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THE CREATION OF SOCIAL CAPITAL ACROSS DIFFERENT TYPES OF CANADIAN BUSINESS INCUBATORS

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Dedication

To my incredible wife Deanna and our two amazing boys, Victor and Alexander. Deanna without your continuous inspiration and support I would have not been able to complete this journey. Victor and Alexander you have brought incredible joy to my life and your curiosity and happiness make me appreciate the important things.

To my parents, Peter and Dorina, who made the courageous decision to immigrate to Canada, so that I could have a better life. Thank you for instilling in me the desire for knowledge and education.

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I would like to also thank all the wonderful founders that participated in this study and graciously provided their time. Working with entrepreneurs, I understand how busy they are and I appreciate all of the individuals who took the time to respond to my survey and those who generously agreed to a follow up interview. I hope that their feedback will help provide new insights that will help advance the Canadian entrepreneurial ecosystem.

Abstract

Social capital plays a prominent role in economic and business literature, but to date, limited research has focused on social capital within a business incubation environment. My research investigates two business incubator models, nonprofit economic development business incubators (NEDBIs) and university business incubators (UBIs), and how they create social capital for the start-ups residing within them. As expected, both types of business incubators proved to be well suited to the creation of social capital, by providing access to their network, building trust among the members of the business incubators and encouraging knowledge sharing among business incubator members. The difference between the two business incubator models was the outcome or resources accessed through the social capital. Eighty-three per cent of startups located in UBIs were successful in securing grant funding, while only 6% of startups located in NEDBIs secured grant funding. University business incubator startups were also more successful in job creation with 83% reporting full time staff compared to only 38% of startups in NEDBIs reporting full time staff. In terms of revenue generation 56% non-profit startups reported revenues, while only 17% of university business incubator startups reported revenues. There were also some additional themes that emerged from the interviews that provide interesting insights into Canada's entrepreneurial culture.

Keywords: business incubation, entrepreneur, incubator, social capital, startups

Preface

In 1992, following the revolution and fall of communism in Romania, I arrived in Canada at the age of 13. My parents immigrated to Canada in search of a better life for me. An important piece in the quest for a better life has been the pursuit of higher education, which my parents instilled in me. I completed a B.Comm, followed by a year tour teaching English in S. Korea, following which I completed my MBA. I have been in the Athabasca University DBA program since 2012, which coincided with my taking the role as managing director of a business incubator, in Windsor, Ontario. The decision to take on that position has very much informed my research and has genuinely changed my life.

After completing my MBA, I began working at the University of Windsor in the Position of Policy Advisor to the VP, Administration and Finance. It was a very interesting job and I learned a great deal about how large organizations operate. There is a great deal of bureaucracy and politics in that environment, which although interesting did not quench my third for creating change. When the opportunity presented itself to take charge of the newly opened business incubator in Windsor, Ontario I jumped at the chance. My original research topic was leadership styles of university presidents, but upon accepting my new role I decided to dedicate my research to business incubation and entrepreneurship. In addition to adding to the growing body of research on business incubation, I want my research to be able to inform Canadian policy and provide practitioners with insights that can help them create successful entrepreneurial ecosystems.

The target group my dissertation was written for are fellow academics in the field of entrepreneurship and business incubation, policy makers, and practitioners that manage business incubators and accelerators.

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Chapter 1. Introduction

The purpose of this research is to examine business incubation in Canada, specifically the province of Ontario, through the lens of social capital theory. This research is meaningful to me as I have been managing a business incubator for the past eight years and I am continuously trying to understand what makes a successful entrepreneurial ecosystem. Through this journey, I have had the opportunity to interact with hundreds of startups and visit and spend time at various business incubators, both in Canada and the US, and I believe my research will be helpful to practitioners and academics. My research looks at how we currently measure success and provides insights into how we might use social capital as a lens to capture the intangible benefits provided by business incubators. In addition, the research provides insights needed to assist government policy with future innovation policies such as the Canadian Incubator and Accelerator Program (Robbins & Crelisten, 2018). This is particularly important because it tackles the critical issue of using public funds to empower the private market, all for the benefit of public interest. It is my intent that the research address and provide insight into the effectiveness of business incubators, particularly how different types of incubators are able to assist the startups in their ecosystem. This is the first research in Canada that captures how different types of business incubators create social capital and how that translates into value for the startup, be it through access to grants, potential partnerships, and knowledge exchange.

The Social Capital - Business Incubator Nexus

Social capital theory is based on the premise that a network provides value to its members by allowing them access to resources embedded within the network (Bourdieu, 1985; Seibert, Kraimer, & Liden, 2001). Although social capital receives a lot of attention in economic and business literature, to date limited research has focused on this topic within business incubators. This is surprising given that research suggests social capital fosters an environment that is conducive to information and knowledge exchange (Anderson, 2008), startup and network formation (Liao & Welch, 2005) and firm performance (Batjargal, 2003). Furthermore, business incubators provide avenues for building social capital through incubator networking opportunities, support from the incubator staff and other incubatees, as well as access to contacts and professional services. In their study of Dutch firms, Schutjens and Voker (2010) found a positive relationship between social capital and firm performance.

Social capital has been used to measure startup and network formation (Gordon, Kogut, & Shan, 1997), firm performance (Barjargal, 2003), venture formation (Liao & Welsch, 2005), and learning and knowledge transfer (Inkpen & Tsang, 2005). For this research, I utilize the three-factor structure of social capital, which looks at structural, cognitive and relational capital and has been empirically tested and confirmed by a number of studies including Liao and Welsch's (2005) study of the role of social capital in venture creation, Totternman and Sten's (2005) examination of business incubation and social capital among business incubators in Finland, and Ascigil and Manger (2009) who looked at business incubators and how entrepreneurs leverage skill utilization through social capital.

To date much of the research on business incubators has taken a descriptive approach, typically focusing on and documenting the various services provided by business incubation, such as monitoring the number of training programs carried out, recording the number of firms that have graduated from the incubator, average incubation time, and networking activities (Allen & McCluskey, 1990; Campbell & Allen, 1987; Smilor & Gill, 1986).

In recent years, research on business incubators has utilized a wider lens to investigate business incubator success by also taking into account the intangible benefits that a business incubator offers its clients. Business incubators provide much more than the traditional role of space and service provider. According to Bullingtoft and Ulhoi (2005), "business incubators seek to maximize the potential of entrepreneurial agency by providing entrepreneurial actors with services and support that complement their existing talents and resources, which in turn is meant to enable them to expand their potential" (p. 269).

Given the above, linking business incubation and social capital makes sense. Leyden, Link and Siegel (2014) developed a theoretical model of entrepreneurship, which highlighted the importance of social networks in promoting innovation and reducing uncertainty. Their theory "is based on the notion that an entrepreneur is searching for knowledge and the key to the acquisition of knowledge is access to social networks" (Leyden et al., 2014, p. 1158). Thus, an entrepreneur's probability of successful innovation is positively correlated with the size of the region to be searched for knowledge, which depends on the expansiveness and heterogeneity of the entrepreneur's social network. This theory implies that not knowledge itself, but effective

social networks increase the probability of successfully achieving the desired innovation (Leyden et al. 2014).

Business incubators provide supportive business networks for nascent and new firms (Aernoudt, 2004), which help venture growth and lead to economic development and job creation. Joseph and Eshun (2009) further suggested that incubators create self-esteem and an entrepreneurial culture for the local and national community. As Spigel (2017) identified in his study of Canadian entrepreneurial ecosystems, a supportive entrepreneurial culture creates dense social networks between entrepreneurs, workers and investors. In a study on business incubators in Slovenia, Adlesic and Slavec (2012) investigated how the exploitation of social networks takes place and which factors foster network exploitation. Their study confirmed that incubators provide more than the traditional service and space model in that they also provide avenues for networking and the creation of social capital (Adlesic & Slavec, 2012). In addition, the study revealed that the incubatees' proactive exploitation of social networks had a positive influence on incubatee satisfaction, which in turn lead to incubatees having a more positive impact in terms of their commitment and trust towards the incubator. More recently, in their research on social capital in UBIs, Redondo and Camarero (2018) revealed that collective social capital fosters individual social capital, but only the entrepreneurs' relationship to external agents had a significant impact on their business. This is where business incubator managers can play an important role and act as a bridging tie between the incubatees and external agents, thus improving the incubatees' social capital (Redondo & Camarero, 2018).

In their paper on the emerging ecosystem for student start-ups, Wright, Siegel,

and Mustar (2017) confirmed that "we presently lack the framework to understand the ecosystem necessary to help students launch successful startups." They also raised the importance of the time dimension. This is particularly important for student start-ups as students only spend a relatively short period in UBIs. As such, it is important to create support mechanisms for student entrepreneurs that encompass both internal and external actors so that they have an opportunity to evolve across the activity continuum (Wright, et al. 2017).

In a recent study from Australia, Weerakoon, McMurray, Rametse and Arenius (2019, p. 2), tried to answer the question "in what ways, if any, do social capital, opportunity-motivation ability factors, and knowledge creation explain innovativeness in Australian social enterprises?" This was against the backdrop of the Australian social enterprise sector rapidly growing and becoming a major contributor to the economy, accounting for 2-3% contribution to the GDP (Weerakoon, et al. 2019). Their research provides interesting insights into the role played by social capital dimensions, structural, relational and cognitive, as they relate to opportunity-motivation-ability factors and knowledge exchange. "Knowledge creation mediates the opportunity-motivation-ability to knowledge exchange and combine and innovativeness relationship, subsequently" (Weerakoon, et al. 2019, p. 2). The study recommended that social enterprise managers provide employees with adequate and suitable opportunities for knowledge exchange. Ultimately the research suggested that it is not important to only understand the drivers that foster innovation, but also the mechanics of how this develops in a complex social enterprise setting (Weerakoon, et al., 2019).

Comparing top accelerators in Brazil, India, and the USA, Shetty, Sundaram and

Achuthan (2020), found that input seed funding played a dominant role and improved funding trajectories. The study found that network and human capital capabilities were much higher in the USA. The mentor and investor network capabilities of US accelerators was 30 times higher than Indian accelerators and nearly 20 times higher than Brazilian accelerators (Shetty, et al. 2020). An important implication for practitioners is to ensure that input resources of accelerators are increased by partnering with mature ecosystems to improve network capabilities, such as access to mentors and investors. More competent incubators are able to better utilize the assets at their disposal and spread resources through structured interventions for new ventures (Shetty, et al. 2020).

In a study of Chinese business incubators, Wu, Wang and Tsai (2020) found that, both internal and external networks of business incubators, positively affect new venture performance. They also argued that entrepreneurial orientation is critical to the relationship between incubator networks and new venture performance. Entrepreneurial orientation refers to a firm's decision-making practices, strategic behaviours and managerial philosophies, which are entrepreneurial in nature (Wales, 2016). This study integrated internal and external networks and used the resource based view and co-production theory to explain their impacts on new venture performance (Wu, et. al., 2020). New ventures pursue resource integration by forming independent and interdependent relationships, which encourage long-term cooperation in R&D and production through mutual beneficial behaviors. The knowledge services and knowledge sharing between new ventures provided valuable resources that assisted with technical growth and improve market opportunities (Wu, et. al., 2020). Through interactions with

external organizations new ventures can gain external knowledge and accelerate the sharing of market information.

New ventures face highly uncertain and unpredictable environments (Salamzdeh and Kesim, 2017., Wu, et al. 2020), and nascent entrepreneurs face high uncertainty and goal ambiguity (Bush & Barkema, 2020). In their study of an extreme case business incubator, Bush and Barkema (2020) chose a business incubator in Kenya an emerging country with a rapidly evolving entrepreneurial environment, but weak formal institutions. This is a very interesting study as it investigates a highly uncertain context and discovers that a "social structure that allows for flexibility can provide conditions under which unexpected discoveries are enabled and nurtured." Through cultivating reframing, the researchers found the business incubator's founding team "fostered an openness to the unexpected" by allowing ideas to flow and encouraging members to support each other. Nascent entrepreneurs were exposed to the idea that the perception of reality is socially constructed and thus can be reframed (Bush & Barkema, 2020; Grey, Purdy & Ansari, 2015). This provides a different view from the traditional network structure towards a more dynamic interplay between the entrepreneurs' agency and social structure in the context of uncertainty.

An interesting study involving Danish and Canadian startups, Lukosiute, Jensen and Tanev (2019) ask the very important question: "Is joining a business incubator or accelerator always a good thing?" Their findings are very insightful and provide a glimpse into how startup founders describe their experience. The first and most surprising finding was that half the business incubation programs did not perform due diligence to ensure startup quality. In terms of services and offerings, again there was a gap between

what the incubation programs offered and the resources needed by the startups. One founder from the study described the experience of the program as “keep startups busy with stuff which they don’t really need to do like presentations, instead of helping them with securing first customers” (Lukosiute, et al. 2019). There was also a perceived issue by founders with low commitment from program mentors and advisors, with four out of the eight founders. One founder raised a concern regarding the equity positions taken by the program, which made the startups unattractive to potential investors. One of the founders also reported that participation in a business incubation program put their intellectual property at risk (Lukosiute, et. al., (2019). This study reinforces the importance that startup founders do extensive due diligence and thoroughly research business incubator/accelerator programs before joining.

In a study of Spanish incubators Rijnsoever (2019), develops a theoretical model in which network development is a function of meeting and mating. The author investigates how different business support mechanisms can influence these two processes and overcome weak network problems. In this specific case Rinjisoever (2019) focused on financial support networks for start-ups. The model proved that a sufficiently strong network among startups is key to overcoming weak network failures. This can be accomplished by introducing startups to peers outside the incubator thus greatly expanding the network among startups and thus benefiting the entire entrepreneurial ecosystem (Rinjisoever, 2019). Another useful insight of the study was the importance of building a culture of trust and cooperation in order to drive the process of network formation among startups. When such a culture exists it is more likely that startups will broker relationships between other startups and different actors (Rinjisoever, 2019).

Finally, according to Hacket and Dilts (2004), if incubator-incubation research is to advance in a theoretically meaningful matter it must go beyond simply looking at critical success factors and investigate factors that look at "how", "why", and "in what context," which is what this research proposes to achieve. This will be the first study in Canada to examine business incubators through the lens of social capital. The research has wide implications for both academics and practitioners. From an academic standpoint, to date there has been no research comparing how different types of business incubators create social capital and the impact that may have on the performance of the firms located in the incubators. This will add new insights to the existing body of research. From a practical perspective, my research will provide a better understanding of the activities and environment that best support business incubator clients. The research will also be extremely useful for policy makers that are focusing on business incubation to drive innovation and job creation in Canada.

