ICT IN THE FINANCIAL SERVICES SECTOR

// Assessing the Human Resource Needs

Information and Communications Technology Council

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About ICTC

The Information and Communications Technology Council (ICTC) is a centre of expertise in ICT business intelligence, labour market research, policy development and workforce solutions. ICTC enables industries to maintain a competitive advantage in a global market and develop Canada’s future skilled and innovative talent. For more information, please visit our website at www.ictc-ctic.ca.
Executive Summary

The economic turmoil that engulfed the globe in 2008 impacted the Financial Services industry more than any other industry, with many financial firms forced to shut their doors permanently, while others looked to government intervention and still others were forced into consolidation. The new global paradigm has created immense pressures on financial institutions to perform on an ongoing and immediate basis. In order to keep up with the demands of a globally integrated marketplace, financial firms are increasingly turning to information and communications technology (ICT) to drive innovation and design products and services that are both safe and efficient for end-users.

ICT has long been a critical component to the success of the Financial Services sector. Often described as e-finance, technology in financial services refers to the accessibility of financial services through the use of electronic communications. Spurred by decades of innovation, productivity and growth, Canadian financial institutions have made Canada a global leader in the Financial Services industry, thus contributing to the transformation of Canada’s digital economy.

Led by Toronto, Canada’s financial industry has for decades championed a series of innovations that enhanced financial transactions on a global scale. In the 1990s these innovations included the development of a national ATM system, Interac debit system, processing facilities and payments clearing systems. Yet, regulatory restrictions and heavy investment in legacy systems challenge the innovative capacity of Canadian financial service providers.

Despite the growing demand for ICT governance and new regulatory requirements, many financial service providers have been forced to consolidate their ICT budgets following the 2008 recession. In this environment, financial service providers will need ICT professionals with a blend of skills and experience to handle the new challenges of the global economy.

Based on ICTC’s extensive consultation with Subject Matter Experts (SMEs) from Toronto’s Financial Services sector, Canada’s largest financial hub is experiencing skills shortages in many leadership roles at the intersection of ICT and business. SMEs involved in the recruitment of ICT professionals identified that the most significant ICT HR challenge facing their sector is ensuring that the skills of applicants align with the needs of industry. Occupations that require the most attention include IT Business Analysts, IT Security Systems Specialists and the growing field of ICT Governance. However, the most difficult positions to fill are often senior-level, including IT Executive, Chief Information Officer (CIO) and Vice President of IT Operations.

SMEs identified that stronger linkages are needed between industry and post-secondary institutions, including cross-disciplinary programs that integrate ICT with other components in order to develop business savvy ICT professionals. Given the size of Canada’s major financial hubs, universities, ICT associations and financial institutions themselves have a large opportunity to stimulate innovation and thus attract more investment. By investing in post-secondary recruitment strategies and leveraging existing diversity and inclusion programs, financial institutions can reach untapped talent pools to propel Canada forward and lead the nation in its digital transformation.

The shifting business paradigms of the global digital economy have been shaped largely by the growth and innovation of the Financial Services sector. ICTC foresees a growing appetite and accelerated demand for business intelligence, business analysis, mobile banking, e-trading platforms and cyber security within the sphere of financial services. This will likely create new skills requirements for ICT professionals looking to work in the rapidly evolving intersection between technology and finance.
1.0 Introduction

ICTC’s Labour Market Intelligence has identified the growing impact of ICT on the Financial Services Sector. Thus, with the support and approval of ICTC’s Board of Directors, ICTC undertook an in-depth examination of the Financial Services sector in order to better understand how ICT innovation is shaping and defining Canadian financial services. In order to keep up with the demands of a globally integrated marketplace, financial service providers are increasingly turning to ICT to drive innovation and create new business opportunities.

Harnessing the innovative capacity of ICT has the potential to overcome the many challenges facing financial service providers. Challenges related to cost, quality and timeliness of services, security and regulatory compliance can all be addressed by accelerating the adoption of ICT across all spectrums of the financial service environment.

Furthermore, through its research ICTC identified Toronto as the centre of Canada’s Financial Services sector, representing one-half of the total ICT workers in financial services. Toronto also boasts the third largest financial hub in North America, behind New York and Chicago, and is fueled by a highly diverse and innovative talent pool from around the world.

Therefore, the purpose of the study is to investigate the ICT human resource (HR) needs of Canada’s Financial Services sector, including an in-depth examination of Toronto—the country’s largest financial hub. This exercise will allow us to determine whether there are challenges the sector is experiencing with regards to finding the required talent.

