Study on the depth of Montreal’s financial services workforce

THIS STUDY WAS PREPARED FOR FINANCE MONTRÉAL WITH THE PARTICIPATION OF THE MAJOR PLAYERS IN MONTREAL’S FINANCIAL SERVICES SECTOR

OCTOBER 2017
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FOREWORD

Dear members,

Recruiting, training and retaining qualified employees is essential to the sustainability and growth of our industry. These activities require an in-depth knowledge of the job market and an awareness of the changes it will face in the years to come.

It is against this background that Finance Montréal entrusted Chappuis Halder & Co. with the responsibility of conducting two studies into the future of Quebec’s financial workforce.

The first, delivered in winter 2017, analyzed the changes we may expect to occur in the financial sector and identified a number of professions of interest to our ecosystem.

The second, which we present in this document, builds on the first to assess the depth of the financial sector workforce in Montreal and Quebec as a whole.

Specifically, the study performs two tasks:

First, to provide comprehensive data as well as detailed portraits of a number of developing professions in order to draw an objective portrait of the employment situation in the Montreal and Quebec City financial sectors;

Second, to propose recommendations to three categories of stakeholders in our ecosystem – financial institutions, governments and universities – toward achieving a better alignment between training and recruitment and the industry’s future needs.

We hope that the information contained in this study will prove useful to you. We would also like to take this opportunity to thank the financial institutions that generously agreed to participate in collecting the necessary data. This task could not have been completed without their invaluable collaboration.

Sincerely,

Louis Lévesque
Chief Executive Officer
Finance Montréal
INTRODUCTORY REMARKS

The digital revolution, the flood of new regulations and the revival of customer expectations have had a significant impact on the financial services landscape. Drawing on our network of financial services experts around the world, we have identified six trends that characterize the transformation of today’s financial services ecosystem:

1. **Renewing the offer** – The digital revolution has made new tools available to financial services firms, tools that will enable these firms to renew their service or product offerings in order to adapt to new competition and to meet their customers’ high expectations.

2. **Renewing the customer experience** – Today, financial services need to simplify and become more intuitive, and this applies to all their processes: sales and management as well as initiating customer relationships.

3. **Modernizing support operations** – Digital and other technologies are not simply about revolutionizing the customer experience and the service or product offering; they are a completely new departure for all financial services operations (support and strategic) leading to a more efficient business model focused on tasks with higher added value.

4. **Strengthening risk management** – Since the 2008 crisis, risk control has become ever more central to financial services. The regulatory environment is changing rapidly and affects all stakeholders.

5. **Renewing the relationship of trust** – Data digitization places security and trust in financial services at the heart of the customer relationship. Governance of these data thus becomes an important criterion for differentiating financial institutions.

6. **Integrating the collaborative economy** – The collaborative economy (crowdfunding, P2P, etc.) has grown exponentially in a very short time and is beginning to affect financial services.
These trends, now making lasting changes to the financial services ecosystem, are introducing new cultural, organizational and managerial models that, though recent, have already had an impact on all jobs in the industry. As a result, jobs will be lost and others created but nearly all will undergo change. The challenge for Montreal, which intends to continue to be a centre of financial services as the industry moves forward, will be to create infrastructure around certain high-value-added jobs and position itself as a world-leading hub of expertise recognized for its skilled workforce.

In order to define the opportunities for improvement through which stakeholders (industry, universities and government) can create this infrastructure, CH&Co. had to complete the first phase of this project: identifying the developing professions in financial services (the first phase is not dealt with in this document). To study these jobs, we used matrices to assess their complexity and potential for automation. Once we had obtained worthwhile results, we looked at the depth of financial services in Montreal to analyze the skills available and Montreal’s positioning in light of these evolving professions. This last step enabled us to map the strengths and weaknesses of the financial services job market in Montreal and to determine the opportunities and threats facing the city, given its distinct profile in Canada and North America.

We would like to thank all stakeholders for their participation and for the time they generously gave to this project. Convinced as I am that the changes impacting financial services should be seen as opportunities in a positive-sum game from which all players can emerge as winners, I believe that the success of the future competitiveness cluster in Montreal will reflect the success of this study: a win for all.

Alexandre Hovette
Partner
CHAPPUIS HALDER & Co.
Background

The financial services industry is one of the economic pillars of Greater Montreal. The most recent data show that financial services account for 7% of Montreal’s GDP, which ranks it 4th among the most important sectors of the city’s economy1.

Comprehensive study & job focus

With more than 100,000 employees in financial services, Montreal counts over 44,000 in the banking, 47,000 in insurance (including Quebec) and 16,000 in asset management.

The study covered 12 professions, which made it possible to distinguish 3 job types of: high-growth, low-growth and in-decline.

Strengths and challenges

This study on the depth of the financial services workforce in Montreal has identified a number of strengths: the city’s human capital, recognized expertise in financial services, potential of the digital sector – and challenges: attracting the best candidates, lack of hybrid candidates, redefinition of the responsibilities and skills required; Montreal will have to deal with both the strengths and challenges if it wants to hold on to its 12th place ranking among world financial centres (Global Financial Centers Index).

Opportunities for improvement

Against this background, recommendations have been proposed to encourage financial services stakeholders (government, universities and industry) to develop a comprehensive strategy focused on human capital:

1. Industry – Boost in-house training and recruitment to ensure the renewal of a workforce whose skills are rapidly becoming obsolete.
2. Government – Revamp existing incentives to attract new jobs to Montreal thereby strengthening the financial ecosystem.
3. Universities – Continue adapting curricula and teaching models to the changing reality of the financial services industry.

Origins

Since 2014, Finance Montréal and CH&Co. have collaborated on several occasions to enhance the international reputation of Montreal’s financial sector, for example, in 2015 the two worked together as part of a mission to analyze the FinTech ecosystem around the world.

In 2017, Finance Montréal asked CH&Co. to carry out two studies:

1. Study on the future of financial services jobs in Montreal: A study to understand the trends characterizing the financial sector jobs of today and tomorrow and to define the trades that would benefit Montreal.

2. Study on the depth of Montreal’s financial services: A study on Montreal’s financial services functions and a focus on selected jobs jointly determined with Finance Montréal (results presented in this document).

The second study, the results of which are described below, was a logical follow-up to the first since, after listing more than 30 jobs likely to change significantly over the next five years, Finance Montréal then wanted to look into how Montreal was positioning itself in the face of these changes.

Objectives

This study on the depth of the workforce sets out the following objectives:

1. To quantify the size of the talent pool according to major job categories (front, middle and back office, etc.) of financial services in Montreal.

2. To focus on a number of jobs previously determined with Finance Montréal (see list below).

3. To list the strengths and challenges of Montreal’s workforce in relation to the opportunities and risks currently facing the local industry.

4. To draw up a set of improvements that will enable stakeholders (businesses, government and universities) to strengthen the local talent pool so that Montreal may position itself as a world-class financial centre in the years to come.
Job focus

A job focus was carried out, using detailed information sheets, focusing on 12 jobs at the heart of the transformation of the financial services industry. Some of these jobs show great potential (e.g., analytical solutions development), while others are at risk from artificial intelligence and robotics (e.g., back office).

In order to hear from the professionals themselves on the issue, CH&Co. met with a representative from each of the 12 jobs to ask more specific questions aimed at obtaining qualitative information on the reality of the work. These individuals were selected on a voluntary basis from within the companies participating in this study.

List of the 12 jobs receiving particular attention:

1. Analytical solutions development (data scientist);
2. Process automation;
3. Digital security (cybersecurity);
4. Data quality control (data governance);
5. Risk management;
6. Social media (digital marketing);
7. Financial disclosure;
8. Integrating new customers (KYC);
9. Internal compliance;
10. Middle office;
11. Accounting;
Governance

Steering Committee
A body to follow up on the progress of the study, the Steering Committee met at least twice a month over the course of the project. Chaired by Finance Montréal, the Committee also brought together the team responsible for the project at CH&Co.

Strategic Committee
Chaired by Mr. Louis Lévesque (CEO, Finance Montréal), the Strategic Committee met several times over the course of the study. This Committee is the final authority on key decisions and guarantor of the methodology and the quality of the results.

Timeline
The study began in May 2017 and ended in September 2017.

Sources:
This study on the depth of financial services draws on 4 sources:

Primary sources:
1. Meetings between CH&Co. and the HR departments of the major financial services players in banking, insurance and asset management in Montreal as well as questionnaire surveys designed along 4 major themes: current situation, training, recruitment and projections.
2. Meetings between CH & Co and senior professionals still working in the 12 jobs that are the subject of this study; they were asked about their profession, their work environment and their medium-term vision.

Secondary sources:
3. Analyses of existing studies on the subject produced by public bodies, professionals, etc.
4. A LinkedIn analysis of data from its aggregate database: a representative sample of financial services employee profiles in Montreal, extracted in July 2017, was used to extrapolate data on the workforce in financial institutions not participating in the study.
Scope of the study

Financial services
This study on the depth of Montreal's financial services covers banking in the wider sense (retail and investment banking), insurance and asset management. Furthermore, the conglomerates developing in several industries saw their workforce distributed across these 3 industries.

Geographical area
For banking and asset management, the study was confined to Greater Montreal (including suburbs). Insurance also includes Quebec City, which is home to a significant proportion of the province’s insurance professionals.

Meetings with participating companies

HR director and assistant
In each participating company, we met with a member of the management team’s HR department to present the details of the study and the questionnaires to be completed.

12 professionals (job focus)
We met at least one representative from each of the jobs that is the subject of a specific study. These interviews were only possible thanks to the voluntary participation of the companies that offered a representative from each of the 12 jobs.

Professional social networks and existing studies
Professional social networks and existing studies were used to supplement and to cross analyze the data from participants with a range of sources.

Data processing
The data presented in the comprehensive study were obtained by combining the results of the surveys of the participating companies (>45% the financial services workforce) and extrapolating the results from non-participating companies based on the surveys.

The data presented in the job focus come mainly from surveys and interviews conducted with professionals from each of the professions represented. Some of the data reflect the impressions of the professionals interviewed and are, therefore, subjective. The comments in the job descriptions were made in light of the surveys, interviews and CH&Co.’s expertise in financial services.