Statement of the Problem

Much of the research to date regarding business incubator success has been determined mainly by tangible factors such as new venture creation and growth, survival rate of new business, number of jobs and dollars generated. The literature has predominantly concentrated on the direct, tangible aspects of business incubator performance, outcomes such as incubator tenants' ability to meet monthly expenses, the ability of tenants to expand their business and hire employees, number of training programs and services offered by the incubator, average incubation time, and number of incubator graduates over a period of time (see, for example, Allen & McCluskey, 1990; Bøllingtoft & Ulhøi, 2005; Chan & Lau, 2005; Fry, 1987; Robbins & Crelisten, 2018;

Schwartz, 2009; Smilor & Gill, 1986; Stokan et al. 2015;).

As such, much of the research takes a descriptive approach focusing mainly on the documentation of services provided (Bøllingtoft & Ulhøi, 2005) and we do not have a complete picture of how business incubators support the process of nurturing and accelerating start-ups. Specifically, there is limited research investigating how business incubators create social capital for the firms located in the business incubators. In response to this problem my research utilizes exploratory mixed-methods research to investigate two different business incubator models found in Ontario, Canada and examine how they create social capital for the firms residing within. In addition, my research provides insight on whether certain types of business incubators are more conducive to the creation of social capital and how that translates into support for startups, be it through mentorship, access to new information and knowledge or funding support through grants and/or equity.

Purpose/Rationale for the Study

The purpose of this research is to further our understanding of business incubation, in particular how social capital is created within the business incubator ecosystem. While much attention has been paid to business incubation facilities, services and number of graduates, very little attention has been paid to the incubation process itself. Presently there is no complete evaluation framework that could appropriately capture business incubators' performance, particularly a framework that can account for intangible measures of success (Hackett & Dilts, 2004; Mian, 1991; Phan, Siegel, & Wright, 2005). Examples of intangible measures include such factors as gaining legitimacy, social inputs, psychological support and working in an environment of peers

(Bøllingtoft & Ulhøi, 2005).

Researching business incubators through the lens of social capital provides a vantage point that has received limited attention in relevant research and has the potential to provide great insights. As suggested by Gedajlovic, Honig, Moore, Payne, and Wright (2013, p. 456), social capital is "uniquely situated to address the integrative theoretical needs of entrepreneurship scholars because it helps explain processes and outcomes of social interactions at multiple levels of analysis and across a diverse set of situations and contexts".

Research Question

For this research, I examined two different types of business incubators found in Ontario, Canada, UBIs and non-profit incubators, and applied both quantitative and qualitative methods to uncover how they create social capital for the start-ups residing within. The business incubators were selected based on a model developed by Allen and McCluskey (1990) and elaborated upon by Bøllingtoft and Ulhøi (2005), as outlined in Chapter 2. Consequently, I investigated two non-profit economic development business incubators and two UBIs. The two nonprofit economic development business incubators that participated in the study are Centre for Social Innovation and the Downtown Windsor Business Accelerator and the two UBIs that participated in the study are Forge McMaster and Sault St. Marie Innovation Centre – Algoma University. Below is the research question that guided this study:

How is social capital created across different types of business incubators?

Definitions

The following definitions have been provided to ensure uniformity and understanding of these terms throughout the study.

Business Accelerator (BA): "[BAs] tend to serve more mature client firms, selected based on demonstrated success and projected future potential. BAs tend to focus on providing in-depth coaching and compressing the timescale for achieving sustainable business success. A number of BAs operate mentoring boot camps (ranging from two to 12 months in duration) with advice, guidance and other support to help entrepreneurs accelerate their firm's development. BAs are also more likely than business incubators (BIs) to provide their clients with small amounts of equity-based financing and contacts in the angel investor community. Because of these differences in timetable, client base and services, BAs are more likely than BIs to be for-profit entities, charging their clients fees for services" (Industry Canada, 2012, p. 5).

Business Incubation: Business incubation is a business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator management and offered both in the business incubator and through its network of contacts (https://www.businessnewsdaily.com/4658-business-incubator-accelerator-difference.html).

Business Incubator (BI): Business incubators nurture the development of entrepreneurial companies, helping them survive and grow during the start-up period, when they are most vulnerable. These programs provide their client companies with business support services and resources tailored to young firms. The most common goals of incubation programs

are creating jobs in a community, enhancing a community's entrepreneurial climate, retaining businesses in a community, building or accelerating growth in a local industry, and diversifying local economies (https://www.usccolainc.org/faq).

National Business Incubation Association (NBIA): The NBIA describes itself as the world's leading organization advancing business incubation and entrepreneurship. NBIA serves more than 2,100 members in over 60 nations and 25% of its membership is from outside the United States (https://inbia.org/about/).

Social Capital: "The fundamental proposition of social capital theory is that network ties provide access to resources and information" (Liao & Welsch, 2005, p. 349). Social capital comprises both the network and the assets that are accessible through that network. (Nahapiet & Ghoshal, 1988).

The remainder of the dissertation will cover the literature review, methodology, data analysis, discussion and will culminate with the conclusion, limitations and future research.

Chapter 2. Literature Review and Research Propositions

This chapter presents a review of the literature relevant to my research on business incubation and social capital, including innovation in the Canadian landscape, entrepreneurial ecosystems, the role and types of business incubators, and measuring the success of business incubators. It concludes with the research propositions that guided data collection.

Business Incubation

There is much debate about the definitions of incubators with many concepts evolving over time. The story of the first business incubator started in 1959 in Batavia, New York, when the Massey-Harris company closed down their plant. The Mancuso family purchased the building and started attracting companies into the space. This became the famous Batavia Industrial Centre that celebrated 60 years of helping startups in 2019. In a Wired article (2017) Justin Peters looks at the impact the Batavia Industrial Centre has played as a forerunner of the business incubation movement. The Batavia Industrial Centre currently operates 700,000 square feet of space with 72 tenants spread over 30 buildings (Peters, 2017) and their mandate is still very much as when they started, to help people create business and jobs in Batavia.

The concept of business incubation has evolved over time with many types of business incubators models but most of the literature focuses mostly on urban and economic development and university-industry technology transfer (Hausberg & Korreck, 2018). According to Hausberg and Korreck (2018), only recently has "research focusing primarily on the phenomenon of business incubators themselves gained traction." (p. 152)

As stated in the previous chapter, a business incubator nurtures the development of entrepreneurial companies, helping them survive and grow during the start-up period, when they are most vulnerable. They provide their client companies with business support services and resources tailored to young firms. In addition, as described by Bøllingtoft and Ulhøi, (2005), they provide much more than the traditional role of space and service. For example, they also provide avenues to build social capital through incubator networking opportunities, support from the incubator staff and other incubates, and access to contacts and professional advice. Ideally, business incubators create a supportive environment for nascent firms during the startup period when they are most vulnerable (Aernoudt, 2004) and can provide various mechanisms and tools that lead to network creation. These elements are designed to create success for emerging businesses (Hansen, Chesbrough, Nohria & Sull, 2000).

Business incubators can also act as "change agents" that help address failures in the market and provide favourable controlled conditions, such as access to information and capital flow to support the establishment and growth of new ventures (Campbell, 1989). Allen and Rahman (1985) proposed that incubators help nascent firms indirectly by placing the entrepreneurial actor in an environment that provides social inputs, resources, and psychological support between and across incubatees. In addition, incubators provide a platform conducive to knowledge transfer and experience sharing among the incubatees (Bergek & Norrman, 2008). For example, in a study of Chinese business incubators, Wu, Wang and Tsai (2020) found that both internal and external networks positively affected new venture performance, and argued that entrepreneurial orientation is critical to the relationship between incubator networks and new venture

performance. Entrepreneurial orientation refers to a firm's decision-making practices, strategic behaviours and managerial philosophies which are entrepreneurial in nature (Wales, 2016).

This study integrated internal and external networks, using a resource-based view. New ventures pursued resource integration by forming independent and interdependent relationships, which encouraged long-term cooperation in R&D and production through mutual beneficial behaviors. The knowledge services and knowledge sharing between new ventures provided valuable resources that assisted with technical growth and improved market opportunities (Wu, et. al., 2020).

In an earlier study of Slovenian business incubators, Adlesic and Slavec (2012) investigated how the exploitation of social networks takes place and determined which factors fostered network exploitation. Their study confirmed that incubators provide more than the traditional service and space model by providing incubator tenants avenues for networking and social capital.

Business Incubator Prevalence

The growth in the number of business incubators in North America, and across the world, has been phenomenal over the last 30 years. According to the National Business Incubation Association (NBIA) there were only 12 business incubators in North American in 1980 and now the number has surpassed 7,000 worldwide, with close to 25% located in North America (Al-Mubaraki & Busler, 2012). According to the Centre for Digital Entrepreneurship + Economic Performance (DEEP Centre), a Canadian economic policy think-tank, there were 79 business incubators in Canada as of 2015.

One major challenge is that our current level of understanding as to how business incubators support the process of nurturing start-ups is still very limited. To date, the literature has predominantly concentrated on the direct, tangible aspects of business incubator performance. Researchers have investigated such outcomes as incubator tenants' ability to meet monthly expenses, the ability of tenants to expand their business and hire employees, number of training programs and services offered by the incubator, average incubation time, and number of incubator graduates over a period of time. In a recent review of the Canadian Incubator and Accelerator Program (CAIP) it was revealed that the most common metric was job creation (Robbins & Crelinsten, 2018).

My research provides further insight into how social capital is created within business incubators and whether the type of business incubator plays a role in creating social capital. The literature review will touch upon the following areas: innovation in the Canadian landscape; entrepreneurial ecosystems, business incubation and the role of business incubators; different types of incubators; measuring business incubator performance; and social capital theory. It will conclude with a list of research propositions that are derived from the literature, and which address the overarching research question: "How is social capital created across different types of business incubators?"

Innovation in the Canadian Landscape

Historically Canada has a poor track record of commercializing research (Jenkins Report, 2011; Balsillie, 2015; Robbins & Crelinsten, 2018) and has struggled to move research from "mind to market." From an innovation perspective this is a major challenge for Canada that successive governments have been trying to solve. One of the policies the

government of Canada has initiated to spur innovation forward is the Canada Incubator and Accelerator Program (CAIP) (Robbins & Crelinsten, 2018). In 2013, the CAIP was established as a $100 million, five year, non-repayable contribution program aimed at establishing a critical mass of outstanding business incubators and accelerators that could develop innovative, high-growth firms, which themselves represent superior early-stage investment opportunities (Gauthier, Birch-Jones & Kishchuk, 2016). From 100 applicants a total of 16 incubators and accelerators were chosen. CAIP continued funding for these organizations until March 31, 2019. According to the National Research Council of Canada (https://nrc.canada.ca/en/corporate/planning-reporting/evaluation-canada-accelerator-incubator-program-caip-0#s5), the program was extremely successful with revenues and equity investment over the 2014-2017 period increasing by 2000% and 3600% respectively (2019).

Further investigation into the program, however, raises a number of interesting challenges. Robbins and Crelinsten (2018) completed a review of the CAIP and their findings provided some important insights into the success of the program. One factor that immediately stood out in their review is that size matters. “This gives larger innovation intermediaries a greater ability to accrue CAIP program funding, and perhaps even to influence the expenditure and reporting criteria that govern this funding.” (Robbins & Crelinsten, 2018, p. 13). This clearly puts smaller innovation intermediaries at a disadvantage for funding. From the 100 applicants only 16 received funding and they are major players in Canada that already have large funding support and resources. As found by Rijnsoever (2019) in a study of Spanish incubators, financial support networks for start-ups are key to overcoming weak network problems. As such, those applicants

who did not receive funding had more financial challenges to overcome and likely operated in a weakened network.

Another area of concern regarding the program was the funding allocation and spending by the business incubators and accelerators chosen to receive funding. In the first year of the program over 38 per cent of the allocated CAIP funding was not paid out to participants, suggesting major pain points with the rollout of the program. In the second year this dropped to 8 per cent, but it appears there was a gap between the priorities set by the government and the ability of the innovation intermediaries to fulfill those priorities. This raises questions about the degree to which spending requirements have produced optimal spending patterns by the innovation intermediaries (Robbins & Crelinsten, 2018).

Measuring the performance of business incubators has received considerable interest, but available studies used different methodological approaches focusing on different measures (Hausberg & Korreck, 2018). This makes it incredibly difficult to compare the performance of business incubators. Very much in line with this, the CAIP cohort of innovation intermediaries used a range of non-comparable metrics, ranging in sophistication and reliability, to measure success (Robbins & Crelinsten, 2018). The most common metric employed was job creation, which is the metric most preferred by government stakeholders. This metric, however, creates a critical issue, which was raised by some of the CAIP cohort of innovation intermediaries - most notably that job creation cannot be equated to innovation, productivity or increased competitiveness. The following are statements made by innovation intermediaries in their interviews as conveyed by Robbins and Crelinsten (2018) in their article, as they captured the

challenge of focusing on job creation as the key metric.

"They (governments) are optimizing their policies for the wrong metric" one interviewee explained. Another interviewee noted, "The number of people employed is not a priority for how we measure our own success, but governments like it." (2018, p.15)

How job creation was measured by CAIP as a success metric was also flawed. The job creation metrics did not distinguish between full-time and part-time employment. From a policy perspective, it's imperative that the government create success metrics that are standardized and consistent, as the current process "raises serious concerns about the degree to which innovation intermediaries' impact can be reliably measured" (Robbins & Crelinsten, 2018, p. 16).

The entrepreneurs themselves do not necessarily focus on the same metrics and want the business incubators/accelerators to provide the necessary resources to help them succeed. In their research into Danish and Canadian business incubators and accelerators, Lukosiute, Jensen and Tenev (2019) investigated the very interesting topic of whether startups should even join a business incubator or accelerator. In their in-depth interviews with founders they explored admission criteria, services and offerings, network, financial resources, equity, IP protection and post-incubation. According to the founders' feedback, only four out of the eight incubators/accelerators performed due diligence to ensure startup quality. There were two critical areas in service offerings that were lacking from the founders' perspective: commitment from program mentors and advisors, and tangible services such as access to manufacturing capabilities. In terms of network, a number of founders indicated that startups did not use office space efficiently and missed

out on networking opportunities. Three out of the eight founders also felt that the program incubation network was not aligned to the startup's product. Two of the eight founders stated that their business incubation program did not provide direct or indirect access to investment. One founder felt that the equity position taken by the business incubation program made the company unattractive to other potential investors. With regards to IP protection one founder stated that participation in the business incubation program put the company's intellectual property at risk. Thus, from a startup perspective it is much more important that the business incubator provide services and offerings that are of value to the entrepreneurs, such as access to a good network of mentors and advisors. In addition, the business incubator network must be a good fit for the startups that join. It seems that providing specialized services targeted on financial services including investment, equity options, and IP protection is of concern to startup founders. Following incubation three out of the eight startups looked to join another business incubation program or looked for angel investors.

