Talent-Innovation-Investment

ICT in Toronto's Financial Services Sector

Information and Communications Technology Council

White Paper

TFSA | TORONTO FINANCIAL SERVICES ALLIANCE

Centre of Excellence in Financial Services Education

TABLE OF CONTENTS

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.

About TFSA

The Toronto Financial Services Alliance is a public/private initiative whose mandate is to enhance and promote the long-term competitiveness of Toronto as a premier North American financial services centre. Its membership encompasses core financial services companies – banks, brokerages, investment fund managers, insurance companies – as well as partner sectors – accounting, law and education. The TFSA was created in 2001 by the financial services industry, in partnership with the City of Toronto and with the support of the federal and provincial governments. For more information, please check our Website at www.tfsa.ca.

About CoE

As part of the Toronto Financial Services Alliance, the Centre of Excellence in Financial Services Education (www.tfsa.ca/coe) acts as a catalyst to strengthen and expand Toronto's talent pool and elevate the region's global stature as a financial services capital. The Centre of Excellence aggregates research and information on Toronto's talent and educational strengths for the benefit of educators, employers and students/graduates; works with employers and educators to improve the focus and quality of education programs; encourages cross-sector dialogue on talent and education-related issues, and showcases the region's strengths and the career opportunities that await in the Toronto region. The Centre of Excellence is supported by the Ministry of Training, Colleges and Universities and the City of Toronto.

EXECUTIVE SUMMARY

Information and Communications Technology (ICT) has long been a critical component to the success of the Financial Services sector. ICT in financial services refers to the accessibility of financial services through the use of electronic communications. Spurred by decades of innovation, productivity and growth, Toronto's financial hub has made Canada a global leader in the Financial Services industry, thus contributing to the transformation of Canada's digital economy. New developments in ICT have become the driving force for innovation and business development in the banking, investment and insurance sectors.

Toronto's Financial Services 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[1] and heavy investment in legacy systems challenge the innovative capacity of Canadian financial service providers.

Toronto's Financial Services industry has been viewed by some to be much more prudent and thus a slower innovator than its international counterparts.[2] Despite these challenges, the sector continues to boast a strong and highly diversified talent base. The size of the region's Financial Services sector and its growing talent base give Toronto a competitive advantage globally for innovation and productivity, two essential components for attracting investment. Given the large scale knowledge transfers between ICT and financial services, this report represents the first step in understanding the role of talent in fueling innovation, productivity and ultimately investment in Toronto's Financial Services sector.

While Toronto represents over 49% of Canada's total financial ICT workers, Subject Matter Experts (SMEs) involved in the recruitment of ICT professionals identified that the most significant ICT human resources challenge facing the Financial Services 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 Office (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 Toronto's financial hub, universities, ICT associations and financial institutions themselves have a large opportunity to stimulate innovation in the region 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 the Toronto region forward in this critical stage of Canada's digital transformation.

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. 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 services hub in North America, behind New York and Chicago,[3] 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 Toronto's Financial Services sector and 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 Toronto's Financial Services sector. ICTC has collected primary and secondary data for the following financial services providers: banking services, investment services and insurance companies.

In completing the study, ICTC employed the following combination of primary and secondary research:

- Industry level consultations and surveys with 25 Subject Matter Experts (SMEs) involved in the recruitment of ICT professionals, including Human Resource Managers, Operations and IT Managers, Senior Recruitment Consultants and IT Directors from Toronto's Financial Services sector;
- Secondary data analysis of Labour Force Survey (LFS) and Canadian Census data; and
- Environmental scan (i.e., literature review) of research pertaining to ICT in the Financial Services sector, including new and emerging technology trends, occupations and skills.

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, c) retention; and d) the integration of IEPs in the workforce.

All feedback gathered provided the needed input for the report, which represents the first step in understanding the labour market profile of Toronto's Financial Services sector.

3.0 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. It has also created new opportunities for ICT professionals across various domains.

While ICTC draws in part from Census/LFS data to determine the scope of ICT workers within the Financial Services sector, determining the full breadth of Toronto's financial ICT workforce requires more primary data to identify new and evolving occupations not yet captured by the National Occupational Classification System (NOCS). Therefore, the labour market analysis in this report reflects more traditional ICT occupations within financial services, such as programming, software development, information systems analysis and managerial roles.