ICTC’s strategic plan is to ensure that Canada and its regions have the infrastructure in place to guarantee a continuous supply of diverse, highly skilled and qualified ICT workers to ensure Canada’s continuous success on the global stage. To achieve this vision, ICTC carries out strategies that are proven building blocks for a healthy, successful and forward-looking sector, with youth, women, Internationally Educated Professionals (IEPs) and Aboriginals as prime targets for the future.
2.0 Methodology

This report provides a preliminary review of the labour market trends of ICT occupations within Canada’s Financial Services sector. ICTC collected both primary and secondary data for the following financial service providers: banking, investment and insurance.

The study also includes a case study of Toronto’s financial hub, which represents one-half of all financial ICT workers in Canada. Stakeholders from the region contributed extensively to the development of this study.

The research methodology used included:

- Industry level consultations and surveys with 21 subject matter experts (SMEs), namely Human Resource Managers, Operations and IT Managers, Senior Recruitment Consultants and IT Directors.
- SMEs were primarily from Toronto’s Financial Services sector and a few from Montreal and Vancouver.
- Secondary data analysis of Labour Force Survey (LFS) and Canadian Census data.
- Environmental scan (i.e., literature review) of research pertaining to financial ICT, including new and emerging technology trends, industry-based research and news.

Industry consultations were used to understand the primary factors affecting the current and future demand/supply of ICT professionals in financial services, such as:

- a) academic programming,
- b) recruitment/retention and
- c) the integration of IEPs in the workforce.

All feedback gathered to date provides the necessary input for this initial report and helps identify the impact of ICT on Canada’s Financial Services sector. The size and composition of SMEs are not intended to serve as a representative sample of regional or national financial hubs. Rather, they provide qualitative guidance and further granularity regarding the industry’s ICT talent needs.

ICTC will continue to validate the findings of this report in conjunction with national and regional partners, as well as pursue further research to develop a comprehensive picture of Canada’s Financial Services sector, with special emphasis on regional clusters such as Toronto, Montreal, Vancouver and others.
2.1 DEFINING THE FINANCIAL ICT WORKFORCE

The growth of ICT in the sphere of financial services has created new business opportunities for banks, investment firms and insurance companies, despite the sharp increase in regulation following the 2008 financial crisis. In this challenging environment, financial firms will require highly skilled ICT professionals with the skills to adapt to new technologies and respond to the ongoing regulatory requirements of the post-recession period.

ICTC draws in part from Census/Labour Force Survey (LFS) data to determine the labour market profile of ICT workers within the Financial Services sector. We begin by looking at 21 “core” ICT occupations (i.e., NOCS) employed in the Financial Services sector (NAICS 52). For a complete list of these occupations, refer to the Appendix.

When consulting with industry SMEs, ICTC used a list of “common” job titles to help employers identify the ICT workers most critical to their sector. These common job titles, which are listed to the right, were then mapped to the occupations listed in the NOC system.

Common Job Titles

» Analyst (includes technical, hardware and systems analyst roles)
» Technician (includes computer network, user support and system testing technicians)
» Programmer
» Computer/Software Engineer/Developer
» IT Manager or Executive
» IT Business Analyst/Information Systems Analyst
» Web/Application Developer
» IT Security

i Core ICT occupations are occupations that support or produce ICT products, services, systems or applications. These occupations require a minimum of one year of formal training in ICT, with more training typically required by most companies. For a list of the core ICT occupations, refer to the Appendix.

ii National Occupational Classification System.

iii North American Industry Classification System.
**3.0 ICT and the Global Economy**

The integration of ICT and financial services is hardly new. However, due to recent government intervention in major financial institutions, governments and the public are demanding more transparency, such as increased auditing and reporting requirements. In addition to this evolving regulatory environment, security risks have never been higher, with fraud, identity theft and information leaks more prevalent today than in the past. According to a forthcoming ICTC publication, cyber threats are on the rise and are impacting various sectors of the Canadian economy, including financial services.

**3.1 THE REGULATORY ENVIRONMENT**

Combined with technological innovation, demand, competition and globalization, regulation is one of the principal drivers of change in the global Financial Services sector. Canadian financial institutions must deal with these drivers of change on a global scale in order to remain competitive and enhance Canada’s standing internationally.

