

A Tale of Three Cities

London, New York and Montreal



Analysing Tech Start-up Ecosystems

Supervisor: Peter Younkin

Table of contents

Contents

Table of contents	2
Introduction	5
Abstract.....	5
Introduction	5
Context – why it matters.	6
Exhibit 1 – Evolution of Silicon Valley, Source: Labour Market Information Division Analytics.....	8
A deluge of data is central to the fourth industrial revolution.....	9
SECTION 1: Literature review.....	12
Start-up definition.....	12
Entrepreneurship motivations.....	13
Start-up explosion.....	15
...and success factors	16
List of variables	16
Human capital.....	17
Access to financing.....	18
Exhibit 2 – Financial institutions are investing at different time in a company life-cycle	19
Exhibit 3 – The lifecycle of a typical company stages of funding – Bain & co 2016.....	19
Existing ecosystem	20
Exhibit 4 – Start-up ecosystem players.....	21
Exhibit 5 – Start-up development phases.....	21
Exhibit 6 – Entrepreneurship Ecosystem Canvas (German productivity and innovation centre 2015)	23
Government intervention offering legal and fiscal advantages	23
SECTION 2: Methodology.....	25
Choosing two cities as a comparison	25
Empirical analysis.....	26
Qualitative research.....	26
SECTION 3: Empirical analysis	28
Comparing access to talent.....	28
Exhibit 7 - Number of university ranked by QS in 2016 (Quacquarelli Symonds Limited)	28
Exhibit 8 - Student population (in thousands) – Source QC report 2015/16.....	29
Exhibit 9 - Time to hire engineers (number of days) – Source Global Compass report 2015.....	30

Exhibit 10 - High tech workers (in thousands) – Source Global Compass report 2015 & London’s Digital Future - THE MAYORAL TECH MANIFESTO 2016	30
Exhibit 11 - Software engineer salary in USD – Source Global Compass report 2015.....	30
Comparing access to financing	33
Exhibit 12 - Number of financial institution - Source cbinsight.com	33
Exhibit 13 – Venture Capital investment in billion USD – Source: PWC Moneytree report, BVCA, CVCA 2016.....	34
Exhibit 14 – Average seed round in million USD – Source Global Compass report 2015.....	34
Exhibit 15 – Average Series A round in million USD – Source Global Compass report 2015.....	35
Comparing Ecosystems	37
Exhibit 16 – Estimated number of start-ups – Source Global Compass report 2015	37
Exhibit 17 – Estimated value of all start-ups at or prior to exit – Source Global Compass report 2015	38
Exhibit 18 – Metropolitan GDP in billion dollars – Source Global Compass report 2015.....	39
Exhibit 19 – City share of total estimated exit volume 2013 & 2014 in USD – Source Global Compass report 2015.....	40
Comparing Legal/Fiscal advantages (Government regulations).....	42
Exhibit 20 – Immigration time in days – Source Global Compass report 2015	42
Exhibit 21 – Tax index – Source KPMG compalt2016_report_tax	43
Exhibit 22 – Local government rated positive – Source Global Compass report 2015.....	44
Exhibit 23 – National government rated positive – Source Global Compass report 2015	45
Exhibit 24 – Summary of the policy levers analysed in the CITIE report 2015	49
SECTION 4: Interview analysis.....	50
Entrepreneurial motivations.....	50
Exhibit 25 – What is your motivation for entrepreneurship?.....	51
Does location matter?	53
Exhibit 26 – Does location matter and why?	53
Top factors of success of an ecosystem.....	54
Exhibit 23 – Choose the top 5 factors of success for a start-up ecosystem	55
Exhibit 28 – Top 5 factors of success for start-up ecosystem, by score	57
Perception of the Montreal’s ecosystem.....	57
Exhibit 29 – Perception of Montreal’s ecosystem	58
Is there a specialisation of start-up ecosystems?.....	60
Exhibit 30 – Specialisation of start-up ecosystems.....	60
SECTION 5: Conclusion.....	63
Back to the context	63
Exhibit 31 – The Digital Hospital: 80+ Companies Reinventing Medicine In One Infographic.	64

Exhibit 32 – The Future of Dining: 99 Start-ups Reinventing The Restaurant In One Infographic.	64
Answering the question	65
How does it compare with New York and London?	67
Outlook and recommendations	68
Future research.....	69
Limitations	69
References	71
Other sources:.....	73
Acknowledgements.....	74

Introduction

Abstract

This thesis will focus on the factors that make a start-up ecosystem attractive and dynamic for new tech ventures to prosper. The purpose of the research is to determine how Montreal compares to a US city (New York City) and a European hub (London) for prospective founders of high-growth ventures. The starting hypothesis is that Montreal ecosystem is favourable for new tech venture. The results of the research tend to support that idea, with some limitations mainly around access to finance for start-ups to scale up fast. This is mainly due to the relative youth of the ecosystem and is subject to change for the better.

Introduction

Architecture is a testimony of a location's history, and can provide valuable information of its past and present. St Patrick street, Southwest of Montreal, in an area called Griffintown, is characterised by few old manufacturing buildings which have recently been renovated into luxurious apartments. This transformation of the cityscape can also be witnessed in other areas such as Mile Ex and Mile End districts. Montreal will celebrate, in 2017, its 375th anniversary. Since its foundation by Maisonneuve in 1642, the city has prospered with the development of various industries including textile manufacturing, aerospace and now is a major global hub for video game development. With around 2,000 active tech start-ups, Montreal has been ranked in the top 20 start-up ecosystem ranking from Compass.co. What is attracting these new entrepreneurs to the city? Put simply, I seek to identify if Montreal is a good place to establish a tech business.

In this paper, we are investigating what makes a start-up ecosystem successful in attracting and nurturing new entrants. To do this, we will identify both the factors that founders rely on and the ones they should consider.

The literature, at large, focuses on the entrepreneurial motivation, and suggests the existence of several factors which can explain the emergence of start-up clusters. In this report, we are going to look at these factors and try to answer the above questions. Some of these factors might seem obvious with the likes of access to talent, financing or natural advantage. Others, are less obvious and not widely covered by the existing literature, especially the concept of the specialisation of ecosystems and how this specialisation can be influenced by a large local employer. We will argue that both sets of factors are critical to the success of new ventures and help explain why founders should think of location as a strategic move, and not merely a personal choice.

Context – why it matters.

To build the logical framework that will allow us to answer the question, we are comparing Montreal with London and New York City. This provides a good insight on what makes one place more attractive than another.

Start-up ecosystems, around the globe, are competing for resources. As stated by cite.org, the labour market is increasingly fluid and mobile. Start-up ecosystems have become symbols of urban vitality by creating jobs that rely on skills increasingly essential for cities of the 21st century. Start-ups are a major source of employment, losing out in a "start-up race" is problematic for cities, especially when they have lost their former manufacturing core. Entrepreneurship is considered as an activity that generates innovation, employment and long-term growth, and therefore governments are focusing on entrepreneurs as a solution to economic and social problems (Thornton, Ribeiro-Soriano and Urbano, 2011).

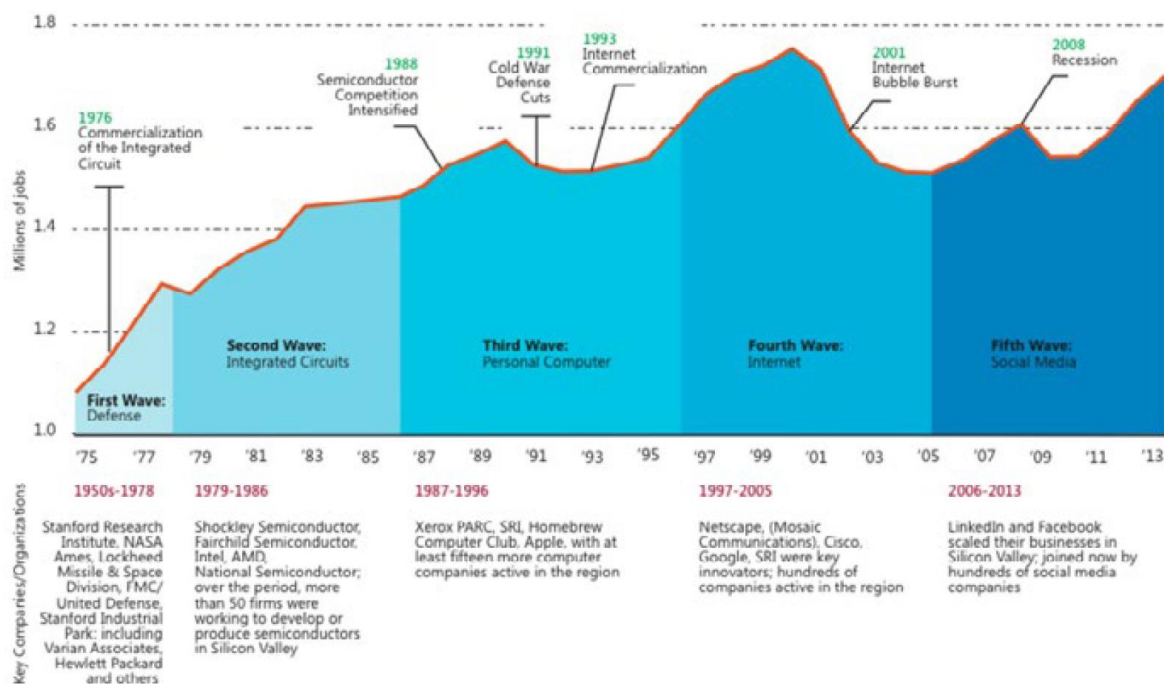
Recent economic reports seem to indicate that the global economy is going through a massive transition. As stated by **Steve Blank** in his 2015 Compass report *“This relentless wave of disruptive innovation is marching through not only technology industries..., but is destroying industries thought of as forever stable and predictable: newspapers, entertainment, energy, healthcare, education, construction, transportation, retail commerce, finance, and even governments themselves”*. These are signs of economic shift, considering that most of the innovation generating these disruptions are coming from start-ups like Uber, Air BnB and Turo which are redefining entire industries (Taxi, hotel and car rental respectively). This acceleration of new innovative businesses is compared to the “Cambrian moment”, which marks a corner stone in the evolution of life, some 540 Million years ago, life forms started to multiply into ever more complex organisms, these more varied building blocks enabled, in few million years, the rise of the animal kingdom (The economist Jan 2014).

We see a similar pattern in the flourishing number of start-ups, which are building on each other to evolve. For this very reasons, analysts think this bubble will not burst like the “.com in the early 2000”. Today’s entrepreneurial boom is based on more solid foundations than the 1990s-internet bubble, which makes it more likely to continue for the foreseeable future (The Economist Jan 2014).

Start-ups are building on each-other like Lego bricks. Some of the building blocks are the line of code that can be used freely (open source code), and all the different Application Programming Interfaces (APIs), which enable one service to use another, (i.e. google map for geo-location of Uber application).

As the Economist feature noted, *“The Internet is now fast, universal, and wireless.”* Not unlike what Gutenberg’s printing press gave nascent publishers, this technology provides a mechanism for start-ups, to inexpensively distribute new products and services around the world almost instantaneously. From day one, a start-up can now be what Steve Blank refers to as a *“micro-multinational.”*

Exhibit 1 – Evolution of Silicon Valley, Source: Labour Market Information Division Analytics



On the other hand, we see existing companies in the 21st century dealing with declining performance and ROA (Return on Assets)¹ with the average life of a company on the S&P 500 reduced to 15 years from 65 in 1920 (Steve Blank). These elements could be the proof of a major shift in the economy, moving from the **industrial Era** to what is now called the **Information Era**. Previous transitions, from Agriculture to industrial for example, are characterised by a dangerous adaptation period. Humanity does not see transitions between major economic eras very often, but when they come, every aspect of society gets reinvented: government, business, finance, education, medicine, energy, technology, art, and science all get upgraded. The Industrial Revolution was the last great full spectrum societal transformation, and the Scientific Enlightenment that ensued gave rise to modernity².

¹ The Shift Index1, by the Deloitte Center for the Edge, notes a 75% decline in Return on Asset (ROA) performance for U.S. companies over the past 45 years.

² The Great Transition: Industrial to Information Revolution

A deluge of data is central to the fourth industrial revolution

The data deluge is something that every corporation and every city is facing around the globe. This represents as much a challenge as an opportunity for new businesses to shine by addressing some of the issues with innovative solutions. The battle for the digital era has started.

It is hard to quantify the amount of information available in the world, but it clearly is astronomical and it is growing at a terrific rate (a compound annual 60%) that is speeding up all the time. This flood of data comes from sensors, computers, research labs, cameras, phones and are consumed in many ways: video games, video streaming, and music. In terms of bytes, written words are insignificant, amounting to less than 0.1% of the total (The Economist Feb 2010). There are many reasons for the information explosion. The most obvious one is technology. As the capabilities of digital devices soar and prices plummet, sensors and gadgets are digitising lots of information that was previously unavailable. The amount of digital information increases tenfold every five years. Moore's law, which the computer industry now takes for granted, says that the processing power and storage capacity of computer chips double or their prices halve, roughly every 18 months.

"2003 was a tipping point, in one year we have generated the same amount of information than the entire history of mankind" explains **Janos Flösser**, co-founder of iO interactive and now Senior Partner at Promentum Capital A/S. When the Sloan Digital Sky Survey started work in 2000, its telescope in New Mexico collected more data in its first few weeks than had been amassed in the entire history of astronomy.

These examples tell the same story; the world contains an unimaginably vast amount of digital information (The Economist Feb 2010). This deluge of data represents a huge challenge, as only a fraction of it is structured (5%) or processed (less than 1%).

Joe Hellerstein, a computer scientist at the University of California in Berkeley, calls it “*the industrial revolution of data*”. The effect is being felt everywhere, from business to science, from government to the arts.

This “revolution of data”, also known as “Big data”, is the tip of the iceberg of the transformations ahead. From a definition point of view, information is made up of a collection of data and knowledge is made up of different strands of information, however “data” and “information” are increasingly difficult to tell apart. The cornucopia of data now available is a resource, like other resources in the world and even to technology itself. Information has become one key resource to global economy. This industry is estimated to be worth more than \$100 billion and growing at almost 10% a year, roughly twice as fast as the software business (The Economist Feb 2010).

The democratization of entrepreneurship from start-up ecosystems all over the world is creating new disruptions and innovations. These changes, originating from start-ups, will light the way for the massive restructuring of our society (from education and political systems, to economy and corporate structure).

Since start-ups are playing a central role in this transition, it is relevant to understand their factors of success and if location matters. Cities around the world are competing to become attractive for entrepreneurs and become or remain a leading force in the global economy.

In this report, we are going to compare three cities, one in Canada, one in the US and one in Europe:

- **Montreal**, as it is central to the question we are trying to answer.
- **New York City**, the giant American neighbour has rapidly become the second ecosystem in the US and even in the world.
- **London**, currently the digital and financial capital of Europe. The city is particularly interesting to compare in context of the Brexit. How is this likely to challenge its ranking as the top European start-up ecosystem?

The report is structured in four sections. **Section 1** presents insights from the current literature on the subject. **Section 2** presents the methodology of the research. **Section 3** comparatively assesses the research results (Empirical analysis). We continue discussions and conclude in **section 4**, having analysed the main variables that can define the attractiveness of an ecosystem.

Through the research, Montreal seems to be behind its European and US counterparts, however the right ingredients are at hand to enable the city to further flourish into a significant hub. Out of all the variables listed, (access to talent, natural advantage, financing, governmental incentives), this report suggests that talent is key, especially at the early stage of a new venture. Local bias seems to play an important part. This can be associated to the actual motivation of entrepreneurship, which looks to be a cultural thing as well as a lifestyle choice.

SECTION 1: Literature review

In this section, we are going to look at the existing literature about the subject of start-ups ecosystems, their success factors and their location distribution. To facilitate understanding, we will start by providing some definitions for some of the key terms used in this research.