Results
Though the orders of magnitude are the same, the results of our study are likely to differ slightly from other studies carried out by such organizations as the Institut de la statistique du Québec or Statistics Canada insofar as the methods used, the scope of the study and the company classifications are not necessarily similar.

Data collection

Participating companies
As the quantitative and qualitative data were collected, they were sent to us by the study participants.
The purpose of this global study is to provide an overview of the size of Montreal’s financial services workforce. With respect to insurance, the study widens the scope to cover Quebec City, which must be included to achieve a true picture of this sector.

For the sake of clarity, we present the results of the global study by major job family (financial functions, smart technologies and support functions) and then by sub-family. Definitions of each sub-family are presented in Appendix A.

**Global (Montreal for banking and asset management, Montreal and Quebec for insurance)**

<table>
<thead>
<tr>
<th>Function/Seniority</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial functions</td>
<td>42,660</td>
<td>23,910</td>
<td>7,530</td>
<td>3,710</td>
<td>77,810</td>
<td>71.6%</td>
</tr>
<tr>
<td>Front office</td>
<td>25,290</td>
<td>14,040</td>
<td>4,390</td>
<td>1,630</td>
<td>45,350</td>
<td>41.7%</td>
</tr>
<tr>
<td>Middle office</td>
<td>9,220</td>
<td>5,850</td>
<td>1,750</td>
<td>990</td>
<td>17,810</td>
<td>16.4%</td>
</tr>
<tr>
<td>Back office</td>
<td>7,250</td>
<td>3,350</td>
<td>1,060</td>
<td>920</td>
<td>12,580</td>
<td>11.6%</td>
</tr>
<tr>
<td>Risks</td>
<td>900</td>
<td>670</td>
<td>330</td>
<td>170</td>
<td>2,070</td>
<td>1.9%</td>
</tr>
<tr>
<td>Smart technologies</td>
<td>6,630</td>
<td>4,980</td>
<td>1,520</td>
<td>6,810</td>
<td>19,940</td>
<td>18.3%</td>
</tr>
<tr>
<td>IT support</td>
<td>1,510</td>
<td>700</td>
<td>250</td>
<td>1,250</td>
<td>3,710</td>
<td>3.4%</td>
</tr>
<tr>
<td>Application development</td>
<td>2,730</td>
<td>2,140</td>
<td>660</td>
<td>3,050</td>
<td>8,580</td>
<td>7.9%</td>
</tr>
<tr>
<td>Data management and analysis</td>
<td>2,390</td>
<td>2,140</td>
<td>610</td>
<td>2,510</td>
<td>7,650</td>
<td>7.0%</td>
</tr>
<tr>
<td>Support functions</td>
<td>5,360</td>
<td>3,250</td>
<td>1,630</td>
<td>830</td>
<td>11,070</td>
<td>10.2%</td>
</tr>
<tr>
<td>Legal and compliance</td>
<td>770</td>
<td>650</td>
<td>360</td>
<td>260</td>
<td>2,040</td>
<td>1.9%</td>
</tr>
<tr>
<td>Human resources</td>
<td>1,730</td>
<td>990</td>
<td>380</td>
<td>180</td>
<td>3,280</td>
<td>3.0%</td>
</tr>
<tr>
<td>Marketing and communication</td>
<td>530</td>
<td>350</td>
<td>230</td>
<td>120</td>
<td>1,230</td>
<td>1.1%</td>
</tr>
<tr>
<td>Corporate finance</td>
<td>2,330</td>
<td>1,260</td>
<td>660</td>
<td>270</td>
<td>4,520</td>
<td>4.2%</td>
</tr>
<tr>
<td>Total employees by seniority</td>
<td>54,650</td>
<td>32,140</td>
<td>10,680</td>
<td>11,350</td>
<td>108,820</td>
<td>100%</td>
</tr>
</tbody>
</table>
Highlights:

- Financial functions represent the majority of the financial services workforce in Montreal (71.6%), far ahead of smart technologies (18.3%) and support functions (10.2%).

- The front office (all employees working in sales and customer relations aimed at generating income) alone accounts for 41.7% of the financial services workforce.

Analysis:

Montreal has a double comparative advantage over its North American neighbours:
1. An abundant and lower-cost workforce in all fields of pure finance;
2. A considerable talent pool in smart technologies (91,000 ICT workers in nearly 5,000 organizations) including a large number of trained professionals in financial services.

<table>
<thead>
<tr>
<th>Function/Seniority</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial functions</td>
<td>20,200</td>
<td>8,560</td>
<td>3,060</td>
<td>1,330</td>
<td>33,150</td>
<td>74.0%</td>
</tr>
<tr>
<td>Front office</td>
<td>13,070</td>
<td>5,830</td>
<td>2,150</td>
<td>540</td>
<td>21,590</td>
<td>48.2%</td>
</tr>
<tr>
<td>Middle office</td>
<td>3,010</td>
<td>1,310</td>
<td>430</td>
<td>180</td>
<td>4,930</td>
<td>11.0%</td>
</tr>
<tr>
<td>Back office</td>
<td>3,650</td>
<td>1,120</td>
<td>360</td>
<td>470</td>
<td>5,600</td>
<td>12.5%</td>
</tr>
<tr>
<td>Risks</td>
<td>470</td>
<td>300</td>
<td>120</td>
<td>140</td>
<td>1,030</td>
<td>2.3%</td>
</tr>
<tr>
<td>Smart technologies</td>
<td>2,450</td>
<td>1,790</td>
<td>490</td>
<td>2,870</td>
<td>7,600</td>
<td>17.0%</td>
</tr>
<tr>
<td>IT support</td>
<td>760</td>
<td>420</td>
<td>140</td>
<td>820</td>
<td>2,140</td>
<td>4.8%</td>
</tr>
<tr>
<td>Application development</td>
<td>1,220</td>
<td>940</td>
<td>230</td>
<td>1,620</td>
<td>4,010</td>
<td>8.9%</td>
</tr>
<tr>
<td>Data management and analysis</td>
<td>470</td>
<td>430</td>
<td>120</td>
<td>430</td>
<td>1,450</td>
<td>3.2%</td>
</tr>
<tr>
<td><strong>Support functions</strong></td>
<td><strong>2,060</strong></td>
<td><strong>1,220</strong></td>
<td><strong>540</strong></td>
<td><strong>360</strong></td>
<td><strong>4,180</strong></td>
<td><strong>9.3%</strong></td>
</tr>
<tr>
<td>Legal and compliance</td>
<td>260</td>
<td>220</td>
<td>110</td>
<td>140</td>
<td>730</td>
<td>1.6%</td>
</tr>
<tr>
<td>Human resources</td>
<td>620</td>
<td>340</td>
<td>120</td>
<td>60</td>
<td>1,140</td>
<td>2.5%</td>
</tr>
<tr>
<td>Marketing and communication</td>
<td>310</td>
<td>200</td>
<td>110</td>
<td>40</td>
<td>660</td>
<td>1.5%</td>
</tr>
<tr>
<td>Corporate finance</td>
<td>870</td>
<td>460</td>
<td>200</td>
<td>120</td>
<td>1,650</td>
<td>3.7%</td>
</tr>
<tr>
<td><strong>Total employees by seniority</strong></td>
<td><strong>24,710</strong></td>
<td><strong>11,570</strong></td>
<td><strong>4,090</strong></td>
<td><strong>4,560</strong></td>
<td><strong>44,930</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Highlights:

✓ The banking sector employs approximately 45,000 people in Montreal (52% of the financial services workforce), ahead of insurance (25,000 in Montreal and 47,000 in the province) and asset management (17,000).

✓ Montreal banks can be broken down into 3 categories:

1. **Canadian banks headquartered in Quebec**: 59% of the workforce, distributed among financial functions, smart technologies and support functions.

2. **Canadian banks headquartered outside Quebec**: 34% of the workforce, mainly front office.

3. **Foreign banks**: 7% of the workforce, mainly in smart technologies and support functions.

✓ Smart technologies are strongly represented in banking services, especially in foreign banks, which are attracted to Montreal by the quality of the training and the size of the IT and digital employment pool. This constitutes an advantage given the trends in financial services.

✓ Consultants, who account for 10% of the banking workforce, are over-represented in smart technologies (38%), an important attraction for foreign banks looking for a high-quality, mobile workforce able to adapt to a different corporate culture.

Analysis:

The banking sector includes both local companies and their headquarters, the regional operations of other Canadian banks and branches of foreign banks. Such a diversity of operations is unique to major global financial centres and accounts for a wide variety of profiles.
## Insurance (Quebec)