Today, Canadian banks and investment services must deal with more stringent regulations that came into effect following the 2008 financial crisis, including the Volcker Rule, legislation with inhibits U.S. banks from engaging in certain speculative investments, as well as Basel III, a global standard introducing more stringent regulatory requirements on bank liquidity and leverage. While these regulations were intended to counter the failures of U.S. and European banks, they will certainly impact Canadian institutions doing business globally. This means that, for the Big Five
text continues...
3.2 INNOVATION IN FINANCIAL SERVICES

Innovation in the Financial Services industry can be defined as either product innovation or process innovation. **Product innovation** refers to the development of new products and services, whereas **process innovation** reduces production costs of existing goods. For the purpose of this study, product and process innovation are both understood within the context of ICT — that is, the role of ICT in developing new products and services (product innovation) and reducing the costs of production (process innovation).6

Canada’s Financial Services industry has for decades utilized ICT on both the product and process sides. In the future, ICT promises to benefit financial service providers on an even greater scale. Some of the benefits of greater ICT integration include the following:

1. More efficient and cost-effective global payment systems. Between 1999 and 2010, global payment volume increased to 330 billion transactions annually, with the highest growth occurring in electronic payments, which represented 85% of all non-cash payments.7

2. The ability to meet the growing demand for disintermediation by providing consumers with greater online access to products and services. Executives in various industries are increasing disintermediation channels for two primary reasons: it allows them to learn more from their customers and allows them to serve them more effectively.8

3. The infrastructure to meet ICT governance standards much more efficiently. ICT governance allows financial firms the ability to embed sustainable risk management practices internally, meet industry regulations and adhere to government compliance measures.

4. The ability to reach unbanked markets globally through mobile innovation and application development. According to the OECD, 75% of the world’s population has a mobile phone, yet only 30% of the world’s population has a bank account.9

5. Enhanced ability to deal with ongoing cyber insecurity emanating from hackers and cyber criminals. Identity theft alone costs the Canadian economy $2.5 billion annually.10 In 2009, a combined 37% of all hacking incidents resulted in monetary loss or stolen information.11

For these and many others reasons, financial firms have a great incentive for improving upon their existing legacy applications.
ICT IN THE FINANCIAL SERVICES SECTOR

4.0 International Outlook on Financial ICT

The tumultuous financial recession of 2008 impacted the global economy in many different ways, most notably in the cuts to infrastructure spending and job loss in various sectors. Global ICT spending declined by three percent in 2009\(^2\) and as much as 5.2% on end-user spending\(^3\) (Figure No. 1), as many large firms were forced to lay off existing staff. Among the hardest hit were financial service providers, with large firms such as JP Morgan Chase announcing the elimination or redeployment of up to 3,000 ICT-related jobs.\(^4\)

Despite the economic downturn, ICT spending in banking and investment services has increased globally. ICT spending in North America is expected to be 2.4% higher in 2012.\(^5\) Despite the sharp decline in spending in 2008, the Financial Services industry led all other industries in worldwide ICT spending during the recession (Figure No. 2). By 2013, North American banks are expected to spend USD 56.3 billion on ICT.\(^6\) Financial services in the Asia-Pacific region are experiencing the largest growth (6%) in ICT spending in 2012 and will reach USD 59.4 billion by the end of this year. On the other hand, ICT spending in Europe is growing very modestly in 2012 (0.3%) and is estimated to reach USD 59.2 billion by year’s end.\(^7\)

4.1 UNITED STATES

ICT spending among U.S. banks is expected to grow at a CAGR\(^\text{v}\) of 3.7% until 2015. The main reason for this level of spending optimism is the growing influence of ICT innovation in U.S. financial institutions, ranging from online banking platforms to mobile applications and even on-site renovations.\(^8\)

\(\text{v Compound Annual Growth Rate.}\)

Figure No. 1 Regional End-User Spending on ICT (Billions of USD)

![Figure No. 1 Regional End-User Spending on ICT (Billions of USD)](image)

Despite the recent downturn in the U.S. economy, the rapid pace of technological innovation in American finance has enabled banks to provide highly sophisticated cash management techniques to clients. As an example, securities firms are able to combine traditional investment services with transactions services and third-party payments capability. Combined with decades of rising inflation, technological advancements have had arguably the biggest impact on U.S. financial services.¹⁹

As American finance strives to overcome the 2008 recession, they will increasingly rely on technology to reduce costs, create new business opportunities and erode the challenges of new regulatory frameworks.

### 4.2 EUROPE

Over the past fifteen years Europe’s banking sector ranked first in total ICT investment, having recently settled on an annual average of €6 billion. Perhaps the most significant financial innovation in Europe was the establishment of the Euro, which represented a unique monetary invention.

The trend in European financial markets has been toward product innovation as opposed to process innovation. This is largely true for the following countries: Belgium, Portugal, the Netherlands, France, U.K. and Italy. Innovation in these countries is also much stronger among the larger banks, especially in France.²⁰
Examples of product innovation include digital payments and banking platforms, identity verification, money management, social investing and direct investment tools. Examples of process innovation include new methods of carrying out production activities, such as a new credit risk management model.