Start-up definition

For example, even a commonly used phrase like "start-up" is ambiguous and requires some scope conditions. The term became widespread during the dot-com bubble at the end of the 1990s, when a great number of Internet-based companies were founded.

There are many ways we can describe a start-up company, including words like "new" or "growing." The word "new" is enough to separate it from an established firm, but not all newly created firms qualify as start-ups. Small new local businesses such as a restaurant or a grocery store certainly do not qualify. The exact definition of "start-up" is widely debated. Most would be aligned with what the U.S. Small Business Administration describes as a "business that is typically technology oriented and has high growth potential".

Paul Graham (co-founder of Y Combinator, one of the most renowned seed accelerators), explains that *"a start-up is a company designed to grow fast. Being newly founded does not in itself make a company a start-up. Nor is it necessary for a start-up to work on technology, or take venture funding, or have some sort of 'exit'".*

Arguably, the definition can vary from one industry to another. For example, in software development, the definition for start-ups could be: firms that are newly created companies with no operating history and fast in producing cutting-edge technologies.

Growth and scalability are therefore common properties which characterise a start-up. But for how long can a firm be considered a start-up? Rather than time, it seems important to focus on which *phase* of development is the new venture in.

Steve Blank and **Bob Dorf** (entrepreneur-mentors and co-authors of "The Start-up Owner's Manual") propose a popular definition by describing a start-up as an "*organization formed to search for a repeatable and scalable business model.*"

We will base our report on this definition - a start-up is a newly created and temporary organisation, as opposed to a well-established and permanent one, looking for a product-service to market fit and a business model that allows for fast and profitable growth.

Following the Lean methodology, start-ups follow six stages of development: (1) Discovery, (2) Validation, (3) Efficiency, (4) Scale, (5) Sustain and, (6) Conservation.

Entrepreneurship motivations

It is critical to understand the motivation of entrepreneurs, since it can be an important factor in determining a start-up's location. Literature on the subject indicates that entrepreneurial motivations develop dynamically in relation to career, household and business life courses. Entrepreneurship has increasingly been the focus of research, since it is considered to play a key role in economic and social growth and development. There are multiple founding motives, some monetary, others are non-economic.

It seems that entrepreneurs have multiple motivations, the following elements of intrinsic motivation have been identified by several researchers (Birley & Westhead, 1994; Carter et al., 2003; Cassar,

2007): economic gain, desire for achievement, personal development, improved social status, opportunity to innovate and create new products, emulation of role model, and contribution to community welfare. Entrepreneurs are the product of their economic, institutional and cultural environment. The importance of socio-cultural factors on entrepreneurial decisions is taken into account in numerous scientific studies; though how the social-cultural factors influence the entrepreneurship propensity is difficult to measure. Most of the studies use the Hofstede model as an analysis framework (Hofstede, 1980). His initial work represents one of the most comprehensive studies of how values in the workplace are influenced by culture (nation).

To keep it simple, we can easily draw two types of motivations, one is monetary (improved social status and make more money) the other is not (emulate a role model, have an impact on society).

Stanley Cromie (1987) provides a list of 14 reasons for female founders to establish their own enterprise. Other research tries to distribute motivations into six profiles (Jayawarna D, Rouse J and Kitching J, 2013), reluctance, convenience, economically driven, social, learning and earning and prestige and control entrepreneurs. A simpler view could be to stick to a) about life-style (a mix of convenience, social and learning), b) about having an impact “I want to change the world” syndrome (The founder’s blues – The Economist Jan 2014), and C) the one about material gain.

Start-up explosion...

Start-ups are increasingly seen as an important factor in economic growth and job creation (Birch, 1979; Acs and Audretsch, 1990; Storey and Tether, 1996; Brunderl et al., 1998). As stated in “The Start-up Revolution Series | 3 - The Rise of the Start-up”³, so many start-ups have burst onto the global scene that the entrepreneurial explosion has been compared to the Cambrian Explosion in earth’s biological history (The Economist Jan 2014). It has never been easier or cheaper to start-up a tech business, thanks to open source software, software as a service, cloud hosting, globally ubiquitous payment processing, crowd funding, API’s (Application Programming Interface) and hyper-targeted advertising. In fact, **Steve Blank** proposed four key reasons for the start-up explosion. First, starting cost have been slashed down to a fraction of what they were in the “.com era”. Second, is a wider source of financing with lower bets, due to lower starting costs, meaning larger numbers of start-ups. Third, entrepreneurship is developing a new management science, personified in the “Lean Start-up” movement (Eric Ries and Steve Blank are thought to be the fathers of this movement). This methodology is believed to have a positive impact on the failure rate, which is still evaluated at about 75%

While the number of new ventures is booming, and their role on the global economy becomes more impactful, their failure rate remains high. As stated in “Start-up Genome Report Extra on Premature Scaling” (2012)⁴, within 3 years, 92% of start-ups failed. Of those who failed, 74% failed due to premature scaling. What are the key success factors for a new venture?

³ <http://blog.compass.co/the-startup-revolution-series-part-3-the-rise-of-the-startup/>

⁴ Start-up Genome Report Extra on Premature Scaling A deep dive into why most high growth start-ups fail

...and success factors

As stated above, we cannot talk about start-ups without referencing the work of Eric Ries (2012) and Steve Blank (2005, 2012, 2013) who have started the *Lean Start-up* revolution. Both recognised that start-ups needed a different model than the one used by established companies to succeed. The new method includes the business model canvas which is widely used now. This new breed of entrepreneurship requires agility to create and innovate.

Literature in general indicates various factors influencing the success of new ventures, (Kathryn Watson Sandra Hogarth-Scott Nicholas Wilson 1998, Dr. Gad Selig, PMP, COP 2014) and recent reports from Start-up Genome, indicate that success factors are linked to the five core dimensions of start-ups which are Customer, Product, Team, Business Model and Financials. This can be translated into access to: talent, to market and to financing, as well as the speed to get to market. Joel Kurtzman in his 2005 book about start-ups, he lists ten critical factors to consider for a new venture. He regroups them in three categories: strategy, resources and performance.

List of variables

Cities and start-up ecosystems are looking to create a fertile environment for new ventures to flourish. Therefore, what makes a good location for start-ups, should be linked to these factors of success. While there are an infinite number of possible variables, the research focuses upon four as being critical for a city: (1) talent or human capital, (2) financing, (3) infrastructure and existing ecosystem, and (4) government incentives (legal and fiscal).

Human capital

Human capital and talent variables include knowledge, education, skills and experience (Deakins and Whittam, 2000). Human capital is likely to influence the development of a business idea and the organization of resources. Talent is attached to a location, though it can be mobile.

Geographical concentration in any industry can form a pool of talent (Olav Sorenson and Pino G. Audia, 2000). The high technology industry in the United States is known to be in Silicon Valley, the region between San Francisco and San Jose, and in the area along U.S. Route 128 circling Boston. Los Angeles serves as a hub for the entertainment industry, including motion pictures, television, computer graphics, and music-recording. Of course, talent is one dimension explaining the geographical distribution (Marshall 1922; Chinitz 1961). Like the chicken and the egg, we can wonder if an existing cluster attracts talent, or if existing talents are the foundation of a new cluster of firms in a specific industry. Talent is key to any company, and this is even more important for a new venture (Combes and Duranton, 2006).

Robert Siegel, Silicon Valley investor, explains "*The single largest issue that causes the most emotional heartache in a start-up is people challenges. Every organisation has them...*". This is both about finding the right talent and retaining it.

There are two aspects of talent that matters. The first is **education**, since it is the source of knowledge. All the top start-up ecosystems are close to established universities. Silicon Valley has Stanford and Berkley. Boston, MIT and Harvard. And Montreal has few prestigious universities including McGill and UDM. Big agglomerations such as Los Angeles, NYC and London have also wide variety of famous establishments. Good, renowned universities, with specific programs are central to the creation of talent. The education system, including universities, not only influence the quality of employees, but also the actual entrepreneurs themselves (Edward L. Glaeser and William R. Kerr, 2009). Through their graduates, universities are transferring knowledge and expertise in the various ecosystems. To a

certain extent, we could say that the demographic of an area or a city can indicate the suitability of the local labour force.

The second way to attract talent is through existing **employers**. The concentration of large successful companies can act as a shield for a specialised labour force. This provides the assurance of being able to move from one company to another. This creates an agglomeration of specialised workers (Marshall 1920). Firms that employ similar types of workers tend to locate near one another, and this benefits start-up.

Access to financing

Availability of capital, short term and long term, is a major constraint faced by entrepreneurs. The financial and innovation literature generally claims that venture capital (VC) investments spur the growth of new technology-based firms (NTBFs). However, this claim raises two things, one is the actual impact of venture capital investment in tech start-ups success, and the other is whether VC financing is the only reasonable way to finance a tech business. While some papers try to answer the first question (Fabio Bertoni, Massimo G. Colombo, Luca Grilli, 2011), it is clear there is a wider set of funding solution available to new venture, from

- Crowdfunding. Which is the use of small amounts of capital from many individuals to finance a new business venture.
- Business angels (also known as an informal investor, angel funder, private investor, or seed investor) are affluent individuals who provide capital, usually in exchange for convertible debt or ownership equity.
- Private funding.
- Government subsidies and university grants are also an option.

Angel investors provide capital at a much earlier stage and generally provide only few post-investment support services (Bain & Company report – Exhibit 2). The source of funding depends on the phase of

development of the new venture (Bain & Company report – Exhibit 3). Even if alternative funding is increasingly available and popular to entrepreneurs, VCs remain the dominant source for fast growth of tech start-ups. To this point, it seems clear that most VCs are US based, while Europe is lagging.

Exhibit 2 – Financial institutions are investing at different time in a company life-cycle

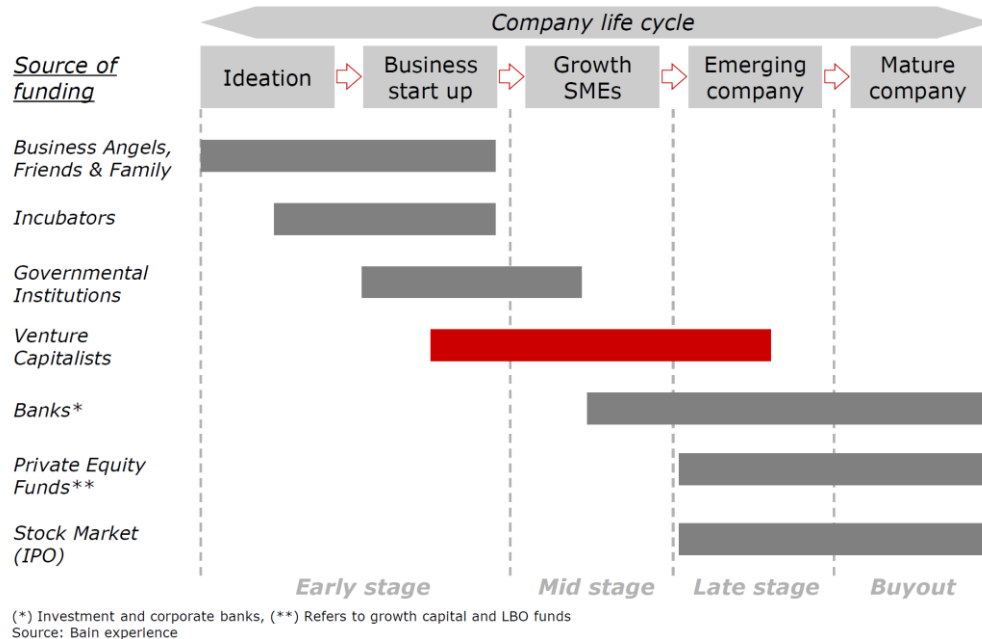
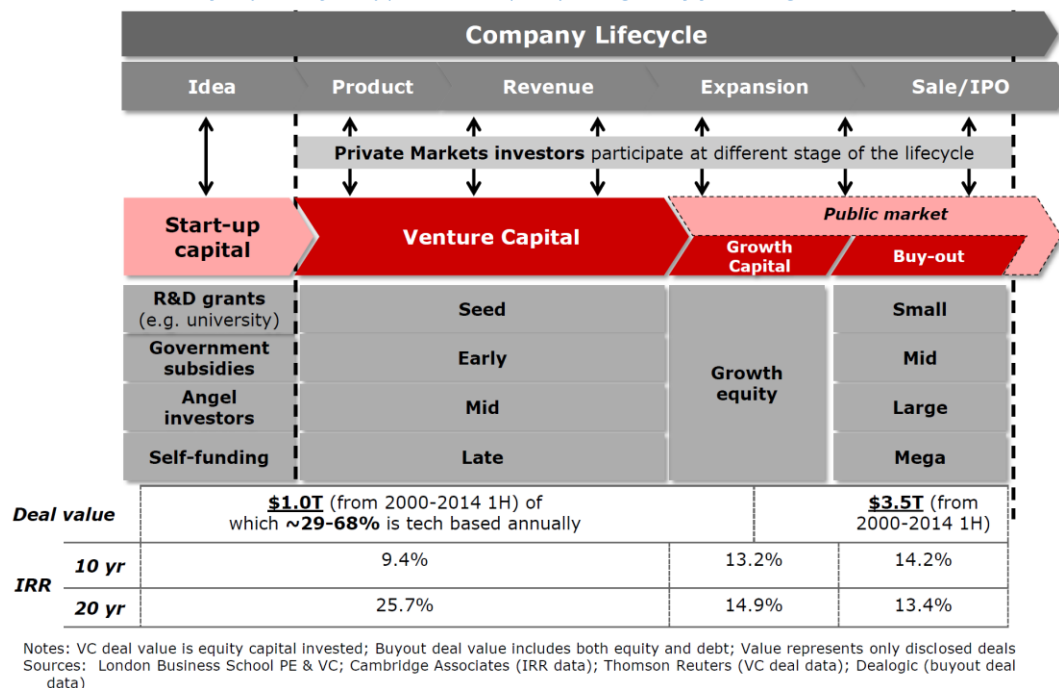


Exhibit 3 – The lifecycle of a typical company stages of funding – Bain & co 2016



Existing ecosystem

Literature from Alfred Marshall (1920), and more recently Michael Porter (1998, 2008) and Paul Krugman (1996), suggests that co-located firms experience reduced production costs due to pools of skilled labour, specialized suppliers and knowledge inflows from competitors. Agglomeration economies may also provide revenue-enhancing opportunities, especially access to knowledge spill overs (Juan ALCÁ CER and Wilbur CHUNG – 2013). New firms would amass similar benefits by concentrating themselves in clusters, or ecosystems. Both market efficiency and knowledge spill over, being the main drivers. As we witness the rise of the start-ups, we can also see the growing critical role of start-up Ecosystems. It is surprising that such concentrations exist, and tend to prove that location matters, in a world where information can be shared almost instantaneously using tools like Skype or Slack.

Start-ups are attracted by these ecosystems, seeking in them the same variables as listed above in this very section: human and social capital, access to talent and financing. **AnnaLee Saxenian**, in her seminal book *Regional Advantage: Culture and Competition in Silicon Valley and Route 128* (1994), argues that the culture of information sharing across companies and industries are one explanation why Silicon Valley overtook Boston's route 128 between the 1980's and the 1990's.

Brad Feld, in his book about Start-up communities⁵, explains that there are three explanations as to why the entrepreneurial world has concentrations of start-up communities in specific geographies. One is economic (external economy of scale from the agglomeration economy theory), another one is regional network effect (as described by Saxenian) and the final one is the notion of Creative class, with a tie between innovation and creative-class individuals.

But what is exactly an ecosystem?

⁵ Start-up communities: building an entrepreneurial ecosystem in your city – by Brad Feld - Start-up revolution, 2012

It is a collection of entities (Exhibit 4), including start-ups at various stage of development (Exhibit 5) and organisations interacting with them as a system to create and scale new start-up companies.