<table>
<thead>
<tr>
<th>Function/Seniority</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial functions</td>
<td>16,720</td>
<td>11,730</td>
<td>3,200</td>
<td>1,750</td>
<td>33,400</td>
<td>71.1%</td>
</tr>
<tr>
<td>Front office</td>
<td>8,480</td>
<td>5,370</td>
<td>1,430</td>
<td>780</td>
<td>16,060</td>
<td>34.2%</td>
</tr>
<tr>
<td>Middle office</td>
<td>5,710</td>
<td>4,240</td>
<td>1,120</td>
<td>680</td>
<td>11,750</td>
<td>25.0%</td>
</tr>
<tr>
<td>Back office</td>
<td>2,250</td>
<td>1,850</td>
<td>500</td>
<td>270</td>
<td>4,870</td>
<td>10.4%</td>
</tr>
<tr>
<td>Risks</td>
<td>280</td>
<td>270</td>
<td>150</td>
<td>20</td>
<td>720</td>
<td>1.5%</td>
</tr>
<tr>
<td>Smart technologies</td>
<td>3,360</td>
<td>2,530</td>
<td>860</td>
<td>3,200</td>
<td>9,950</td>
<td>21.2%</td>
</tr>
<tr>
<td>IT support</td>
<td>470</td>
<td>140</td>
<td>50</td>
<td>260</td>
<td>920</td>
<td>2.0%</td>
</tr>
<tr>
<td>Application development</td>
<td>1,150</td>
<td>860</td>
<td>360</td>
<td>980</td>
<td>3,350</td>
<td>7.1%</td>
</tr>
<tr>
<td>Data management and analysis</td>
<td>1,740</td>
<td>1,530</td>
<td>450</td>
<td>1,960</td>
<td>5,680</td>
<td>12.1%</td>
</tr>
<tr>
<td>Support functions</td>
<td>1,930</td>
<td>1,010</td>
<td>470</td>
<td>260</td>
<td>3,670</td>
<td>7.8%</td>
</tr>
<tr>
<td>Legal and compliance</td>
<td>210</td>
<td>150</td>
<td>50</td>
<td>30</td>
<td>440</td>
<td>0.9%</td>
</tr>
<tr>
<td>Human resources</td>
<td>770</td>
<td>430</td>
<td>140</td>
<td>80</td>
<td>1,420</td>
<td>3.0%</td>
</tr>
<tr>
<td>Marketing and communication</td>
<td>60</td>
<td>30</td>
<td>30</td>
<td>50</td>
<td>170</td>
<td>0.4%</td>
</tr>
<tr>
<td>Corporate finance</td>
<td>890</td>
<td>400</td>
<td>250</td>
<td>100</td>
<td>1,640</td>
<td>3.5%</td>
</tr>
<tr>
<td><strong>Total employees by seniority</strong></td>
<td>22,010</td>
<td>15,270</td>
<td>4,530</td>
<td>5,210</td>
<td>47,020</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Highlights:

- The insurance sector (property and casualty) employs approximately 25,000 people in Montreal and 47,000 in Quebec. Unlike the banking and asset management sectors, the study of insurance covers Quebec as a whole since a large part of the insurance industry is concentrated Quebec City.

- 53% of the insurance workforce (25,000 employees) are in Montreal, compared to 47% (22,000) in Quebec City.

- Quebec has a large number of insurance brokers (approximately 4,800 front office employees) and actuarial firms (approximately 960 back office employees).

- Insurance companies hold an enormous amount of data on their customers (home, car, travel, life/health, etc.), which explains the size of the workforce in the data management and analysis departments.
Smart technologies are strongly represented in the insurance sector, proportionally higher than in banking. The insurance sector has been lagging behind other industries for quite some time, and today there is a certain amount catch-up going on, which explains the size of the IT teams. Furthermore, many professions at the heart of the insurance business, such as actuarial science, are currently undergoing technological change, which will produce a convergence towards jobs in data management and process automation.

Consultants, who account for 10% of the workforce, are overrepresented in smart technologies (28%). This constitutes a major attraction for foreign insurance companies looking for a high-quality, mobile workforce able to adapt to a different corporate culture.

Analysis:

Together, Montreal and Quebec represent a major North American insurance centre. With its large talent pool, Quebec has many advantages for international insurance groups looking for a specialized workforce in this very specific market.

### Asset management (Montreal)

<table>
<thead>
<tr>
<th>Function/Seniority</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial functions</td>
<td>5,740</td>
<td>3,620</td>
<td>1,270</td>
<td>630</td>
<td>11,260</td>
<td>66.6%</td>
</tr>
<tr>
<td>Front office</td>
<td>3,740</td>
<td>2,840</td>
<td>810</td>
<td>310</td>
<td>7,700</td>
<td>45.5%</td>
</tr>
<tr>
<td>Middle office</td>
<td>500</td>
<td>300</td>
<td>200</td>
<td>130</td>
<td>1,130</td>
<td>6.7%</td>
</tr>
<tr>
<td>Back office</td>
<td>1,350</td>
<td>380</td>
<td>200</td>
<td>180</td>
<td>2,110</td>
<td>12.5%</td>
</tr>
<tr>
<td>Risks</td>
<td>150</td>
<td>100</td>
<td>60</td>
<td>10</td>
<td>320</td>
<td>1.9%</td>
</tr>
<tr>
<td>Smart technologies</td>
<td>820</td>
<td>660</td>
<td>170</td>
<td>740</td>
<td>2,390</td>
<td>14.1%</td>
</tr>
<tr>
<td>IT support</td>
<td>280</td>
<td>140</td>
<td>60</td>
<td>170</td>
<td>650</td>
<td>3.8%</td>
</tr>
<tr>
<td>Application development</td>
<td>360</td>
<td>340</td>
<td>70</td>
<td>450</td>
<td>1,220</td>
<td>7.2%</td>
</tr>
<tr>
<td>Data management and analysis</td>
<td>180</td>
<td>180</td>
<td>40</td>
<td>120</td>
<td>520</td>
<td>3.1%</td>
</tr>
<tr>
<td>Support functions</td>
<td>1,370</td>
<td>1,020</td>
<td>620</td>
<td>210</td>
<td>3,220</td>
<td>19.0%</td>
</tr>
<tr>
<td>Legal and compliance</td>
<td>300</td>
<td>280</td>
<td>200</td>
<td>90</td>
<td>870</td>
<td>5.1%</td>
</tr>
<tr>
<td>Human resources</td>
<td>340</td>
<td>220</td>
<td>120</td>
<td>40</td>
<td>720</td>
<td>4.3%</td>
</tr>
<tr>
<td>Marketing and communication</td>
<td>160</td>
<td>120</td>
<td>90</td>
<td>30</td>
<td>400</td>
<td>2.4%</td>
</tr>
<tr>
<td>Corporate finance</td>
<td>570</td>
<td>400</td>
<td>210</td>
<td>50</td>
<td>1,230</td>
<td>7.3%</td>
</tr>
<tr>
<td>Total employees by seniority</td>
<td>7,930</td>
<td>5,300</td>
<td>2,060</td>
<td>1,580</td>
<td>16,870</td>
<td>100%</td>
</tr>
</tbody>
</table>
Highlights:

- The asset management sector employs approximately 19% of the financial services workforce in Montreal, behind banking (52%) and insurance (29%).

- Asset Management in Montreal includes players such as the integrated brokerage divisions of major Canadian banks and insurance companies as well as independent brokerage firms.

- Less present than in banking and insurance, smart technologies account for a smaller share of the workforce (14%). Application development is an exception to the rule due to the significant need for transaction platforms and other industry-specific work tools. The latest innovations and the arrival on the market of FinTechs such as robot-advisors will continue this trend.

Analysis:

Asset management is the smallest and most specialized of Montreal’s three financial services sectors. However, the sector is well established locally with several world-class financial institutions, among other attractions.

With more than 2,400 active members, Montreal’s CFA association contributes significantly to the development and networking of asset management professionals in Montreal.
The second part of the study focuses on a selection of 12 jobs that are at the heart of the change currently underway in the industry owing to their growing importance, or conversely, to their declining importance as a result of automation and artificial intelligence.

During the job focuses, thanks to the collaboration of the HR teams of the study’s partner companies, we collected data on 4 strategic themes:

1. Workforce size and compensation;
2. Recruitment;
3. Training;

For the sake of clarity, definitions of the terms used in the 12 job descriptions are presented in Appendix A.

List of the 12 jobs studied in more detail:

1. Analytical solutions development (data scientist);
2. Process automation;
3. Digital security (cybersecurity);
4. Data quality control (data governance);
5. Risk management;
6. Social media (digital marketing);
7. Financial disclosure;
8. Integrating new customers (KYC);
9. Internal compliance;
10. Middle office;
11. Accounting;
Job focus highlights:

Projected workforce growth by profession between 2017 and 2020 (1)

Operational surveys and interviews indicated 3 groups of professions:

1. **High-growth jobs**: The revolution being felt in financial services is essentially technological. The opportunities are especially promising for jobs in data processing. The departments involved with process rationalization and reading company data will experience significant growth by 2020 (analytical solutions development, process automation). Similarly, departments responsible for protecting the company from cyber-attacks will also grow (digital security).

2. **Low-growth jobs**: Risk management teams in the wider sense (risk, KYC, compliance) will grow less quickly than those in digital security. The digital security workforce is already quite considerable and will begin to automate a significant proportion of the tasks related to preparation and reporting owing to an overall improvement in data quality. Teams related to data quality and communications (financial disclosure and digital marketing) will also grow at a slower pace.

3. **Jobs in decline**: Back office and middle office departments as well as pure accounting may experience sharp declines due to automation of the simplest processes. The teams that remain will focus on the more complex issues and higher value-added tasks.

(1) Montreal for banking and asset management, Quebec City for insurance.
Study on the depth of Montreal’s financial services workforce

Functions that are expected to decline (middle office, back office and accounting) are often the ones with the largest number of employees. They currently represent 22% of the financial services workforce.

Most banking functions will see their numbers increase despite increased automation. Some new recruits will be trained in-house, in particular those coming from declining departments such as the middle and back office.

Though highly sought after today, professionals in analytical solutions development, process automation and digital security still represent only 6% of the workforce.