Despite the sharp decline in innovation among European banks following the 2008 financial crisis, competition in the retail banking sector spurred product innovation in the U.K. It is thus largely understood in Europe that innovation leads to new business opportunities, even during a recession.

### 4.3 ASIA-PACIFIC

With financial ICT spending growing in the Asia-Pacific region, regional powers are seeking ways to drive economic growth through financial services. A prime example is China, which is undergoing financial reform in order to accelerate its economic growth targets, which have been lowered to 7.5% for 2012. Chinese Premier Wen Jiabao indicated that this process of financial reform will commence by reducing the state banking monopoly, which will allow foreign businesses greater access to China’s Financial Services industry.

While Chinese state-owned commercial banks continue to invest the most in ICT, there is huge, untapped potential in rural banking areas, which, due to ongoing financial reforms, will eventually become important centres for China’s emerging banking sector.

In Japan, electronic claims have been the foremost innovation and have impacted virtually every sector of the economy. In 2007, the Japanese Government went further, enacting the Electronically Recorded Claims Act, the first of its kind, which stipulated that “... electronic claims will be originated and transferred between parties via an electronic book-entry system maintained by electronic claims registry institutions.” Electronic claims provide three potential advantages to Japanese financial institutions: they can be used as substitutes for bills, enhance the transparency of accounts receivable and may be used to administer loans.

The size of the Asia-Pacific region’s financial industry provides great avenues for business creation, both in terms of product innovation and process innovation. Financial institutions in the Asia-Pacific region are allocating greater resources toward their technology operations, with ICT spending expected to reach USD 30 billion by 2016. It is also forecasted that ICT spending among the retail banking sector will increase by USD 7.1 billion, thus contributing to the largest banking sector growth in the world in 2012 (8.3%). Online banking, mobile technology, customer analytics and customer data management are all growing areas, with online banking platforms and mobile expected to hit CAGR of 7% and 7.1%, respectively.

### 4.4 INDIA

In India, ICT investments have had the most noticeable impact on the insurance industry, which is undergoing a dramatic transformation in response to growing demand and regional competition. According to Kaylan Banga of Netscribes, an India-based research company, ICT spending in the insurance industry will have a CAGR of 14% until 2015. This growth is attributed to the large appetite for ICT in various sectors of India’s rapidly evolving market, including fierce competition among ICT vendors.

### 4.5 SOUTH AFRICA

In South Africa, financial and related business services control over 30% of total ICT expenditure. In developing countries outsourcing is not a feasible option for most ICT functions, which forces financial service providers to carry out their work in-house. Perhaps the most significant trend in South Africa and other BRICS countries is the growth of mobile banking. The power of mobile technology has enabled users around the world to do more with their mobile devices.

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*vi Brazil, Russia, India, China and South Africa.*
BRICS countries and other developing regions of the world are expressing a strong appetite for mobile banking, which has the potential to bring financial inclusion to unbanked populations, which represent up to 70% of the world.30

4.6 LABOUR MARKET IMPLICATIONS

While the 2008 recession prompted many industries to cut ICT staffing, with one poll\(^\text{vii}\) indicating that the majority of decision makers projected to cut ICT jobs by as much as 15%,31 financial service providers around the world will need ICT professionals who understand the new regulatory environment.

In this environment, ICT workers will require a blend of skills and experience to handle the new challenges of the global economy. According to the International Labour Office (ILO), ICT employees working in financial services who have strong financial and business skills are likely to fair the best in this new environment.32

\(^{vii}\) Gartner, 2009.
5.0 Labour Market Trends in Financial ICT

In the coming years, the global Financial Services industry is expected to place even greater emphasis on innovation, including new investments in systems upgrades.\textsuperscript{33} With the regulatory landscape governing financial services continually evolving, financial companies will be required to allocate greater resources into ICT governance and security infrastructure.

The growing impact of ICT innovation on financial services will likely create new skills requirements for ICT professionals looking to work in the rapidly evolving intersection between technology and finance. While maintenance of traditional ICT platforms will continue to play a role, the global Financial Services industry is “realizing the competitive advantage of modernizing their core systems and byzantine legacy systems.”\textsuperscript{34}

Despite spending cutbacks in recent years, financial service providers continue to view technology as a critical component to their success. Thus, the key question to explore is: how has the rapid integration of ICT impacted the human resource requirements of financial services companies?

ICT in financial services has created opportunities for ICT professionals in various areas, such as banking, mobile technology, security, software development, computer hardware, user support and IT business analytics, among many others. Between 2008 and 2011, ICT employment in Canada’s Financial Services sector grew by 12% (Figure No. 3).