Thus, ICTC begins by looking at 21 "core" ICT occupations[1] employed in the Financial Services sector (NAICS[2] 52). When consulting with SMEs, ICTC used a list of "common" job titles to help employers identify the ICT workers most critical to the Financial Services sector. These common job titles 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 Systems Specialist
- IT Infrastructure Architect
- IT Consultant

[1] 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.
[2] North American Industry Classification System.

3.1 DEFINING THE BUSINESS CONTEXT

As the heart of Canada's Financial Services industry, Toronto represents a favourable environment for innovation not only on regional and national levels, but internationally as well. Harnessing the capacity of ICT has the potential to open up new pathways for Toronto's financial industry, such as:

1. The ability to meet the growing demand for disintermediation by providing consumers with greater online access to products and services. According to a recent CMO Survey, executives in various industries are increasing disintermediation channels for two reasons: it allows them to learn more from their customers and allows them to serve them more effectively.[4]
2. 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.[5]
3. Building upon and promoting the reliability of Canada's payment clearing systems internationally. 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.[6]
4. The ability to reach unbanked markets globally through mobile banking. According to the OECD,[3] 75% of the world's population has a mobile phone, yet only 30% of the world's population has a bank account.[7]
5. Enhanced ability to detect cyber-crime and identity theft. Identity theft alone costs the Canadian economy $2.5 billion annually.[8]

Financial services continue to spend more money on ICT than virtually any other industry, due largely to growing demand for new trading infrastructure, the growing volume of transactions which must adhere to new regulatory requirements and the need for new revenue sources.[9]

[3] Organisation for Economic Co-operation and Development.

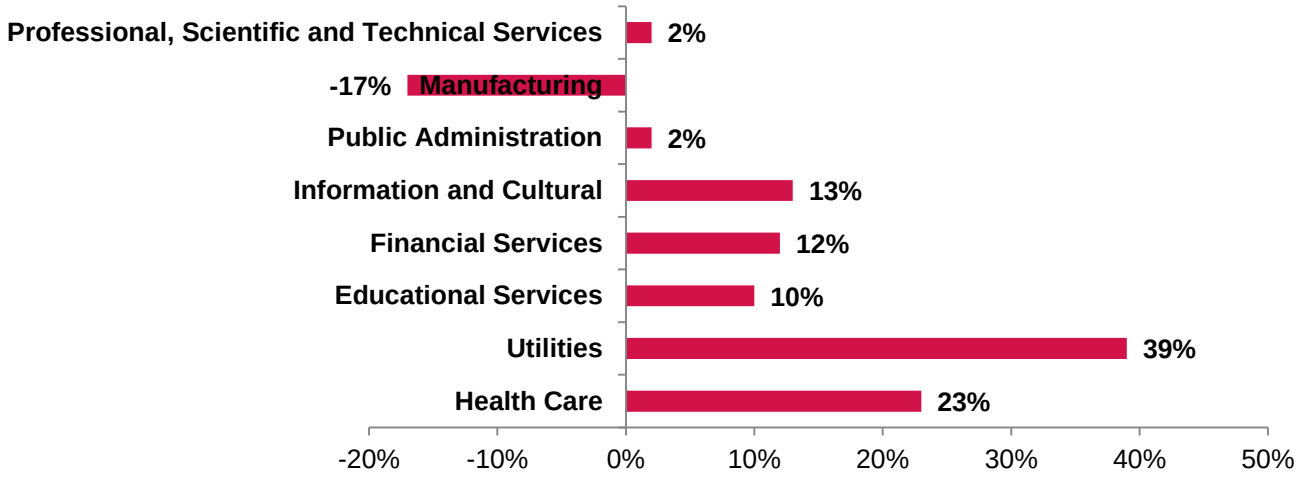
4.0 LABOUR MARKET TRENDS IN FINANCIAL ICT

Through the use of ICT, financial institutions are able to provide their clients with greater access to products and services, banking solutions and real-time information than ever before. As leaders in technological innovation, financial institutions 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 HR requirements of financial institutions?