Canadian Federal Investment in Business Incubators and Accelerators

Investment by the Canadian federal government in the business incubator/accelerator ecosystem first began in 1997, continues. On April 17, 2019 an additional investment of $52.4 million into a growth and innovation network creating a network to support businesses scaling up in the Waterloo-Toronto-Ottawa area by bringing together three large innovation hubs: Communitech, MaRS Discovery District and Invest Ottawa. Invest Ottawa is to receive $16.9 million, Communitech will get $18 million and MaRS Discovery District will get $17.5 million.

The federal government also recently announced a $950-million supercluster

initiative designed to drive innovation, job creation, and wealth in Canada (Doyle, 2020). One of the shortcomings identified with the CAIP Project was that funding went to the top 16 business incubators and accelerators in Canada, while many of the smaller players were excluded. It is important that Canada also look at providing support to business incubators and accelerators that are regional and smaller in size. Towards this end it was encouraging to see the announcement (https://www.watercanada.net/trent-university-receives-federal-investment-for-cleantech-accelerator/) on July 24, 2020 that FedDev Ontario will be investing $4.8-million to help Trent University establish the Trent Enterprise Centre (TEC), a cleantech accelerator. The project is expected to support 70 companies with business advisory and mentoring services and create an anticipated 300 jobs.

Appendix 8 provides an overview of federal government investment towards innovation, including business incubators and accelerators, since 2010.

Entrepreneurial Ecosystems

Entrepreneurial ecosystems are becoming a popular tool for explaining the persistence of high-growth entrepreneurship within regions (Spigel, 2017; Theodoraki, Messeghem, & Rice, 2017). In his research on Canadian entrepreneurial ecosystems Spigel (2017) describes them as follows:

> Entrepreneurial ecosystems are combinations of social, political, economic, and cultural elements within a region that support the development and growth of innovative startups and encourage nascent entrepreneurs and other actors to take the risks of starting, funding, and otherwise assisting high-risk ventures. (pg. 50)

Theodoraki and Messeghem's (2017) research support the concept developed by Spigel (2017) that an entrepreneurial ecosystem is a "contextual umbrella". The entrepreneurial ecosystem is comprised of both physical and non-physical elements such as entrepreneurial culture (Theodoraki & Messghem, 2017). Entrepreneurial culture is the attitude, values and skills and power of individuals or a group working in an organization to generate income (Danish et al., 2019). Furthermore, Theodoraki and Messeghem (2017) suggest that the entrepreneurial support ecosystem and the business incubator ecosystem serve as sub-ecosystems of the broader entrepreneurial ecosystem.

Business incubators are important pillars of entrepreneurial ecosystems because they provide support systems, access to human capital and mentorship. In their book, *The rainforest: The secret to building the next Silicon Valley*, Hwang and Horowitt (2012) provided powerful insights of how entrepreneurial ecosystems are crucial to creating resilient economies and how those entrepreneurial ecosystems are created. The challenge for policy makers is to understand the unique underlying mechanisms, which make those entrepreneurial ecosystems successful and not simply import best practices. As Harrison and Leitch (2010, pg. 1243) argue, "the economic impact of university spin-out activity outside the unique environment of technology intensive core regions is likely to be very much less than advocates of this activity believe." According to Spigel (2017), ecosystem theory needs to focus not only on the internal attributes of the ecosystem but also on the interaction between these different attributes and how they reproduce the overall ecosystem. In his research he investigated two case studies in Canada - Waterloo and Calgary - and was able to demonstrate that there are multiple ways for successful entrepreneurial ecosystems to develop. Going one step further, Shetty, Sundaram and

Achuthan (2020) in a comparison of top accelerators in Brazil, India and the U.S., found that input resources of accelerators were increased by partnering with mature ecosystems, thus improving network capabilities such as access to mentors and investors.

Entrepreneurial ecosystem attributes fall under three categories: cultural, social and material. Cultural attributes are the underlying beliefs a region has about entrepreneurship and they are an outcome of cultural attitudes and histories of entrepreneurship (Spigel, 2017). In their study of regional social legitimacy for entrepreneurship, Kibler, Kautonen, and Fink (2014, p. 1010) looked at 65 regions in Austria and Finland and found that "the more entrepreneurship is considered a socially legitimate activity in a region, the stronger will be an individual's entrepreneurial attitudes that form their intention to become an entrepreneur." A region that has positive cultural attitudes towards entrepreneurship is going to positively influence individuals to pursue entrepreneurship as a career path. Histories of entrepreneurial success in the region also play a key role. Success stories of local entrepreneurs that create companies that become global leaders can inspire young entrepreneurs to pursue the same path (Feld, 2012).

Social attributes are resources acquired through the social network of the region. Social networks and social capital can provide entrepreneurs with new knowledge about opportunities (Owen-Smith & Powell, 2004), by fostering an environment that is conducive to information and knowledge exchange (Anderson, 2008). Entrepreneurial ecosystems have four main social attributes: the networks themselves, investment capital, mentors and dealmakers, and worker talent. Layden, et al (2014) argue the key to entrepreneurial success lies in the ability of the entrepreneur to exploit social networks.

Investment capital is critical and local investors with deep connections to the entrepreneurial community are essential to drive the growth of entrepreneurial firms (Spigel, 2017).

Mentors help entrepreneurs improve their performance (Ozgen & Baron, 2007) and dealmakers proactively build new connections between entrepreneurial actors, which help improve firm formation and growth (Feldman & Zoller, 2012). Worker talent is important, as human capital is a key driver of our modern knowledge economy. Human capital is a major determinant of entrepreneurial absorptive capacity that is critical to the success of entrepreneurial actions and has a positive relationship with new knowledge measured with patent output (Qian, Acs, & Stough, 2012). The notion of absorptive capacity refers to the ability of a recipient to assimilate value and use the knowledge transferred. (Carayannis, 2012).

Material attributes of the entrepreneurial ecosystem are tangible in nature and include universities, support services and facilities (this is where business incubators and accelerators apply), policy and governance, and open markets. Universities can provide human capital for the region and foster an entrepreneurial mindset by encouraging students to start new ventures (Wolfe, 2005). An entrepreneurial mindset refers to the inclination to discover, evaluate, and exploit opportunities (Bosman & Fernhaber, 2018).

Support services can include access to patent lawyers, accountants and business advisors, and business incubators provide space as well as access to various networks. Policies include government rules and regulations. Access to strong local markets is key, as they provide young firms with a platform to generate early sales (Feldman, 2001).

The major takeaway from Spigel's (2017) study is that an ecosystem's attributes do not exist in isolation; rather they develop in tandem, helping to influence and reproduce one another. The relationship between the different attributes indicates that new material attributes such as entrepreneurial support organizations, state financed startups investment and new university or technology transfer programs are unlikely to succeed if they are not supported by social and cultural attributes.

Business Incubation and the Role of Business Incubators

The incubator concept originated in 1959 with the Batavia Industrial Center in New York (Lewis, 2002). Following the departure of a large corporation from the building, a local real estate developer acquired the property and began leasing it out to a variety of tenants, some of which requested business advice (Adkins, 2001). In the U.S., incubation programs diffused slowly during the 1960s and 1970s (Hackett & Dilts, 2004), mostly as a government response to the need for urban economic revitalization. In the 1980s and 1990s there was a significant increase in the rate of incubator diffusion due to: a) the Bayh-Dole Act, which decreased the uncertainty associated with commercializing the fruits of federally funded basic research; b) the U.S. legal system, which gave increased importance to innovation and intellectual property rights protection; and c) expansion of profit opportunities derived from commercializing biomedical research (Hackett & Dilts, 2004).

As stated previously, currently the U.S. has the largest number of business incubators in the world growing from less than 100 in the 1980s to over 1,800 in 2010, according to the National Business Incubation Association (NBIA, 2010), and the US

currently houses over 25% of the 7,000 total estimated incubators worldwide (Al-Mubaraki & Busler, 2012).

There is no government organization or body in Canada at this time that has an updated inventory of business incubators and accelerators. The most current figure regarding the number of business incubators and accelerators in Canada is 118 as of June, 2019 as reported on Tracxn.

The Evidence Network reports that there are 150 business incubators and accelerators in Canada (Danziel, 2012). Of the 150 organizations identified by the report, 92 are best classified as business incubators, 29 are best classified as business accelerators and 29 are best classified as both. According to the Deep Centre there were 79 business incubators and 29 business accelerators in Canada as of 2015, but those numbers are not entirely accurate as some incubators/accelerators, including the Downtown Windsor Business Accelerator, are not listed in this study.

This is compounded by the fact that there is no one standard and commonly accepted definition of business incubation or business incubator. According to Bruneel, Ratinho, Clarysse, and Groen (2012), there are nearly three dozen definitions available in academic literature. Likely the most generic is that offered by the National Business Incubation Association (NBIA), which defines business incubation as: "A business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services (NBIA, 2012a)."

To illustrate the difficulty of defining business incubators, below is a table from Hauseberg and Korreck's (2018) literature review of business incubators and

accelerators. As a result of the evolution of business incubation models there is no universally accepted definition of business incubation and practitioners and scholars often use the concept of business incubator and business accelerator synonymously (Hauseberg & Korreck, 2018).

Table 1

Definitions of Business Incubators

Definition	References
"A facility which promotes the early stage development of a for-profit enterprise [w]ithin the confines of a building (…)"	Plosila and Allen (1985)
"Real estate projects with shared space and administrative arrangements [and] organize the business development process"	Campbell et al. (1985)
"Seeks to effectively link talent, technology, capital and know-how in order to leverage entrepreneurial talent and to accelerate the development of new companies"	Mcadam and Marlow (2007), Smilor and Gill (1986)
"A facility with adaptable space which small businesses can lease on flexible terms and reduced rents [where] Support services are available and shared"	Kuratko and LaFollette (1987)
"Large buildings operated to nurture young companies by providing low-rent space, shared office services and management advice"	Lumpkin and Ireland (1988)
"Centralized physical facilities that 'incubate' new and small ventures by providing them with varying support services and other assistance."	Udell (1990)
"Are multi-tenant buildings providing affordable, flexible space, and a variety of office and support services which share a common purpose: to nurture small fledgling firms into healthy businesses"	Weinberg et al. (1991)
"Locally based institutions that provide shared physical space and business support services to new and young firms"	Markley and McNamara (1995)
"[Organizations that] offer fledgling companies a number of benefits—office space, funding, and basic services such as recruiting, accounting, and legal—usually in exchange for equity stakes"	Hansen et al. (2000)
"Producer' of business assistance programs. (…) companies and the incubator staff are co-located in the same facility"	Rice (2002)
"An enterprise that facilitates the early-stage development of firms by providing office space, shared services and business assistance"	Hackett and Dilts (2004)
"Evolving innovative organizational form that is a vehicle for enterprise development"	Peters et al. (2004)
"Any organization that provides access to affordable office space and shared administrative services"	Bollingthoft and Ulhoi (2005)
"Property-based organizations with identifiable administrative centers focused on the mission of business acceleration through knowledge agglomeration and resource sharing"	Phan et al. (2005)
"Organisations that supply joint location, services, business support and networks to early stage ventures"	Bergek and Norrman (2008)
"Organizations who's purpose it is to support the creation and growth of new businesses, by supplying a shared office environment and agglomeration of new and small businesses"	Honig and Karlsson (2010)
"Tools to accelerate the creation of successful entrepreneurial companies"	Bruneel et al. (2012)

The definition that I find most useful in terms of this research is provided by Hauseberg and Korreck (2018) and breaks down business incubators by tangible and intangible resources.

> Business Incubators (in the narrower sense) are business-incubating organizations that support the establishment and growth of new businesses with tangible (e.g. space, shared equipment and administrative services) and intangible (e.g., knowledge, network access) resources during a flexible period and are funded by a sponsor (e.g., government or corporation) and/or fund themselves taking rent (or less frequently equity) from incubates. (p. 163)

A business incubator supports the creation and growth of new businesses by providing a variety of services that might include office space, shared administrative services, management training, access to capital and financing, legal advice, coaching and mentoring and network services (Amezcua et el. 2013; Hackett & Dilts, 2004; Rijnsoever, 2019).

In Canada, business incubators are playing a significant role in the innovation ecosystem. As described on the Government of Canada (https://www.ic.gc.ca/eic/site/061.nsf/eng/h_03045.html) website “A key element of the Innovation and Skills Plan is to strengthen Canada's network of business accelerators and incubators (BAIs) across the country.” (2019)

There are mixed reviews with regards to the performance of business incubators, in large part because of a lack of appropriate measures of performance. For example, apart from the location and administrative support services, the value of the business incubator itself has been questioned (Mian, 1997; Hansen et al., 2000). Furthermore,

Lumpkin and Ireland (1988) have demonstrated that locating in a business incubator does not necessarily guarantee success. As asked by Lukosiute, et al, (2019) in their research on Danish and Canadian startups, "Is joining a business incubator or accelerator always a good thing?" Not all of the founders that they interviewed agreed that it was a positive experience. The main advice offered by this research was that startup founders should do extensive due diligence and thoroughly research programs before joining.

Conversely, business incubators have proven to be effective business development tools providing an excellent return on investment to a regional economy, with relatively modest investment (Markley & McNamara, 1995; Sherman & Chappell, 1998; Smilor, 1987). Business incubators can provide supportive business networks for nascent and new firms (Aernoudt, 2004), which help venture growth and lead to economic development and job creation. According to Hisrich (1988), business incubators are important to the community because they are designed to the cultural values of the community and act as a communication vehicle with community leaders. Joseph and Eshun (2009) further suggest that incubators create self-esteem and an entrepreneurial culture for the local and national community.

It has been suggested that successful business incubators serve a critical role in the development of local, regional, and national economies through the creation of jobs and the generation of profits (Aernoudt, 2004; Grimaldi & Grandi, 2005), as well as technology development and innovations (Lee & Osteryoung, 2004; Phan, Siegel, & Wright, 2005; Tsai et al., 2009). Additionally, business incubators are a source of value for the firms located within the incubator. They can provide firms with credibility, help with diagnosing business needs, access to capital, access to a network of experts and

support systems, and faster learning/solution to problems (Campbell et al., 1985; Smilor, 1987; 1998; as cited in Hackett & Dilts, 2004). Further, Lalkaka and Abetti (1999) suggest that operating out of a business incubator will increase the tenants' probability of success. Individual incubators may also become more effective over time, attracting more clients and graduating more businesses, with a positive correlation between the age of an incubator and the number of jobs it created (Eshun, 2004).