**Figure No. 3 Canadian Employment Growth by Sector**
With ICT set to play a more pivotal role in the financial markets over the next decade, banks and investment services will have to update their business models to remain competitive. According to a recent TownGroup study, “technology will be essential to the success of industry operators seeking profitability after three years of high credit losses, hyperactive regulators, and general economic stress.”\(^{35}\) This means that financial institutions will need capable ICT talent to continue to push innovation within the sector.

### 5.1 CANADIAN OUTLOOK

ICTC’s 2011-2016 Outlook report predicts that Canadian employers will need to hire more than 106,000 ICT workers by 2016 to meet labour demands. These demand requirements impact industries across the Canadian economy, including Financial Services. Figure No. 4 provides a breakdown Canada’s ICT workforce within the Financial Services sector.

In financial services there is a growing demand for Business Analysts, IT Security Systems Specialists and ICT governance professionals. Based on ICTC’s consultation with SMEs in Toronto’s financial hub, senior management positions are often the most challenging to fill.

Figure No. 4 Financial ICT Workforce in Canada by Occupational Group (June 2012 3-month avg)
Based on latest available data, over 49% of Canada’s total ICT workers in the Financial Services sector are in Toronto (see table below). By comparison, the next greatest concentrations of Financial ICT workers are in Montreal (9.4%) and Vancouver (6.4%).

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<thead>
<tr>
<th>Top CMAs</th>
<th>% of Canada</th>
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<tbody>
<tr>
<td>Toronto</td>
<td>49.1%</td>
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<tr>
<td>Montreal</td>
<td>9.4%</td>
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<td>Vancouver</td>
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<tr>
<td>Quebec City</td>
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<td>Kitchener</td>
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<td>Winnipeg</td>
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<tr>
<td>Hamilton</td>
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<td>Ottawa-Gatineau</td>
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<tr>
<td>London</td>
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<td>Oshawa</td>
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<tr>
<td>Edmonton</td>
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<td>Regina</td>
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<tr>
<td>Calgary</td>
<td>1.4%</td>
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<tr>
<td>Rest of Canada</td>
<td>9.2%</td>
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<tr>
<td>Total</td>
<td>100.0%</td>
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5.2 ONTARIO

As the heart of Ontario’s Financial Services sector, the Greater Toronto Area (GTA) has become one of North America’s top three financial service hubs and is home to Canada’s top five banks. The GTA is also home to five of Canada’s largest pension plans and six of Canada’s top insurers. Among the 41 international banks doing business in Canada, 35 are headquartered in the GTA. Between 1996 and 2005, Toronto’s Financial Services sector led all major North American cities in job creation. More than 337,000 people are employed in Ontario’s Financial Services sector (Figure No. 6), with nearly one-half employed in banking services.

Financial workers in Ontario are also highly educated, with 68% having completed a post-secondary degree, diploma or certificate. Ontario’s Financial Services sector is built on a large ICT infrastructure, with more than 5,000 ICT companies headquartered in the province. Today, Canadians are the “world’s top per capita users of Automated Banking Machines and debit cards… with roughly 85% of all retail banking transactions… done electronically.”

Figure No. 6 Financial ICT Workforce in Ontario by Occupational Group

After Toronto, Kitchener has the second largest concentration of Financial ICT workers in Ontario (3.5% of Canadian total). Around 44% of Toronto’s Financial ICT workers are Information Systems/IT Business Analysts and close to 20% are Computer Programmers/Developers.

5.2.1 CASE STUDY: TORONTO’S FINANCIAL SERVICES SECTOR

ICTC’s consultation with SMEs from Toronto’s financial hub revealed that the region’s major financial institutions foresee a strong need for ICT talent, especially in emerging areas such as business analysis, cyber security and governance.

In summary, SMEs brought forward the following points:

» ICT is very important to the Canadian Financial Services sector, both in terms of product and process innovation.

» ICT has dramatically changed the ways in which Canadian financial firms do business.

» There is a strong need to ensure that ICT skills align with the needs of industry. Due to the rapid pace of technological change, post-secondary institutions must ensure that their students stay ahead of the technological current.

» Regarding the intersection of technology and financial services, security of financial transactions is the most important area that must be addressed.

» Other areas that should be addressed include reliability of financial transactions and standardization of electronic transfers.

ALIGNING SKILLS WITH THE NEEDS OF INDUSTRY

According to SMEs aligning workers’ skills with the needs of industry is important at each stage of the career cycle: entry-level, mid-level and senior-level. In fact, it can be argued that it is most important in leadership roles such as IT Executive, Chief Information Officer (CIO) and Vice President of IT Operations.