Exhibit 4 – Start-up ecosystem players

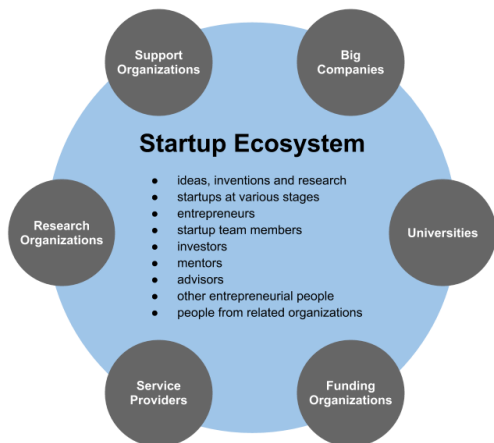
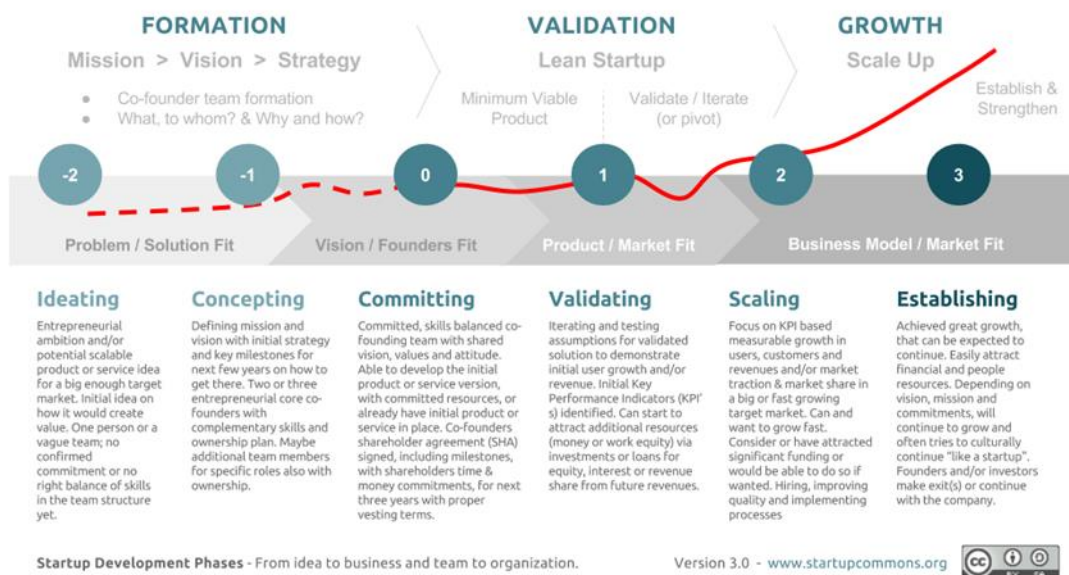


Exhibit 5 – Start-up development phases

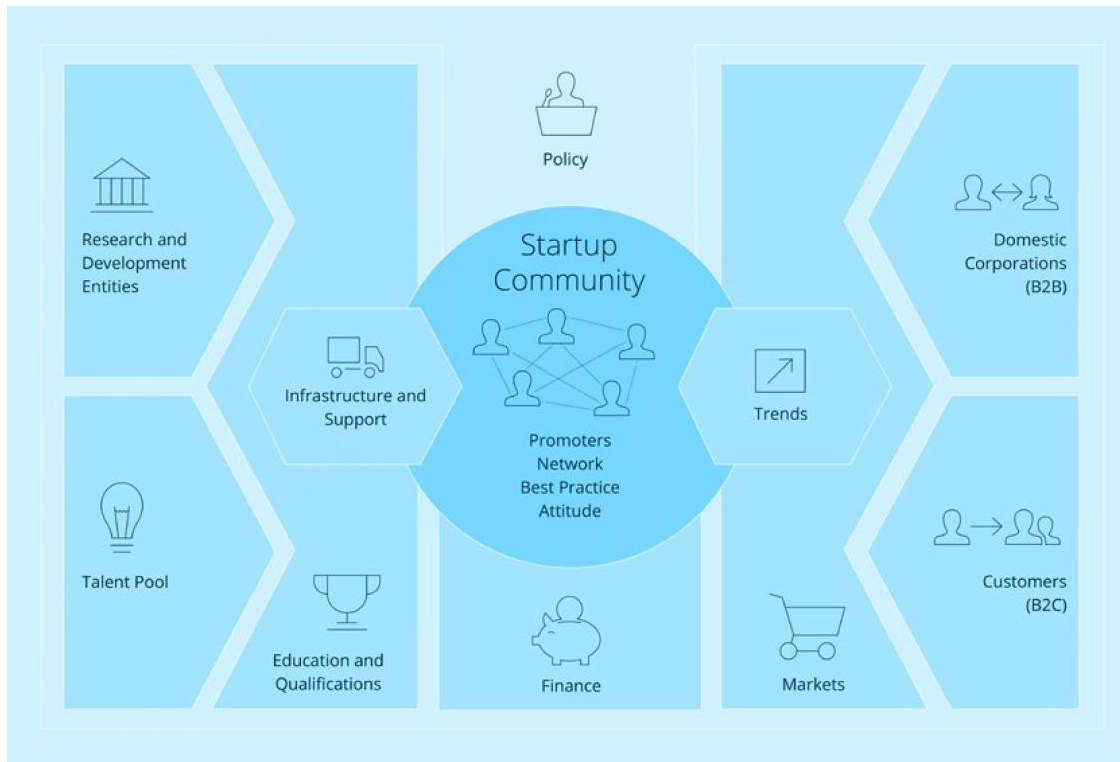


The Global Start-up Ecosystem report explains that ecosystems can best be described through eleven basic building blocks that show the logic of how an ecosystem works. They use eleven blocks to cover the four main areas of an ecosystem: Ideas & Talents, Start-up Community, Policy & Finance, and Markets. They even created a canvas (see Exhibit 6).

For this report, we will consider the following elements:

- **Entrepreneurs**, always at the very centre of the ecosystems.
- **Universities** - they have five resources relevant to entrepreneurship: students, professors, research labs, entrepreneurship programs, and technology transfer offices. According to the research conducted by Giorgio Calcagnini, Ilario Favaretto, Germana Giombini, Francesco Perugini and Rosalba Rombaldoni (2015), collaborative work between universities and start-ups are positively correlated to the creation of innovative ideas.
- **Angel investors & Venture capital companies** are not only offering financing, but mentoring. This helps start-ups generate synergies within a portfolio of selected ventures. (They often invest in specific industries to build knowledge and expertise).
- **Co-working places** are achieving an economy of scale by sharing attractive workplace facilities. Another positive aspect is that it helps the growth of social capital (network).
- **Start-up incubators**, generally offer management training and/or office space. They provide services which helps start up a business (including space, funding, legal, accounting and computer services).
- **Start-up accelerators** are offering cohort base programs to build pitch and raise money. They often offer seed funding in exchange of equity. TechStar and y-Combine have been active leaders of start-up communities. The primary value to the entrepreneur is derived from the mentoring, connections and the recognition of being chosen to be a part of the accelerator.
- **Government**, local and national, participate in different ways in ecosystems, and sometimes offer financing programs too.
- **Clusters** are geographic concentrations of interconnected companies and institutions in a particular field.

Exhibit 6 – Entrepreneurship Ecosystem Canvas (German productivity and innovation centre 2015)



Government intervention offering legal and fiscal advantages

Literature is rather scarce on the subject of governments' intervention to help start-up ecosystems flourish, though we have already identified financing programs. There are at least three main government initiatives that can impact a location's attractiveness.

The first one is regarding **legislation** and making it easy for an entrepreneur to set up his new venture. Such legislations include employment labour laws making access to talent more fluid. This is important for the new venture to be able to easily hire key personnel. Alongside employment labour law, is immigration regulation. Digital companies rely on hiring top talent, which often come from abroad. One out of seven businesses in the UK is owned by a foreigner. This is especially true in London where there are close to 190,000 migrant entrepreneurs, as stated by Matt Chorley from the Daily Mail (article published in 2014).

The second is about **fiscal** advantage. Governments can offer varied types of tax reliefs. These policies include tax exemptions, subsidies, land grants and other infrastructural benefits to firms to incentivise them to locate to specific, sometime disadvantaged, regions. As stated by Ritam Chaurey, in his 2016 research, one economic justification for providing tax incentives to attract new firms is the possibility of agglomeration economies on the existing firms in that locality. There are multiple advantages, from productivity to cost benefits. Existing literature from Rathelot and Sillard (2008) shows that although the tax reliefs do offer a natural advantage to firms, many do not make a location decision based solely on tax exemptions, therefore are forced to pay higher taxes when not based in a specific government sanctioned region. Chaurey (2016) claims that many firms are now taking full advantage of the tax exemptions provided by the governments by moving into the selected areas. Therefore, having a positive impact on employment, output and capital.

SECTION 2: Methodology

Choosing two cities as a comparison

To analyse the factors of attractiveness and assess the competitive position of Montreal globally, we have chosen to compare it to two other cities, New York City and London (UK).

We have chosen three cities to limit the focus of this thesis, and to compare Montreal with the best in class, from two different continents.

New York city is currently a leading start-up ecosystem in the United States, second to Silicon Valley in California. New York City is, geographically, relatively close to Montreal, which could be the source of cultural and economic exchange. We did not choose Silicon Valley because it is too big of an ecosystem to be compared to. It is home to approximately 14,000 to 19,000 start-ups and 1.7 to 2.2 million high-tech workers. Despite the global explosion of start-up ecosystems, Silicon Valley still has about as much capital and exit volume as the rest of the top 20 ecosystems combined.

London is the digital hub of Europe and has been the most important start-up ecosystem in the region for a few years. It is particularly interesting to look at this city in context of the recent Brexit, and the consequences this may have on the economic power of the city.

Empirical analysis

We are comparing the three cities using data from various macro-economic reports and analysis conducted in the past couple of years. The analysis is structured around the four variables identified in the literature review: Access to talent, financing, existing ecosystem and legal/fiscal regulations.

Qualitative research

This section of the research is based on a series of interviews with individuals who are active participants of start-ups ecosystems. The sample consists mainly of entrepreneurs and investors. The 25-people interviewed are mainly from Montreal, with some people based in New York City and Europe.

This qualitative approach complements the empirical analysis and helps assess Montreal's position compared to London and Montreal. It also helps what was found in the literature review. Are these variables also important to the actual entrepreneurs and investors, and how do they perceive their ecosystem in comparison to others?

Each interview lasted between thirty to sixty minutes, following a four-part questionnaire to guide the discussion.

1. The **first** part was about the motivation of entrepreneurship, which provides some background information as to why the individual is interested and invested in the ecosystem, and can influence their view of the variables.
2. The **second** was about the factors of success of an ecosystem and how it can impact the process of choosing a location.
3. The **third** one is about investigating the perception of the Montreal ecosystem.
4. The **fourth** and final one is exploring the hypothesis of specialization of ecosystems.

Who	Location	Title	Organisation	Role
Caroline Pelletier	Montreal	VP sélection et soutien à l'investissement	Anges Quebec	Investor
David Nault	Montreal	Partner	Inovia	Investor
Janos Flösser	Copenhagen	Senior Partner	Promentum Capital A/S	Investor/Entrepreneur
Christofer Sandberg	Stockholm/NYC	CEO	Avalanche	Entrepreneur
Christian Eve-Levesque	Montreal	CEO	Sphereplay	Entrepreneur
Guy Gervais	Montreal	Angel	HumanID Technologies	Investor/Entrepreneur
Gaetan Fron	Paris/Londres	DG	SaaS	Entrepreneur
Nicolas Moulin	Paris	Founder	IOT	Entrepreneur
Johan Eile	Montreal	COO	cloudcade	Entrepreneur
Sigisbert Ratier	Montreal	CEO	Soluteo	Entrepreneur
Joost Van Dreunen	New York City	CEO	Superdata research	Entrepreneur
Thibaud Marechal	Montreal	Project Manager	Founder fuel	Investor/Entrepreneur
Jean Francois Charette	Montreal	Analyst	Credoprod	Conseil
Andree Lemay	Montreal	Directrice gestion des relations	espacecdpq	Conseil
Marc-Olivier Lepage	Montreal	COO	Vrvana	Entrepreneur
Jean Francois Perrault	New York City	Directeur Creatif-Co-founder	@Stereosuper	Entrepreneur
Pierre Lemieux	Montreal	Directeur Général,	Morrison Films & 1One productions	Entrepreneur
Matthew Boerum	Montreal	Founder/CEO	Audible Reality	Entrepreneur
David Grijns	New York City	Founder and MD	Defiant Studios	Entrepreneur
Roland Lesterlin	New York City	Co-Founder and Creative Director	Defiant Studios	Entrepreneur
Gregoire Arcache	Paris	Co-Founder	Hypersuite - the Ory.com	Entrepreneur
Tom Sicard	Paris	Co-Founder & COO at HYPERSUIT	Hypersuite - the Ory.com	Entrepreneur
Jean François Marcoux	Montreal	General Partner	White Star Capital	Investor
Patrick Naud	Montreal	Studio MD	Square Enix Montreal	Executive
Jean-Francois Leclair	Montreal	Partner & General Manager	Big Jack's Factory	Entrepreneur

SECTION 3: Empirical analysis

In this section, we are going to compare the three cities of Montreal, London and New York City using quantitative measures of the four variables we have identified as the keys to defining an ecosystem's success. The four variables are access to talent, access to financing, the existing tech start-up ecosystem and finally the government incentives. In the subsequent section I will complement these with data drawn from interviews with entrepreneurs in each location.

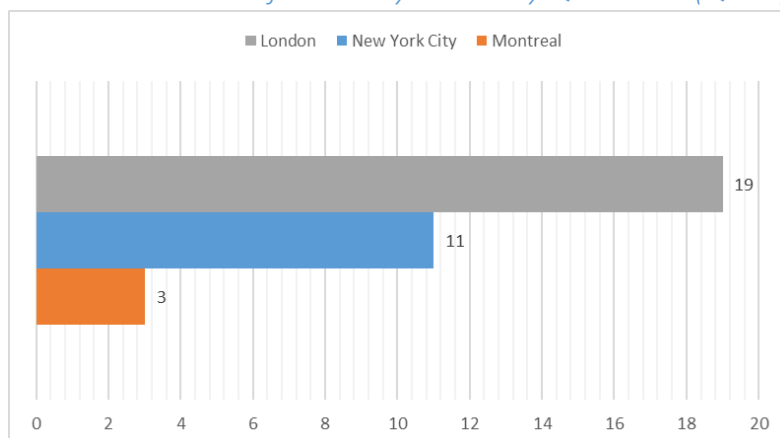
Comparing access to talent

Shortage of available talent is something that keeps entrepreneurs awake at night, and is considered a top factor of success by most. As per the literature review, there are several aspects of talent, and we should look at them separately to make a useful comparison of the three locations.

First, we shall look at talent being generated by the education system. In order to measure this, we will look at two data points:

- The number of "elite" universities (as designated by international rankings).