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. 1).

With technology playing a more pivotal role in the current and future financial markets, banks and investment services will need to update their business models to remain competitive. According to a 2011 study conducted by TownGroup, "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."[10] This means that financial institutions will need capable ICT talent to continue to fuel innovation within the sector.

Figure No. 1 Canadian ICT Employment Growth by Sector, 2008-2011

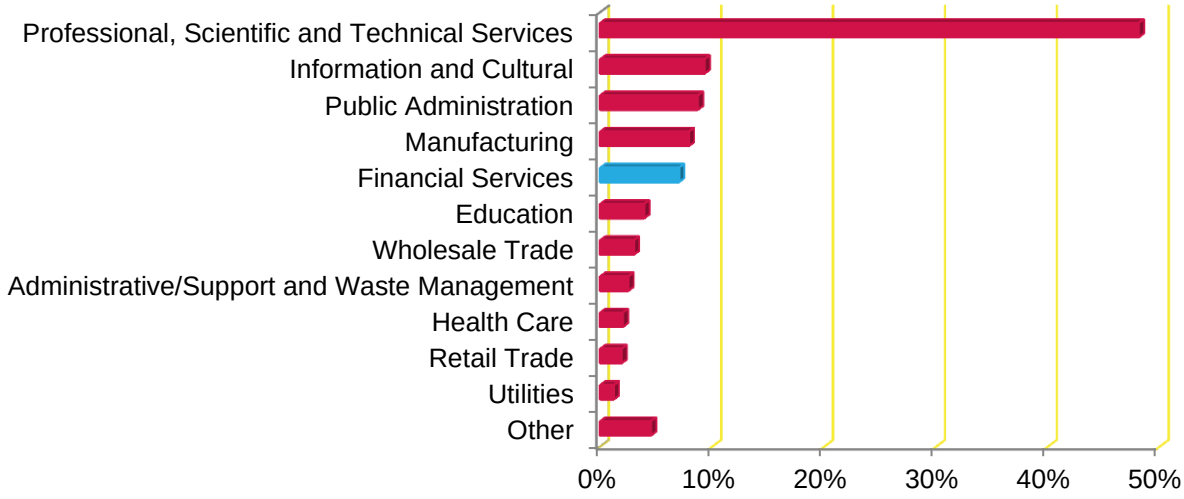


Source: ICTC (2012).

4.1 CANADIAN OUTLOOK

With a 12% employment growth over the 2008 to 2011 period, the Financial Services industry has the **fifth largest concentration** of core ICT workers (Figure No. 2) in Canada. It is thus reasonable to expect that the trends identified in ICTC's *2011-2016 Outlook* report will also be observed in the financial ICT labour force.

Figure No. 2 ICT Workers by Industry (February 2012)

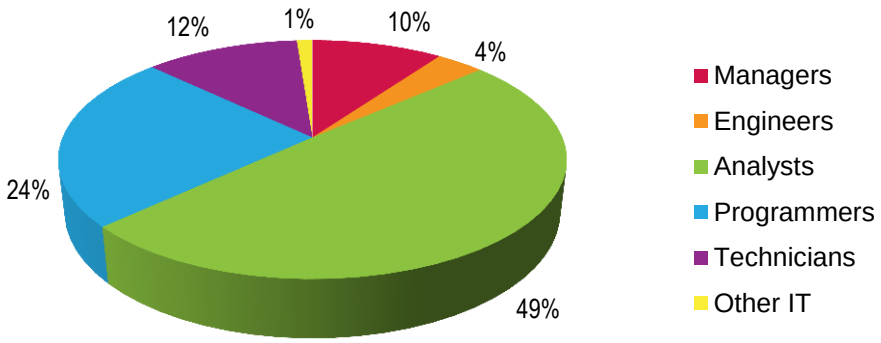


Source: ICTC (2012). February 2012 Labour Force Survey.

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. In Ontario, this translates into a demand of **28,000 ICT workers by 2016**. These demand requirements impact industries across the Canadian economy, including Financial Services. Figure No. 3 provides a breakdown Canada's financial ICT workforce by occupational group.