However, regardless of where they are in the career cycle, financial ICT workers must understand the business context in which ICT is being applied and must have the ability to translate these requirements into business opportunities. Strong technical skills are essential, but so are soft competencies such as behavioural skills, teamwork, context skills and domain knowledge.

It is thus essential for post-secondary institutions in the region to continually reflect upon the academic programming and curricula they offer. ICT is unique in that it demands life-long learning, specialization and cross-disciplinary education. Fortunately, the GTA is home to many world-class institutions, which, together with industry, must work toward strengthening the alignment between ICT skills and the evolving demands of financial ICT.

TOP HR CHALLENGES AND RECRUITMENT STRATEGIES

SMEs identified the top human resource challenges facing their industry:

» The most significant ICT HR challenge is ensuring that skills align with industry needs.

» The rapid pace of technological change has shifted the priority toward specialized skills in business analytics, governance, security and enhancing customer services.

» Cross-disciplinary post-secondary programs that integrate ICT with other components are strongly needed in order to meet the evolving needs of Canada’s Financial Services industry.
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Networking is by far the most effective recruitment strategy; recruitment agencies, online job postings, post-graduate recruitment and internal hiring were considered to be moderately effective recruitment strategies.

Increasing post-secondary enrolment and stimulating interest in ICT among women, Aboriginals and other visible minority groups may provide employers with access to untapped talent pools.

JOBS OF TOMORROW

According to SMEs, three occupations in particular require extra attention: (1) Business Analysts; (2) IT Security Systems Specialists; and (3) ICT Governance. With the regulatory landscape governing financial services continually evolving, financial institutions will be required to invest greater resources into ICT governance and security infrastructure, which will be critical in ensuring the continual growth and prosperity of Canada’s financial institutions.

RECRUITMENT PROGRAMS IN THE BANKING SECTOR

Financial institutions recruit workers through various strategies. Many banks have focused on diversity and inclusion programs in order to find the talent they need. Such programs, which often target visible minorities, women, Aboriginals and IEPs, provide employers with the opportunity to tap into diverse labour pools. Below is a list of several leading banks and their diversity programs:

- **Toronto-Dominion (TD) Bank Financial Group** has a Diversity and Inclusion program designed to expand leadership opportunities for women and visible minorities.

- **Canadian Imperial Bank of Commerce’s (CIBC) Diversity Matters and Initiatives programs** support employee-led affinity networks for visible minorities, as well as opportunities for professional women returning to the workforce.

- **Scotiabank** has an active diversity and inclusion plan dedicated to leveraging the skills of Aboriginals, visible minorities, women and IEPs.

- **The Royal Bank of Canada (RBC)** has established a Diversity Blueprint which recognizes diversity as a source for innovation and prosperity, with programs designed to attract women, visible minorities and IEPs.

- **The Bank of Montreal (BMO)** supports diversity, equity and inclusion through its Corporate Sustainability initiatives, which also sponsor education programs that provide educational opportunities for women, visible minorities and Aboriginals.

These leading financial institutions all have active recruitment programs designed for recent graduates in financial services, business and ICT.
5.3 QUEBEC

Montreal’s Financial Services sector has grown significantly since 2007. The city is home to over 3,000 financial service companies employing more than 100,000 people. Figure No. 7 provides a breakdown of Quebec’s financial ICT workforce. Montreal has a strong banking sector, including Desjardins, National Bank of Canada and HSBC as well as insurance providers such as Standard Life and Sun Life Financial. In 2012 Bloomberg Markets ranked National Bank as the fifth strongest bank in the world and third strongest in North America, behind CIBC and TD Bank.38

Figure No. 7 Financial ICT Workforce in Quebec by Occupational Group

The Quebec City metropolitan region is the second largest hub for the insurance industry in Canada, with ten insurance companies headquartered in the city. Three of these companies (Desjardins Financial Services, Industrial Alliance and SSQ Financial Group) are also among the top ten largest companies in Canada. Approximately 16,500 people are employed in Quebec City’s financial hub.39

Similar to Toronto, SMEs from Montreal’s banking sector expressed challenges finding the right blend of business and ICT talent, especially for senior level positions. Demand for senior profiles in Montreal’s financial district is on the rise.

Given the relatively smaller size of the region’s banking sector when compared to Toronto, SMEs are often challenged by a limited talent pool and transient profiles. Due to the size of Toronto’s financial hub, it is not uncommon for financial workers in Montreal to relocate to Toronto, the headquarters of many financial institutions.