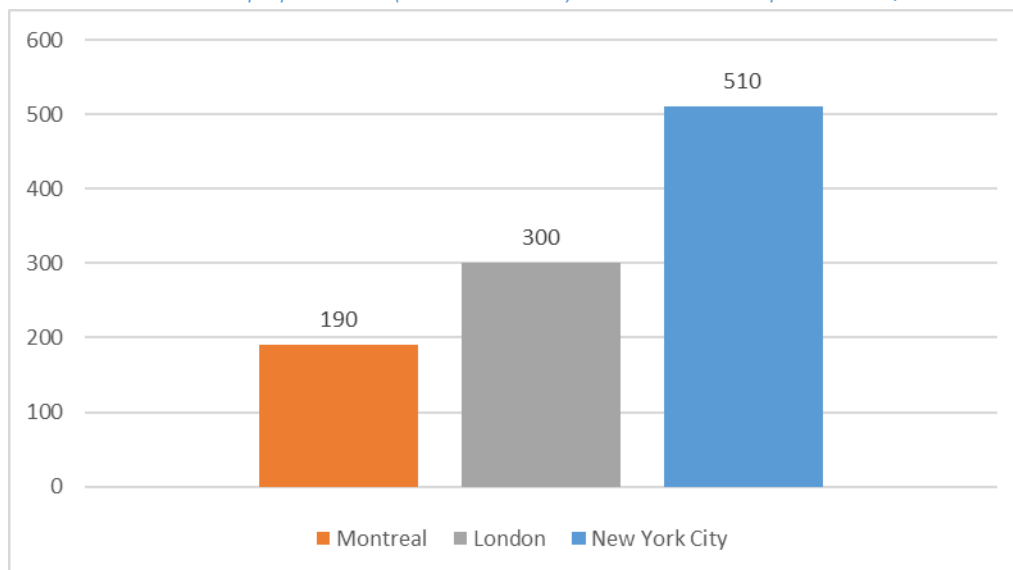
Exhibit 7 - Number of university ranked by QS in 2016 (Quacquarelli Symonds Limited)



London has the biggest pool of universities out of the three cities, including 19 ranked by Quacquarelli Symonds Limited in 2016 (Exhibit 7). New York City is second with 11 ranked universities. Finally, ranked 3rd is Montreal with 3 (The city has a total of 11 university institutions, 3 of which are ranked by QSL).

- Student population

Exhibit 8 - Student population (in thousands) – Source QC report 2015/16



New York City is the largest agglomeration of the three cities and logically has the biggest student population with over 500 thousand individuals (Exhibit 8). London is second with around 300 thousand students. Montreal is third with a student population close to 200 thousand.

Second is about competition for talent. This is relevant since this is a testimony of the existing pool of talent. It is more difficult to measure however. We will use the time to hire and the number of employed people in the tech sector to define a) if there are good people and b) how hard it is to get them to work for you.

- Time to hire

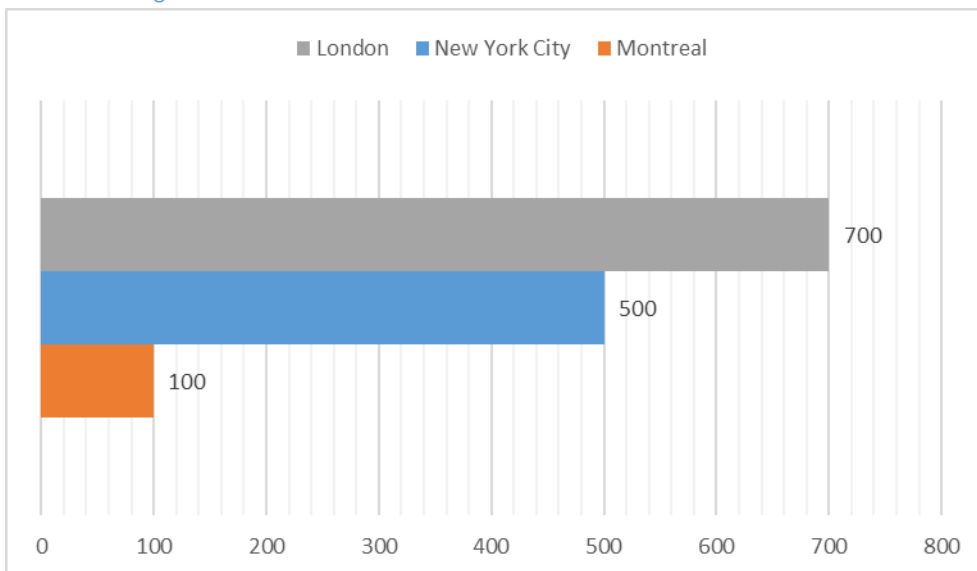
Exhibit 9 - Time to hire engineers (number of days) – Source Global Compass report 2015

New York City	Montreal	London	Silicon Valley	Avg North America
64	42	39	40	48

London is on top with an average of 39 days to hire an engineer (Exhibit 9), this is better than in Silicon Valley (40 days). Montreal is competitive with 42 days, while New York City is lagging with 64 days, due to the tough competition from financial and other industries.

- Tech worker’s population

Exhibit 10 - High tech workers (in thousands) – Source Global Compass report 2015 & London’s Digital Future - THE MAYORAL TECH MANIFESTO 2016



London is home to over seven hundred thousand high-tech workers (Exhibit 10), more than New York City with five hundred thousand, while Montreal’s population is around one hundred thousand.

Third is the per employee cost, measured by the average annual salary of a software engineer in each location.

Exhibit 11 - Software engineer salary in USD – Source Global Compass report 2015

New York City	Montreal	London	Silicon Valley	Avg North America
117	49	63	118	91

In term of cost, Montreal has the lowest average annual salary for a software engineer with \$49,000 (Exhibit 11), this is less than half what is paid on average in New York City (\$117,000). London is second with \$63,000 annual wage. As a comparison in Silicon Valley, software engineers are paid on average \$118,000. What this data does not tell us, is whether good engineers from Montreal tend to move to higher paid locations. Regardless of this missing information, overall the salary difference is reflecting the overall higher cost of living of London and New York City.

New York City - With 11 internationally ranked universities located in the New York City area, it has long been attracting international students seeking the finest education money can buy. Few other cities can rival the high concentration of world-class universities in the NYC area. It is one of the highest scoring cities in the 'university rankings' category of the QS Best Student Cities index. Beyond its education system, New York City attracts talent from all around the world who want to have the chance to live in such an iconic and vibrant metropolis. One of the attractions of the city was the potential workforce with "product, marketing and financial know-how," Allon Bloch, Vroom's chief executive in an interview with the Wall street Journal. On the negative side, New York City is a very expensive place to live, average wage is representative of the general high cost of living. It is true that the pool of world class talent is second to none, but this comes at a price of high competition from other local sectors, such as finance, media, and health care. This explains the relative length of time to hire engineers for new tech ventures.

London - London is in many ways the cultural and business capital of Europe and is a nerve-centre of global academia. Among its 19 internationally ranked universities, the current leaders are UCL (University College London) and Imperial College London, which rank 7th and 8th respectively in the QS World University Rankings® 2015/16. Other prestigious institutions are scattered throughout the metropolis – along with world-leading facilities such as The British Library, which constitutes one of the most extensive and significant collections of books and manuscripts in the world.

Like New York City, London is one of the most important financial hub in the world. It is one of the planet's great centres of culture and creativity, famed for its museums, arts scene, nightlife and diversity. For these reasons, London has been attracting top talent from around the globe. Average wages are

lower than New York but the cost of living remains very high. It is relatively easy to find talent, as illustrated by the relative quick time to hire engineer (39 days average).

Montreal - with 11 universities, including 3 ranked by QS and 190,000 students, the Greater Montréal region has the highest number of university students per capita among all metropolitan areas in North America. It even ranks higher than Boston, the intellectual capital of the U.S. There are four well-known engineering schools that annually educate more than 5,000 computer science graduates. Meanwhile, the HEC and Concordia's John Molson School of Business produce some of the finest business grads in the country.

The 2016 edition of QS Best Student Cities ranked Montreal the 7th-best city in the world to be a university student. It also offers significant cost advantages; it has the lowest engineering salaries among North America's top 20 and this is excluding any tax credit.

If the city cannot claim to be as diverse as London and New York City, still it is a multicultural and cosmopolite city offering a high quality of life.

Conclusion on access to talent – Montreal offers a great pool of talent at a much lower cost than London and New York City, this is a clear natural advantage for entrepreneurs looking to incorporate their new venture. London and New York have a larger pool of talent numerically, as they are simply larger cities able to attract world class talent wanting to experience the unique lifestyle these two cultural hubs have to offer. What is not presented in this section is the level of experience of entrepreneurs, Compass.co suggests that the percentage of founders with work experience in hyper growth start-up is higher in London (23%) than in New York (18%) and Montreal (9%).

Finally, U.S. start-up ecosystems (and to a lesser degree Canada) are the only places in the world where a software engineer gets paid a higher salary for working at a start-up than at a comparable position at a larger, more established corporate firm.

Overall, Montreal fares very well against London and New York City, with a high density of very qualified talent, at a much lower cost.

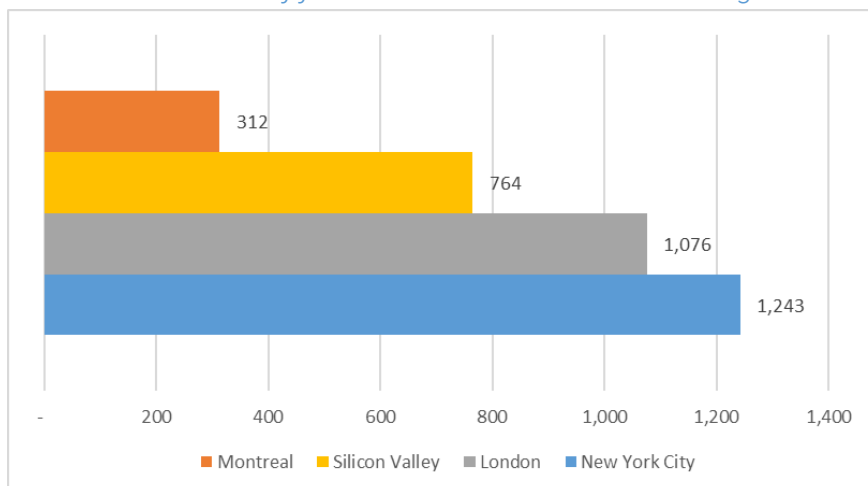
Comparing access to financing

To evaluate the access to financing, we are using three data points, the first one measures the number of investors in each city (Angles, venture capital mainly). The second provides the size of the money being invested in each city over the last twelve months. The third data point compares the average amount raised in seed and series A rounds.

- The number of investors

The data collected by cbinsights.com indicates that there are over 1,200 investors in New York City (Exhibit 12), London has just over 1,000 and Montreal is third with 312. Both London and New York are the world largest financial hubs, and it is no surprise that we can find a larger pool of investors here than in Montreal.

Exhibit 12 - Number of financial institution - Source [cbinsight.com](https://cbinsights.com)

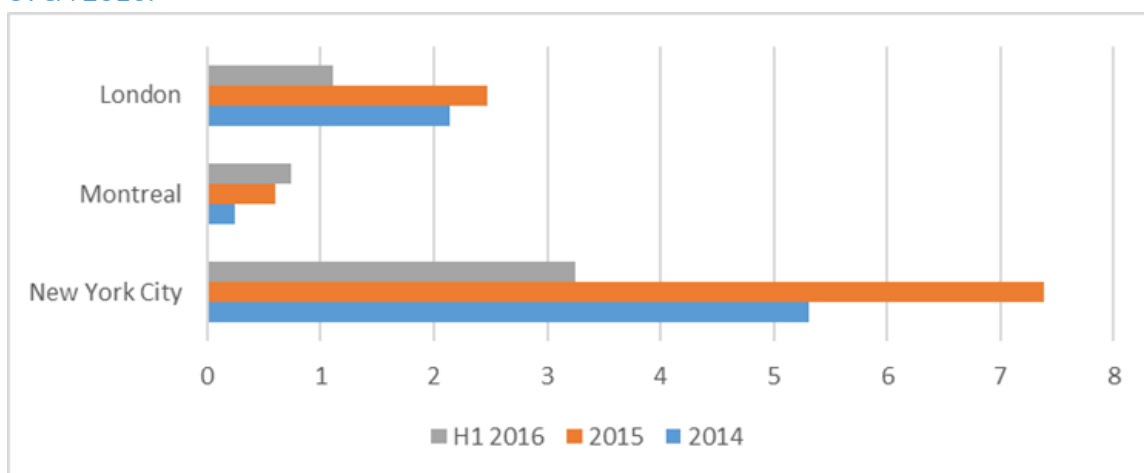


- The level of investment

Since it is difficult to find comparable data for the total of investments, we have focused on assessing the level of venture capital activities in each city. The data gathered from Price Waterhouse Cooper Money Tree report, the British VC association and the Canadian VC association (Exhibit 13), shows that

New York City has the highest level of VC activity out of the three locations. In the first two quarters of 2016, 271 VC backed deals were completed for a total amount of \$3.26 billion. London is second with close to 120 deals representing \$1.1 billion. Montreal saw a smaller amount of deals during the same period for a total of \$740 million. As a comparison, Silicon Valley was host to over \$13 billion invested in 615 deals, this is more than anywhere else in the world.

Exhibit 13 – Venture Capital investment in billion USD – Source: PWC Moneytree report, BVCA, CVCA 2016.



- Level of average financing

The next set of data measures the average amount raised in seed and series A rounds of financing.

New York City had the largest level of average seed round with \$0.85 to \$0.9 million (Exhibit 14).

London start-ups raised on average \$0.7 to \$0.75 million compared to \$0.6 to \$0.65 million for Montreal.

Exhibit 14 – Average seed round in million USD – Source Global Compass report 2015

New York City	Montreal	London	Silicon Valley	Avg North America
0.85-0.9M	0.6-0.65M	0.7-0.75M	0.9-0.95M	0.8-0.85M

The data presented in the Global Compass report suggests that Montreal had the highest average amount raised in series A round of financing with \$8 to \$8.5 million. This is higher than the \$7.5 to \$8 million measured in New York City and the \$7 to \$7.5 million raised in London (Exhibit 15). This is even higher than the average amount raised in Silicon Valley. The result could be explained by the lower number of deals completed in Montreal which could boost the average amount invested in this round of financing.

Exhibit 15 – Average Series A round in million USD – Source Global Compass report 2015

New York City	Montreal	London	Silicon Valley	Avg North America
7.5-8M	8-8.5M	7-7.5M	6.5-7M	7-7.5M

On New York City – New York is home to the largest financial hub in the world. The number of financial institution reflects this, from private equity, to venture capital or hedge funds.

Fifteen years after the bust of the dot com bubble left most serious venture capitalists and entrepreneurs highly sceptical that New York could ever become a major hub of tech activity, the city has produced a wave of wildly successful start-ups.

As stated by Mayor Bloomberg in June 2008, “many smaller start-up companies have difficulty accessing seed capital to get off the ground.” Since angels and VCs alike have started investing in local new ventures from the growing tech hub, the number of VC deals between 2005 and 2015 has almost tripled, per data from the Money Tree report published by PricewaterhouseCoopers and the National Venture Capital Association. More importantly, the venture capital investment has been multiplied by 4.5, moving from \$1.6 billion invested in 2005 to \$7.39 billion. Of the 395 venture-capital deals in 2015, 143 were in software, 83 in media and entertainment, and 60 in information-technology services, according to the report. Software companies alone received \$1.7 billion in venture-capitalist investment, and media and technology companies saw \$1.1 billion.

New York is now the leading place on the East Coast for tech-venture investments, second only in North America to Silicon Valley (about 10% of venture-capital investment nationwide was invested in NYC in 2015).

On London - Since 2011, London's tech companies attracted \$6.64 billion in 2,894 deals, outperforming other European cities including Paris, Berlin and Stockholm. Increasingly, it is London's technological hub that is generating the big money. Figures from the mayor's office show that digital start-ups in the UK capital attracted \$682 million in venture capital in the first quarter of 2015, up 66% year on year. From the game designer King, best known for Candy Crush, to financial technology companies such as Funding Circle or fashion sites such as Net-a-Porter, London, along with San Francisco, is one of the key technology centres in the world. However, the outcome of the UK's referendum to leave the European Union has introduced new uncertainties into the VC market; ones that could linger in the quarters and years ahead. According to CB Insights and KPMG Venture Pulse reports, the uncertainty around the Brexit contributed to the decline in VC investment in Q2 and Q3 of 2016. The devaluation of the pound has also had a negative impact on the investment value. This situation can create opportunities for other start-up hubs, such as Berlin, Stockholm or Paris, to attract additional VC investment and interest. If some Start-ups are beginning to leave London, enticed by the lure of Berlin and other EU cities, other big firms like Google commit to post-Brexit London techno hub with large investment. The internet giant who acquired the AI company Deepmind for half a billion dollars in 2014, has announced plans for a new building in the King's Cross area of the city that will house thousands of extra engineers.