In order to better understand the role of business incubators it is necessary to examine the evolution of business incubation. On his blog, Vasily Ryzhonkov (2013) does an excellent job of establishing a framework for analyzing three main periods of business incubation evolution:

- First Generation - initiation and development of the concept (late 1950s – mid 1980s). This is referred to as "Infrastructure: economies of scale" period. The Batavia Industrial Center in New York is considered the first business incubator in N. America.

- Second Generation - active growth and development (mid 1980s – mid 1990s). "Business support: accelerating the learning curve" is the name of this period. City Venture Corporation was at the forefront of the business incubation movement at that time.

- Third Generation - industry maturity and new leaps of development (mid 1990s – present). "Networks & Value Chains" are the most common characteristics of the present period. Some examples are the Y Combinator and TechStars.

The main role of the first generation of business incubators was to provide affordable office space and shared resources (Barrow, 2001; Lalkaka & Bishop, 1996). Tenants found the shared physical space and shared administrative services as the most beneficial features of incubators at that time.

During the second generation, business incubators saw incredible growth, as governments began to realize that innovation and entrepreneurship held the keys to future

economic development and growth. Business incubators were seen as a way to address some of the common reasons associated with the failure of new ventures which may occur due to the following three reasons: (1) insufficient access to capital, (2) lack of managerial expertise, and (3) insufficient marketing expertise" (Gatewood et al., 1985; Peterson et al., 1985; Allen 1985). Business incubators can provide access to knowledge through mentors, training, and programming, and these can assist incubator clients to accelerate their learning curve.

Third generation business incubators include networking as a variable. In a knowledge-based economy, network models can assist start-ups to access capital, expertise and knowledge. One of the main reasons of start-up failure is resource scarcity (Giardino, Wang, & Abrahamsson, 2014) and the networks provided by business incubators can provide tenants with preferential access to resources such as potential customers, suppliers, technology partners and investors.

Different Types of Business Incubators

Early definitions of business incubators drew the distinction between incubators as real estate development efforts and business development assistance efforts (Brooks, 1986; Smilor, 1987b; Smilor & Gill, 1986). One approach was focused on renovating old, or vacant buildings, and providing cheap rent. The second approach was a more focused effort to foster new ventures and help newly established firms to grow.

Allen and McCluskey (1990) elaborated on this earlier model by focusing on the primary and secondary objectives of four types of incubators that are distributed on a continuum, depending on the value they add. From least value-adding to most value-adding, the incubator types include: for-profit property development incubators, non-

profit development corporation incubators, academic incubators, and for-profit seed capital incubators. More recently, Bøllingtoft and Ulhøi (2005), added a fifth type of incubator referred to as a for-profit collaborative incubator or networked incubator. A networked incubator places emphasis on the mutual recognition of the value of collaboration, and falls in the middle of the value-added continuum described by Allen and McCluskey (1990). The chart below illustrates the five types of business incubators through the value added continuum.

Table 2

Business Incubation Model Distributed on a Continuum, Depending on Value Added

Value added through				
←				→
Real Estate		**Collaboration**		**Business development**
For-profit property development incubators	Non-profit development corporation incubators	For-profit collaborative incubators	Academic incubators	For-profit seed-capital incubators
Real estate appreciation	Job creation and enhancing of the entrepreneurial climate	Capitalize collaborative and symbiotic potentials	Commercialization of university research	Capitalize investment opportunity
Sell proprietary services to tenants	Regional/area development	Network development and nurture	Capitalize investment opportunity	Secure availability to risk capital
No interorg. collaboration	Interorg. Collaboration (multi stakeholder collaboration)	Firm-firm collaboration	University-industry collaboration	No interorg. collaboration

Source: Adapted from Allen, D. N., & McCluskey, R. (1990). Structure, Policy, Services and Performance in the Business Incubator Industry. *Entrepreneurship: Theory and Practice, 15*(2), 65.

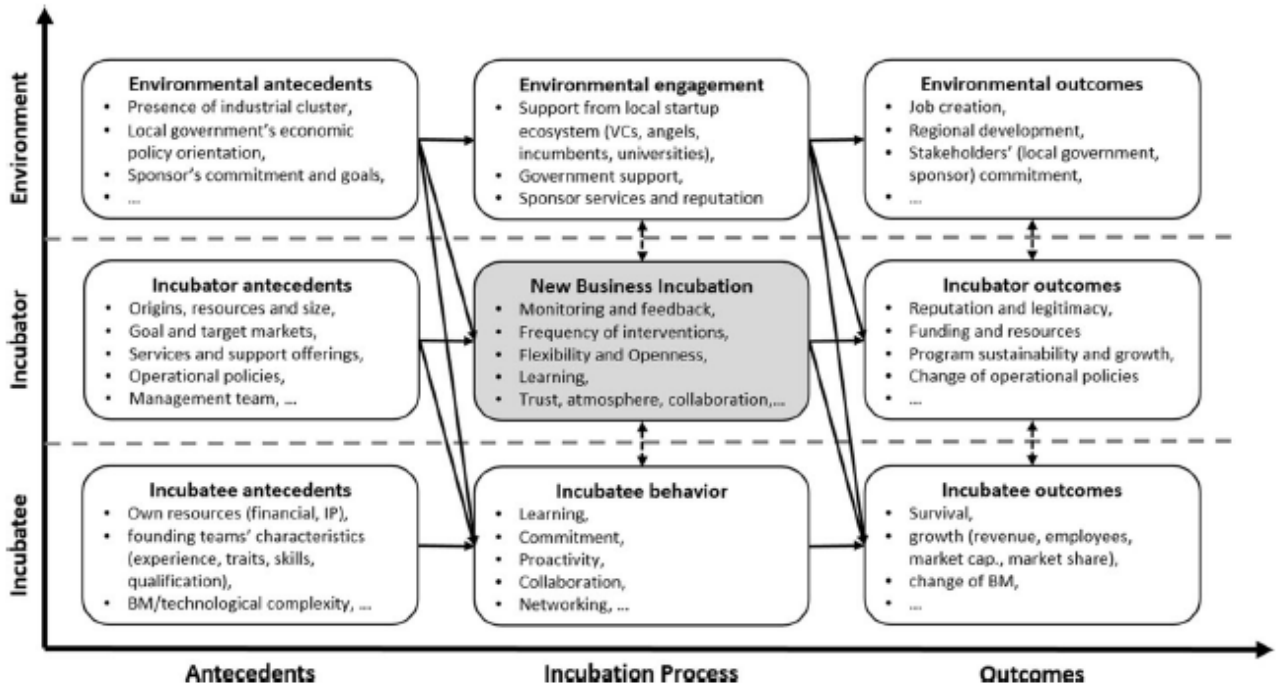
Source: Bøllingtoft, A., & Ulhøi, J. P. (2005). The networked business incubator—leveraging entrepreneurial agency? *Journal of Business Venturing, 20* (2), 265-290.

Recently Hausberg and Korreck (2018) completed a systematic literature review of business incubators and accelerators and they found that open innovation and social capital theory are becoming increasingly important to understanding business incubation. They broke their study down in the following three streams: (1) studies on origins,

definitions and typologies of incubators, (2) studies on the incubation process, and (3) studies on impact and performance.

Table 3

Multi-level Antecedents and Outcomes of Business Incubation



Note: Sourced from Houseberg, J.P. & Korreck, S. (2018). Business incubators and accelerators: a co-citation analysis-based, systematic literature review. Journal of Technology Transfer, 45:151–176.

The term business accelerator (BA) may often be used interchangeably with business incubator, but business accelerator is relatively newer, and they fall in line closer to the for-profit seed funded incubators continuum on Allen and McCluskey's (1990) model. One of the main characteristics that accelerators and for-profit seed incubators share is that they take an equity position in the tenant companies. Although similar in nature to business incubators, business accelerators differ from business incubators in a number of ways. For example, they differ in terms of the clients they are

looking to attract, which in the case of BAs are start-ups with ventures in high growth markets. BAs also differ with regards to the nature of the services they provide, which are much more intensive than in an incubator setting. The Science and Innovation Sector of Industry Canada makes the following distinction between business incubators and business accelerators:

> Incubators tend to help aspiring entrepreneurs first perfect and then implement business plans as start-up businesses. Incubators tend to serve clients on first-come, first served basis and typically take in clients for periods ranging between one and five years.
>
> Accelerators tend to serve more mature client firms, selected based on demonstrated success and projected future potential. BAs tend to focus on providing in-depth coaching and compressing the timescale for achieving sustainable business success. BAs are also more likely than BIs to provide their clients with small amounts of equity-based financing and contacts in the angel investor community. Because of these differences in timetable, client base and services, BAs are more likely than BIs to be for-profit entities, charging their clients fees for services (Industry Canada, 2012, as cited in Dalziel, 2012, p. 5)

Adding further difficulty to the process of examining and comparing incubators is the fact that no two incubators are exactly alike. The general goal may be similar, but different incubators have different priorities. Even incubators that have similar models will differ between their operations and goals (Bøllingtoft & Ulhøi, 2005). For-profit property development incubators focus primarily on development of real estate

appreciation (Nyrop, 1986). Government supported and private ownership non-profit incubators focus mainly on job creation and enhancing the entrepreneurial culture (Pacholski, 1988). According to Smilor (1987b), academic incubators are mainly interested in commercializing research into new products or technologies. Academic incubators are sometimes referred to as research parks (Money, 1970), science parks (Martin, 1997) and knowledge parks (Bugliarello, 1998). For-profit seed incubators focus on maximizing investment opportunities. They provide seed funding and take an equity position in the firms that are accepted into the incubator. These incubators are often private and managed by private corporations. Finally, Bøllingtoft and Ulhøi (2005) introduce the "networked" incubator, which is represented by the for-profit collaborative incubators based on the mutual recognition of the value of collaboration.

According to the NBIA (2010) the breakdown of business incubators in North America is the following:

- Most North American business incubators (about 93 percent) are nonprofit organizations focused on economic development. About 7 percent of North American incubators are for-profit entities, usually set up to obtain returns on shareholders investments.
- 54 percent are "mixed-use," assisting a range of early-stage companies.
- 37 percent focus on technology businesses.
- About 6 percent focus on service businesses, serve niche markets or assist other types of businesses.
- 3 percent serve manufacturing firms.

Bringing business incubation closer to home, Canada has 150 business incubators/accelerators (Dalziel, 2012). Forty per cent of these organizations can be classified as generalists, meaning their clients can come from any industry. The

remaining organizations focus on specific industries: biotech, environmental, healthcare, ICT, manufacturing and other. Interestingly, Canada only has five organizations (around 3%) that focus on high growth firms and they are all business accelerators (Dalziel, 2012). As stated earlier, of the 150 entities identified, 92 are classified as business incubators, 29 as business accelerators and 29 are classified as both.

Over the last few years Canada has also seen a shift in the alignment of business incubators with strategic partners. There has been a significant increase in partnerships with universities and government. Autonomous, which encompass both for-profit and non-for-profit business incubators, dropped from 61% to 34% from 2005 to 2012 (Dalziel, 2012). Funding is a major driver of this change, with provincial governments, particularly in Ontario, committing significant resources to developing the business incubation capacity of universities and colleges. The number of university affiliated business incubators has grown from 12% to 26% from 2005 to 2012.

Four provinces, Ontario, Quebec, British Columbia and Alberta host the vast majority of business incubators/accelerators with 87.3%. Ontario has the lion's share with 40% of the total business incubators/accelerators in Canada (Dalziel, 2012) and this is where my research focuses.

Measuring Success of Business Incubator Performance

It still remains unclear what constitutes an appropriate measure of performance for business incubators. According to Hausberg and Korreck (2018) from their systematic literature review of business incubators and accelerators "there is significant controversy about which measures are best suited to measure the performance of incubators" (p. 167) Presently there is no evaluation framework of incubator performance that could measure

the intangible factors of success (Hackett & Dilts, 2004; Mian, 1997; Phan, Siegel, & Wright, 2005). In addition, there are few studies that specifically measure the success of the firms located in business incubators, and research shows that simply locating in a business incubator is no guarantee of success (Lumpkin & Ireland, 1988). According to Phan et. al. (2005, p. 169) one of the main problems with research in this area "is that the typical dependent variable, the rate of firm survival (or failure), has little construct validity, since incubators are specifically designed to maintain and increase life span."

In their seminal work focusing on organizational sponsorship and founding environments as it relates to the survival rates of incubated firms from US UBIs, Amezcua et al. (2013), found that simply having resources is not always predictive of organizational survival. Their research investigated the survival of university business-incubated firms from 1994-2007 and whether creating a resource-munificent environment through organizational sponsorship always leads to positive outcomes for startups. The research captured organizational sponsorship through the impact of three services provided by UBIs, networking services, field-building services and direct support services and also took into consideration geographic founding density. Their research empirically demonstrated that collective structures introduced through business sponsorship do not always serve as "best-practice" and or "one-size-fits-all" to organizational survival (Amezcua et al. 2013). Amezcua et al. (2013) "found that the effectiveness of sponsorship is contingent on the fit of particular sponsorship activities with the degree of geographically based founding density of an environment" (p. 1643). The first major finding of the study was that networking sponsorship efforts reduce exit rates, but only where founding density is high. At mean industry founding density, firms

located in incubators offering network services were more likely to exit than firms located in incubators without that service. The second important finding indicates that field-building efforts in low founding density environments can lower exit rates for sponsored organizations. Additionally, the findings indicate that the effectiveness of field-building decreases quickly as founding density increases (Amezcua et al. 2013). Finally, direct support services were effective at reducing exit rates, again at higher levels of founding density. These findings suggest that sponsors, particularly policy makers responsible for large funding envelopes, are cognizant of the heterogeneity of activities and environmental conditions.

The following sections will examine the tangible and intangible factors that can be utilized to measure business incubator success.

Tangible Factors

A great deal of research in this area has been focused on identifying the economic benefits business incubators create for the economy. According to Adkins, Sherman and Yost (2002), the most important goal of an incubator is to contribute to the economic environment through job growth. In a recent study Al-Mubaraki and Busler (2010) found that the vast majority of incubators surveyed used graduation of clients as the primary factor in measuring their own success. Allen and McCluskey (1990) completed a large study of 127 business incubators in the US and they focused on three criteria: occupancy, jobs created and firms graduated. Phillips (2002) included additional indicators such as tenant revenues, number of patent applications per firm and the number of discontinued businesses. Bergek and Norrman (2008), go on to further suggest that most business incubation studies have focused on outcomes, but did not relate the outcomes to how

different incubators manage the incubation process.