In the Financial Services sector, there is a growing demand for **Business Analysts**, **IT Security Systems Specialists** and professionals specializing in **ICT governance**. Based on ICTC's consultation with SMEs from Toronto's financial institutions, senior management positions are often the most difficult to fill, with employers citing a lack of soft skills and proven experience completing major projects as the most significant challenges.

Figure No. 3 Financial ICT Workforce in Canada by Occupational Group (February 2012)



Source: ICTC (2012). February 2012 Labour Force Survey.

Based on latest available data,[4] **over 49% of Canada's total ICT workers in the Financial Services sector are in Toronto** (Table No. 1). By comparison, the next greatest concentrations of Financial ICT workers are in Montreal (9.4%) and Vancouver (6.4%).

Table No. 1: ICT Workers in the Financial Services Sector, Top CMAs

Top CMAs	% of Canada
Toronto	49.1%
Montreal	9.4%
Vancouver	6.6%
Quebec City	5.3%
Kitchener	3.5%
Winnipeg	3.3%
Hamilton	2.7%
Ottawa-Gatineau	2.2%
London	2.1%
Oshawa	2.0%
Edmonton	1.7%
Regina	1.5%
Calgary	1.4%
Rest of Canada	9.2%
Total	**100.0%**

Source: Statistics Canada (2006). 2006 Census Special Tabulation.

[4] Statistics Canada (2006). 2006 Census Special Tabulation.

4.2 ONTARIO'S FINANCIAL SERVICES WORKFORCE

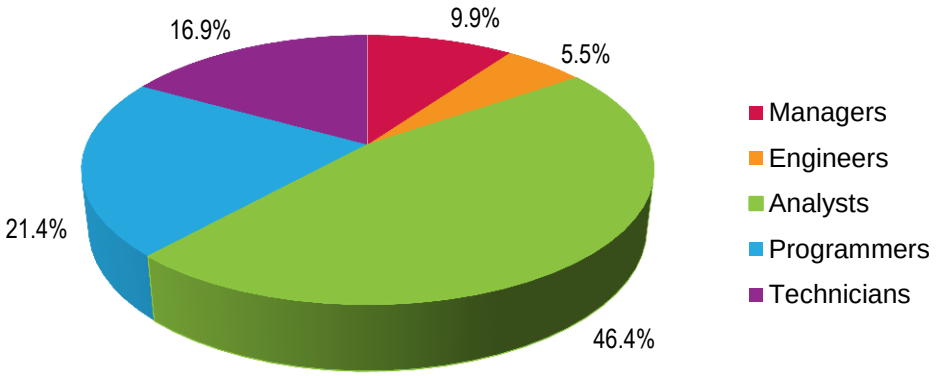
Recognized as the epicentre of Ontario's and Canada's Financial Services sector, the Greater Toronto Area (GTA) has become one of North America's top three financial services hubs and is home to Canada's top five banks. The GTA is also home to five of Canada's largest pension plans and six of Canada's top insurers. Among the 41 international banks doing business in Canada, 35 are headquartered in the GTA. Between 1996 and 2005, Toronto's financial hub led all major North American cities in job creation.[11]

The size of Toronto's Financial Services sector and the availability of talent make Toronto a favourable environment for innovation not only regionally, but internationally as well. Toronto continues to attract by far the highest level of immigrants to Canada, including highly educated, working age talent.

More than 337,000 people are employed in Ontario's Financial Services sector (Figure No. 4), with nearly one-half employed in banking services. Workers in Ontario's Financial Services sector are also highly educated, with 68% having completed a post-secondary degree, diploma or certificate. [12]

Ontario's financial hub is built on a large ICT infrastructure, as more than 5,000 ICT companies are headquartered in Ontario.[13] The strength of Ontario's ICT infrastructure has made Canada a global leader in efficient payment clearance and settlement systems. 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."[14]

Figure No. 4 Financial ICT Workforce in Ontario by Occupational Group



Source: Statistics Canada. 2006 Census Special Tabulation.