On Montreal – Unlike London and New York City, Montreal is not home to many investors. Only a few years ago, the city was not on the map of venture capital investment, but something is changing and this is reflected by the number and the size of VC deals over the past two years.

In 2015, \$693 million in venture capital was invested in Quebec-based companies by both local and international firms. That is up from \$295 million in 2014, per a study by the Canadian Venture Capital & Private Equity Association. Of that money, more than \$600 million went to companies in Montreal. Canada saw last year its highest level of venture capital activity in 13 years. The three largest deals made in 2015 were investments in Montreal-based companies. The most noticeable one was the \$79 million raised by Lightspeed POS, which develops point-of-sale software for retailers and restaurants.

The year before, it closed a \$40-million deal, though it will not say how much of the company those investments bought. Montreal is attracting a lot of attention now, and is seen as the second largest tech hub in Canada, behind Toronto.

Conclusion on access to financing – It is difficult to compare London and New York City to Montreal in term of financing as Montreal lacks a comparable concentration of banks and capital. However, Montreal’s venture capital activity is growing at a rapid pace and, for its size, it attracts a significant amount of venture activity. The city rose five places to take over the 11th strongest venture capital city spot in North America according to the new report that detailed venture capital activity on the continent over the first nine months of 2016. For example, per the report, \$736 million was invested within Montreal compared to \$645 million in Toronto. Toronto was ranked number 13 while Vancouver and Kitchener-Waterloo landed at 20th and 21st place respectively. San Francisco led all metro regions with \$15.98 billion invested. Hedge fund seems to be targeting tech start-ups and could change the landscape of financing according to an article published on the Mercury News. Crowdfunding is also on the rise in Canada and around the world, per the National Crowdfunding Association.

Comparing Ecosystems

We are going to compare the three ecosystems using four sets of data. We are going to look at a number of start-ups in each hub, then the total value. Third will be about the access to market using the GDP of each city. Finally, we are going to look at the average exit in each location.

- Number of start-ups

Exhibit 16 – Estimated number of start-ups – Source Global Compass report 2015

New York City	Montreal	London	Silicon Valley
7,100-9,600	1,800-2,600	3,200-5,400	14,000-19,000

As per data presented by Compass.co in their 2015 report, New York City’s tech ecosystem is home to 7,000 to 9,600 start-ups (Exhibit 16). This is almost double the number of new tech ventures seen in

London (with 3,200 to 5,400). Montreal is third with a very honourable 1,800 to 2,600. That places Montreal at the 13th place of the top 20 cities ranked in the report. Silicon Valley and its 14,000 to 19,000 remains far ahead of any global ecosystems when it comes to the number of start-ups. Montreal has fewer start-ups than London and New York, but has the highest density per capita of all three cities.

- Value of the ecosystem

Exhibit 17 – Estimated value of all start-ups at or prior to exit – Source Global Compass report 2015

New York City	Montreal	London	Silicon Valley	Avg North America
40.9 - 49.8bn	3.4-4.1bn	39.5-48.3bn	264-323bn	37.7bn

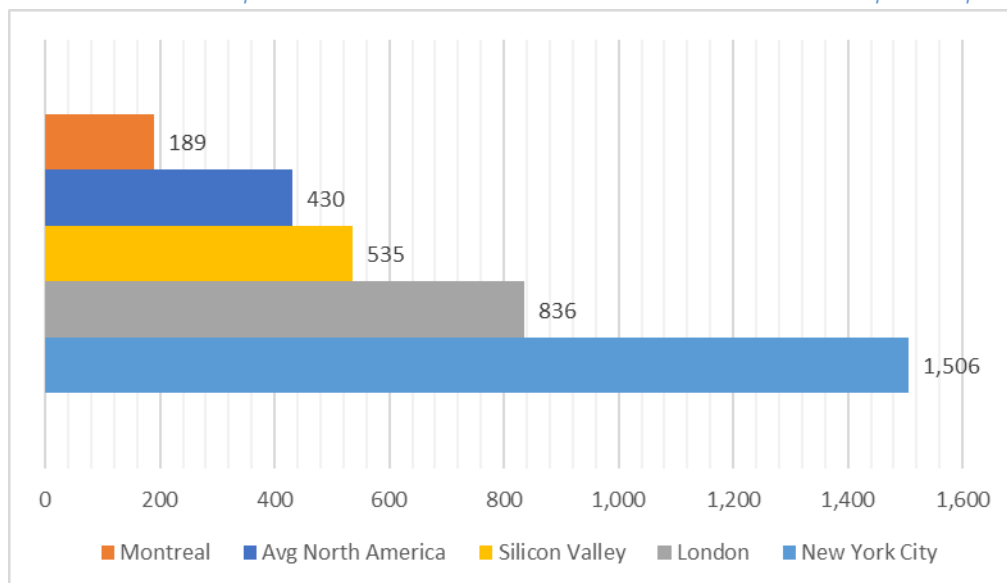
The data presented in the Global Compass report shows that both New York City and London are similar in size of their tech ecosystem with just under \$50 billion (Exhibit 17), presenting the estimated value of all the star-ups in the ecosystem prior or at exit point. The value of Montreal tech-ecosystem is a lot smaller, with \$3.4 to \$4.1 billion. This is only 10% of the value of New York or London.

- Access to market

There are several ways to measure the access to market, here we have chosen to use the Gross Domestic Product (GDP) of each city (Exhibit 18), using the data collected by Compass.co in their 2015 report on Tech start-up ecosystems.

It is no surprise that New York City is on top with \$1,506 Billion, ranked second in the world just behind Tokyo. London represents \$836 Billion making it to the top five richest cities. Montreal had a \$143 Billion in the same period. Note that this is only one aspect of the access to market, if it helps some new ventures to have direct access to a local consumer market in a large and rich metropole such as London, New York or Tokyo, it does not prevent companies based in smaller cities to excel on a global scale. The San Francisco area for instance has much smaller GDP than New York. Also, Montreal is only 1 hour away from New York, or Toronto, and 6 or 7 hours from Europe.

Exhibit 18 – Metropolitan GDP in billion dollars – Source Global Compass report 2015

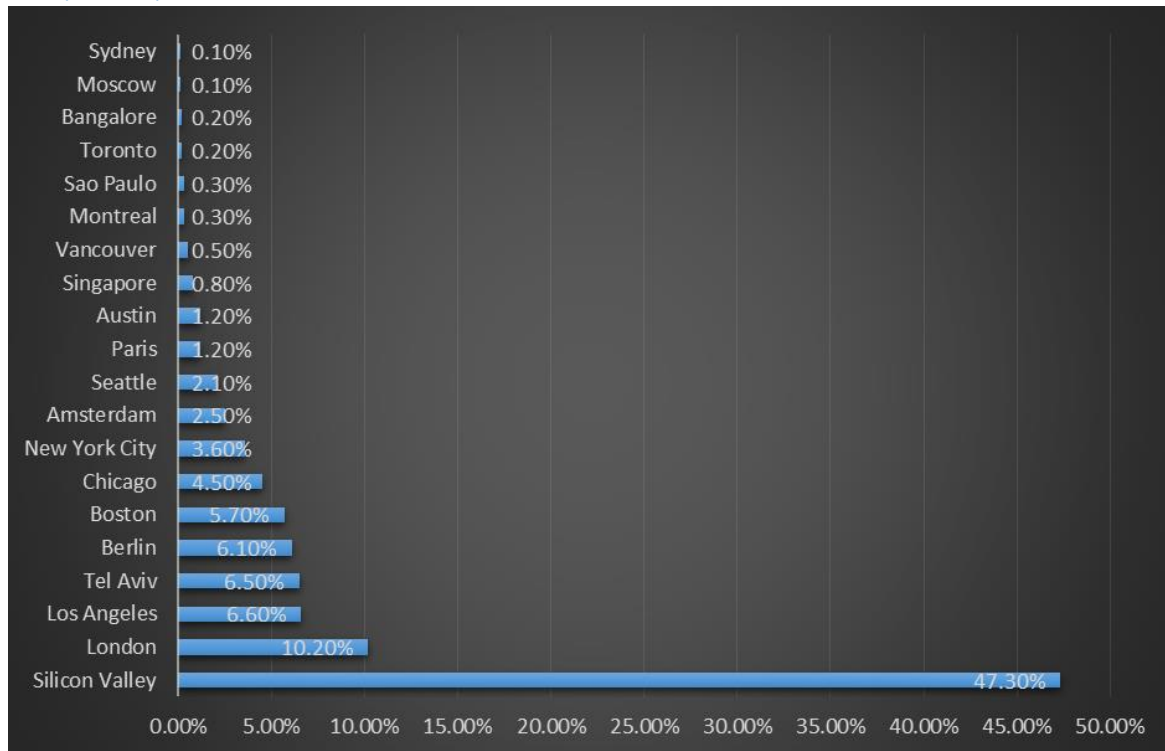


- Exit value & volume

We use the data collected by Compass.co, which is the total estimated exit volume of 20 cities, between 2013 and 2014, providing market share of these exit per city.

Silicon Valley represented close to 50% of total Exit volume in this period, London was second with just over 10%, and New York City came in 7th with 3.6% and Montreal 15th with less than half a percent (Exhibit 19). This data is limited in time, and possibly does not reflect recent activities in each city. To this point, London scores particularly high, thanks to the acquisition of DeepMind by Google in 2014 for a reported value of over \$0.5 Billion.

Exhibit 19 – City share of total estimated exit volume 2013 & 2014 in USD – Source Global Compass report 2015



On New York City – A tidal wave of start-ups has emerged in New York City in recent years. This flood of digital new ventures has transformed the city to become a national leader in fields that leverage the Internet and mobile technologies. New York is now the second strongest tech ecosystem in the world per Compass report, with approximately 7,100 to 9,600 active tech start-ups and high amount of VC investments.

This is a real economic boost, with local tech employment estimated to have grown by 40% since 2008, which is greater than Silicon Valley.

The local GDP is huge with approximately \$1.5 trillion, making New York's ecosystem a large playground to test and market products. According to Compass.co, this is why the city has become the most popular ecosystem for start-ups to build out a second office for sales and marketing.

With its infrastructure, talent and access to market, New York City is well positioned for future tech growth and is one of the most competitive cities for innovation.

On London - With an estimated 3,200 to 5,400 active tech start-ups and an Ecosystem Value of \$44 billion, London is ranked the fourth largest ecosystem in the world, and the largest in Europe according

to Compass report in 2015. In a few short years, London has become a globally renowned centre of digital excellence: a hotbed for entrepreneurs, investors and innovators. The 2015 European Digital City Index ranked London at No. 1 for both start-up and scale-up readiness. This digital growth has had a very positive impact on the city starting with job creation. More than 382,000 people are employed in the technology and information sectors, it is estimated that this digital growth drove 30% of the capital's job growth since 2009⁶. Smart cities, internet of things, sharing economy are some of the areas of focus from the new tech ventures flourishing around London. The local GDP of \$0.84 trillion, like New York City, makes it a great place to test products and services.

On Montreal – Montreal is known for its cultural diversity and its great quality of living. The city has proven to be a fertile ground for entrepreneurship with innovative tech start-ups now appearing in clusters concentrating between Mile End and the Old Town districts. The estimated number of start-ups currently active on the Island of Montreal is around 1,800 to 2,600, as presented by Start-up Genome in their study The Global Start-up Ecosystem Ranking 2015. A report published in November 2016 compiled by Credo Productions, provides a deep dive into Montreal's start up ecosystem. The report stated that an estimated 8,000 people are working in start-ups on the Island of Montreal. Per the same report, there are 125 meet up groups with a total of 45,000 members, these are impressive and promising numbers. Another indication of the dynamic nature of the Montreal ecosystem, is the number of working spaces (around 30) including the five main accelerators and incubators District 3, WeWork, Notman House, La Gare, and Nexus.

Conclusion on ecosystems – London and New York City are home to some of the world largest tech start-up ecosystems. New York City's ecosystem is the biggest of the three with up to 9,600 start-ups. It also has the largest GDP. There are tons of meetup groups with thousands of members, New York Tech Meetup created ten years ago, claims to have over 42,000 of them. There are also many incubators and accelerators. Builitinnyc.com provided a list of 20 in a 2016 article "A complete guide to NYC's accelerators and incubators". In comparison, London has just over 20 programs as listed in a

⁶ June 2014, South Mountain Economics, "London: Digital City on the Rise", p.2

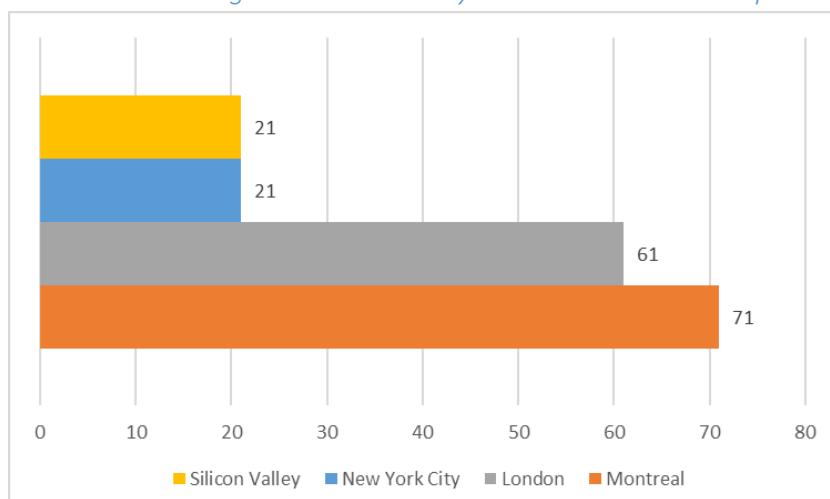
recent article published by Hubblehq.com “Official List of London Business Accelerators and Incubators”. Montreal’s tech start-up ecosystem is smaller with up to 2,600 start-ups. However, the density of start-up (estimated number of active tech start-ups created per 1,000 people), is higher in Montreal (0.45-0.65) than in New York (0.35-0.5) and London (0.25-0.4), based on the data presented in the “Global Start-up Ecosystem Ranking 2015” Compass’s report. The presence of industrial clusters such as the video games, with large employers in the like of Ubisoft, is helping build the tech savviness of the Montreal ecosystem. Montreal has grown into a tight and cohesive ecosystem, it might not be as boiling hot as London and New York City but is very dynamic indeed.

Comparing Legal/Fiscal advantages (Government regulations).

The fourth variable is about legal and fiscal regulations, and how the government and local administration can positively and actively influence the city attractiveness. We are measuring this using three data points. First, we will discuss immigration time. Then we will compare fiscal advantages. Finally, we will look at the overall perception of local government.

- Immigration

Exhibit 20 – Immigration time in days – Source Global Compass report 2015

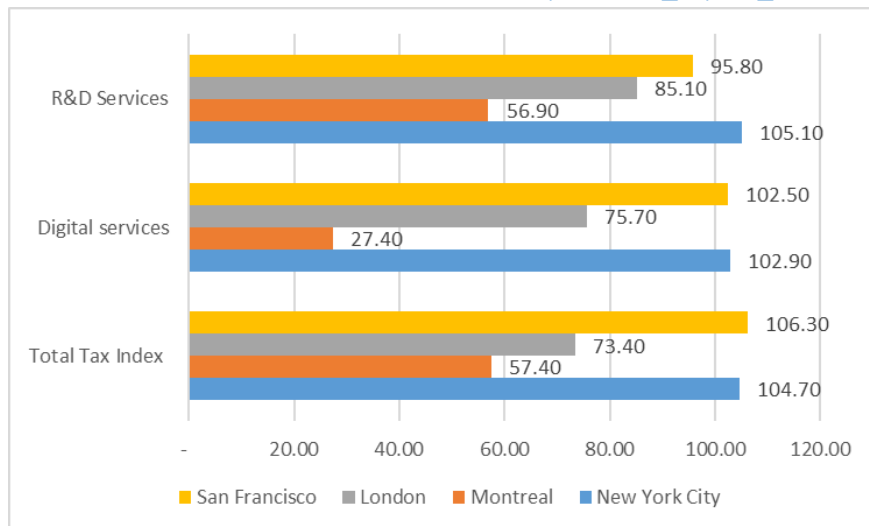


Immigration is relevant as it is an important way to access external talent, and this is clearly a regulation dependent upon the government’s actions.