In addition to senior-level positions, demand for technical skills such as SAP and CLM are on the rise. Due to the challenges associated with finding these skills, Montreal’s banking sector is increasingly turning to international recruitment, especially for technical programming jobs.
5.4 BRITISH COLUMBIA

As Canada’s gateway to the Asia-Pacific markets, Vancouver’s financial hub enjoys a strong competitive advantage. With 30 international banks and 15 international financial institutions, Vancouver is one of the two International Finance Service Centres in Canada (along with Toronto). Through B.C.’s International Financial Activities Act (IFAA), Vancouver is developing an international treasury and financial functions infrastructure, including factoring, importing and exporting, foreign exchange and back office support. Figure No. 8 illustrates B.C.’s financial ICT workforce.

Vancouver is home to a vibrant insurance sector, as well as Canada’s largest credit union. The region will continue to need a diverse ICT talent base to fuel its growing international Financial Services industry, which is the country’s largest west of Toronto.

Vancouver SMEs indicated to ICTC that, while technology is very important to the region’s financial industry, finding the right talent is often challenging and requires considerable effort outside of traditional recruitment programs. SMEs cited a mix of labour and skills shortfalls as the primary reason for this challenge, with post-secondary recruitment and career fair programs only moderately effective in finding the talent they need.

Like the majority of SMEs from Toronto, Vancouver SMEs agreed that financial cyber security was the biggest challenge facing their industry. As cyber threats continue to proliferate, it is critical that financial services providers identify the skills they need and invest in programs at the post-secondary level to ensure that more ICT graduates are prepared for a career in financial services.

For SMEs in Vancouver, the absolute best way of meeting the new and emerging HR challenges of their sector is through cross-disciplinary post-secondary programs that integrate ICT with other components.

Figure No. 8 Financial ICT Workforce in B.C. by Occupational Group

6.0 Conclusions and Recommendations

This study is intended to bring together leaders at the intersection between technology and finance in order to identify the business opportunity of financial ICT and explore strategies for enhancing the supply of well-rounded ICT workers for their sector. ICTC’s consultation with SMEs from Toronto’s Financial Services sector allowed participants from banking, investment and insurance to consider various opportunities to expand the talent pool of ICT professionals across all levels of the career cycle (entry, mid and executive levels). The resulting recommendations point to the need to increase the Financial Services sector’s talent pool, especially in areas pertaining to soft skills, management skills and leadership. Moreover, they create a call to action for the overall sector, for academia and for individual organizations within financial services to respond to the demands of the digital economy.

RECOMMENDATION 1: INVESTMENT THROUGH INNOVATION

» Toronto’s financial hub has made Canada a world leader in financial services, spurred by decades of ICT integration and innovation, thus contributing to the transformation of Canada’s digital economy. As Canada’s digital-financial economy continues to expand, the same innovation that brought us here must be carried forward into the next decade.

Figure No. 9 Levers of Success

<table>
<thead>
<tr>
<th>Lever 1</th>
<th>Stimulating post-secondary enrolment</th>
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<tbody>
<tr>
<td>Lever 2</td>
<td>Shifting to integrated, cross-discipline post-secondary programs</td>
</tr>
<tr>
<td>Lever 3</td>
<td>Encouraging industry investment in the skills it needs</td>
</tr>
<tr>
<td>Lever 4</td>
<td>Integrating Internationally Educated Professionals (IEPs)</td>
</tr>
<tr>
<td>Lever 5</td>
<td>Embracing diversity and inclusion</td>
</tr>
</tbody>
</table>

» Despite regulatory restrictions and heavy investment in legacy platforms, Canadian financial institutions must continue to prioritize innovation as a means to fuel productivity and ultimately investment.

» Canada’s strength lies in its diverse, highly educated and innovative talent base, which has the potential to spearhead Canada’s digital transformation and competitiveness on a global scale. The talent-innovation-productivity chain must be strengthened in order to attract more investment to the region, which will serve to strengthen Canada’s standing globally in this post-recession period.

RECOMMENDATION 2: MAXIMIZE THE POTENTIAL FOR SUCCESS

» SMEs expressed concern over their ability to recruit specialized talent to fuel their evolving ICT operations. It is thus essential for financial institutions to utilize all avenues for attracting the talent they need.

» Figure Number 9 illustrates what financial institutions can do to develop and recruit the talent their ICT operations require.
ICTC believes that there must be stronger linkages between post-secondary institutions and industry in order to develop a workforce with strong employability skills.

Post-secondary institutions, especially universities, must be willing to provide integrated, cross-disciplinary programs that prepare students for a career in financial services.

Given the size of Canada’s financial centres, there exists a very large opportunity for universities across the country to develop business savvy ICT professionals for the Financial Services industry.

At the same time, Canada’s major financial hubs must continue to invest in post-secondary recruitment programs, co-ops and internships in order to attract young ICT professionals into the field.