---

<table>
<thead>
<tr>
<th>Financial services workforce</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Analytical solutions development (data scientist)</td>
<td>700</td>
<td>620</td>
<td>180</td>
<td>700</td>
<td>2,200</td>
<td>2.0%</td>
</tr>
<tr>
<td>2. Process automation</td>
<td>620</td>
<td>450</td>
<td>140</td>
<td>590</td>
<td>1,800</td>
<td>1.7%</td>
</tr>
<tr>
<td>3. Digital security (cybersecurity)</td>
<td>610</td>
<td>540</td>
<td>160</td>
<td>610</td>
<td>1,920</td>
<td>1.8%</td>
</tr>
<tr>
<td>4. Data quality control (data governance)</td>
<td>600</td>
<td>800</td>
<td>210</td>
<td>690</td>
<td>2,300</td>
<td>2.1%</td>
</tr>
<tr>
<td>5. Risk management</td>
<td>720</td>
<td>540</td>
<td>260</td>
<td>160</td>
<td>1,680</td>
<td>1.5%</td>
</tr>
<tr>
<td>6. Social media (digital marketing)</td>
<td>90</td>
<td>60</td>
<td>40</td>
<td>20</td>
<td>210</td>
<td>0.2%</td>
</tr>
<tr>
<td>7. Financial disclosure</td>
<td>1,400</td>
<td>750</td>
<td>390</td>
<td>160</td>
<td>2,700</td>
<td>2.5%</td>
</tr>
<tr>
<td>8. Integrating new customers (KYC)</td>
<td>160</td>
<td>130</td>
<td>80</td>
<td>60</td>
<td>430</td>
<td>0.4%</td>
</tr>
<tr>
<td>9. Internal compliance</td>
<td>470</td>
<td>380</td>
<td>220</td>
<td>150</td>
<td>1,220</td>
<td>1.1%</td>
</tr>
<tr>
<td>10. Middle office</td>
<td>6,150</td>
<td>3,860</td>
<td>1,170</td>
<td>650</td>
<td>11,830</td>
<td>10.9%</td>
</tr>
<tr>
<td>11. Accounting</td>
<td>700</td>
<td>380</td>
<td>200</td>
<td>80</td>
<td>1,360</td>
<td>1.3%</td>
</tr>
<tr>
<td>12. Back office</td>
<td>6,370</td>
<td>2,880</td>
<td>910</td>
<td>810</td>
<td>10,970</td>
<td>10.1%</td>
</tr>
</tbody>
</table>

1 Montreal for banking and asset management. Quebec City for insurance
The professions in decline (middle office, back office, accounting) are characterized by lower salaries, especially for junior positions that do not require very specialized expertise.

The financial professions that are expected to grow in the future (analytical solutions development, process automation, digital security) are already quite well paid. This is due in particular to the need for specialized academic training and the strong demand for qualified candidates.

<table>
<thead>
<tr>
<th>Salaries by seniority level (C$ K)</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Analytical solutions development (data scientist)</td>
<td>50-80</td>
<td>80-100</td>
<td>&gt; 120</td>
</tr>
<tr>
<td>2. Process automation</td>
<td>50-85</td>
<td>85-100</td>
<td>&gt; 110</td>
</tr>
<tr>
<td>3. Digital security (cybersecurity)</td>
<td>50-70</td>
<td>70-90</td>
<td>&gt; 100</td>
</tr>
<tr>
<td>4. Data quality control (data governance)</td>
<td>50-70</td>
<td>70-90</td>
<td>&gt; 110</td>
</tr>
<tr>
<td>5. Risk management</td>
<td>50-70</td>
<td>70-100</td>
<td>&gt; 115</td>
</tr>
<tr>
<td>6. Social media (digital marketing)</td>
<td>45-65</td>
<td>65-85</td>
<td>&gt; 110</td>
</tr>
<tr>
<td>7. Financial disclosure</td>
<td>45-70</td>
<td>70-85</td>
<td>&gt; 110</td>
</tr>
<tr>
<td>8. Integrating new customers (KYC)</td>
<td>45-60</td>
<td>60-85</td>
<td>&gt; 110</td>
</tr>
<tr>
<td>9. Internal compliance</td>
<td>40-60</td>
<td>60-90</td>
<td>&gt; 120</td>
</tr>
<tr>
<td>10. Middle office</td>
<td>50-70</td>
<td>70-95</td>
<td>&gt; 100</td>
</tr>
<tr>
<td>11. Accounting</td>
<td>45-60</td>
<td>60-80</td>
<td>&gt; 100</td>
</tr>
<tr>
<td>12. Back office</td>
<td>45-60</td>
<td>60-80</td>
<td>&gt; 100</td>
</tr>
</tbody>
</table>

1. Montreal for banking and asset management. Quebec City for insurance
1. ANALYTICAL SOLUTIONS DEVELOPMENT (DATA SCIENTIST)

Expert in the management and analysis of big data, employees in analytical solutions development use data from multiple dispersed sources to determine indicators needed to develop strategies to address problems usually related to business development or analysis of existing customers (business intelligence). These employees, therefore, specialize in statistics and IT and are perfectly familiar with the sector or the application function of the data being analyzed.

In banks and insurance companies, most departments (front office, back office, risks, etc.) are interested in adopting new approaches in data science and big data to improve performance. Teams of data scientists are developing artificial intelligence algorithms adapted to move this process forward.

Without necessarily being trained programmers, they have background in analytics and master a number of different languages (Python, C++, etc.). They are expert at designing and implementing technologies such as deep learning, logistic regressions, etc., that they require to analyze databases.

Employment pool

<table>
<thead>
<tr>
<th>Employee seniority(1)</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>700</td>
<td>620</td>
<td>180</td>
<td>700</td>
<td>2,200</td>
</tr>
<tr>
<td>Average annual salary (C$ K)</td>
<td>50-80</td>
<td>80-100</td>
<td>&gt; 120</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

N/A: Not available
* Montreal for banking and asset management. Quebec City for insurance

Perception of the quality of university training (1)

Perception of the quality of the employment pool (1)

Financial services professionals agree that training in analytics and computer science in Montreal is high quality. The consensus is the same for the employment pool. However, there is some disappointment at the relative lack of hybrid profiles with knowledge of business administration, quantitative analysis and IT.

Though there are currently 2,200 employees in analytical solutions development in Montreal, this number will need to increase significantly to meet demand.
Data scientists are in high demand in Montreal (73% of respondents consider that it takes more than 6 months to hire for this position). These analytical profiles are often trained in-house (25% of respondents) by curious and willing professionals with quantitative/statistical profiles.

Consulting firms were the first to recruit data scientists, but insurers and banks have recently realized the importance of a more in-depth analysis of their data. This profession should experience strong demand in the coming years.

Currently, consultants represent 32% of the workforce. A ratio that will likely decrease in the future given the function’s strategic weight. This function is expected to be performed more and more in-house out of a concern for knowledge retention.

Perspectives for developers of analytical solutions are very positive regardless of the industry. With its many talented professionals, this is an opportunity for Montreal to develop an international reputation in data science.

Ever more data labs are being created in financial services, mixing technologies and operations and working closely with employees in process automation to improve the daily routines of all departments by automating low value-added tasks.

Professionals prefer junior employees who have experience in financial services and then learn how to use the new technologies rather than the reverse. 80% of respondents believe that a good knowledge of financial services is necessary to do this work.

Montreal has all the assets required to create a centre of expertise around data science in financial services: university infrastructure, comprehensive knowledge base in finance the relevant technology, etc.
2. PROCESS AUTOMATION

Responsible for providing business units with automated solutions for daily processes in order to speed up processing times, reduce human error and lower business costs, business analysts fall between IT and operations and require good cross-functional knowledge to predict the impact of process automation on each department.

- Part of the Basel III framework, operational risk measurement, which includes IT risk, has forced financial services to further structure their projects and better define employee roles in process automation.
- Process automation tends to oscillate between specialization in each business area (which provides a better understanding of business issues) and consolidation within a single entity (which provides a better idea of the information system’s functional architecture).

Employment pool

<table>
<thead>
<tr>
<th>Employee seniority</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>620</td>
<td>450</td>
<td>140</td>
<td>590</td>
<td>1,800</td>
</tr>
<tr>
<td>Average annual salary (C$ K)</td>
<td>50-85</td>
<td>85-100</td>
<td>&gt; 110</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Source (1): HR surveys  (2): Operational interviews  (3): CH&Co. interviews and expertise

Perception of the quality of university training

- The ongoing transformation/digitization in financial services has created a strong demand for this expertise in very little time. Teams were organized quickly and the local workforce has now developed extensive expertise in this field.
- If process automation is not taught as such in universities, programs in digital technology are being established and attracting many students. Training of young graduates is high-quality according to sector professionals.
Study on the depth of Montreal’s financial services workforce

Employees in process automation are relatively difficult to recruit in Montreal (80% of respondents believe that it takes over 6 months to hire for this position); however, the city has a large pool of business analysts with related abilities who are knowledgeable about business processes and able to connect with IT services.

Process automation makes it possible for many teams (back office, middle office, front office) to work more efficiently and focus on higher value-added tasks. This profession will play a key role in the success of the digital revolution in Montreal’s financial services.

Junior graduates in information and communications technology are more attracted to organizations such as Google, Amazon, Facebook and Apple rather than to banking, insurance or asset management. Montreal is no exception. Financial services should give greater prominence to careers involving innovation and IT in finance in order to benefit from the high-quality workforce coming out of the city’s universities.

The use of interns appears to be growing rapidly in this field. The spread of such programs to all universities for terms of 6 to 12 months would give financial services an opportunity to encourage students to look to them for employment following a successful first internship experience while benefiting from their skills, expertise and creativity at a lower cost.

Source (1): HR surveys
(2): Operational interviews
(3): CH&Co. interviews and expertise
3. DIGITAL SECURITY (CYBERSECURITY)

Digital security employees work as specialists on the company’s processes involving matters of information security. They ensure ongoing monitoring of activities and identify the resulting security requirements. They define the company’s information risk management policy, as well as the policy for deploying and coordinating the risk management framework. This framework integrates anticipatory actions that assess vulnerabilities with corrective actions for breaches of information security.

In its study on financial services, Websense, the digital security specialist, reports that, worldwide, digital security incidents are three times more common in financial services than in other industries. Websense also stresses the high degree of specialization of criminals who target financial services.

Employment pool

<table>
<thead>
<tr>
<th>Employee seniority (1)</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>610</td>
<td>540</td>
<td>160</td>
<td>610</td>
<td>1,920</td>
</tr>
<tr>
<td>Average annual salary (C$ K)</td>
<td>50-70</td>
<td>70-90</td>
<td>&gt; 100</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Perception of the quality of university training (1)

- Very good: 14%
- Good: 7%
- Neutral: 29%
- Poor: 50%
- No opinion: 7%

Source (1): HR surveys

Perception of the quality of the employment pool (1)

- Very good: 36%
- Good: 14%
- Neutral: 7%
- Poor: 7%
- Not applicable: 36%

Source (1): HR surveys

Financial services professionals agree that training in cyber security in Montreal is good. With specialized cybersecurity programs being established at universities, this trend should grow and strengthen. The consensus is the same for the employment pool. Montreal is a pioneer in this field, like Tel Aviv and other cities with a strong focus on technology.

