011.

Youth across Canada are struggling in the overall labour market for lack of opportunities, while the ICT professions are want for talent and skills. Programs that target youth at a younger age, when they are still making decisions about their courses and career options, can help. At that age, they are being influenced by peers, teachers and parents away from science, technology, engineering and math (STEM) in some cases due to misinformation about the opportunities.

ICT employment outlook

Industries outside the ICT sector (e.g. forestry, financial services, healthcare, education and public administration) are major users of ICT products and services in Canada. These industries' need for top ICT talent continues to grow and has resulted in expanding career options for ICT-trained workers, placing competitive pressure on the employers seeking technical ICT talent.

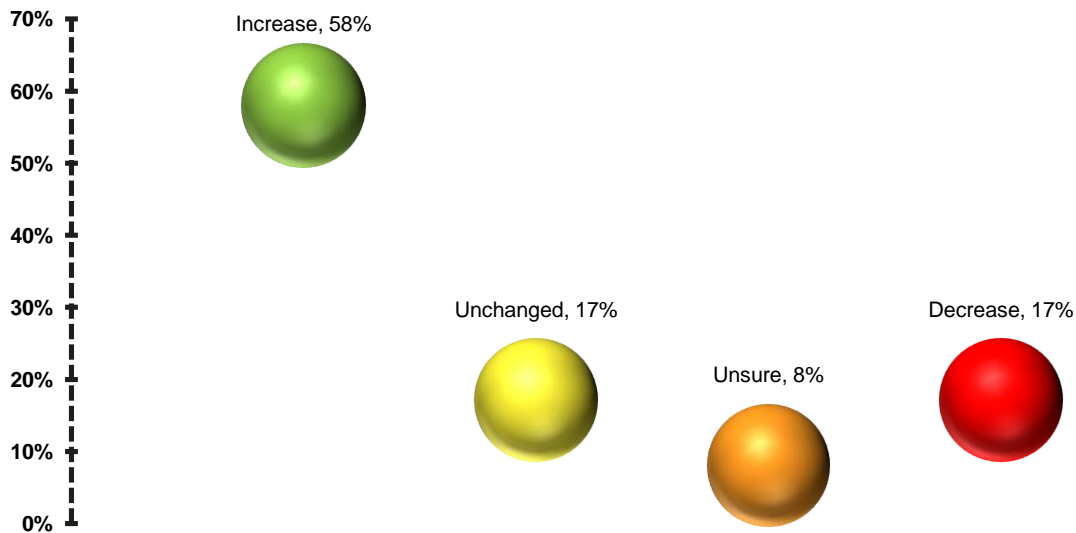
As a result, 2013 is expected to be a good year to be job hunting in the core ICT occupations in Canada. Based on active vacancies posted on jobsites, employment growth in early 2013 is expected to be the highest for the following occupations.

- ▶ informatics analysts
- ▶ business systems analysts
- ▶ IT/ICT analysts
- ▶ electronics technicians
- ▶ multimedia/graphic designers/illustrators
- ▶ mobile application developers
- ▶ application programmers
- ▶ software developers
- ▶ graphical user interface (GUI) developers
- ▶ animation programmers

ICT skills outlook

Strong demand for ICT talent and skills indicates that the digital economy labour market is set to continue positively in 2013. ICTC's recent consultation with Canadian employers also suggests as much. ICTC annual survey shows 58% of Canadian employers anticipate an increase to their ICT staff in 2013, 17% expect their total ICT staff to remain the same, while 8% foresee job cuts (figure 7). It should be noted that 46% of the consulted companies are non-ICT companies operating in sectors such as finance, public administration and social services. This goes to show the importance of ICT skills and adoption in all sectors of the economy.

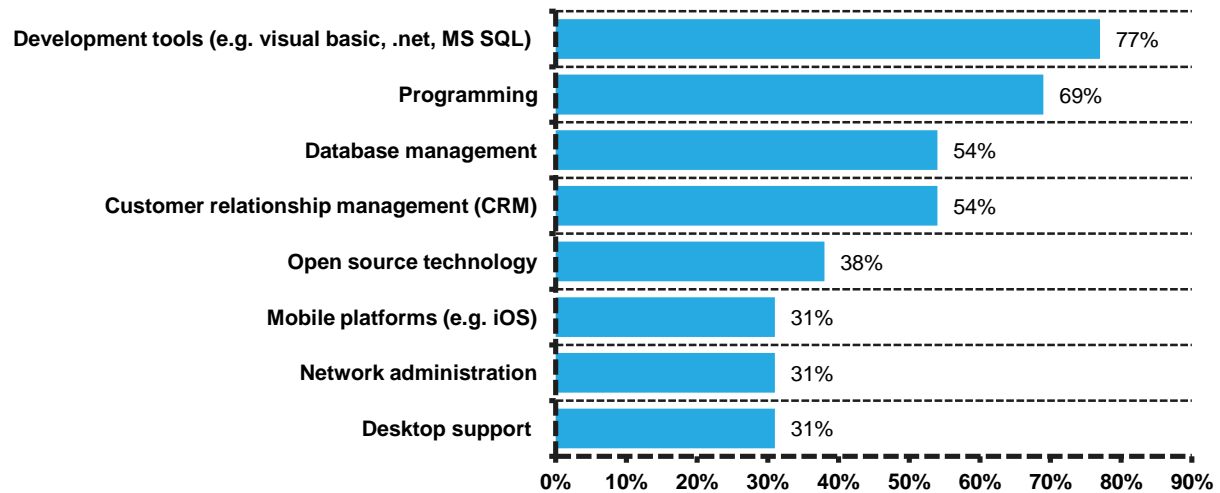
Figure 7. Canadian employers' ICT hiring plans for 2013 – Opinion poll



Source: ICTC annual survey

In-demand ICT skills change frequently and Canadian employers attempt to respond to the market demand as quickly as possible. ICTC annual survey shows that 77% of consulted employers are looking for development-tools-related skills (e.g. visual basic, .net, MS SQL), 69% cite programming, 54% state database management and customer relationship management (CRM), 38% mention open source technology and 31% reveal mobile platforms (e.g. iOS), network administration and desktop support as the set of skills they need the most (figure 8).