Economic impact and graduation rates are important measures, but ultimately insufficient if we want to understand the full picture. More importantly, the question of the quality of development of incubator clients must be addressed (Schwartz & Gothner, 2009). In a recent review of the CAIP, Robbins and Crelinsten (2018) identified that job creation was the most critical metric, but, in fact, job creation does not equate with innovation, productivity or competitive advantage.

Firms must first acquire the necessary business skills to succeed in the long term before we address the economic impact issue. Business incubators must deliver quality services to firms so as to increase the firms' chances of success upon graduation (Wilcock, 1999; Hannon & Chaplin, 2000; Cammarata, 2003). As such, intangible factors become an important consideration.

In the most recent report (2019) released by the Canadian government (https://www.ic.gc.ca/eic/site/061.nsf/eng/03103.html#Toc4579866) investigating the success of business incubators and accelerators in Canada the performance measurement model investigates five metrics, four of which are performance indicators. The one subjective metric asks the company to assess the impact the business incubator/accelerator has had on company performance. Listed below are the five performance metrics used and their specific indicators.

Job Creation: Measures of the total number of jobs created, including more specific measures of the types of jobs that have been created (e.g., full-time vs. part-time positions inside and outside of Canada)

Revenues: Measures of any annual sales revenues, including a breakdown of

domestic and international sources.

Investment: Measures of the value and kind investment capital raised by companies.

Intellectual Property: Measures of the number of patent applications filed and granted.

BAI Impact Assessment: Measures the company's subjective assessment of the impact of BAI programming on company performance.

Intangible Factors

One unique feature of business incubators is their potential for creating and exploiting synergy (Bøllingtoft & Ulhøi, 2005). This makes a business incubator much more than just a physical space where new ventures can minimize start-up costs by accessing affordable space and shared services (Allen & Rahman, 1985). While recognizing the predictive value of the more tangible measures of incubators' performance, in order to have a deeper understanding of business incubator theory, it is important to investigate intangible factors as well.

Intangible factors include gaining legitimacy, social inputs, psychological support and working in an environment of peers (Bøllingtoft & Ulhøi, 2005). Hacket and Dilts (2004), describe an incubator as a network of individuals and organizations, including the incubator manager and staff, incubated companies, incubator advisory board, industry contacts, venture capitalists, angel investors and volunteers. Overall, the firm's success is related to strategic networking, not merely their presence in the incubator (Hughes, Ireland, & Morgan, 2007). Networks provide entrepreneurs with access to seed capital, equipment, information, contacts and moral support (Birley, 1985; Hutchinson, 1995;

Waldinger, Aldrich, & Ward, 1990). Hughes, Ireland and Morgan (2007) suggested that when incubating firms develop strong interactions within the network they generate social capital, which then creates substantial value and leads to elevated performance.

Building on the above notion, Adlesic and Slavec (2012) investigated how the exploitation of social networks takes place and which factors foster network exploitation. The authors investigated the influence of social network size, role models, individual experiences and firm establishment as a consequence of proactive exploitation of social networks within incubators. Their study confirmed that incubators provide more than the traditional service and space model; they also provide avenues for networking and creating social capital (Adlesic & Slavec, 2012). In addition, the study revealed that the incubatees' proactive exploitation of social networks had a positive influence on incubatee satisfaction; this in turn leads to incubatees having a more positive impact in terms of their commitment and trust to the incubator. In an exploratory study of three university based entrepreneurial ecosystems in France, Theodoraki, Messeghem and Rice (2017), suggested that all three social capital dimensions are relevant to the effective functioning of the ecosystem and contribute to its sustainability. The structural dimension provides access to resources, the cognitive dimension builds strengths among the ecosystem members and the relational dimension creates trust (Theodoraki et al. 2017).

In their book *The Rainforest*, Huang and Horowitt (2012), described the ideal ecosystem where the key ingredients of innovation – talent, ideas, and capital – are allowed to flow through the system. But in order for that to happen there must be "diversity of talents, trust across social barriers, motivations that rise above short-term rationality, and social norms that promote rapid, "promiscuous" collaboration and

experimentation among individuals.(p. 10)" In order to create ecosystems that reflect the culture of the Rainforest model described by Huang and Horowitt (2012), using social capital theory is a natural fit.

Social Capital Theory

Pierre Bourdieu first defined the concept of social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition" (1986, p. 248). Social capital can be described as an asset embedded in the relationships of networks, communities, individuals and societies (Nahapiet & Ghoshal 1998; Burt 1997; Walker, Kogut, & Shan 1997). Social capital theory is based on the premise that a network provides value to its members by allowing them access to information and resources embedded within the network (Bourdieu, 1985; Seibert, Kraimer, & Liden, 2001). Information benefits can occur in the form of access, timing and referrals (Burt 1992). Gedajlovic and his colleagues (2013) argue that social capital is uniquely situated to address the needs of entrepreneurship scholars, as it helps explain the processes and outcomes of social interactions across multiple levels of analysis and diverse contexts.

For my research, I utilized Nahapiet and Goshal's (1998) framework of social capital. Such categorization has been widely adopted in other studies such as Liao and Welsh (2005), Anderson and Jack (2002), and Tsai and Ghoshal (1998). They take a multidimensional view where social capital is broken into three dimensions: structural capital, relational capital, and cognitive capital. This model has also been previously used by other researchers (see, for example, Adlesic & Slavec, 2012; Inkpen & Tsang, 2005; Puhakka, 2002; Yli-Renko, 1999, Tötterman & Sten, 2005).

Structural capital refers to social interactions and ties. Strong social interaction and ties can assist entrepreneurs in sharing and exchanging resources, as well as recognizing business opportunities (Liao & Welsch, 2005). Nahapiet and Ghoshal (1998), define structural capital as the overall pattern of connections between actors, in other words, who the actor is able to reach. Structural capital defines the ability or potential of nascent entrepreneurs to access resources, information and support that lead to venture creation (Liao & Welsch, 2005). Putnam (1993), confirmed that this type of social capital encourages cooperative behavior, leading to the development of new forms of association and innovativeness.

Relational capital relates to trust and trustfulness. According to Granovetter (1992), this dimension of social capital relates to the types of personal relationships that people have developed though a history of interaction, focusing in particular on respect, trust, trustfulness and friendliness. An entrepreneur with a higher degree of trust is able to better leverage relationships to his or her advantage. The more channels of communication available, the higher the interaction, the easier for entrepreneurs to develop trust and trustfulness, which ultimately provides access to more information, resources and other forms of transaction occurring in the entrepreneurial network (DiMaggio 1992; Hansen & Allen 1992; Nohria 1992). As identified by Theodoraki, et al. (2017) and Rijnsoever (2019), a stable environment where trust dominates encourages the transfer of knowledge and capabilities among members. When trust is built up between parties, there is a greater propensity to engage in cooperative activity, which leads to further trust being generated (Fukuyama, 1995). The higher the degree of trust the more likely an entrepreneurial agent will be able to acquire knowledge, information

and other resources available in their entrepreneurial network. When a culture of trust exists, it is more likely that startups will broker relationships between other startups and different actors (Rinjnsoever, 2019).

The cognitive dimension of social capital relates to shared norms. Nahapiet and Ghoshal (1998) define cognitive capital as resources providing "shared representations, interpretations and systems of meaning among parties (p. 244)." Shared meanings are created and reinforced through common language and codes as well as shared narratives. Systems of meaning are developed, applied and combined through ongoing dialogue and the collective process of sense making among a group of people (Weick, 1995). Norms exist when the socially defined right to control an action is held by others and not the actor (Coleman, 1990). This is very much in line with institutional isomorphism (the concept of isomorphism can be described as a constraining process that forces one unit of the population to resemble other units that face similar conditions), where normative and mimetic forces in a network shape the behavior of the actors (DiMaggio & Powell, 1983). Normative isomorphic forces influence customary and professional procedures and activities deemed socially expected and responsible (Meyer, Ramirez & Soysal, 1992). Mimetic isomorphism is often a result of organizations attempting to limit uncertainty by modeling their behavior after similar successful organizations in their field (DiMaggio & Powell, 1983). Thus, a community that supports the entrepreneurial spirit is more willing to accept failure and provide access to information and resources. Shared goals and culture leads to mutual awareness, which "represents the standards of behaviour, objectives of collaboration, and shared values established among the members to create a collective identity that is appropriate to each member." (Theodoraki et al., 2017, p. 157)

Research Propositions

Based on the review of past literature (see Appendix 7), three propositions, which address the main research question, "How is social capital created across different types of business incubators," and which guided this study are outlined below.

Proposition 1

Business incubators create social capital by expanding the network of the companies residing within the incubator.

A business incubator can provide an entrepreneur with the appropriate internal and external networks necessary to succeed (Lyons, 2002). Lyons (2002) further stresses that the most important service an incubator offers is the opportunity for networking among tenant companies. Because startups find themselves at a resource disadvantage, one of the most critical tasks performed by a business incubator is to identify local and external partners and build linkages to them. These networks will assist entrepreneurs to overcome obstacles and help them build additional networks such as they require (Lee & Osteryoung, 2004). Hackett and Dilts (2004) conducted a systematic review of the incubator-incubation literature and one of their major conclusions was that network relationship building is the most important value-added component of the incubation process. However, entrepreneurs may encounter difficulties in locating the right individuals in a complex network, therefore it is important that incubator personnel support the creation and development of value-adding network relations (Rice, 2002). Business incubators support startups by providing them credibility and helping them build business networks (Tötterman & Sten, 2005) and these networks connect entrepreneurs to privileged business opportunities (Redondo & Camarero, 2018).

Furthermore, a company may appear more trustworthy, if it belongs to the network of the business incubator ecosystem.

Proposition 2

Business incubators create social capital by building trust between the companies residing within the incubator.

Relational social capital in a business incubator includes the degree of trust between tenants and the extent to which the tenants are friendly, identify with each other and feel a sense of community (Ascigil & Magner, 2009; Liao & Welsch, 2005; Nahapiet & Ghoshal, 1998). In their study of three Finnish business incubators, Tötterman and Sten (2008), found that trust was established within the incubator community and tenants were willing to share company related information with incubator staff and to a certain extent, other tenants. In addition, all the entrepreneurs that participated in the study confirmed that they were confident the incubator staff were trustworthy. An entrepreneur that has achieved a higher degree of trust and trustfulness can leverage relationships to her or his advantage (Liao & Welsch, 2005). Trust is the precursor to resource acquisition and knowledge exchange, thus an entrepreneur with a higher degree of trust will be more successful in appropriating knowledge and information from their social network (Rijnsoever, 2019). Tötterman and Sten (2008), as well as Coleman (1990), also suggested that there is a relationship between the level of trust and the level of risk between entrepreneurial actors. In their study Adlesic and Slavec (2012) confirmed that commitment to and trust in incubators are the outcomes of incubator clients' satisfaction with the incubators. According to Bøllingtoft and Ulhøi's (2005) study, networking is dependent on whether incubator tenants have a positive social relationship with each other, which leads to trust and ultimately determines if they will cooperate in the future.

Therefore, trust is a driving force behind networking and cooperation, and protects tenants from opportunistic behavior, since entrepreneurs are afraid their ideas might be stolen (McAdam & Marlow, 2007; Redondo & Camarero, 2018; Vandestraeten & Matthyssens, 2012).

Proposition 3

Business incubators create social capital by providing opportunities for knowledge transfer and experience sharing between incubatees through shared norms and vision.

According to Allen and Rahman (1985), business incubators help firms indirectly by placing the entrepreneurial actor in an environment providing social inputs, resources, networks and psychological support between the incubatees. Hansen et. al., (2000) suggested that business incubators generate networking attitudes which foster partnerships among startups located in the same facility that can lead to sharing of information and talent. In addition, incubators provide a platform conducive to knowledge transfer and experience sharing among the incubatees (Bergek & Norrman, 2008; Wu, Wang & Tsai, 2020). Tötterman and Sten (2005) found that tenants of business incubators find it beneficial to be able to share knowledge and experience regarding business matters. Liao and Welsch (2005) suggested that a community that places a high emphasis on entrepreneurship will be more accepting of failure and encourage exchange of information. According to Wasko and Faraj (2005) knowledge sharing requires shared understanding, such as shared culture and norms. As such, one of the main reasons a startup chooses to reside in an incubator is to develop cognitively connected relationships to other members of the incubator ecosystem, which assists in creating a successful enterprise. In their research of Australian social enterprises, Weerakoon et al. (2019) found statistical evidence to indicate that the stronger the ties,

the more there are opportunities for knowledge exchange. Business incubators strengthen and enrich the existing skills of tenants by facilitating the transfer of knowledge and information (Ascigil & Magner, 2009). Chow and Chan (2008) found that social network and shared goals directly influenced the attitude and subjective norms about knowledge sharing.

Summary of the Literature Review

Measuring the success of business incubators is a difficult task, made even more difficult by the fact that no two incubators are alike. More importantly there is a lack of a complete evaluation framework of incubator performance that takes into account intangible factors as a measure of success (Hackett & Dilts, 2004; Mian, 1997; Phan, Siegel, & Wright, 2005).

There has been little focus on the social capital that is built through the networking activity that occurs within a business incubator. Business incubators provide much more than the traditional role of space and service provider, they also provide avenues to build social capital through incubator networking opportunities, support from the incubator staff and other incubatees, and access to contacts and professional services.

Bollingtoft and Ulhoi's (2005) research provided insight into two important areas: 1) the mechanisms connected to individuals and their relations with each other in an incubator; and 2) the mechanisms related to the construction of the incubator. They found that networking is dependent, to some extent, on whether tenants have a (positive) social relation with each other or not. Entrepreneurial actors need to know each other to some degree, before they cooperate and develop trust. In terms of the physical construction of the incubator itself, the closer the physical proximity, the more dense the internal network

activities become.

The findings of Bollingtoft and Ulhoi (2005) provided greater depth, however, they focused on one incubator only, and therefore the findings cannot be generalized. The approach I want to take is to examine different types of business incubators and apply both quantitative and qualitative methods to uncover how social capital is created across different types of business incubators.

The next chapter will outline the research design that will be used to gather data relative to the three propositions that were created in order to help answer the main research question: How is social capital created across different types of business incubators? In summary, the three propositions are:

Proposition 1*: Business incubators create social capital by expanding the network of the companies residing within the incubator*.