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

5.0 ICT TALENT IN TORONTO'S FINANCIAL SERVICES SECTOR

ICTC's consultation with SMEs from Toronto's Financial Services sector revealed that the region's major financial institutions foresee a strong need for ICT talent, especially in emerging areas such **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 innovation and delivering day-to-day products and services.
- ICT has dramatically changed the Canadian Financial Services sector and the breadth of products and services financial firms can offer.
- 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**.

5.1 ALIGNING SKILLS WITH THE NEEDS OF INDUSTRY

According to SMEs from the banking sector, 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**, **increased 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.

5.2 TOP HR CHALLENGES AND RECRUITMENT STRATEGIES

SMEs identified the top human resource challenges facing their industry:

- The most significant ICT HR challenge facing the Financial Services sector 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 integrated ICT with other components are strongly needed in order to meet the evolving needs of Toronto's Financial Services industry.
- Networking is by far the most effective recruitment strategy identified by SMEs; 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.

5.3 JOBS OF TOMORROW

According to SMEs, three occupations particular require extra attention: (1) **Information Systems Business Analysts (i.e., Business Analysts)**; (2) **IT Security Systems Specialists**; and (3) **ICT Governance**. This means that, in the coming years, the global Financial Services industry is expected to place even greater emphasis on innovation, including new investments in systems upgrades. With the regulatory landscape governing financial services continually evolving, financial institutions will be required to invest greater resources into **ICT governance and security infrastructure**. 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.

5.4 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.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This study is intended to bring together leaders at the intersection between technology and finance in order to explore strategies for enhancing the supply of well-rounded ICT workers for the Financial Services 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 adapt to the demands of the digital economy.

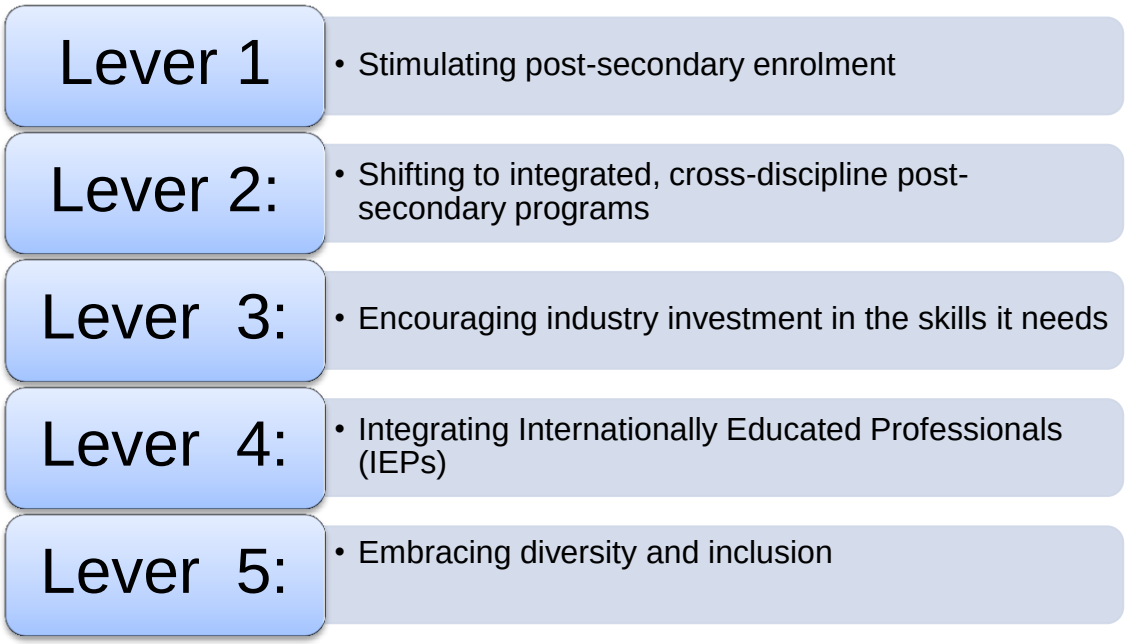
RECOMMENDATION 1: INVESTMENT THROUGH INNOVATION

- 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.
- Despite regulatory restrictions and heavy investment in legacy platforms, Toronto's financial hub must continue to prioritize innovation as a means to fuel productivity and ultimately investment.
- Toronto'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 5 illustrates what financial institutions can do to develop and recruit the talent their ICT operations require.