It takes, on average, 21 days to get immigration paperwork in New York City (Exhibit 20). That is a third of the time needed in London (61 days). Montreal has the longest lead-time of the three cities, with 71 days.

- Fiscal advantage

Exhibit 21 – Tax index – Source KPMG compalt2016_report_tax



When it comes to taxes, Montreal is outperforming New York and London. It is ranked by KMPG as 4th in the world, behind two other Canadian cities (Toronto and Vancouver respectively first and second), and Manchester in the UK. Its total tax index is 57.40, compared to 73.40 for London, and 104.7 for New York City (Exhibit 21). If we look specifically at Digital services⁷, Montreal is ranked second in the world behind Toronto with a tax index of 27.40, followed by London with 75.70 and New York with 102.90. The R&D services category⁸ shows a similar picture. Montreal has the lowest tax index with 56.90, London is second with 85.10 and New York has the highest index with 105.10. Silicon Valley is more in line with New York, as its total tax index of 106.30 gives it the 46th spot on the KMPG ranking.

⁷ KPMG definition: The digital services sector reflects results for two model businesses: a software development firm and a video game production studio.

⁸ The R&D services sector reflects results for three model businesses: a biomedical R&D facility, a clinical trials management firm and an electronic systems development/ testing operation.

- Local and national government perception

The data presented in the “Global Start-up Ecosystem Ranking 2015” report, shows New York’s entrepreneurs rated both local and national the highest, with 40% and 54% respectively rating them positively. London is on the side of the spectrum with only 9% and 10% of the start-ups surveyed rating the government both local and national (Exhibit 22 & 23). A third of Montreal’s start-ups (33%) rated positively their local government, and a little more national with 37%. This measurement has its limitation, and could be reflective of local culture, European and especially the British are more critical if not cynical, which could explain the very low score of London.

Exhibit 22 – Local government rated positive – Source Global Compass report 2015

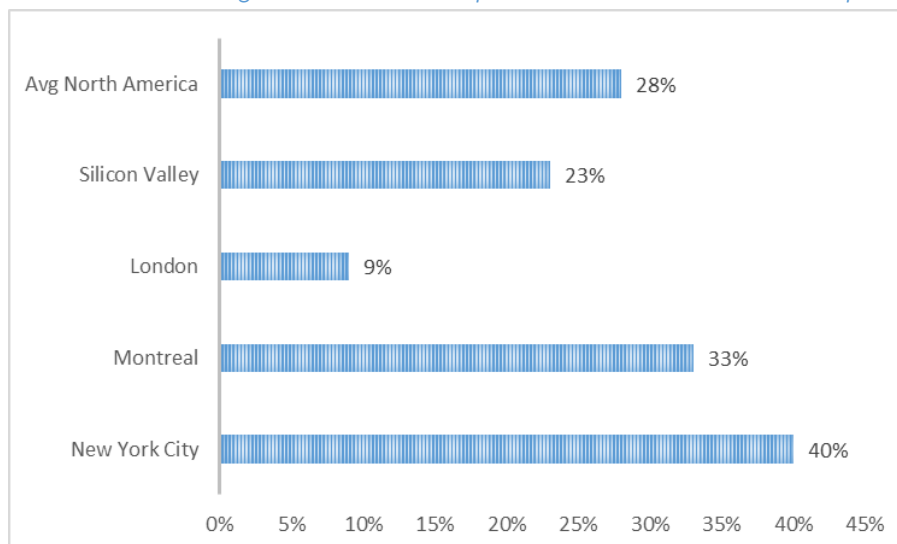
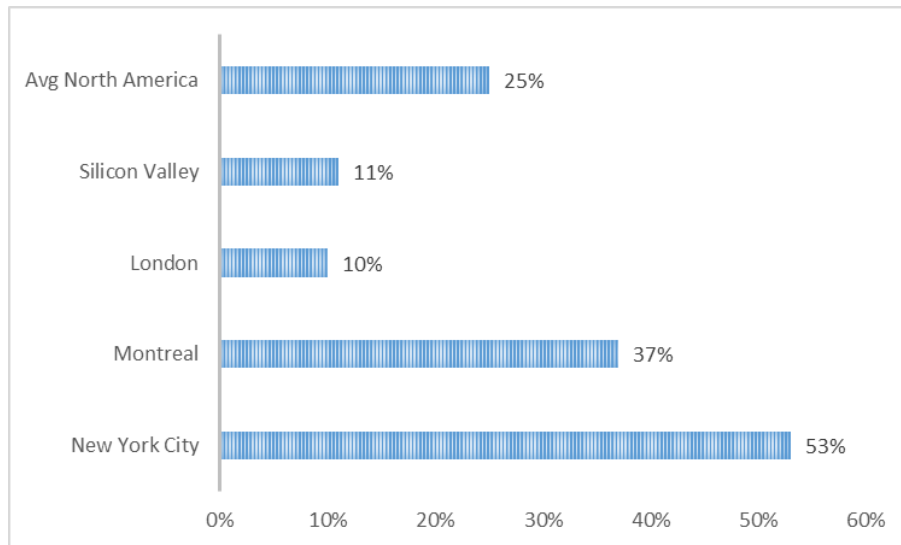


Exhibit 23 – National government rated positive – Source Global Compass report 2015



On New York City – Entrepreneurs of New York City seem to be relatively pleased with the local government, this might be more representative of the people’s resilience than the actual performance of the government’s initiatives. When it comes to immigration, the city fairs well compared to London and Montreal; however, whether the administration under the new presidency will change the regulation remains to be seen. Taxes are high, and so is the cost of operating a business in this city. There is one tax incentive in the name of The START-UP NY program⁹ which provides tax benefits to approved businesses. The incentive is significant with an opportunity to operate tax-free for 10 years. The conditions to be eligible are also significant, since you need to be a new business in New York State, or an existing New York business relocating to or expanding within the state. There also must be plans in place to partner with a New York State college or university and to create new jobs and contribute to the economic development of the local community. The local government is not generous in terms of tax, it is nevertheless very active in making the tech ecosystem competitive in the world market. The NYC Tech Talent Pipeline is a great example, launched in 2014, this \$10 million program is designed to create jobs and develop homegrown tech talent.

⁹ More information about this program can be found on <https://startup.ny.gov>.

This has already engaged companies such as Facebook, Google, LinkedIn, BuzzFeed, The New York Times and Goldman Sachs to provide digital training and job opportunities.

On London – When the survey conducted by Start-up genome, in their Global Start-up Ecosystem ranking, the Londoners seemed less positive about their local government due to the fact that the city had a newly elected mayor in May 2016, Sadiq Aman Khan, and the country had voted to back out of the European Union. It is too early to predict the actual consequences on the tech ecosystem, but the immigration regulation will not be improved, with European talent having to apply for a working permit once the Brexit will be officially in place. Like New York, London is an expensive city to operate a business, mainly due to high rent. In term of tax, the city is well placed for Europe, though behind Montreal. There are some tax incentives, as listed by www.businessn2k.com¹⁰, albeit modest compared to Montreal and Canada. The tax break for video games is a welcomed initiative and has helped the industry flourish in the UK and the city, with the likes of King.com choosing London as the centre of its global operations. The city council is supporting its tech ecosystem with the recent Smart London Plan, which provides a platform to help London compete for the top and serve the Londoners.

On Montreal – Immigration regulations are relatively tight in Montreal and across Canada, and this is reflected by the immigration time. The government is taking action to make Montreal's ecosystem attractive, starting with a strong fiscal advantage. If income taxes are the highest of the three cities, there are tons of incentives offered to digital companies, including the Scientific Research and Experimental Development program (SR&ED), multimedia tax credit and the Tax Credit for the Development of E-business (CDAE). Start-ups can either reduce their tax or in some cases receive investment tax credit that may be refundable. For example,¹¹:

- Development of e-business: Up to \$25,000 per eligible employee if 75% of your gross revenue is derived from the information technology sector.

¹⁰ <http://www.businessn2k.com/7-tax-incentives-for-uk-digital-technology-startups/> retff

¹¹ List of all tax credits available to businesses:
<http://canadabusiness.ca/eng/page/2738/>

- Film and production: Up to 36% of production costs, including labour, animation and special effects.
- Industrial design/manufacturing: Up to \$60,000 in salary costs for internal design work carried out by one employee or 65% of contract fees or charges for external work done by a consultant.
- Fashion or textile industry: Up to \$60,000 for salaried staff carrying out design activities.
- Research and development: Tax credit rate of 14% to 37.5% of their payroll (that's the lowest in North America!).

Beyond the tax incentive the government is actively shaping and supporting the ecosystem through financing and guidance. The Quebec government released in May 2016 the “Plan d'économie numérique” with 28 measures aimed to catapult Quebec toward the digital economy. As part of the plan, \$188 million will be invested over five years to foster the adoption of digital technologies by Quebec enterprises and make the province stand out as an innovator on the international marketplace. Alongside this, the Quebec government will also be investing \$100 million in the deployment of digital infrastructure through the province.

Conclusion on Government – Immigration will remain an issue for any city to bring talent to its ecosystem. The recent political events in the UK and in the U.S., could result in tighter immigration regulations making it harder to hire foreign talents. On the tax front Montreal has a natural advantage adding to its low cost for operating a business. Local government can have a huge impact on the local community, be it jobs, infrastructure, transport and indeed taxes. At the end of the day, local governments are looking to support local businesses and help them flourish, so they can create jobs and in return, both employers and employees will pay their local taxes.

The CITIE report¹², published by innovation charity Nesta, Accenture and the Future Cities Catapult, provides a new perspective on the relationship between governments and tech start-ups ecosystems. The research measures the quality of the policy environment and how well city governments are supporting the growth of the tech community. This goes beyond tax and education. They evaluated 40 city governments through 1,400 data points. They looked at the different roles (Exhibit 24) the city government can have to help the ecosystem in its openness (through regulation and advocacy), its infrastructure (through investment and being a connector) and leadership (through a vision supporting innovation). Interestingly New York City is ranked first and London second out of the forty world cities, unfortunately Montreal was not part of the research.

Cities are increasingly competitive against each other in what looks to be a global race to not only invent tomorrow's hot technologies, but to shape the new society. As an example of this race, Thailand has recently announced the creation of a stock-exchange just for start-ups, so entrepreneurs in the Southeast Asian region might start to consider Bangkok as a good alternative location.

Montreal is competitive in the landscape of tech ecosystems, thanks to the local talent, to its cost advantage, but also thanks to the support its gets from the government of Quebec, the city council, and the chamber of commerce.

¹² CITY INITIATIVES for TECHNOLOGY, INNOVATION and ENTREPRENEURSHIP A resource for city leadership - June 2015 - John Gibson, Matthew Robinson and Scott Cain

Exhibit 24 – Summary of the policy levers analysed in the CITIE report 2015

REGULATOR	1. Enforce existing regulations proportionately	2. Review and update regulations to take account of new business models	3. Engage the full spectrum of stakeholders to craft balanced regulation		
ADVOCATE	1. Ensure a new business focus within the trade and investment function	2. Provide set-up support for new businesses	3. Promotion of the city as a hub of business creation	4. Sponsor events relevant to high-growth sectors	5. Helping early-stage ventures access global networks
CUSTOMER	1. Ensure the visibility of procurement opportunities through a single portal	2. Ensure that pre-qualifying requirements are achievable by new businesses	3. Define targets for spend on new businesses	4. Use problem-based procurement methods	5. Use open innovation methods to engage the ecosystem
HOST	1. Support access to co-working spaces	2. Support incubator and accelerator schemes	3. Enable access to affordable and flexible office space	4. Nurture Innovation Districts	5. Play the role of matchmaker within the ecosystem
INVESTOR	1. Support provision of coding and technical skills	2. Support schemes that help young people access the tech sector	3. Help businesses understand types of financing options	4. Provide funding	
CONNECTOR	1. Support access to high-speed internet	2. Provide free, public Wi-Fi	3. Ensure the high quality and extent of cycling infrastructures	4. Ensure frictionless and integrated public transport	
STRATEGIST	1. Publish a vision of how to support innovation and entrepreneurship	2. Have a public set of KPIs that measure the success of the city's vision	3. Have an innovation function within the city hall	4. Have senior leadership with responsibility for innovation and entrepreneurship	
DIGITAL GOVERNOR	1. Ensure 'digital by default' city services	2. Enable citizens to report city problems on the go	3. Enable citizens to engage in policy decision making		
DATAVORE	1. Use data analytics to optimise city services	2. Publish open data	3. Publish live data with appropriate APIs		

SECTION 4: Interview analysis

In this section, we are going to analyse the results of the 25 interviews conducted across a selection of entrepreneurs, investors, consultants who are active participants of European and North American start-up ecosystems.

The section is organised in four sub-sections, the **first** one dealing with the entrepreneurial motivations, the **second** is exploring whether location matters, and the **third** one is looking at the top factors of success for an ecosystem. The **fourth** subsection is specifically looking at the perception of Montreal's ecosystem. Finally, the **fifth** debates the possible specialisation of start-up ecosystems.

Entrepreneurial motivations

In the literature review we have identified that entrepreneurial motivations are of two kinds, monetary and non-monetary. We have also concluded that these motivations are linked to social-cultural background and are often influenced by the individual life course.

The results from the 25 interviews conducted, seem to confirm these points. Out of these 25 people, 16 were entrepreneurs, 7 investors, 5 of which were previously entrepreneurs, 1 consultant and 1 executive. For the non-entrepreneurs, we have asked them to provide the most common intentions they see in the entrepreneurs they deal with in their profession.

Everyone answered the question by providing a motivation that we have classified in either impact or lifestyle, and sometimes both (Exhibit 25). None of the respondents explicitly listed a monetary motivation, though several have mentioned it is a combination of all and that monetary reward was a fair compensation for the risk taking (Exhibit x). Stating your motivation is purely about money might be negatively perceived and could explain why nobody chose this variable as a primary motivation.

Gaetan Fron, managing director of SAAS, says *“Financial reward can also be important, albeit*

secondary, as salary alone can be insufficient as a motivator, to mitigate the risk taking of entrepreneurship”.

Exhibit 25 – What is your motivation for entrepreneurship?

Location	Role	Organisation	Motivations to become an Entrepreneur
Montreal	Investor 1	Anges Quebec	Impact
Montreal	Investor 2	Inovia	Impact
Copenhagen	Investor 3	Promentum Capital A/S	Ideology to have an impact and lifestyle.
Stockholm/NYC	Entrepreneur 1	Avalanche	Life style
Montreal	Entrepreneur 2	Sphereplay	Life style
Montreal	Investor 4	HumanID Technologies	Impact
Paris/London	Entrepreneur 3	SaaS	Life style
Paris	Entrepreneur 4	IOT	Life style
Montreal	Entrepreneur 5	cloudcade	Life style
Montreal	Entrepreneur 6	Soluteo	Life style
New York City	Entrepreneur 7	Superdata research	Life style
Montreal	Investor 5	Founder fuel	Impact
Montreal	Consultant 1	Credoprod	NA
Montreal	Investor 6	espacecdpq	Impact
Montreal	Entrepreneur 8	Vrvana	Life style
New York City	Entrepreneur 9	@Stereosuper	Life style
Montreal	Entrepreneur 10	arrison Films & 1One producti	Life style & impact
Montreal	Entrepreneur 11	Audible Reality	Impact & Life style
New York City	Entrepreneur 12	Defiant Studios	Life style
New York City	Entrepreneur 13	Defiant Studios	Life style
Paris	Entrepreneur 14	Hypersuite - the Ory.com	Impact
Paris	Entrepreneur 15	Hypersuite - the Ory.com	Impact
Montreal	Investor 7	White Star Capital	impact and lifestyle
Montreal	Executive 1	Square Enix Montreal	lifestyle
Montreal	Entrepreneur 16	Big Jack's Factory	lifestyle & impact

One pattern seems to emerge with investors choosing “having an impact” over the lifestyle motivation (all 7 investors have mentioned impact alone or together with lifestyle). Impact here could mean a lot of things from changing the world to creation of innovative ideas.