Proposition 2: *Business incubators create social capital by building trust between the companies residing within the incubator.*

Proposition 3: *Business incubators create social capital by providing opportunities for knowledge transfer and experience sharing between incubatees through shared norms and vision.*

Chapter 3. Methodology

Research Question

To date no one has explored how social capital is created across different types of business incubators. In my research, I examined two types of business incubator models found in Ontario and applied both quantitative and qualitative methods to uncover how they create social capital for the start-ups residing within. As such, I investigated two NEDBIs and two UBIs. Furthermore, I explored whether certain incubators are more conducive to the creation of social capital. Below I have listed the research question I am pursuing:

How is social capital created across different types of business incubators?

Research Design

The research design was exploratory in nature with the goal of shedding light on how social capital is created within two different types of Canadian business incubators, nonprofit economic development business incubators (NEDBIs) and university business incubators (UBIs). Mason, Augustyn, and Seakhoa-King (2010) stated, "Exploratory studies in the social sciences are being increasingly advocated, particularly in relation to new research themes or when addressing an existing issue from a new perspective" (p. 432).

As per the business incubator descriptions provided in Table 2 (p. 34) NEDBIs are similar to the non-profit development corporation incubators and their focus is on job creation and enhancing the entrepreneurial culture. UBIs fit the description of academic incubators where the main focus is commercialization of research and collaboration with

the university. I am focusing on these two types of business incubators because they are two of the most common business incubators models found in Ontario and Canada.

I utilized social capital as the theoretical lens for my research. According to Rice (2002), one of the main mechanisms that incubators provide to help entrepreneurs' fill resource gaps is facilitating networking and providing access to external resources such as advisors, customers and potential employees. Social capital has been used to measure startup and network formation (Gordon, Kogut, & Shan, 1997), firm performance (Barjargal, 2003), venture formation (Liao & Welsch, 2005), and learning and knowledge transfer (Inkpen & Tsang, 2005). I utilized the three-factor structure of social capital, which looks at structural, cognitive and relational capital and has been empirically tested and confirmed by a number of studies including Liao and Welsch's (2005) study of the role of social capital in venture creation, Totternman and Sten (2005) who investigated business incubation and social capital among business incubators in Finland, and Ascigil and Manger (2009) who looked at business incubators and how entrepreneurs leverage skill utilization through social capital.

My research builds on the current body of research and examines how social capital is created within business incubators and whether certain types of incubators are more successful at creating social capital than others. I also look at how that social capital translates into value to startups be it through access to grants, knowledge and support networks. The research provides detail and depth to the phenomenon of social capital in the business incubator setting in Ontario, Canada.

Mixed Methods Approach

Creswell (2003), suggested that the criteria for selecting an approach should be largely influenced by the research question itself and by the personal experiences of the researcher. Teddlie and Tashakkori (2009) stated that a methodology encompasses the researcher's "world view considerations, general preferences for designs, sampling logic, data collection and analytical strategies" and includes " guidelines for making inferences, and the criteria for assessing improving quality" (Teddlie & Tashakkori, 2009, p. 21).

Thus, the planning and design stage is impacted by the researcher's interpretation about what are credible data, and what the approach to collect and analyze these data relative to addressing your research question is (Collins, 2010). Because of the nature of the question that I am trying to answer, how social capital is created in business incubator settings and across different types of business incubators, I needed a methodology that would provide me with multiple perspectives and a more complete understanding of the phenomenon. As such I used a mixed methods approach. This method combines the singular reality of quantitative research with the multiple realities available through subjective interpretation of qualitative research, thus "solving practical problems in the real world" (Feilzer, 2010, p.8). The basic premise is that by using quantitative and qualitative data together, I will gain a better understanding of data relative to my research question.

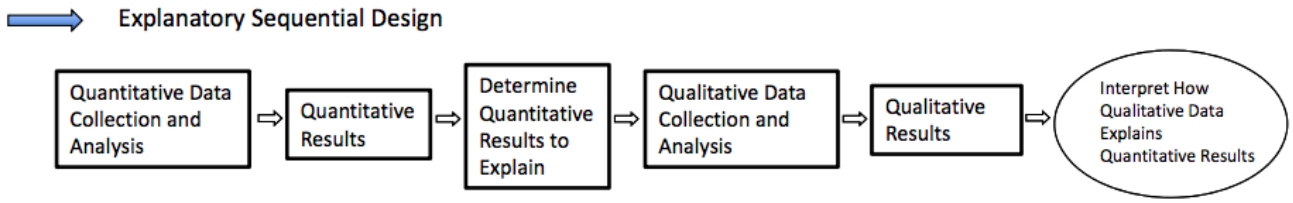
From a personal perspective, having been intimately involved in the business incubation world for the past eight years professionally and academically, I felt that mixed methods is the best method to study this phenomenon and gain a more complete understanding. I investigated the creation of social capital across different types of

business incubators and explored the relationships between social capital and tangible economic outcomes. It would not have been possible to accomplish this by utilizing only quantitative or qualitative methods on their own.

In summary, a mixed-methods explanatory sequential design was employed, as described below.

Table 4

Explanatory Sequential Design for Mixed Methods Research



Note: Sourced from Creswell, J.W. (2013) Steps in Conducting a Scholarly Mixed Methods Study

Development of Data Collection Strategy

This research explored the creation of social capital across different types of business incubators in Ontario, Canada. I chose to focus on Ontario to minimize variability of incubator performance related to regional differences within North America. Ontario also has the largest number of business incubators and business accelerators in Canada with 40% located in the province (Deep Centre, 2015). Table 5 presents the distribution of business incubators and accelerators by province in Canada.

Table 5

Provincial Distribution of Business Incubators and Accelerators in Canada

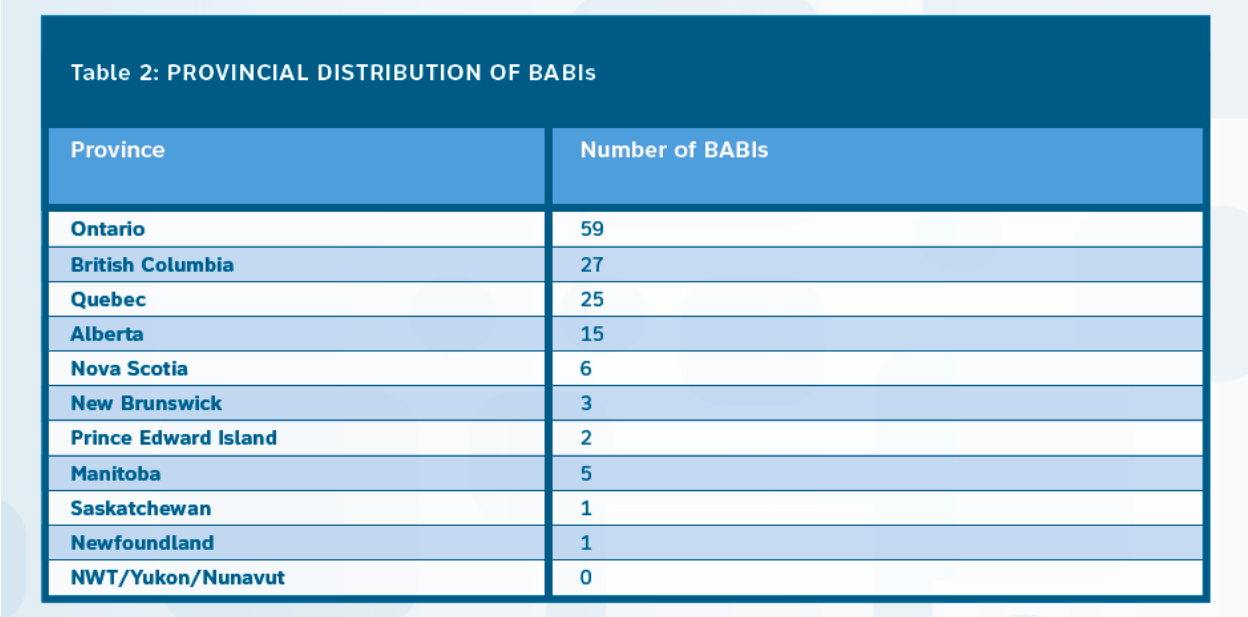


Table 2: PROVINCIAL DISTRIBUTION OF BABIs

Province	Number of BABIs
Ontario	59
British Columbia	27
Quebec	25
Alberta	15
Nova Scotia	6
New Brunswick	3
Prince Edward Island	2
Manitoba	5
Saskatchewan	1
Newfoundland	1
NWT/Yukon/Nunavut	0

Source: Accelerating Canada's Startup Ecosystem: A Review of Canadian Business Incubators and Business Accelerators (www.deepcentre.com)

Using the report created by The Evidence Network (Dalziel, 2012), I was able to identify and create a list of nine business incubators, that I could approach. I also approached Accelerator Centre Waterloo, which is an accelerator, as they were collocated with Communitech Technology Inc. and I had existing relationships with their staff having toured the facilities previously. The business incubators selected also provided space and services to their incubatees. Business incubators that only provided space or services were not included, because they do not fit the definition of a business incubator, as I am using for this study (see definition on page 30), which includes both space and services. I wanted the business incubators to capture the tangible resources such as space, shared equipment and administrative services, as well as intangible resources such as

knowledge and network access (Housberg & Korreck, 2018). The business incubators had to fulfill the following criteria:

- The business incubators will be located in Ontario within a relatively close geographic proximity. The rationale for choosing these business incubators is that they operate within similar economic and political environments, thus controlling for different externality effects.
- The incubators must provide both space and services, as many incubators provide services or space only, thus ensuring similar operations.
- The business incubator must have been operational for a minimum of three years, thus reducing recency effects.

Originally, I approached nine business incubators and one accelerator and asked them to participate in my research. The business incubators are as follows: Centre for Social Innovation, Communitech Technology Inc., the Downtown Windsor Business Accelerator, Epicentre - University of Windsor, Sault. Ste. Marie Innovation Centre, Startup Garage – University of Ottawa, The Forge – McMaster University, Velocity Garage – University of Waterloo, and Springboard Innovation Centre. The Accelerator Centre Waterloo is ranked as Canada's number one private business accelerator.

As discussed earlier no two business incubators are exactly alike, although they may share similar goals. In terms of the purpose and main goals, when we examine these incubators across business incubator models described in Table 2 (p. 35), the Centre for Social Innovation, Communitech Technology Inc., the Downtown Windsor Business Accelerator, and Springboard Innovation Centre are closer to the non profit development corporation incubators, which focus on job creation and building the entrepreneurial climate. It is important to note that Communitech Technology Inc. also acts as one of the

17 regional innovation centres (RIC) in Ontario and is larger in terms of resources and staff than the other business incubators in this study.

The Epicentre - University of Windsor, Startup Garage – University of Ottawa, The Forge – McMaster University, and Velocity Garage – University of Waterloo are business incubators that most closely resemble academic incubators as described in Table 2 (p. 35). The Sault. Ste. Marie Innovation Centre is the anchor tenant of Essar Convergence Centre at Algoma University, which brings together teaching, research and commercial activities. They work with many university startups, but also act as an Ontario regional innovation centre and therefore serve a broader market.

As a result of my professional experience, managing a business incubator for the past eight years, I knew a number of the people involved in managing the business incubators. For the business incubators for which I did not have contact information, I was able to identify a contact through the business incubator website and/or LinkedIn.

Once I had identified the necessary individuals to contact, I sent all of them an introductory email explaining my research objectives and requesting their collaboration on this project. If they agreed to assist, they sent out my survey to their members by email. Eight of the ten individuals were happy to help, with only two business incubator managers giving me a hard no. For all eight of the participating business incubator managers I provided a link to the online survey, which included the online consent form approved by the Athabasca University Research Ethics Board (see Appendix 2). The consent form outlined the survey objectives and provided contact information for the researcher and the University. The consent message also explained the research intent and confidentiality provisions.

Because I utilized a sequential approach, where I collected all the quantitative data first, the statistical data analysis began before the qualitative data were collected. Relationships between the quantitative and qualitative samples as recommended by Collins et al. (2007) were identical, with the same participants that responded to the survey asked if they would be willing to participate in a follow up interview.

Reliability and Validity

Quantitative Data

The data reliability and validity demonstrate the rigor of the research process and the credibility of research findings. According to Roberts (2006), a reliable test, procedure or tool is one that will produce the same results in different circumstances assuming nothing has changed. Reliability is generally tested using Cronbach's alpha to verify internal consistency, which is the relationship between all the results obtained from a single test or survey (Roberts, 2006; Cooper & Schindler, 2014).

Validity is the extent to which a test measures what it claims to measure (Cooper & Schindler, 2014). The measures of validity are external and internal. External validity is being able to generalize the findings to other situations or people. Internal validity includes content validity, criterion related validity and construct validity and represents the confidence that we can place in the cause-effect relationship of a scientific study (Eby, 1994). Content validity is generally achieved through pilot testing and expert reviews and focuses on the relevance of the items such as the survey instrument. Criterion-related validity measures how well one measure predicts an outcome for another measure (Glen, 2015). Construct validity is the extent to which the measurement utilized actually tests the theory it is measuring. There are two subsets of construct

validity: convergent construct validity and discriminant construct validity. To show construct validity, one needs to be able to demonstrate both convergent and discriminant validity (Trochim, 2020):

- measures of constructs that theoretically should be related to each other are, in fact, observed to be related to each other (that is, you should be able to show a correspondence or convergence between similar constructs)

and

- measures of constructs that theoretically should not be related to each other are, in fact, observed to not be related to each other (that is, you should be able to discriminate between dissimilar constructs)

Table 6

Strategies Used to Demonstrate Reliability and Validity

Strategies used to Demostrate Reliability and Validity - Quantitative Data		
(Adapted from Cooper & Shindler, 2014; Roberts, 2006; Eby, 1994)		
Quality Criterion	**Overall strategies used to achieve each quality criterion**	**Specific strategies and tactics used to achieve each quality criterion**
Validity	Review of questions	Question reviewed by panel of experts (business incubation practitioners)
	Pilot testing of the survey	Recruited TechTown Detroit and the Downtown Windsor Business Accelerator to complete a pilot test
		Debriefed a number of the partipants to the survey to ensure that the survey was clear to the participants and was capturing the correct data
Reliability	Use of statistical techniques	Computed Cronbach's Alpha to test for internal consistency

The quantitative component of the research was survey based, with a web-based link to a questionnaire sent out to the preselected business incubators. The Managing Directors/Executive Directors of each incubator were asked to forward the link to the questionnaire to all their members. The survey instrument itself was adapted from a survey used in research investigating social capital in business incubation by Totternman and Sten (2005). To enhance validity, I utilized a pilot study to test the questionnaire utilizing Tech Town Detroit, a university business incubator located in Detroit, Michigan. Based on the pilot study, only minor changes were made and thus, in general, the original questionnaire fulfilled its purpose (See Appendix 1 for the questionnaire). For example changed “Provided assistance to find appropriate resources for tenants” to “The incubator provides assistance to find appropriate resources for tenants”.