Figure 8. In-demand ICT skills in 2013



Source: ICTC annual survey

All surveyed employers express an expectation for their own company and Canada's digital economy to grow in 2013. Among the challenges they expect to face during the year, 69% name finding suitably skilled workers as their major challenge, while 23% cite a supply shortage of talent.

Conclusions

The Canadian ICT sector remained steady in 2012 despite uncertainties in the global economy stemming from a slowdown in China, Europe and the U.S. Notable findings of the *Annual Report – 2012* include:

- ▶ Real GDP produced by the Canadian ICT sector in 2012 increased by 0.4% in 2012, contributing \$67.7 billion to Canadian GDP. The ICT sector accounted for 4.4% of Canada's total output of \$1,553 billion.
- ▶ 1,074,000 workers were employed in Canada's digital economy in 2012. 32,000 new jobs were created in the digital economy in the year and the employment level increased by 3% compared to 2011.
- ▶ Created jobs reduced joblessness and the jobless rate decreased from 3.3% in 2011 to 3.0% in 2012.
- ▶ The majority of the digital economy employment was in ICT occupations (71%) and there was 4% growth (▲27,000) in ICT jobs in 2012.
- ▶ ICT jobs grew in all provinces in 2012, barring Ontario and Nova Scotia. British Columbia (▲14%) and Quebec (▲11%) witnessed the highest ICT employment growth.
- ▶ All provinces and regions are facing different challenges when it comes to matching the needs of the provincial/regional economy with available talents. Many occupations are flourishing in one province/region, while facing declines in another. The problem is exacerbated by the fact that there are systemic shortages of ICT workers with the right blend of technical, business, and interpersonal skills that Canadian employers need and want in order to be competitive in today's economy. The need for region-specific granular LMI is very clear.
- ▶ The ICT occupations continue to experience considerable imbalance in terms of workforce diversity. If corporate tax credits are tied to labour market practices to encourage focused (e.g. women, immigrants, youth) hiring, employers will have both incentives and means to provide training opportunities to staff so they may upgrade their skills — a once common practice that has been less emphasized since the onset of the recession.

Canada is well-positioned to fully leverage the digital economy, a catalyst for innovation, jobs and economic growth. Empowering tomorrow's ICT workforce is vital for Canada's competitiveness in a global economy. A measured and prioritized digital strategy in key sectors of the economy is essential to propel Canada onto the world stage.



About ICTC

The Information and Communications Technology Council (ICTC) is a leading not-for-profit national centre of expertise conducting research, policy development, and creating talent solutions for the digital economy.



Digital economy labour force

ICTC's LMI captures critical economic and labour market indicators to inform competitive business and human resource strategy planning, decision-making and career development in ICT, thereby driving the development of a more prosperous Canadian ICT workforce and industry in a global digital economy.

The table below summarizes the core ICT occupations. The sum total of workers (workers that are employed in these occupations as well as workers that are currently unemployed, but actively looking for work) in these occupations and workers in all other (non-ICT) occupations in the ICT sector (ICTC's framework of Canada's ICT sector is explained below) is the total digital economy labour force in Canada:

Index	NOC Code	Occupation Title
1	0131	Telecommunication Carrier Managers
2	0213	Computer and Information System Managers
3	6115	e-Commerce Managers
4	2133	Electrical and Electronics Engineers
5	2147	Computer Engineers
6	21711	Information Systems Business Analysts
7	21712	Systems Security Analysts
8	21713	Information Systems Quality Assurance Analysts
9	21714	Systems Auditors
10	21721	Database Administrators
11	21722	Database Administration Analysts
12	2173	Software Engineers
13	21741	Computer Programmers
14	21742	Interactive Media Developers
15	2175	Web Designers and Developers
16	2241	Electrical and Electronics Engineering Technologists and Technicians
17	22811	Computer Network Technicians
18	22812	Web Technicians
19	2282	User Support Technicians
20	2283	Systems Testing Technicians
21	51212	Technical Writers
22	5224	Broadcast Technicians
23	5224	Graphic Designers and Illustrators



ICT sector

The table below summarizes the ICT sector:

Index	NAICS Code	ICT Sub-sector
1	3333	Commercial & Service Industry Mach. Manuf.
2	3341	Computer & Peripheral Equip. Manuf.
3	3342	Communications Equip. Manuf.
4	3343	Audio & Video Equip. Manuf.
5	3344	Semiconductor & Other Electronic Component Manuf.
6	3345	Navigational, Medical & Control Instruments Manuf.
7	4173	Computer & Comm. Equip. & Supplies Wholesale distribution
8	5112	Software Publishers
9	5171	Wired Telecommunications Carrier
10	5172	Wired Telecommunications Carrier (except satellite)
11	5174	Satellite Telecommunications
12	5179	Other Telecommunications
13	5182	Data Processing, Hosting, and Related Services
14	5415	Computer Systems Design & Related Serv.
15	8112	Electronic & Precision Equip. Repair & Maintenance