“Being an entrepreneur is also about developing new ideas or combine existing ideas and resources to create additional value and market opportunities.” explains **Gaetan Fron**, founder of several companies in London and in Paris. “This creative process, which sees an idea becoming a project, turning into a team, a product or a service with its clients, is massively rewarding”, he continues, describing the achievement as a motivator.

The lifestyle intentions are varied too, autonomy, freedom and control. Gaetan describes his intention as *“A need to be autonomous”*. For **Nicolas Moulin**, *“This is about taking control over your destiny”*. He has recently left his job at Les Pages Jaunes to start-up a business developing smart devices for the wine industry.

Other respondents have made references to their previous job, like **Christian Eve-Levesque**, CEO and founder of *“Sphereplay”*, a start-up developing a distribution platform for virtual reality. *“Before becoming an entrepreneur, I was a frustrated employee for 10 years”* he explains.

Finally, as part of the lifestyle motivation, some have mentioned creating a business that enables them to do what they like or live where they want. For **Joost Van Dreunen**, founder and CEO of the research company Superdata, being in New York was important, since he fell in love with the city when he first travelled there from his native Holland. *“The first time I landed in New York, it was like I was coming home”*. This point could illustrate the local bias theory.

Entrepreneurship intention are, above all, personal. Caroline Pelletier, from Ange Quebec, appears to validate the existing literature about the importance of the social and cultural background in entrepreneurship. *“Having your mum, your Dad, or your uncle entrepreneur, helps de-mystify entrepreneurship making it more accessible”* she explains. She also raises another interesting point with the fact that most entrepreneurs she meets in Quebec are either Anglophones or Europeans. Could this be explained by the local culture and its social and religious values? *“Making money is a taboo where I come from”*, she says. *“The intention of entrepreneurship in Quebec is one of the highest in the world, but it remains an intention only rarely implemented”*.

To conclude, this analysis, with its limitations, seems to support the existing literature in explaining the motivation origins of entrepreneurship as presented by Estay, C., Durrieu, F., & Akhter, M. (2013).

Does location matter?

To the question, does location matter, all of 25 respondents answered positively. This unanimous response supports the literature (Exhibit 26).

Exhibit 26 – Does location matter and why?

Location	Role	Does location matter?	Why?
Montreal	Investor 1	Yes	Cost & financing
Montreal	Investor 2	Yes	Talent pool and proximity
Copenhagen	Investor 3	Yes	Social capital
Stockholm/NYC	Entrepreneur 1	Yes	Cluster/ecosystem
Montreal	Entrepreneur 2	Yes	Market
Montreal	Investor 4	Yes	Ecosystem
Paris/London	Entrepreneur 3	Yes	Talent
Paris	Entrepreneur 4	Yes	Market
Montreal	Entrepreneur 5	Yes	Access to resources
Montreal	Entrepreneur 6	Yes	Market
New York City	Entrepreneur 7	Yes	Talent
Montreal	Investor 5	Yes	Social capital
Montreal	Consultant 1	Yes	Market
Montreal	Investor 6	Yes	Talent
Montreal	Entrepreneur 8	Yes	Social capital
New York City	Entrepreneur 9	Yes	Social capital & Customers
Montreal	Entrepreneur 10	Yes	Talent
Montreal	Entrepreneur 11	Yes	Infrastructure, ecosystem
New York City	Entrepreneur 12	Yes	Talent
New York City	Entrepreneur 13	Yes	Talent
Paris	Entrepreneur 14	Yes	Ecosystem & home base/social network
Paris	Entrepreneur 15	Yes	Ecosystem & home base/social network
Montreal	Investor 7	Yes	Ecosystem
Montreal	Executive 1	Yes	Homebase
Montreal	Entrepreneur 16	Yes	Social network and personal factors

So why does it matter? Respondents provided several reasons. Talent came on top, being cited 7 times, and ecosystems 6 times. We go in greater details in the next sub-section.

Here are two quotes to illustrate this point:

Janos Flösser, Senior partner at a private equity firm Promentum Capital, *“without talent you have nothing, you need talent to come to you, or you need to come to it”*.

Ecosystem is another, explaining why location matters, and has been cited 6 times.

To add to this, **David Nault**, partner at the Montreal based Venture Capital Inovia, says *“Location matters, but more importantly the talent pool available, look at Waterloo, a city in the middle of nowhere, but thanks to the university and Blackberry, it has an incredible density of talent”*. He also argues that the proximity to density of customers is important.

Top factors of success of an ecosystem

To continue and go deeper in explaining why location matters, we asked our sample of people to rank the top 5 factors, which, in their view, was to make an ecosystem attractive and fertile for new tech ventures (Exhibit 27). They had to choose from a list of 10 variables.

Exhibit 23 – Choose the top 5 factors of success for a start-up ecosystem

Location	Role	Title	Rank top 5 criteria of success/Attractability in a city
Montreal	Investor 1	VP sélection et soutien à l'investissement	1) Talent, 2) financing, 3) Access to market, 4) Ecosystem, 5) cost
Montreal	Investor 2	Partner	1) human capital, 2) access to market/infrastructure, 3) financing, 4) Labor cost, 5) legal and fiscal
Copenhagen	Investor 3	Senior Partner	1) Talent, 2) peer, 3) funding, 4) infrastructures, 5) culture (ok to fail)
Stockholm/NYC	Entrepreneur 1	CEO	1) Financing, 2) legal-fiscal, 3) talent, 4) existing ecosystem, 5) lifestyle & Brand
Montreal	Entrepreneur 2	CEO	1) Access to market, 2) Financing, 3) Human capital, 4) Labor cost, 5) legal and fiscal
Montreal	Investor 4	Angel	1) Talent, 2) Financing, 3) Market, 4) ecosystem, 5) cost
Paris/London	Entrepreneur 3	MD	1) Access to market, 2) Talent, 3) Financing, 4) Ecosystem, 5) culture
Paris	Entrepreneur 4	Founder	1) Finance, 2) talent, 3) brand, 4) social capital, 5) ecosystem
Montreal	Entrepreneur 5	COO	1) Talent, 2) Financing, 3) Social capital, 4) ecosystem, 5) fiscal
Montreal	Entrepreneur 6	CEO	1) talent, 2) legal, 3) fiscal and cost, 4) Financing, 5) access to market
New York City	Entrepreneur 7	CEO	1) People and Culture, 2) financing, 3) Infrastructure, 4) Access to market, 5) Lifestyle
Montreal	Investor 5	Project Manager	1) Talent, 2) cost, 3) Legal & fiscal, 4) financing, 5) ecosystem
Montreal	Consultant 1	Analyst	1) Talent, 2) Financing, 3) Access to market, 4) Ecosystem, 5) Lifestyle - Social
Montreal	Investor 6	Directrice gestion des relations	1) talent, 2) financing, 3) ecosystem, 4) culture, 5) Social
Montreal	Entrepreneur 8	COO	1) Talent, 2) legal-fiscal, 3) Homebase, 4) financing, 5) culture
New York City	Entrepreneur 9	Directeur Creatif-Co-founder	1) Financing, 2) talent (French), 3) Ecosystem, 4) Access to market, 5) Lifestyle
Montreal	Entrepreneur 10	Directeur Général,	1) Social capital, 2) Talent, 3) Financing, 4) Fiscal, 5) ecosystem
Montreal	Entrepreneur 11	Founder/CEO	1) Social & Lifestyle, 2) Labor cost, 3) Ecosystem, 4) Legal-Fiscal, 5)access to market
New York City	Entrepreneur 12	Founder and MD	1) Talent, 2) Financing, 3) Labor cost, 4)ecosystem, 5) Access to market
New York City	Entrepreneur 13	Co-Founder and Creative Director	1) Talent, 2) Financing, 3) Labor cost, 4)ecosystem, 5) Access to market
Paris	Entrepreneur 14	Co-Founder	1) Talent, 2) Ecosystem, 3) legal-fiscal, 4) Homebase, 5) financing
Paris	Entrepreneur 15	Co-Founder & COO at HYPERSUIT	1) Talent, 2) Ecosystem, 3) legal-fiscal, 4) Homebase, 5) financing
Montreal	Investor 7	General Partner	1) Talent, 2) Financing, 3) Ecosystem, 4) Legal-Fiscal, 5) Labor cost
Montreal	Executive 1	Studio MD	1) Talent, 2) Cost, 3) Legal-fiscal 4) Homebase, 5) financing
Montreal	Entrepreneur 16	Partner & General Manager	1) Talent, 2) Funding, 3) Home base & social capital, 4) Legal and fiscal, 5) Existing ecosystem

17 out of the 25 respondents, have ranked talent and human capital as the number one factor making a city and its start-up ecosystem attractive. Financing has been ranked a top factor only 3 times, but was ranked second by 11 people.

The next table (exhibit 28), confirms this pattern. We have counted the number of citations (how many times talent was ranked first, then how many times it was ranked second and so on). We then applied a multiplier (5 points for being ranked first, four for being ranked second and so on). This provides a score for each variable.

Talent came on top with a total score of 107 ($17 \times 5 + 4 \times 4 + 2 \times 3$), **financing** was second with 80 points. Third came the **ecosystem** (as in, existing cluster of start-ups, incubators and accelerators) with 44 points. Fourth was **legal and fiscal** advantages with 35 points, closely followed by **access to market** with 31 points. These results support our choice of the four variables studied in section 2 and 3 of this thesis.

One thing to be noted, all 7 investors listed talent as the most important factor of success for a new venture and therefore is the most important resource of an ecosystem.

David Nault from Inovia Capital, explains *“Talent is key, and the first thing we look at in a start-up is the team and the relationship we have with them. We want to see if entrepreneurs can sell us on the vision and if they are able to execute.”*

Talking about New York City, **David Grijns**, Managing Director and founder of Defiant studio, says *“The city has an incredible pool of talent, because it is one of the most diverse and vibrant cities on the planet, there is an energy here that is very hard to find anywhere else, maybe in London.”*

For entrepreneurs, the picture looks more balanced, with some of them stating the importance of these factors together (talent pool plus access to capital in a dynamic ecosystem).

Talent is the most important factor for half of the entrepreneurs (ranked first by 8). Financing came on top 3 times, access to market and social capital were both ranked first by 2 people. Culture was ranked first by one entrepreneur.

Johan Eile, COO of Cloudcade, a video game start-up, illustrates this pattern *“Talent and social capital are tied to a location, financing is hugely important but can come from further out”*.

Final point, Brand as “other” factor has been listed only once, however, it came out during the conversations, that the ecosystem’s perception can have an impact. **Nicolas Moulin**, founder of IOT, explains *“Being incorporated in Paris can help me, as a business, in term of perception from investors, suppliers and potential clients, compare to any other city in France”*. In the same way, being a start-up in Silicon Valley will grant you more legitimacy than being based in a less recognised ecosystem.

Exhibit 28 – Top 5 factors of success for start-up ecosystem, by score

	Ranked 1	Ranked 2	Ranked 3	Ranked 4	Ranked 5	Total score
Talent	17	4	2			107
Ecosystem		3	4	8	4	44
Legal-fiscal		3	4	4	3	35
Hombase			2	3		12
Financing	3	11	4	3	3	80
Cost		3	3	2	3	28
Access to market	2	1	3	2	4	31
Social and lifestyle	2		1	1	5	20
Culture	1			1	3	10
Infrastructures			1	1		5
Others			1			3

Perception of the Montreal’s ecosystem

In this sub-section, we look at the perception of Montreal’s ecosystem. We asked people four questions. The first one, asked if they have a positive perception of the city and its ecosystem, and whether it is a good place for start-ups. The second question was to determine if they see any limitations to the ecosystem. With the third question, we asked them specifically, what do they see as

limitation of Montreal's start-up ecosystem, if any. The fourth was to understand if they see a positive future for the city.

Exhibit 29 – Perception of Montreal's ecosystem

Location	Role	Title	Is Montreal a good place?	Is there limitations?	What is (are) the limitation (s) ?	Are you positive about the future?
Montreal	Investor 1	VP sélection et soutien à l'investissement	Yes	Yes	Lack of exit	Yes
Montreal	Investor 2	Partner	Yes	Maybe	Culture, Market size	Yes
Copenhagen	Investor 3	Senior Partner	Don't know	Don't know	Don't know	Don't know
Stockholm/NYC	Entrepreneur 1	CEO	Don't know	Don't know	Don't know	Don't know
Montreal	Entrepreneur 2	CEO	Yes	Yes	Financing	Don't know
Montreal	Investor 4	Angel	Yes	No	-	Yes
Paris/London	Entrepreneur 3	MD	Yes	Don't know	Don't know	Don't know
Paris	Entrepreneur 4	Founder	Yes	Don't know	Don't know	Don't know
Montreal	Entrepreneur 5	COO	Yes	Yes	Financing	Yes
Montreal	Entrepreneur 6	CEO	Yes	Probably	Competition for talent	Yes
New York City	Entrepreneur 7	CEO	Yes	Yes	Market size	Yes
Montreal	Investor 5	Project Manager	Yes	Yes	Scaling up	Yes
Montreal	Consultant 1	Analyst	Yes	Yes	Access to \$\$ But changing, culture	Yes
Montreal	Investor 6	Directrice gestion des relations	Yes	Yes	Bureaucratic	Yes
Montreal	Entrepreneur 8	COO	Yes	Yes	Financing	Yes
New York City	Entrepreneur 9	Directeur Creatif-Co-founder	Yes	Yes	Market size, competition for talent	Don't know
Montreal	Entrepreneur 10	Directeur Général,	Yes	Yes	Culture, Market size	Yes
Montreal	Entrepreneur 11	Founder/CEO	Yes	Yes	Immigration, financing	Yes
New York City	Entrepreneur 12	Founder and MD	Yes	Yes	No local IP	Yes
New York City	Entrepreneur 13	Co-Founder and Creative Director	Yes	Yes	Ecosystem size	Yes
Paris	Entrepreneur 14	Co-Founder	Yes	Don't know	Don't know	Yes
Paris	Entrepreneur 15	Co-Founder & COO at HYPERSUIT	Yes	Don't know	Don't know	Yes
Montreal	Investor 7	General Partner	Yes	Yes	Marketsize, larger financing rounds	Yes
Montreal	Executive 1	Studio MD	Yes	Yes	Financing, staff retention, French effect to attract talent	Yes
Montreal	Entrepreneur 16	Partner & General Manager	Yes	Yes	Market, competition for talent and Financing	Yes

Almost all our respondents (92%) have a positive perception of Montreal. Only 2 felt they did not know enough about the ecosystem to express a clear judgement (Exhibit 29). It is particularly interesting to see that all respondents from or based in Montreal think their local ecosystem is good to start-up a tech business.

Guy Gervais, Serial Entrepreneur and Business Angel, says the following on this point *“The ecosystem in Montreal is now complete, with the right level of governmental support, everything is in place making it one of the best places in the world to start-up a business!”*.

For **Jean Francois Marcoux**, General Partner at White Star Capital, a venture capital based in London, New York and Montreal, *“Montreal has a wide pool of qualified talent, with competitive salaries and a relative low staff turnover when compared to other north American cities, add government incentives, and you have a great place to operate a start-up”*.