Montreal’s financial services stakeholders have launched many initiatives to attract young people into the field of digital security: organizing hacking competitions, coordinating with universities to improve programs, discussing the possibility of creating an order of digital security professionals, developing a cyber security kit to allow the curious to teach themselves, etc.
Employees in digital security are in high demand in Montreal (67% of respondents believe it takes at least 6 months to hire for this position). Junior employees are often hired out of specialized university courses, student IT associations or even through organized hacking competitions. Senior employees are usually pursuing MBAs or obtain accreditations such as CISSP and CISA before being hired.

Montreal has developed a high-performing digital security workforce. Major players from around the world have relocated part of their activity to Montreal in search of these specific skills.

Digital security professions show great potential, and Montreal is gearing up to meet a very important demand in the short to medium term.

There is a strong desire among professionals in this sector to work with Montreal universities to capitalize on the strengths of the local workforce. Many initiatives have already been launched with this goal in mind. Increased assistance from the Quebec government would give Montreal the support it needs to truly shine internationally as a centre of cybersecurity, and this would attract other stakeholders like Google and Facebook.

Due to its importance and the immediacy of the need, the financial sector is currently the only one in Montreal able to move with sufficient speed to develop digital security. Professionals in this sector understand this well and are working to expand this expertise in Montreal before Toronto or New Brunswick, also moving along this track, catch up.

Regulation of digital security in financial services is still in the early stages, but digital security is evolving rapidly and Montreal has the assets to benefit from this development.
4. DATA QUALITY CONTROL (DATA GOVERNANCE)

Employees responsible for data quality control perform checks and analyze data samples taken over the course of the business processes to verify that the information relayed through the systems is consistent with reality, standards and regulations. These analyses are used to determine the causes behind a lack of compliance and to improve data quality. They reconcile the data found in the original reports with those distributed in the information system.

Since the 2008 crisis and the increase in regulatory requirements, banks have been required to provide regulators with ever more accurate data, whether to assess their financial health or to combat money laundering, terrorist financing or tax evasion; failure to do so could result in stiff fines.

Data management departments are today at the heart of financial services and employ multidisciplinary teams able to analyze data and operations support systems.

Employment pool

<table>
<thead>
<tr>
<th>Employee seniority (1)</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>600</td>
<td>800</td>
<td>210</td>
<td>690</td>
<td>2,300</td>
</tr>
<tr>
<td>Average annual salary (C$ K)</td>
<td>50-70</td>
<td>70-90</td>
<td>&gt; 110</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Perception of the quality of university training (1)

- Very good: 50%
- Good: 36%
- Neutral: 14%
- Poor: 14%
- No opinion: 14%

Perception of the quality of the employment pool (1)

- Very good: 43%
- Good: 29%
- Neutral: 14%
- Poor: 7%
- Not applicable: 7%

With the growth of data science, courses in data governance and data quality should emerge in Montreal universities to meet the strong market demand and provide the students with a more technical experience.

At the quantitative level, the number of data quality employees is expected to increase as international standards (BCBS 239, etc.) start to apply across all financial services.

Source (1): HR surveys

(2): Operational interviews

(3): CH&Co. interviews and expertise
Recruitment

Employees in data quality control are in high demand in Montreal, especially senior employees (75% of respondents believe that recruitment takes at least 6 months).

Expertise in the fields of systems architecture and financial auditing is particularly sought after. Hybrid profiles are the most in demand.

Projections - 2020

Data quality departments are highly strategic and will expand in the coming years to meet regulatory requirements and the understandable need of organizations to control their own data.

Once data quality is assured, this workforce should fall slightly and move onto data science jobs depending on the opportunities available within each department.

Conclusion for Financial Services in Montreal

There exists today a strategic challenge around data quality. Big data is at the heart of the digital revolution that is affecting financial services, and the condition needed for the success of all its applications lies in the quality of the data found in the IT system.

Financial services, like all industries, must ensure uniformity and regularity of the data they convey, from source to end user. This work, which will initially require a drastic increase in numbers, will then be performed by smaller teams, assisted by robotization and artificial intelligence.

The strength of the IT and accountancy talent pool promotes the emergence of data management departments within Montreal-based international organizations.

Source (1): HR surveys  (2): Operational interviews  (3): CH&Co. interviews and expertise
5. RISK MANAGEMENT

Risk management employees work to manage and control credit, market and operational risk. They have excellent knowledge of banking regulations and financial markets (Basel Accord, CRB 97-02, standard and internal methods, etc.). As the scope of coverage is very broad, a subdivision of this profession is often found in corporate and investment banking by type of risk (analysts for credit risk, counterparty risk, market risk, operational risk, etc.).

- Formerly included in middle office departments, the various regulations (Basel II and III) were the reason for the creation of dedicated risk control services.
- Risk is generally divided into two types: quantitative, relating to credit risk and market risk; and qualitative, relating to operational and reputational risk.

Employment pool

<table>
<thead>
<tr>
<th>Employee seniority (1)</th>
<th>Junior employee</th>
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<td>160</td>
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</tr>
<tr>
<td>Average annual salary (C$ K)</td>
<td>50-70</td>
<td>70-100</td>
<td>&gt; 115</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

N/A: Not available
* Montreal for banking and asset management. Quebec City for insurance

Perception of the quality of university training (2)

- Financial services professionals agree on the high quality of risk training in Montreal. The consensus is the same for the employment pool.
- Currently numbering 1,680 in Montreal, they represent 1.7% of the workforce in banking. This figure will have to be monitored closely over the medium term, especially in market and credit risk (the great majority) where automation is likely to be considerable. Operational and reputational risk should be much less affected.
- Quantitative analysis requires specialized expertise and modeling, which explains the increase in master’s degrees and doctorates in this field. This is an asset for Montreal, which also includes FRM and PRM-certified employees.
Risk management has changed a great deal over the last 10 years. The centre of gravity shifted from quantitative risk to qualitative risk, which saw its workforce increase significantly. According to 75% of respondents, senior profiles are the rarest, which is explained by the higher level of technical expertise required for these positions.

Profiles oriented toward pure qualitative risk are relatively rare and not well developed in universities, which opens up opportunities for those with financial services profiles interested in joining a profession with a bright future.

Projected salary growth for 2017-2020

- Sharp increase: 6%
- Increase: 33%
- Neutral: 61%
- Decline: 3%
- Sharp decline: 6%

Projected recruitment for 2017-2020

- Employees hired in Montreal to 2020
- Very easy: 13%
- Easy: 25%
- Neutral: 13%
- Difficult: 33%
- Very difficult: 6%

Risk control and assessment procedures in financial services are now reaching their limits. Consequently, developing an approach based on business intelligence becomes a real challenge in financial services. The efficiency and relevance of risk management is based in part on automating and rationalizing controls, and on anticipating and identifying new risk models.

A logical consequence of automating risk management will be the evolution of the workforce in the medium term towards smaller and more technical teams. First, however, several steps need to be taken, such as harmonizing and homogenizing the databases coming from support functions and business lines.

Far less developed, but just as complex as its quantitative counterpart, qualitative risk will play an increasingly larger role within risk departments. Montreal should prepare for this trend by increasing training and career development efforts.

Source (1): HR surveys
(2): Operational interviews
(3): CH&Co. interviews and expertise

Study on the depth of Montreal’s financial services workforce
6. SOCIAL MEDIA (DIGITAL MARKETING)

Social media employees design and implement the company’s digital communications strategies in accordance with the marketing department’s objectives. They work within the company’s online communications strategy (web, internet, multimedia, social networks, etc.) and integrate web practices into the company’s public relations strategy.

- Digital marketing will experience a major increase in visibility. Collaborative platforms, in-house TV channels and mobile apps will reach more employees and consumers and make it possible to personalize messages.
- Digital marketing functions require not only creativity but also responsiveness and IT skills, which allow digital marketing employees to use the new communications tools independently of the IT teams.

**Employment pool**

<table>
<thead>
<tr>
<th>Employee seniority (1)</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>90</td>
<td>60</td>
<td>40</td>
<td>20</td>
<td>210</td>
</tr>
<tr>
<td>Average annual salary (C$ K)</td>
<td>45-65</td>
<td>65-85</td>
<td>&gt; 110</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

* N/A: Not available
* Montreal for banking and asset management, Quebec City for insurance

**Perception of the quality of university training (1)**

- Very good: 8%
- Good: 31%
- Neutral: 62%
- Poor: 8%
- No opinion: 31%

**Perception of the quality of the employment pool (1)**

- Very good: 38%
- Good: 46%
- Neutral: 8%
- Poor: 8%
- Not applicable: 38%

- Financial services professionals agree that training in digital communications and marketing in Montreal is high-quality. Increased field experience for young graduates would be a real advantage, adding practical experience to their rather too theoretical skills.
- There are relatively few digital marketing employees in Montreal’s financial services (210 employees), but this number must be seen in perspective considering that over 69% of professionals believe that experience in finance is not necessary for this profession, especially for junior and senior positions. Only managers need combined experience in both. Consequently, in case of need, a rapid increase in demand in this profession could be filled by recruiting from outside financial services.

Source (1): HR surveys  
Source (2): Operational interviews  
Source (3): CH&Co. interviews and expertise
Employees in digital communications are relatively easy to find in Montreal, especially junior employees (63% of respondents believe that it takes less than 3 months to hire for this position). This is an advantage for professionals since they are able to recruit junior employees from a number of different sectors.

Digital marketing professions require three key skills: creativity, communications and IT. This is an asset for Montreal, which has a large marketing and communications employment pool and which is very strong in IT.

Internally, mobility and career initiatives in marketing and communications and bridges to other functions, such as those already developed by some major players, will also contribute to the development of a specialized, high-quality workforce in this field.

Communications services and, more specifically, digital marketing have a role to play in improving the image of financial services. Communications plans defined in-house with HR departments could target younger people and draw them toward new technological functions in banking, insurance and asset management.

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Financial disclosure employees are responsible for preparing the company’s financial statements (balance sheet, profit and loss statement, etc.) while respecting the various deadlines (quarterly, annual, etc.), and they set up a system of controls to monitor the flow of information within the company. They prepare all the accounting, budget and performance monitoring documents for the board of directors and the internal/external communications service.