The first five questions of the survey captured the structural dimension of social

capital, specifically how incubator tenants can benefit from the network of the business incubator and the network of other firms located in the incubator to gain access to resources. For example, respondents were asked to indicate (on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree") how strongly they agree or disagree with the following statement about network support: "The incubator is capable of providing scarce resources to tenants."

Questions 6 to 8 captured the cognitive component of social capital such as shared norms and culture. There is an expectation from incubator tenants that incubator personnel and other tenants will be there for them when they need assistance. For example, respondents were asked to indicate (on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree") how strongly they agree or disagree with the following statement about network shared goals and narratives: "The tenant mix leads to conversation and resource exchange among incubator members."

The last four questions addressed the relational component of social capital, particularly the level of trust and collaboration among tenants. It also touched on the role the incubator personnel play in supporting trust, networking and social interaction. For example, respondents were asked to indicate (on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree") how strongly they agree or disagree with the following statement about trust: "Incubator personnel supports trust, networking, and social interaction among tenants."

In addition, I added a number of questions that captured tangible performance data and demographic information. The portion of the questionnaire that captured

tangible performance data was informed by research completed by the National Business Incubation Association, presently known as InBIA, and reflected the performance metric indicators that are the main focus of the Canadian government as supported by the report on Business Incubator and Accelerator performance released in 2017 (https://www.ic.gc.ca/eic/site/061.nsf/eng/03103.html#Toc4579866). There was also a question asking the participants for permission to connect with them for an interview in the future.

As mentioned, from the ten business incubators that I reached out to originally, eight agreed to send out my survey to their members and two refused to participate. I run annual surveys for the business incubator that I manage and the response rate is usually around 30%. Each incubator I targeted has between 30 to 35 startups therefore I was expecting to have a sample of 75 to 100 respondents. Unfortunately, from the eight business incubators that sent out the survey, I received responses from founders from only four of the business incubators. Below is a list of the four business incubators that participated in the study. From the four participating business incubators, a total number of 27 startups responded to the survey, with a total of 22 usable responses, or a response rate of 11.25 percent (calculating 27 responses from a potential total of 240 companies - 30 companies per incubator times eight incubators). From the four business incubators that participated two were classified as nonprofit economic development and two were UBIs so that data were drawn from both types of incubator (see Table 7 for the four participants). The responses for the UBIs included five responses for The Forge McMaster and one from Sault St. Marie Innovation Centre – Algoma University. For the nonprofit economic development business incubators there were seven responses from

the Centre for Social Innovation and nine responses from the Downtown Windsor Business Accelerator.

Table 7

Business Incubators Participating in the Study

Nonprofit Business Incubator	**Academic Business Incubator**
Centre for Social Innovation https://socialinnovation.ca/	The Forge McMaster https://theforge.mcmaster.ca/
Downtown Windsor Business Accelerator https://www.downtownaccelerator.com/	Sault St. Marie Innovation Centre – Algoma University https://www.ssmic.com/

Qualitative Data

Qualitative research cannot be so easily tested for validity and reliability, so attaining trustworthiness is a goal of all qualitative research. According to Guba (1981) there are four criteria that need to be considered to ensure the trustworthiness of a qualitative study: credibility, transferability, dependability and confirmability. Credibility requires that the results align well with reality and refers to the confidence in the ability of the data and process of analysis to address the intended goal (Shenton, 2004). Transferability is the extent to which the findings can be transferred to another group or setting. A rich presentation of the findings, together with appropriate quotations, will increase transferability (Graneheim & Lundman, 2004). Dependability is important to trustworthiness because it establishes the research study's findings as consistent and repeatable. Dependability involves participants' evaluation of the findings, interpretation and recommendations of the study such that all are supported by the data as received

from participants of the study (Korstjens & Moser, 2018). In order to achieve dependability one strategy is to create an audit trail. This can be achieved by transparently describing the research steps taken from the start of a research project to the development and reporting of the findings. The records of the research path are kept throughout the study (Korstjens & Moser, 2018). According to Shenton (2004), confirmability is achieved when readers are assured that the findings of the study are the results of the experiences and ideas of the informants, rather than the characteristics and preferences of the researcher. Table 8 (below) outlines the strategies that can be used to achieve each quality criterion.

Table 8

Strategies used to Demonstrate Credibility, Transferability, Dependability and Confirmability

Strategies used to Demostrate Credibility, Transferability, Dependability and Confirmability of Qualitative Methods (adopted from Shenton, 2004)		
Quality Criterion	**Overall strategies to achieve each quality criterion**	**Specific strategies and tactics used to achieve each quality criterion**
Credibility	Use of appropraite well-recognized research methods	The study used a semi-structured interview, which is a well-recognized method.
	Development of early familiarity with culture of participating organizations	Having worked in the business incubation field for the past 8 years has provided me with great familiarity with the cuslture of the participating organizations. I have also visited a number of the business incubators I reached out to for the study and spoken in depth with staff and members.
	Tactics to help ensure honesty of partipants	Participants were given assurance of anonimity and the option to refuse to participate. They were encourenged to be open and frank.
Transferability	Provided the necessary background data to establish context of the study and description of the phenomenon being studied.	Detailed description of social capital in business incubation research and discussion of newer studies that have recently studied the phenomenon (Theodoraki, et al; Redondo and Camarero; Spigel; Houseberg and Korreck)
Dependability	Employment of overlapping methods	The study used a mixed methods design thus ensuring the use of overlapping methods.
Confirmability	Triangulation to reduce effect of investigator bias	The study employed mixed methods, which is, in effect, triangulation.

The qualitative component of the research was conducted through semi-structured interviews, which took place following the collection of the quantitative data. One of the

questions included in the questionnaire asked whether participants would be willing to engage in a follow up interview for this research. The individuals who agreed to the follow up interview were asked to provide their contact information. A total of eight individuals responded that they would be amenable to a follow up interview, with only six individuals ultimately confirming. The additional two founders did not respond to two additional follow up emails. Email was my only method of contacting the participants so I could not reach them by other means. Four founders were from nonprofit business incubators and two founders were from UBIs. The interviews ranged from 40 minutes to 1 hour and 5 minutes.

In order to capture the qualitative data component, I utilized semi-structured interviews (see Appendix 6). Before the interviews began, I had a briefing session with the participating companies, with the participants being the founder or cofounder of the company, explaining the purpose of the study. I conducted three of my interviews by phone and three in person.

Krefting (1991) recommended that novice researchers plan for opportunities to have prolonged exposure to the phenomenon under study so as to establish rapport with the participants. Managing a business incubator for the past eight years granted me an exceptional opportunity to connect with many startup founders. This experience was extremely beneficial in helping establish a good rapport with the participants.

Ethical Considerations

The research design was reviewed by the ethics review board of Athabasca University. The copy of the certificate can be found in Appendix 3 and 4. The ethics application featured the careful consideration given to the need to ensure privacy,

anonymity and confidentiality for all participants, particularly in any published results. Participants were informed that they could withdraw from the study at any time.

Researcher Bias

A key criterion for confirmability is the extent to which the researcher admits his or her own predispositions (Miles & Huberman, 1994). Managing a business incubator for the past eight years I have had the opportunity to interact with hundreds of entrepreneurs as well visit and connect with colleagues from around the globe. One of the reasons I was inspired to pursue this research is because I have experienced first-hand the power of social capital across entrepreneurial ecosystems in both Canada and the US. Therefore, I must profess, from personal experience, that I believe social capital is a powerful tool that business incubators can utilize to help their clients. With that in mind it is important to acknowledge that throughout this process I tried to be aware of my potential biases and maintain objectivity. It is impossible to remove all bias, but I minimized the bias by ensuring that all proposed themes were linked back to the words used by the participants or found in peer-reviewed research.

Summary of Methodology

This chapter detailed how the study was designed, including the ethical considerations for the participants, as well as the approach for data collection. A mixed-methods research design that included an online survey and semi-structured interviews was used to carry out this study, with several steps taken to ensure reliability, validity, and trustworthiness of the data. The next chapter reviews the findings resulting from the surveys and interviews that were conducted.

Chapter 4: Data Analysis and Findings

Following from the previous chapter on methodology, this chapter explores the results from the data collected. Following a mixed methods explanatory sequential design, I focus on the quantitative data analysis results first and then move on to the qualitative data collection, analysis, and results. I provide a summary to conclude the chapter. The findings answer the research propositions outlined in Chapter 2:

Proposition 1*: Business incubators create social capital by expanding the network of the companies residing within the incubator*.

Proposition 2: *Business incubators create social capital by building trust between the companies residing within the incubator.*

Proposition 3: *Business incubators create social capital by providing opportunities for knowledge transfer and experience sharing between incubatees through shared norms and vision.*

Quantitative Results

The survey participation was much lower than expected, with only 27 survey responses, or a response rate of only 11.25%. From the 27 survey responses, only 22 responses were usable as five of the respondents did not fit the original criteria or had key information missing, thus making them unusable. There were a total of 16 responses from founders located in NEDBIs and six responses from founders located in UBIs. Such a small sample size made it impossible to perform in depth quantitative analysis or draw any valid conclusions.

The low number of responses is disappointing, but given that this is exploratory research there are some very interesting insights that we can draw from the survey data that were collected, and can use to inform future research. Additionally, the survey

responses helped to inform the qualitative portion of the data collection. Table 9 (below) presents the demographic data for the survey participants.

Table 9

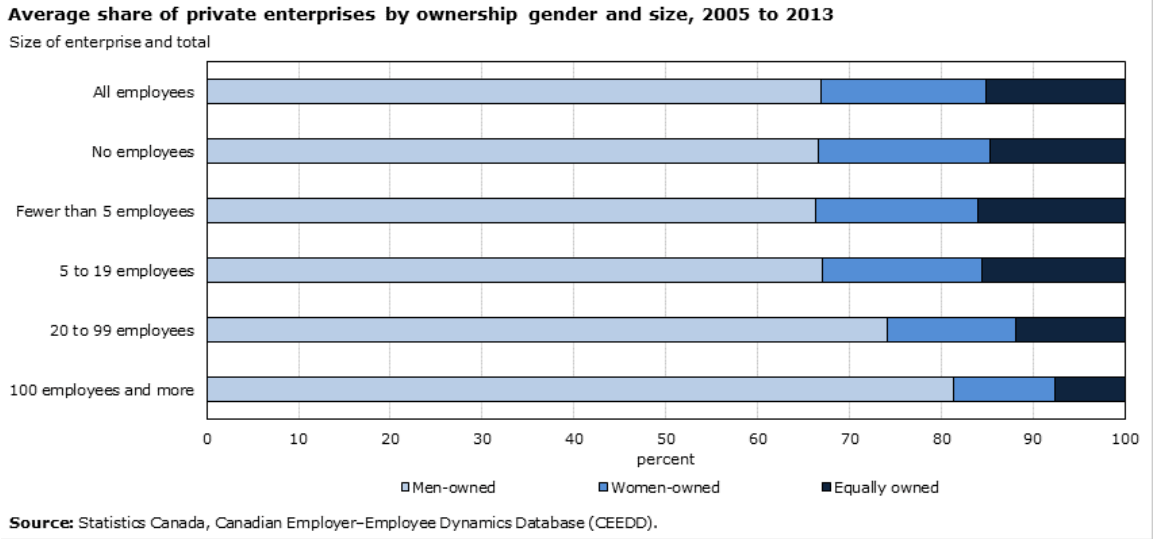
Demographic Data of Participants

		Academic Incubator	Non-Profit Economic Development
Gender	Female	33.33	37.50
	Male	66.67	62.50
Age (in years)	15-24	33.33	6.25
	25-34	50.00	43.75
	35-44	0.00	18.75
	45-54	0.00	25.00
	55-64	16.67	6.25
Education	College Degree	0.00	18.75
	Doctorate Degree	16.67	6.25
	High School Diploma	0.00	6.25
	Master's Degree	16.67	37.50
	University Bachelor's Degree	66.67	31.25

UBIs had 33.3% (two out of six companies) women founders and NEDBIs had 37.5% (six out of sixteen companies) women founders. Recognizing that this is a small sample, this is an improvement when comparing with data provided by Grecou, Li and Liu (2018), who analyzed StatsCan data and found that listed women-owned enterprises were at 18% between 2005 and 2013. I have included the chart from Statistics Canada (2018) for comparison purposes in Table 10. It is also important to note that women-owned enterprises were more prevalent among smaller enterprises. Women-owned enterprises accounted for 17% to 19% of enterprises with fewer than 20 employees. They also represent 14% of enterprises with more than 20 but fewer than 100 employees. For enterprises over 100 employees and more the number of women-owned enterprises drops to 11%. The relative growth was the strongest for women-owned enterprises with 5 to 19 employees, with 2.7% and women-owned enterprises with 0 employees, with 2.3% increase.

Table 10

Statistics Canada Average Share of Private Enterprises by Ownership Gender and Size



Source: https://www150.statcan.gc.ca/n1/pub/11-626-x/11-626-x2018083-eng.htm

In terms of age, for the academic business incubator founders, a large percentage were young, with 50% (three out of six) of participants were in the age category of 25 and 34 years of age. The breakdown for non-profit economic development incubators was similar with 43.75% (seven out of sixteen) falling between the 25-34 age group. The next highest bracket was represented by the 45-54 age group with 25% (four out of sixteen) of the participants, followed by 35-44 years of age with 18.75 (three out of sixteen) of the participants. Rounding out the non-profit incubators there were 6.25 % (one out of sixteen) representation for both 15-25 years of age and 55-65 years of age.

The education breakdown for UBIs fell into three categories. The majority, 66.67% (four out of six) had a bachelor's degree, with master's degree and doctorate degree each representing 16.67% (one out of six) of the participants. When looking at the

non-profit collaborative incubators, each education category was represented with the largest component being master's degree with 37.5%, (six out of sixteen) followed by bachelor's degree with 31.25% (five out of sixteen), college degree with 18.75% (three out of sixteen), and doctorate degree and high school diploma with 6.25% (one out of sixteen) respectively.

After determining the demographic characteristics of the participants, correlational and descriptive data analyses were conducted. Table 11 provides the mean of all variables as well as the correlation between variables. Given the small sample size, the data are only appropriate to present for exploratory and descriptive purposes, not statistical comparison.