16 people see some limitations to the ecosystem, this is close to 70% of the respondents who have a positive perception of Montreal. 6 people answered they did not know, 2 said probably and 1 said no. The 6 who have answered “do not know” are all based in either Europe or New York City.

When it comes to stating the limitations, 10 people provided one, and 8 listed more than one, for a total of 18. The remaining 7 did not have a limitation in mind (6 did not know).

Out of all the answers, financing was cited the most (7 times), together with market size. Competition for talent and French culture were cited 3 times each. On the point of culture, there are two things, one is about the French language being a potential limitation to attract foreign talent who are not French speakers (immigration). The second is about the local culture being less ambitious and focused on selling ideas, limiting growth potential when compared California or New York City.

Here are two quotes to illustrate these points:

Christian Eve-Levesque, CEO and co-founder of SpherePlay *“I am not convinced Montreal is a great place to scale-up a business, VC’s are more conservative here than in California, making it more difficult to raise money at later rounds”*.

Marc-Olivier Lepage, COO and Co-founder at Vrvana, stated *“We would be further out in our development should we have decided to start in Silicon Valley, since start-ups there have access to larger rounds of financing”*. He continues talking about the culture limitations *“There is a clear cultural difference between the US and Canada, here people are more conservative, and do not think big, while in California they shoot for the stars to land on the moon”*.

To mitigate this point both **David Nault** from Inovia Capital and **Jean Francois Marcoux** from White Start Capital, hint that things are changing, and that if there is a project to create the new Facebook, there will be some money locally. The Espace CDPQ was created to accelerate growth by combining networks, expertise and funds to enable larger fund in late round of financing.

Is there a specialisation of start-up ecosystems?

In this sub-section, we are looking for evidence that could support the start-up ecosystems specialisation theory.

First, we have asked people if they believe in such theory of specialisation, and if yes what they think are the specialities of Montreal, London and New York City?

Exhibit 30 – Specialisation of start-up ecosystems

Location	Role	Do you see a specialisation of the ecosystems?	What specialisation?		
			Montreal	NYC	London
Montreal	Investor 1	Yes	Machine learning and AI,	don't know	don't know
Montreal	Investor 2	Yes	IAT, AI, Machine learning, SAS (software as a service)	Fin tech and clean tech	Fintech
Copenhagen	Investor 3	Yes	Fintech, AI	don't know	don't know
Stockholm/NYC	Entrepreneur 1	Yes	Don't know	Fin tech, B2B, VR, special effect	V game, fin tech
Montreal	Entrepreneur 2	Yes	Internet of things, AI, VR	Entertainment	Fin tech
Montreal	Investor 4	Yes	Social, AI, VG	don't know	don't know
Paris/London	Entrepreneur 3	Yes	don't know	fin tech, clean tech	fin tech
Paris	Entrepreneur 4	Yes	don't know	fin tech, clean tech	fin tech
Montreal	Entrepreneur 5	Yes	VG, AI	Media, fintech	fin tech, AI
Montreal	Entrepreneur 6	Yes	VR, e-learning	don't know	don't know
New York City	Entrepreneur 7	Yes	don't know	Fin Tech, B2B, advertising	don't know
Montreal	Investor 5	Yes	VR, AI, IOT	Fin tech	Fin tech, AI
Montreal	Consultant 1	Yes	AI, VG	Fin Tech, Clean Tech	Fin tech, AI
Montreal	Investor 6	Yes	AI, IOT, Smart city	don't know	don't know
Montreal	Entrepreneur 8	Yes	VR	Video Game, AI, VR	don't know
New York City	Entrepreneur 9	Yes	VG	Fashion, fintech, health, e-	don't know
Montreal	Entrepreneur 10	Yes	Media production, VR, R&D	don't know	don't know
Montreal	Entrepreneur 11	Yes	VG	don't know	don't know
New York City	Entrepreneur 12	Yes	VG, production	AI, Fin Tech, Medical, Environment & clean energy	Fin tech, AI
New York City	Entrepreneur 13	Yes	VG, production	AI, Fin Tech, Medical, Environment & clean energy	Fin tech, AI
Paris	Entrepreneur 14	don't know	don't know	don't know	don't know
Paris	Entrepreneur 15	don't know	don't know	don't know	don't know
Montreal	Investor 7	Yes	AI, IOT, Smart city	fin tech, clean tech	AI, fin tech
Montreal	Executive 1	Yes	Maybe VR, AI	Fin tech	Fin tech, VG
Montreal	Entrepreneur 16	Yes	VG, content production	don't know	don't know

23 out of the 25-people interviewed believe start-up ecosystems tend to specialise themselves (Exhibit 30).

Looking at Montreal specifically, 23 people suggested some of the specialities of the local ecosystem. Video games were the obvious one, cited 6 times. 5 people claimed that Montreal was becoming a global hub for Virtual Reality, 4 of these currently working in a start-up connected to this industry. Internet was also mentioned by 4 people. But the clear winner was Artificial Intelligence and Machine learning with 11 citations.

Here are two quotes to illustrate these points:

David Nault from Inovia Capital states the following *“The Canadian government has recently invested more than \$200 million in three Montreal universities, including in a research team under the command of Yoshua Bengio, full professor of the Department of Computer Science and Operations Research at l’Université de Montreal, to develop a pool of excellence in Artificial Intelligence and machine learning.”*

Caroline Pelletier, from Ange Quebec, confirms this *“Machine learning is hot sector in Montreal, with Bengio’s work attracting interest from the government and IT giant like Google who has injected \$4.5M”*.

Both quotes are echoed in a recent article published by thestar.com, stating that *“The lab, Bengio Leads, is one of the largest in the world dedicated to studying Deep Learning, one of the underpinnings of AI.*

People found it more difficult to state the specialities of the London and New York ecosystems. 16 people could pinpoint at least one speciality for New York, with Fin Tech being mentioned 11 times, then came Clean Tech with 6 mentions. Only 12 people spoke about London specialities, with fin tech being mentioned 10 times, followed by AI with 6 citations.

Jean Francois Marcoux, from White start Capital, states that *“In New York, fin tech has emerged as major pool, with a perfect marriage between technology and the existing financial institution in the financial district”*

In conclusion, the interview results support the importance of the four variables chosen to be the focus of this paper with talent, financing, ecosystem and legal-fiscal advantages. Almost everyone agrees that location matters, stating again that talent and financing were the two most important factors of attractiveness.

Montreal is highly regarded by the people interviewed, noting that 15 of them are based in or are from Montreal. Everyone sees limitations in Montreal's ecosystem, mainly around access to financing, though this seems to be changing.

People tend to agree that ecosystems specialise themselves, under the influence of governmental strategic initiatives. AI seems to be a new area of focus in Montreal, but it is also the case in London and to some extent in New York City.

SECTION 5: Conclusion

[Back to the context](#)

At the time when this research started, there was no simple answer to my thesis' question as there was only a handful of reports to compare start-up ecosystems globally. None focused on the 3 cities New York City, London, and Montreal. Only last month, the first report dedicated to the city's start-up ecosystem was published by Credoprod.

From my initial perspective Montreal's ecosystem seemed to be growing, piquing my interest for the initial hypothesis of my research. It felt as if something was happening here, like a slow simmering pot on the stove. As we delved deeper into the subject, it became obvious that the start-up scene is a hot topic, central to world economic growth, and not only in Montreal.

In a time where globalization seemed to be taking a step back, it looked like the role of the city and its relationship with businesses and citizens was changing. With this, city governments' pivot from provider to facilitator, investing heavily in their tech-start-up's ecosystem looks to be the new trend to create jobs and secure long term prosperity. Would it be like the phenomena seen in the 1980s, when city councils were building convention centres as a must have for agglomerations growth? It is difficult to say, but as we are moving fast through the fourth industrial revolution, our society is being redefined, from education to political systems.

The way we live and work is going to change profoundly. Fast advances in technology are about to disrupt many of the sectors that anchor Canada's economy. As stated by CB Insights, from messaging apps for hospital workers to surgeons training with VR, start-ups are working to transform patient care

in the hospital (Exhibit 31). Another example is the way start-ups are integrating digital features into nearly every aspect of restaurant operations, re-inventing dining (Exhibit 32).

Exhibit 31 – The Digital Hospital: 80+ Companies Reinventing Medicine In One Infographic.



Exhibit 32 – The Future of Dining: 99 Start-ups Reinventing The Restaurant In One Infographic.



Start-ups are leading this information revolution. They generate innovation, and are a major source of job creation. Cities around the world are competing for resources to let their ecosystems grow and prosper. This is a question of survival as they are seeking to replace their old industrial core.

Answering the question

The research started with a simple question, and shed light on a wider and deeper subject. It is therefore very relevant, in this context, to ask the following question, “Is Montreal a good place to start-up a tech business?” It is important to understand how Montreal’s ecosystem is performing and fairing in the global landscape.

The short answer to this question is yes to start, but it is not yet the best place to scale up a business.

This research has confirmed the hypothesis that Montreal’s ecosystem is growing. Over the past few years, the Montreal start-up ecosystem has developed rapidly. Montreal’s presence in the ranking of the world’s 20 most dynamic start-up ecosystems completed by Start-up Genome’s 2015 Global Start-up Ecosystem Ranking is only one body of proof. Montreal is performing well when looking at the four variables used in this report.

1 – Montreal has Talent – Montreal has the highest proportion of post-secondary students, the highest density of students in North America. The city also has some of the largest artificial intelligence research centres of all cities in North America. Montreal unquestionably supplies a large pool of great talent at a very competitive price.

Montreal seems to struggle to retain foreign students due to lack of legal incentive (immigration). A work visa is also an issue for senior people, together with the language barrier, this makes recruitment of foreign talent more difficult.

2 – Montreal offers good access to financing...BUT – Funding can be obtained through a variety of channels, including business angels, venture capital, private equity but also crowdfunding, government subsidies, grants, or profits made from sales. However, there is a mixed perception of financing in Montreal. On the one hand, the number of financial institutions is growing, together with the amount invested in the ecosystem; on the other hand, entrepreneur’s perception remains that it

is difficult to raise money in Montreal. Communicating clearly and simply all the available options to entrepreneurs could improve this situation. Several of the entrepreneurs interviewed for this research have complained about the limited access to capital, saying VC's were more conservative here than other places. This was partially explained by Credopro in the Montreal Start-up ecosystem report published in November 2016. It states the number of VCs to start-up ratio is lower in Montreal than in other ecosystems. This reduced competition between investors gives them more time to analyse investment opportunities, making them pickier or conservative depending on the perspective.

3 – Montreal has a good start-up ecosystem – With 1,800-2,600 start-ups, and a value of up to \$4 billion, Montreal now has the capacity to compete with big names such as Silicon Valley, New York City or London. The city's cultural diversity and high quality of life, geographical proximity to both the US and Europe and its low operating cost have all played an important role in creating fertile ground for entrepreneurs and start-ups. With co-working places, accelerators, incubators, meet-ups and mentoring programs, Montreal seems to have it all. This research confirmed the city is a vibrant, innovative and more importantly, collaborative ecosystem. It is well perceived by investors and entrepreneurs alike, and seems to be well positioned to continue to grow. It currently lacks big exit, but some are expected to come soon, these events will further strengthen the perception of the city as a great place to base and grow a business and will attract even more capital.

4 – Local government is giving Montreal a fiscal advantage – There is an increasing number of initiatives being undertaken in support of the recent growth of the ecosystem. The very favourable tax index places Montreal as a top city in North America. The local government has a good reputation for supporting industrial ecosystems, like it did with Aerospace (Les grappes de Montréal). The research confirms the good work done by the local authorities, but also highlights the limitations around immigration as mentioned above in the talent section. Furthermore, some of the people interviewed were wondering if the overdependence of the ecosystem on fiscal incentive was a good

thing in the long run. After all, New York and London have very little tax incentive programs and are still striving as start-up ecosystems.

How does it compare with New York and London?

The research showed that all three cities were considered by European entrepreneurs to start or expand their business, with Montreal and New York City being the keys to the North American market. Overall Montreal is faring well, but it is clearly not in the same league as New York City and London. Both cities were ranked first and second in the world by citie.org for their initiatives already in place to support technology, innovation and entrepreneurship. There is just more people, more money and more start-ups in these two cities. An interesting insight coming out of this research is how ecosystems tend to specialise themselves to compete on the global scale. Historically, Montreal has been strong in entertainment production (cinema, TV and video games) and several individuals pointed at Virtual Reality as a potential pull of excellence.

Artificial Intelligence is also a hot topic for growth and investment in Montreal. But this is also the case in both London and New York City with IT giants like Google investing vast amounts of money in the three cities. In fact, there is a race for AI with 40 start-ups being acquired in 2016 by companies like Google, IBM, Intel, Apple and Salesforce.

Outlook and recommendations

There is no doubt Montreal has a tech start-up ecosystem that can compete on the global scale, all the ingredients are here and the level of collaboration is very high.

There is room for improvement, as it needs some big exits to fuel its future development by injecting fresh capital and forming another generation of entrepreneurs. This will also build the “Made in Montreal brand”, which in turn, can attract more capital, more talent and more entrepreneurs.

Brad Feld often said that it takes 20 years for an ecosystem to mature. The first incubators arrived in Montreal in 2007, which means this ecosystem is half way to its maturation. Where Silicon Valley might be on its 9th cycle, Montreal is only on its 2nd or 3rd (see below ecosystem cycle as a future research potential subject).

The outlook is bright for Montreal, based on this research. The ecosystem is relatively young with huge potential. We expect to see more deals and more capital being invested in the local tech start-ups, with few successful exits, the city will catch up to its hype. Start-up Genome will issue a new report next year ranking the world top ecosystems and we expect this report to show Montreal’s progress. Will it move up from its 20th position as shown in 2015? This is difficult to predict since the report will include Asian cities such as Beijing and Tokyo likely to show strong performances too.

Here are 5 things Montreal could do to help its growth. Note that the city might already be doing some, if not all the proposed actions.

1. Learn from class leaders like New York and London. What are they doing well that can be emulated, such as New York Tech talent pipeline initiative.
2. Clarify and communicate the sources and nature of available capital for start-ups in Montreal.
3. Governments to consolidate existing support infrastructure rather than increasing the number of initiatives, as this becomes confusing to know which is which.

4. Continue to invest in local infrastructures (buildings, transport, and fibre optic).
5. To appoint a Chief Digital Officer (CDO) responsible for co-ordinating, developing and delivering a cohesive digital strategy for the city.

Future research

This report offered some interesting avenues for future research. One area of interest is the existence of a role model in the family network of entrepreneurs. Some of the results of the interview seemed to indicate that such individuals could help demystify entrepreneurship, making it more accessible. Social values from local culture and even religion seemed to play a part too.

Another interesting view to study further is the ecosystem cycle. As stated by **David Nault**, from Inovia, *“there is a recycling of ideas and talent, starting with a big company, which produces knowhow, talent and wealth. That talent and wealth then spill over start-ups, which grow then exit. Exits generate more wealth and knowledge being re-invested into the ecosystem”*. It would be interesting to further study the impact of big companies onto local ecosystem, starting with Blackberry on Waterloo and Nokia on Helsinki.

Limitations

This research has limitations that future studies should address. First, it could have explored more variables, such as access to market, which seems to be important to test a product and service with a pool of customers. Second, the data used in the empiric analysis was difficult to collect and limited. A significant share of it came from one report, future research could look at building further data points. Third, the sample of interviewed people was limited to 25 individuals, with a majority coming from Montreal, this could skew the results, especially when it comes to the perception of the Montreal ecosystem. Also, since the sample is mainly from the Montreal region, it does not really provide enough information about the London and New York’s ecosystems.

Fourth, this thesis uses a questionnaire developed from a theoretical and practical analysis of the subject. It could have been better written to avoid any distortions. It would have been good to include additional questions to clarify a couple of points that came out during the interview process (A question about the existence of an entrepreneur role model in their family for example).

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