Most financial disclosure employees are accounting graduates and have only a few years of experience in financial services auditing.

Experience in financial services is required, according to 69% of respondents, and a CPA designation is also often necessary, owing especially to their knowledge of consolidation techniques for financial products (securities, swaps, futures), their knowledge of regulatory environment (IFRS, Basel III, SOX, etc.) and of taxation.

The study brings to light the quality of university training for this position in Montreal, particularly for the level and quantity of young CPA graduates. Internships performed as part of CPA training are a real asset for professionals who would like more practice and less theory.

The most complex accounting functions often require a CPA designation and 3 to 5 years of experience in an audit firm. This is an asset for Montreal, which has a large number of accountants trained in audit firms (39,000 CPAs, 3rd largest order in Quebec).

According to professionals, the Ordre des CPA, which guarantees the quality of certified accountants, plays a key role in the quality of the workforce. However, its widely recognized professional training courses could be more specific and more numerous, especially in insurance, where IFRS 9 and IFRS 17 accounting standards are expected to change shortly and require new knowledge.
Financial disclosure employees are relatively easy to find in Montreal, especially junior employees (75% of respondents believe that the recruitment process takes less than 3 months). Over 56% of respondent’s state that new hires, mainly recruited from audit firms, are operational in less than 3 months.

By 2020, senior employees who are able to make the most of the new tools and analyze machine-generated data will likely be the most sought-after (65% of respondents).

Financial disclosure departments have already automated most of their processes. The remaining tasks require industry experts.

Financial disclosure employees will see their function evolve in line with the capabilities of information systems. Accounting software is now integrated with ERP and in constant contact with the various company departments, which leaves more time for data analysis.

Tighter deadlines for the year-end closing of accounts are forcing financial disclosure departments to review and automate their processes. Similarly, regulations should further modify the operations of bank-related accounting, requiring ever more responsiveness and adaptability.

Increasingly analytical, accounting functions, and especially financial disclosure, will benefit from the move to automation and see their tasks gain added value. Continuous training will be needed to stay up to date.

Montreal already has a strong contingent of chartered accountants, expert in IFRS and US GAAP. This strength is recognized internationally and attracts many companies looking for a high-quality workforce at a lower cost.
8. INTEGRATING NEW CUSTOMERS (KYC)

Employees responsible for integrating new customers specialize in finding additional information on business and retail customers based on perceived risk. They maintain a watch list to monitor sensitive risks and implement a rigorous process for verifying customers’ identities and risk profiles. They must also transmit their mindset focused on risk to all collaborators (file processing, incident occurrence, questions, etc.).

With heightening risk, an increasingly complex banking environment and ever more sophisticated products, KYC departments will experience a greater need to call on specialists with advanced skills in the fields of law and taxation.

Employment pool

<table>
<thead>
<tr>
<th>Employee seniority</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>160</td>
<td>130</td>
<td>80</td>
<td>60</td>
<td>430</td>
</tr>
<tr>
<td>Average annual salary (C$ K)</td>
<td>45-60</td>
<td>60-85</td>
<td>&gt; 110</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Perception of the quality of university training

Perception of the quality of the employment pool

Financial services professionals agree that, despite the lack of dedicated programs, young people joining KYC departments in Montreal are well trained. The consensus is the same for the employment pool.

Analysts are often trained in-house in the use of the various monitoring tools. Senior advisors and team leaders are required to complete annual continuous training programs, such as CAMS, to keep their level of knowledge up-to-date with new regulatory standards.
Recruitment

New employees often use KYC as a gateway to financial services. Knowledge transfer from senior to junior employees and in-house training play an important role in maintaining these departments’ quality and organizational memory.

Projections - 2020

KYC jobs vary significantly depending on whether they deal with human customers or companies. The tasks performed for human customers are relatively simple and should become highly automated in the future. For companies, controls are more comprehensive and complex and will take longer to automate.

Conclusion for Financial Services in Montreal

Since 2007, banks have paid C$7.8 billion in fines around the world, for reasons including tax evasion, money laundering, irregular banking procedures, embargo violations and so on. These fines go a long way toward explaining the widespread increase in the number of KYC employees.

By pooling KYC processes through a shared encrypted database, a blockchain could revolutionize KYC practices in financial services. This would be an asset for the blockchain ecosystem, centred on Montreal, which could offer innovative solutions to many locally based players.

Regulation in Canada is moving to catch up with international standards, and employment and investment in KYC are expected to follow the same trend. This evolution will, however, be qualified by the partial automation of these departments resulting in a joint reduction of the workforce.

There is currently, in Montreal, a real need for training in all KYC jobs.
9. INTERNAL COMPLIANCE

Internal compliance employees implement, within the organization, a comprehensive management process for threats to compliance. These employees collaborate constantly with the operational employees, the professional experts in each banking activity. Their function encompasses two main activities: upholding ethics (e.g., preventing market abuse and conflicts of interest) and combating fraud (both internal and external). They use monitoring tools to continuously monitor transactions performed by the company on its own behalf or on behalf of its customers.

- The compliance function holds a strategic place within risk departments owing to the constant increase in regulations, especially since the early 1990s. This regulatory flood (SOX, Basel III, etc.) is the result of various crises and financial scandals.
- Profiles needed: administration, for knowledge of the financial sector; legal, for knowledge of prevailing legislation; and engineering, for process rationalization.

### Employment pool

<table>
<thead>
<tr>
<th>Employee seniority</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>470</td>
<td>380</td>
<td>220</td>
<td>150</td>
<td>1,220</td>
</tr>
<tr>
<td>Average annual salary (C$ K)</td>
<td>40-60</td>
<td>60-90</td>
<td>&gt; 120</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Perception of the quality of university training

- Very good: 7%
- Good: 27%
- Neutral: 60%
- Poor: 7%
- No opinion: 7%

Perception of the quality of the employment pool

- Very good: 40%
- Good: 13%
- Neutral: 40%
- Poor: 7%
- Not applicable: 7%

Previously, compliance departments mainly hired lawyers for their legal abilities. Today, banking knowledge takes precedence because this is what is required to become operational quickly. Compliance knowledge is also desired, but these hybrid profiles are the most difficult to find in Montreal. Such diversity and complementarity of profiles make compliance functions true incubators of talent.

Source (1): HR surveys  (2): Operational interviews  (3): CH&Co. interviews and expertise
Recruitment

The teams are fairly young and include a number of legal and business experts. Junior employees are often trained in the field and are relatively easy to recruit given the size of the legal community in Montreal.

Prospects for change vary widely, and compliance is often used as a stepping stone to other business lines: internal control, audit, risk, etc. Resource retention is an issue.

Projections - 2020

There is strong potential for automating data production and processing, and junior profiles could decline substantially in the medium term.

Reverse mentoring, from junior to senior employee, can be used to train the more experienced staff in the latest technological developments and promote an intergenerational knowledge transfer.

Conclusion for financial services in Montreal

The widening of the scope of compliance has led to an increase in the workforce. This change can be compared to that in risk management several years ago. In most banks, the workforce increased significantly in 2014-2015. The regulatory pressure on banks will not likely let up, and the need for expertise within compliance departments will, therefore, continue to grow.

In the medium term, the objective is to train and transmit the compliance culture to managers so that they, in turn, can act as a relay, over the long term, to increase awareness among all employees. The introduction of robotization into this field means that these teams, which are quite large in Montreal, are likely to shrink, and this may constitute a challenge in terms of organizational memory.

Source (1): HR surveys  (2): Operational interviews  (3): CH&Co. interviews and expertise

Study on the depth of Montreal’s financial services workforce
10. MIDDLE OFFICE

Middle office employees have a role to play in the post-execution management of market transactions. They monitor market values recorded in their sphere of activity and initiate transactions to be executed in the financial markets by the back office. Their role is to enrich (with information and data) transactions initiated by sellers and traders, to verify compliance (specifically, with regard to the bank’s investment limits) and to calculate and check on a daily basis the economic performance of the desks.

The growth of trading activities and regulation have made this function a veritable control tower for operations initiated by the front office, even if risk management is now almost entirely under the responsibility of a separate department, the middle office still plays a warning and monitoring role in both compliance and regulation.

Employment pool

<table>
<thead>
<tr>
<th>Employee seniority (1)</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>6,150</td>
<td>3,860</td>
<td>1,170</td>
<td>650</td>
<td>11,830</td>
</tr>
<tr>
<td>Average annual salary (C$ K)</td>
<td>50-70</td>
<td>70-95</td>
<td>&gt; 100</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

N/A: Not available
1: Montreal for banking and asset management, Quebec City for insurance

Perception of the quality of university training (1)

<table>
<thead>
<tr>
<th>Perception</th>
<th>Very good</th>
<th>Good</th>
<th>Neutral</th>
<th>Poor</th>
<th>No opinion</th>
</tr>
</thead>
<tbody>
<tr>
<td>7%</td>
<td>43%</td>
<td>50%</td>
<td>7%</td>
<td>50%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Perception of the quality of the employment pool (1)

<table>
<thead>
<tr>
<th>Perception</th>
<th>Very good</th>
<th>Good</th>
<th>Neutral</th>
<th>Poor</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>36%</td>
<td>21%</td>
<td>14%</td>
<td>14%</td>
<td>25%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Financial services professionals agree that, despite the lack of a dedicated program, middle office training in Montreal is good.

Source (1): HR surveys (2): Operational interviews (3): CH&Co. interviews and expertise
Montreal has a considerable middle office recruitment pool, especially junior employees (56% of respondents believe that it takes less than 3 months to hire for this position). The problem for professionals is to retain these skilled employees, who often want to move to front-office positions or other support functions in financial services.

The results concerning the strategic importance of the middle office in the financial services of tomorrow (19% low / 25% high) reflect the profound changes that the middle office will undergo in the medium to long term. Smaller in terms of staffing, it will handle cases that are too complex for the algorithms that manage the majority of operations and will make more strategic decisions. Talent retention will become key.

Risk and performance calculations are no longer an issue for the middle office teams, which are now looking for employees with greater analytical skills to help the front office with decision support tools (technical dashboards, etc.).