Leveraging existing diversity and inclusion programs which target women, Aboriginals and IEPs will ensure that Canada’s financial hubs remain strong, vibrant and highly innovative.

**RECOMMENDATION 3: THE NEXT STEP**

ICTC believes that further working group sessions facilitated by organizations like ICTC are essential to move this research agenda forward and ensure that Canada’s financial hub is well positioned globally.

Multi-stakeholder meetings and consultations that build partnerships among various financial firms and post-secondary institutions is essential in order to (1) identify the skills that industry needs, (2) strengthen ties between universities and financial institutions in the region and (3) better align the needs of industry with academic curricula.

**CALL TO ACTION**

ICTC strongly encourages financial institutions to participate in further labour market research to better understand the labour market supply/demand conditions of Canada’s financial ICT workforce. More primary data is needed to accurately portray the labour market trends of Canada’s Financial Services sector, including the skills and qualifications most relevant to financial institutions. Ultimately, the goal of this exercise is to identify the skills gaps in the labour pool and develop programs to better prepare ICT workers for a career in finance.

Our ability to prepare tomorrow’s workforce and nurture innovative talent will be vital in ensuring Canada’s competitive advantage in an increasingly global, connected and fast paced environment. Canada’s vibrant Financial Services industry needs to encourage and enable all potential human capital resources in Canada to partake in ICT, including women, Aboriginals and IEPs. It will be critical that we close the gap between the needs of industry and the programs offered in academia by preparing graduates for the new business paradigm and accelerate their deployment into industry. As ICT innovation continues to be a catalyst for success in the Financial Services industry, relevant stakeholders (industry, government, academia) must work together to identify the evolving needs of industry to position Canada as a leader in global financial services.
## 8.0 Appendix

### Core ICT Workforce

The Table below summarizes the “core” ICT occupations:

<table>
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<tr>
<th>Index</th>
<th>National Occupational Classification</th>
<th>Occupation Title</th>
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<tbody>
<tr>
<td>1</td>
<td>0112</td>
<td>Human Resource (HR) Managers</td>
</tr>
<tr>
<td>2</td>
<td>0213</td>
<td>Computer and Information System Managers</td>
</tr>
<tr>
<td>3</td>
<td>06115</td>
<td>e-Commerce Managers</td>
</tr>
<tr>
<td>4</td>
<td>2133</td>
<td>Electrical and Electronics Engineers</td>
</tr>
<tr>
<td>5</td>
<td>2147</td>
<td>Computer Engineers</td>
</tr>
<tr>
<td>6</td>
<td>21711</td>
<td>Information Systems Business Analysts</td>
</tr>
<tr>
<td>7</td>
<td>21712</td>
<td>Systems Security Analysts</td>
</tr>
<tr>
<td>8</td>
<td>21713</td>
<td>Information Systems Quality Assurance Analysts</td>
</tr>
<tr>
<td>9</td>
<td>21714</td>
<td>Systems Auditors</td>
</tr>
<tr>
<td>10</td>
<td>21721</td>
<td>Database Administrators</td>
</tr>
<tr>
<td>11</td>
<td>21722</td>
<td>Database Administration Analysts</td>
</tr>
<tr>
<td>12</td>
<td>2173</td>
<td>Software Engineers</td>
</tr>
<tr>
<td>13</td>
<td>21741</td>
<td>Computer Programmers</td>
</tr>
<tr>
<td>14</td>
<td>21742</td>
<td>Interactive Media Developers</td>
</tr>
<tr>
<td>15</td>
<td>2175</td>
<td>Web Designers and Developers</td>
</tr>
<tr>
<td>16</td>
<td>22811</td>
<td>Computer Network Technicians</td>
</tr>
<tr>
<td>17</td>
<td>22812</td>
<td>Web Technicians</td>
</tr>
<tr>
<td>18</td>
<td>2282</td>
<td>User Support Technicians</td>
</tr>
<tr>
<td>19</td>
<td>2283</td>
<td>Systems Testing Technicians</td>
</tr>
<tr>
<td>20</td>
<td>51212</td>
<td>Technical Writers</td>
</tr>
<tr>
<td>21</td>
<td>5241</td>
<td>Graphic Designers and Illustrators</td>
</tr>
</tbody>
</table>
9.0 Endnotes


5 Ibid.


16 Ibid.


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22 Ibid.
26 Ibid.
34 Ibid.
37 Ibid., 7.
39 Quebec International. “The Quebec City metropolitan region, a nerve center for the insurance and financial services industries.” http://www.quebecinternational.ca/key-industries/insurance-and-financial-services/the-industry