Figure No. 5 Levers of Success



- 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 Toronto's financial hub, there exists a very large opportunity for universities in the region to develop business savvy ICT professionals for the Financial Services industry.
- At the same time, Toronto's financial hub 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 Toronto's financial hub remains strong, vibrant and highly innovative.

RECOMMENDATION 3: THE NEXT STEP

- ICTC believes that further working group sessions facilitated by organizations such as the TFSA and CoE are essential to move this research agenda forward and ensure that Toronto's financial hub is well positioned to lead Canada's digital transformation.

- 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 Toronto's financial ICT workforce. More primary data is needed to accurately portray the labour market trends of Toronto'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 financial services.

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.

7.0 ENDNOTES

[1] PriceWaterhouseCoopers (2012). Canadian Banks 2012: Perspectives on the Canadian banking industry. *PwC.* Retrieved July 4, 2012 from http://www.pwc.com/ca/canadianbanks.
[2] Wolfe, D.A., Davis, C.H., Hepburn, N., Mills, N. and Moore, G. Innovation and Knowledge Flows in the Financial Services and ICT Sectors of the Toronto Region for the Ontario Ministry of Research and Innovation, the Toronto Region Research Alliance and the City of Toronto. *University of Toronto*. Retrieved July 4, 2012 from http://www.utoronto.ca/progris.
[3] Government of Ontario (2007). *Financial Services in Ontario*. Queen's Printer for Ontario. Retrieved Oct. 3, 2011 from http://www.ontariocanada.com/ontcan/1medt/downloads/sector_brochure_FinServices_en.pdf.
[4] The CMO Survey. (2011). The Lure of Disintermediation. *CMO.* http://www.cmosurvey.org/blog/the-lure-of-disintermediation/.
[5] ANXeBusinessCorp (2011). IT GRC: Turning Operational Risks into Returns (White Paper). Retrieved Sept. 15, 2011 from http://www.fiercefinance.com/offer/anx-wp.
[6] Canadian Payments Association (2010). CAP Payments Strategy: Vision 2020. *Canadian Payments Association.* http://www.cdnpay.ca/imis15/pdf/pdfs_news/payments_strategy_vision_2020.pdf.
[7] OECD (2008). Information Technology Outlook 2008. *Organisation for Economic Co-operation and Development*.
[8] Carrie Davis (2009). The High Cost of Identity Theft in Canada. *Spend on Life*. http://www.spendonlife.ca/blog/high-cost-identity-theft-canada.

[9] Uretsky, Sherwin, Dutta, Aron and Jim Cooke (2011). CISCO IBSG Predicts Emergence of Global Connected Marketplaces. *CISCO Point of View*.
[10] Compass Plus (2011). *White Paper: Optimising Payment Platforms for Profitability & Commercial Success.* p. 5. Retrieved Sept 20, 2011 from http://www.compassplus.com/collateral/whitepapers/231.
[11] Government of Ontario (2007). *Financial Services in Ontario*. Queen's Printer for Ontario. Retrieved Oct. 3, 2011 from http://www.ontariocanada.com/ontcan/1medt/downloads/sector_brochure_FinServices_en.pdf.
[12] Ibid.
[13] Ministry of Economic Development and Innovation (2010). Building Jobs of the Future: Driving the Next Generation of Digital, Information And Communications Technologies. *Government of Ontario.* Retrieved July 5, 2012 from http://www.mri.gov.on.ca/english/news/Orf093008_bd3.asp/
[14] Ibid., 7.

8.0 APPENDIX

Core ICT Workforce

The Table below summarizes the "core" ICT occupations:

Index	National Occupational Classification	Occupation Title
1	0112	Human Resource (HR) Managers
2	0213	Computer and Information System Managers
3	06115	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	22811	Computer Network Technicians
17	22812	Web Technicians
18	2282	User Support Technicians
19	2283	Systems Testing Technicians
20	51212	Technical Writers
21	5241	Graphic Designers and Illustrators