A system of continuous training in financial services, particularly IT, and training incentives should be considered so that financial services can gradually retrain the abundance of talent in their middle offices, and thereby retain all that accumulated knowledge, especially among the senior profiles, often highly specialized by industry.

Despite the projected decline in the workforce by 2020, the loss of the best profiles remains a problem for middle office services. They need to work hand-in-hand with HR departments to better understand what drives employees to change jobs so they can develop more effective talent retention plans.
Accounting employees record the organization’s accounting operations, verify processing accuracy on a daily basis, set up the appropriate processing flows in the general ledger, validate invoices and contracts, participate in non-cash charges and analytics, perform calculations for accounts receivable and accounts payable (cut-off times), and make accounting adjustments when necessary.

Accounting activities are often outsourced and handled by low-skilled junior profiles.

Largely repetitive, these tasks became highly automated in the early 2000s. This trend is expected to accelerate.

In financial services accounting departments, jobs tasked with entering and recording accounting transactions are increasingly outsourced and automated.

Employees who continue in this profession require a good knowledge of financial operations and products. In financial services, accounting and legal standards are particularly complex. Virtually the entire workforce comes from within the industry and tends to remain there as their experience is not easily transferable.
These departments have undergone a lot of automation and outsourcing in recent years. These teams continue to experience high turnover rates; only a few experts are now required in this field.

Accounting departments already experienced a period of automation in the early 2000s to automate the production of accounting entries and leave more time to analyze the results. A second period is in the pipeline, and this should enable accounting departments to create added value by providing the advice and information the front office needs (dashboards, etc.).

In 2008, the banking and financial sector was ranked 28th among the most attractive sectors for students enrolled in business school (Universum study). Today, it ranks 52nd. If financial services today are struggling to attract young employees, accounting departments face the same problem.

The skills required, increasingly analytical and business-oriented, may attract a new generation of young graduates and more senior profiles who already have auditing experience to these evolving professions.

Montreal already has a critical mass of accountants specializing in financial services. This means the city is perfectly positioned to meet the potential needs of large organizations coming here to set up shop.

There is strong demand for continuous training programs on understanding and using new accounting tools.
12. BACK OFFICE

Back office employees are key to finalizing financial transactions (liquidation/closing) carried out by the traders (front office). They also monitor payment flows (settlement), securities transfers (delivery) and collateral management between banks and counterparties with whom transactions are carried out.

- Technological developments are automating many repetitive back office functions. In the future, this job will increasingly focus on complex operations that cannot be automated.
- Since 2008, supervision of managers and those in charge of back office functions has increased.
- As the function has become more technical, it requires profiles in specialized mathematics and finance, which explains the recruitment of back office employees with higher qualifications.

Employment pool

<table>
<thead>
<tr>
<th>Employee seniority(1)</th>
<th>Junior employee</th>
<th>Senior employee</th>
<th>Manager</th>
<th>Consultant</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>6,370</td>
<td>2,880</td>
<td>910</td>
<td>810</td>
<td>10,970</td>
</tr>
<tr>
<td>Average annual salary (C$ K)</td>
<td>45-60</td>
<td>60-80</td>
<td>&gt; 100</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

N/A: Not available
* Montreal for banking and asset management, Quebec City for insurance

Perception of the quality of university training (1)

- Very good: 29%
- Good: 57%
- Neutral: 7%
- Poor: 7%
- No opinion: 2%

Perception of the quality of the employment pool (1)

- Very good: 43%
- Good: 30%
- Neutral: 14%
- Poor: 7%
- No opinion: 3%

Financial services professionals agree that training for back office employees in Montreal is good, although there is no back-office training specified as such. The consensus is the same for the employment pool.

The number of employees in transaction settlement is fairly large (10,970) and will need to be closely monitored in the medium to long term when financial services will be reaching the end of the digitization process.

Source (1): HR surveys    (2): Operational interviews    (3): CH&Co. interviews and expertise
Back office employees are relatively easy to find in Montreal, especially junior employees (79% of respondents believe that it takes less than 3 months to hire for this position). The challenge for professionals is to retain these skilled employees, who often want to move to middle office positions or other financial services support functions.

The results describing the strategic importance of the back office in the financial services of tomorrow reflect the profound changes that the back office will undergo in the medium to long term. With fewer employees, the back office will handle cases that are too specific for the algorithms managing most operations and will need to make decisions that are more strategic. Retaining talent will become key.

Until recently, most banks focused their digital investments on improving the customer experience. But banks have recently become interested in the virtualization of their operations by creating a paperless environment and modernizing their back offices, where at least as many opportunities may be found, given the costs involved.

The redefinition of back office services will take some time since banks rely on complex IT infrastructure, developed and deployed over forty years ago, and redesigning these systems will be very expensive. Replacing this infrastructure without interrupting the continuity of banking operations will be a major challenge.

A system of continuous training, covering technological skills and training incentives, should be considered to enable financial services to gradually retrain the back-office talent pool by combining digital and business knowledge, and thereby retain all that accumulated knowledge, especially among the senior profiles usually highly specialized by industry.
ANALYSIS OF MONTREAL’S STRENGTHS AND CHALLENGES

Strengths:

- Recognized expertise in financial services and artificial intelligence: 91,000 ICT workers in nearly 5,000 organizations;
- Proximity to major North American financial centres (New York, Toronto, Chicago, Boston);
- Quebec’s large university talent pool: over 300,000 full-time and part-time students, including more than 48,000 in business administration, 5,000 in quantitative and analytical programs and over 9,000 in computer science;
- Montreal’s unique environment: bilingualism, a robust university network, cost-benefit advantage, high quality of life.

Opportunities:

- Willingness of the major industry players to establish a sustainable strategy of workforce training, coordinated with government and universities;
- Undergraduate and graduate university programs favouring the development of hybrid profiles (professional and technological);
- Industry interest in continuous training and certification programs for skills development in selected key areas (e.g., risk management, data science, cybersecurity, etc.);
- Willingness of financial services to put in place new talent retention strategies in the departments most affected.

Challenges:

- Absence of a coordinated strategy (government, schools, industry) around the training of the financial services workforce;
- Limited number of profiles with combined competency in business and IT skills and database management;
- Weakening competitiveness of the Canadian workforce, currently ranked 12th in the MDI rankings for 2016; whereas, it was 8th in 2014.

Potential risks:

- Montreal’s financial services industry faces increased international competition in attracting talent, and not just from other financial centres but from other industries;
- The development of expertise in evolving niches will be slowed unless more hybrid profiles become available;
- The impact of technology on the industry is growing and is redefining the roles and responsibilities that remain to be handled by people, as well as the skills they need to bring to the job.
Highlights

The workforce in Montreal’s financial services sector has many strengths that make it both unique and competitive. Benefiting from operating costs that are, in general, 30%-40% lower than in other major North American financial centres, the local industry can count on more than 85,000 skilled professionals and more than 62,000 students (business administration, quantitative analysis and IT) ready to step up. In addition, the stability of the regional financial system has meant that local and international players have been able to create hubs of expertise in areas such as application development and data analysis.

However, the stable and settled context that prevailed in the industry for so long exists no longer. The global industry is currently dealing with a period of unprecedented change, and this involves both the scope and the speed of the transformations underway. We have identified three main threats to the future success of Montreal's financial services:

1. **Montreal’s financial services industry faces increased international competition in attracting talent, and not just from other financial centres but from other industries.** And these industries give the appearance of being more dynamic and innovative. Companies such as Google, Amazon, Facebook and Apple have less difficulty recruiting than insurance companies, which need to develop new ways to attract the best talent. For too long, financial services have focused their efforts on compensation to attract the best profiles. HR departments are aware of this and are trying to improve the image of financial services as an employer though the industry is still far from the organizational cultures found in Silicon Valley.

2. **The development of expertise in evolving niches will be slowed unless more hybrid profiles become available.** There is already a shortage of hybrid profiles, and companies that have managed to attract them will go to great lengths to keep them. This situation limits the mobility of key resources between companies. It is often simpler and less expensive to train high-potential employees in-house rather than turn to the market in a costly bidding war. Without a critical number of this profile type, the growth of expertise in areas such as data science or cybersecurity will be limited in Montreal.
3. The impact of technology on the industry is growing and is redefining the roles and responsibilities that remain to be handled by people, as well as the skills they need to bring to the job. Such uncertainty disrupts the established order, and many positions in Montreal see their medium and long-term relevance put in doubt. Given that the professionals affected by these changes possess extensive industry and business expertise, it will be essential to retain this knowledge by enabling these employees to find their way in a transformed industry.

The challenges are considerable for the human resources teams responsible for providing profiles tailored to the organization's current and future needs. It has become clear that current recruitment and training models are not adequate and, in fact, threaten an entire generation of professionals whose skills will quickly become obsolete if no action is taken.

If this is the case, how can local businesses position themselves to ensure the renewal of a workforce that needs to evolve at the same pace as its industry? Three opportunities for improvement can be explored.
Opportunities for Improvement

1. Industry - Change the industry’s approach to recruiting and training to address upstream their future skills and workforce requirements.

Human resources teams have evolved a lot in recent years to cope with the changes occurring in financial services. Proactive rather than simply reactive, they closely align their efforts with the company strategy, creating value and going beyond their operational function. However, major efforts still need to be made in terms of recruitment and training:

**Recruitment**

With regard to recruitment, the financial services sector is in direct competition with industries and companies that are very attractive to young people.

Given this environment, HR departments need to use imagination in order to design strategic recruitment plans that will attract high-potential profiles.

To succeed, they must raise the visibility of the industry’s flagship professions in Quebec high schools, colleges and universities. Students will learn more about financial services and the dynamic careers available to them if they are given an opportunity interact with young professionals in the industry.

To raise the industry’s visibility, companies could organize practical activities such as “hackathons” or innovation labs held in schools.

These initiatives will also improve perceptions of an industry seen as outdated but in fact undergoing rapid transformation.

However, what must absolutely emerge from this opportunity for improvement is an understanding of the need for financial institutions to cooperate on matters of recruitment. Indeed, the task of improving visibility and changing perceptions cannot be accomplished by any single player; since attracting the best talent is vital to the entire industry, the entire industry has everything to gain by working together.
Training

Training is the second pillar of this improvement. Financial services companies have learned this lesson and now understand that the 1% rule is no longer adequate; investing in human resources has become critical to the success of the organization.

To achieve this end, it is essential to modernize the approach to in-house training. In addition to traditional training methods (e.g., classroom, seminars, online courses, evening classes, etc.), immersion learning methods have produced impressive results.

The study carried out by CH&Co. and, in particular, the interviews held with professionals clearly show that mobility is managed, even encouraged in financial services. This gives employees an opportunity to expand their technical and business knowledge.

In addition, our analysis of the 12 professions shows that for the newest jobs (process automation, digital marketing, data scientist) the labour supply is struggling to meet market demand. And if labour more difficult to attract, it becomes more expensive to acquire.

However, high-potential employees are already available within the organization. With a few months of immersion training in innovation labs, for example, employees can return to their original team with new skills that will help achieve the group objectives.

The development of practices such as reverse mentoring would also help train senior employees in new technologies through intergenerational knowledge sharing, from younger to older employee.

Lastly, it is possible to create multidisciplinary teams (e.g., business, analytics and communications specialists) to promote the exchange of ideas and skills and thereby produce employees with a comprehensive profile.

This more proactive model is part of a vision in which human resources will play a new strategic role in managing and anticipating change, thereby creating value for the organization.
The Government of Quebec plays a central role in the province’s economic development, particularly through tax incentive programs for employment and training such as the Labour Force Training Measure (Emploi Québec) or the Programme de développement des affaires électroniques (Investissement Québec). More specifically, the International Financial Centre (IFC) tax credit was launched in the 1980s to create hubs for back office professions dealing with international transactions in Montreal.

The IFC program provides a refundable tax credit equal to 24% of qualified wages incurred for the year up to a maximum of C$16,000 per employee. Finance Montréal is now responsible for managing IFC certification applications and the annual certification process.

The IFC program was merged with two other financial services tax incentives, namely: (1) the corporate tax credit for new financial services companies and (2) the tax credit for the hiring of employees by new financial services companies. Together, these three measures have contributed to the creation of hundreds of jobs in Montreal for a number of international financial institutions. These companies have since moved many teams to Montreal to benefit from the advantages offered by the local workforce (cost-benefit, technological skills, innovation hub, etc.).

Although very successful up to now, the IFC could be more effective if the law governing the program were updated. In fact, the same could be said for all employment subsidy programs. Technology, regulation and customer expectations have transformed the industry while at the same time creating new jobs that did not exist when these grants were established.

For example, the following jobs could benefit from an incentive program:

- Analytical solutions development (data scientist);
- Process automation;
- Digital security (cybersecurity);
- Data quality control (data governance);
- Risk management;
- Social media (digital marketing);
- Integrating new customers (KYC).

Modernizing grant programs, such as the IFC, by adjusting existing incentives, would attract new international investment at no additional expense. These changes would benefit the Montreal ecosystem as a whole.
With over 300,000 university students enrolled full or part-time in the last academic year, renewal of the workforce is assured. However, this critical mass of students graduating from Montreal schools must be equipped with the tools and skills deemed relevant by the industry.

Although the quality of teaching at Quebec universities received unanimous praise during the operational interviews, three areas for change were highlighted:

1. **The need to develop hybrid training**: All the players we talked with in the digital sector noted with regret that young graduates often specialize in finance or computer science without having an opportunity to develop a dual capability before graduate or post-graduate studies.

   More broadly, data science skills will soon be required in most fields and should be taught to all students considering a career in financial services.

   Such hybrid training: financial, technological and analytical, would be the right response to the strong demand from the industry, which is eagerly seeking these types of profiles, currently so rare in the market.

   Furthermore, many stakeholders have pointed out that it is preferable to recruit quantitative financial profiles and teach them the required technological skills directly in the workplace rather than the reverse, given that the financial and quantitative skills needed today are and will remain indispensable to understanding the industry.

   Conscious of this trend, universities have already begun to adapt their programs, but industry demand is such that they will need to intensify their efforts.

3. **Universities –** Continue to focus on training students to develop hybrid profiles to meet new business needs in terms of technological and financial skills.
2. The search for more operational profiles: Many professionals have indicated that they find young graduates technically savvy, and Montreal’s universities are known for having particular areas of expertise, but they generally believe that young people lack practical experience and have little knowledge of the work world.

Though some universities already offer work experiences lasting a few months, internships and work-study courses need to become more common and last for periods ranging from 6 to 12 months depending on the curriculum.

In addition, students need to have more opportunities to interact with mentors and professors still active in the industry to benefit from their advice and lived experience. Professional organizations, such as the Ordre des CPA, etc., could also fill this intermediary role with the industry.

This would not only allow students to engage with the job market but would give their profiles more depth and provide universities with direct access to student impressions of market needs. Building closer cooperation and defining a common strategy between universities and businesses are both necessary and desirable goals given Montreal’s ambitions.

3. Specialized continuing education programs: Automation and artificial intelligence are currently transforming the role of the employee within the organization. As the machine replaces the human, the tasks remaining to be performed manually will require a great deal of expertise and an ability to solve complex problems.

Universities will play a key role in meeting this need for specialization. They can help to create and maintain a specialized workforce by providing continuous training programs, adapted to business hours, in specific areas (e.g., risk management, cybersecurity, data science, artificial intelligence as it applies to financial services, etc.).

Mixed profiles, combining finance, digital technology, strong analytical skills and internships, would be in high demand in the market and would help create talent hubs in a number of key jobs that will be essential in the financial world of tomorrow.

This ferment of talent and ideas is set to attract hundreds of new jobs in financial services, and the economic impact will benefit the entire Montreal economy.
In conclusion, the long-term success of the financial services industry in a mid-size market like Montreal requires that its workforce specialize in a chosen number of developing areas such as data science, cybersecurity and digital marketing.

This positioning will be achievable only if the workforce has access to the tools and training required to master and maintain world-class skills. Industry, government and universities must collaborate to put in place complementary infrastructure and incentive programs.

From the earliest days, Montreal has been growing as a world-class financial centre. We believe that, by taking up the opportunities for improvement set out in this study, Montreal will create the conditions required to build on its success.
Alignment between profiles recruited and profiles needed: Ability to recruit profiles matching the profiles initially sought.

Application development: All employees working in IT solution development functions for operational employees.

Average time needed to recruit: Number of months needed to hire for this position.

Back office: All employees working in transaction settlement functions (clearing positions, validating deals, settlements). Also includes actuarial functions in insurance.

Change in the number of consultants in this position by 2020: Anticipated change by 2020 in the number of consultants (see definition) hired for a fixed term.

Change in the number of employees in this position by 2020: Anticipated change by 2020 in the number of employees hired for an indeterminate period.

Consultant: Employee hired on a temporary basis by the company for a specific assignment. Includes all fixed-term contracts, interns, etc. Frequently not included in HR IT systems, these employees are generally difficult to identify.

Corporate finance: All employees working in pure accounting functions (accounting operations, accounts receivable, accounts payable).

Data management and analysis: All employees working in functions of understanding and simplifying databases and securing computer data.

Experience required in financial services: Whether or not experience in financial services (in the wider sense) is needed to practise this profession at a senior level.

Front office: All employees working in sales and customer relations aimed at generating income.

Human resources: All employees working in functions related to managing the company’s human capital (hiring, termination, payroll, etc.).
**Importance of this position:** Alignment between job characteristics and the company’s global strategy.

**IT support:** All employees working in call centre functions, IT support and help desk staff.

**Junior employee:** Employee with less than 5 years’ seniority in the job, including past and present employers.

**Legal and compliance:** All employees working in legal functions, compliance, internal audit, etc.

**Level of recruitment difficulty:** Assessment of difficulty recruiting for this position.

**Major recruiting channel:** Most common means of recruiting employees and consultants.

**Manager:** An employee heading up a team, department, business line or even an entire group.

**Marketing and communications:** All employees working in the company’s internal and external communications functions.

**Middle office:** All employees working in the post-execution management functions of retail operations (performance monitoring, forecasting, product performance).

**Minimum academic training:** Minimum academic studies required (in theory) for the position.

**Most difficult seniority level to recruit for:** Most difficult rank to recruit for this position in Montreal.

**Number of consultants hired in 2016:** Number of consultants (see definition) hired for a fixed period in the company in 2016.

**Number of employees hired in 2016:** Number of employees hired for an indeterminate period in the company in 2016.

**Number of employees who left this position in 2016:** Number of employees who left the company permanently in 2016 (termination, resignation, etc.)

**Professional certification required:** Professional qualification which may be required to demonstrate the achievement of a certain level of knowledge.

**Projected salary growth by 2020:** Trend (increase/decrease) that will characterize changes in salary by 2020.

**Qualification of the employment pool:** Quality/skill of human capital employed or looking for employment in Montreal.

**Quality of university education:** Quality of academic training available in Montreal for this position.

**Regional origin of expatriate recruits:** Geographical origin of expatriates hired for their specific knowledge or skills.
Risk: All employees in risk management functions, broadly defined (credit risk, market risk, operational risk, etc.).

Sectoral breakdown of hires: Sectoral origin of new hires.

Senior employee: Employees with more than 5 years’ seniority in the field, including past and present employers.

Seniority level sought by 2020: Rank most sought after/recruited by 2020.

Time to be 100% operational following hiring: Number of months required to train new hires for this position.

Type of training: Primary field of academic study.

Typical academic training: Minimum academic studies required (in practice) for the position.
Chappuis Halder & Co. is a global management consulting firm providing services to customers in the financial services industry.

Our consultants are recognized for their solid expertise in financial services and their real-life experiences in the industry. We design and create strategies that transform the rules of the market, and we undertake projects that produce innovative and long-lasting results.

Our service offering is structured around three elements: Strategic & Operational Change, Risk & Finance, Business Development & Innovation. It is based on three centres of expertise: Regulatory, Digital and Risk Modeling and Quantitative Analyses.

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