Table 11

Descriptives of Variables

	N	Mean	SD	Min	Max
Structural Support	22	4.10	0.63	2.60	5.0
Cognitive Support	22	4.06	0.87	1.67	5.0
Relational Support	22	3.93	0.77	2.25	5.0
Total Support	22	4.03	0.68	2.17	4.8
Gross Revenue (in 1000$)	22	146.95	430.91	0.00	2000.0
Grant Capital (in 1000$)	22	79.00	242.07	0.00	1000.0

There were a total of 22 responses from companies located across four different business incubators. The Downtown Windsor Busines Accelerator (DWBA) had nine responses, the Centre for Social Innovation (CSI) had seven responses, The Forge (Forge) had 5 responses and Sault Ste. Marie Innovation Centre (SSMIC) had one response. The analysis focuses on each incubator individually and examines the three dimensions of social capital, as well as a number of economic outcomes.

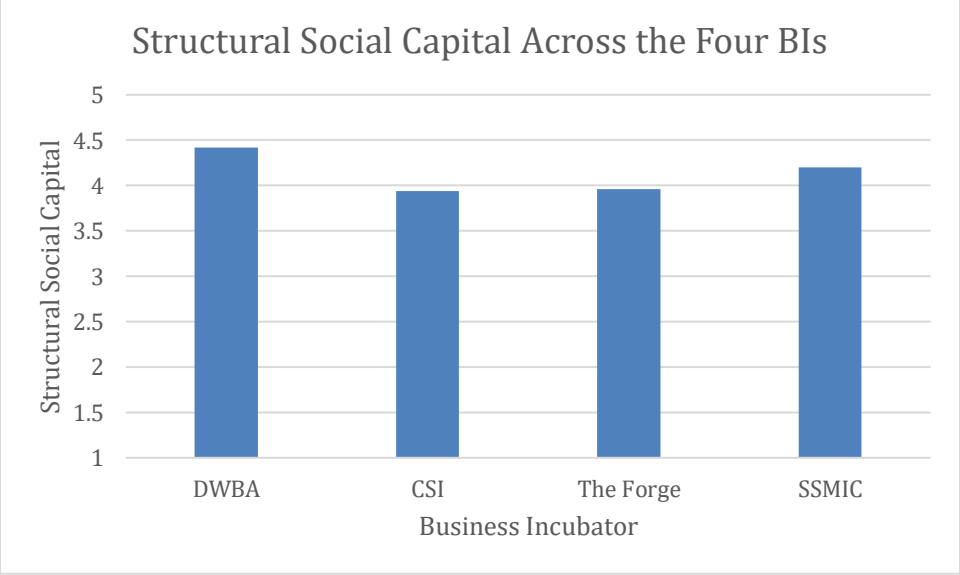
For the analysis of social capital, I looked at all of the responses from each business incubator and counted the frequency of each response (how many people answered 1, 2, 3, 4 or 5) to generate the means for each of the three dimensions of social capital. The economic outcomes provide descriptive data of full time and part time employees, gross revenues, debt capital, equity capital and grant capital raised by the companies in each business incubator.

Structural Social Capital

The breakdown of structural capital across the four different business incubators is as follows: the mean across the nine companies from the DWBA was 4.42; the mean across the seven companies from the CSI was 3.94; the mean across the five companies from the Forge was 3.96; and SSMIC only had one respondent with a score of 4.2.

Figure 1

Structural Social Capital Across the Four BIs

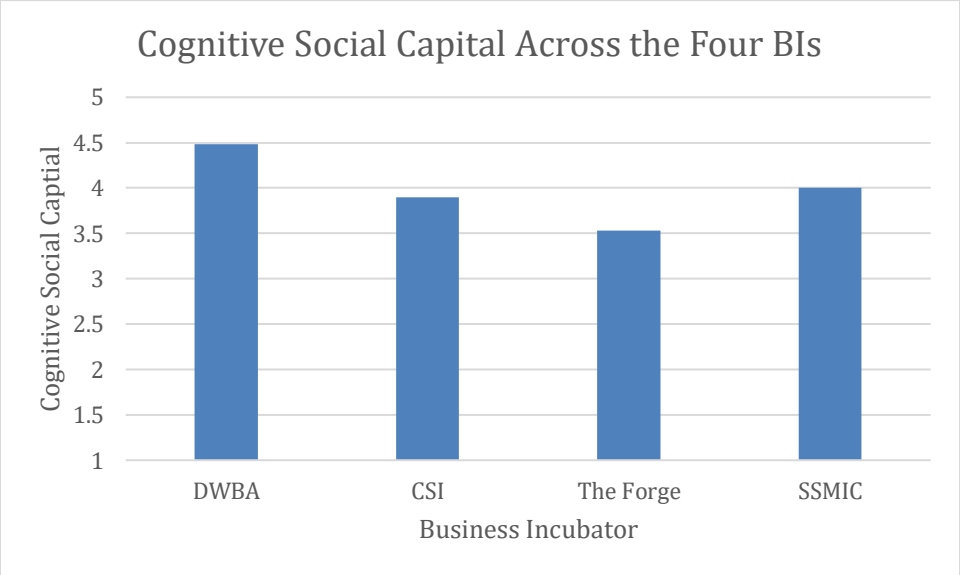


Cognitive Social Capital

The breakdown of structural capital across the four different business incubators is as follows: the mean across the nine companies from the DWBA was 4.48; the mean across the seven companies from the CSI was 3.90; the mean across the five companies from the Forge was 3.53; and SSMIC only had one respondent with a score of 4.

Figure 2

Cognitive Social Capital Across the Four BIs

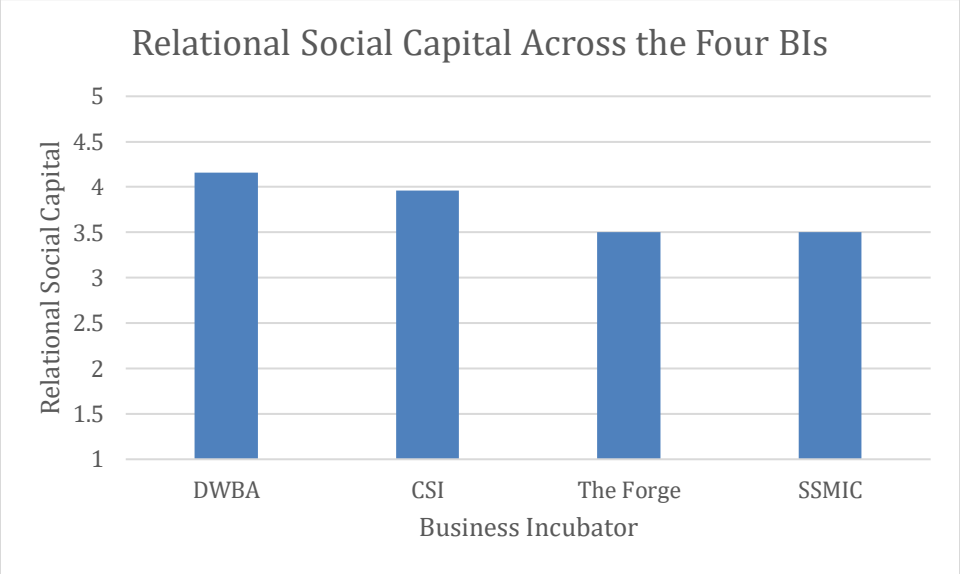


Relational Social Capital

The breakdown of structural capital across the four different business incubators is as follows: the mean across the nine companies from the DWBA was 4.16; the mean across the seven companies from the CSI was 3.96; the mean across the five companies from the Forge was 3.50; and SSMIC only had one respondent with a score of 3.50.

Figure 3

Relational Social Capital Across the Four BIs



All four business incubators scored highest on the structural dimension of social capital and lowest on the relational dimension of social capital. This is not surprising given that providing access to networks and resources is a central piece for both types of business incubators, while building trust and relationships is more complex. Looking at total social capital across the three dimensions, the DWBA scored the highest with 4.38, followed by the CSI with 3.93 and the Forge with 3.70.

Economic Outcomes by Business Incubator Type

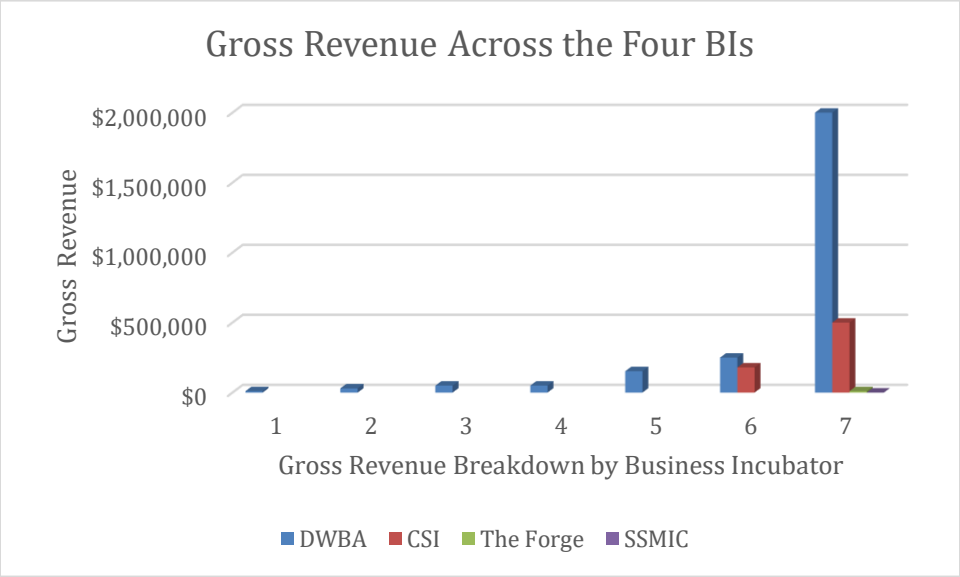
In the following section I explore the economic data across the four business incubators, including: gross revenue, grant funding, debt financing, equity financing and number of employees.

When examining gross revenue, the DWBA had seven out of nine companies that reported gross revenues. The gross revenues ranged from $10,000 to $2,000,000 with five

of the companies reporting gross revenues of $50,000 and above. For CIS two out of seven companies reported gross revenue, $180,000 and $500,000 respectively. The Forge had one company reporting revenues of $10,000 and the SSMI respondent did not report any gross revenue. The data are captured in Figure 4.

Figure 4

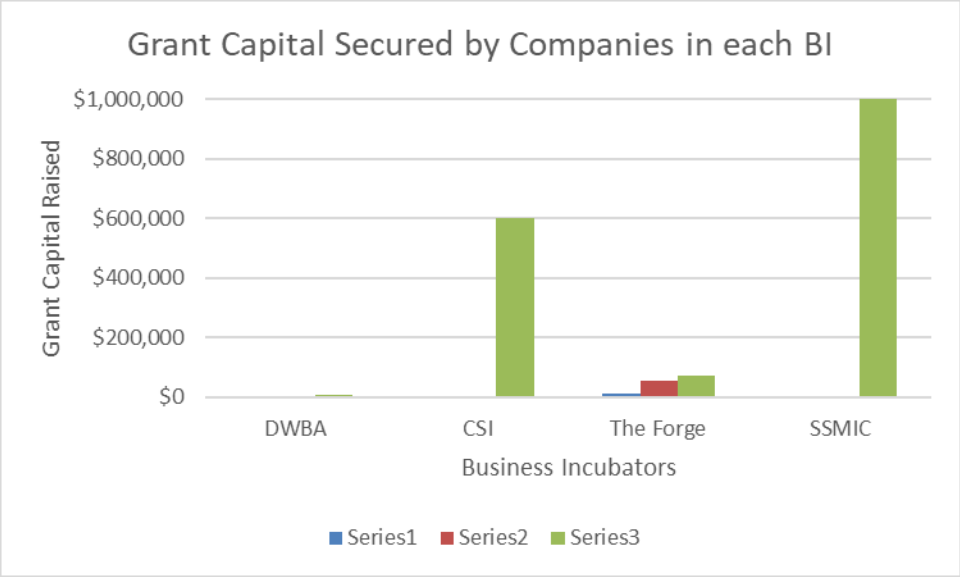
Gross Revenue Across the Four BIs



When examining grant capital, the DWBA and CSI each had one company report receiving grants, $5,000 and $600,000 respectively. The Forge had three out the five companies report receiving grants, $10,000, $53,000 and $70,000 respectively. The SSMI respondent reported a grant of $1,000,000. The data are captured in Figure 5.

Figure 5

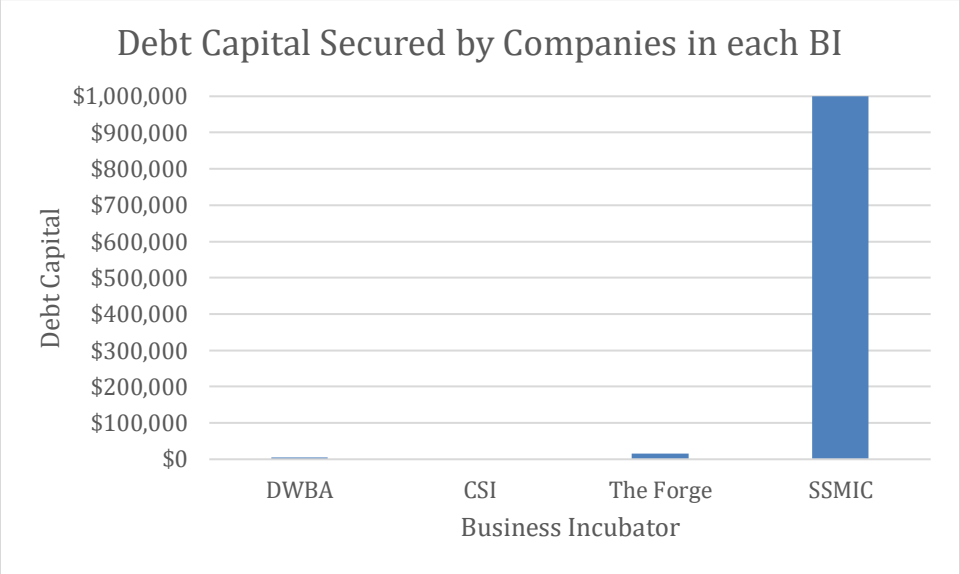
Grant Capital Across the Four BIs



In terms of debt capital there was little activity with one company from DWBA reporting debt capital of $5,600, the Forge $15,000 and the SSMIC company reporting $1,000,000. Given that the SSMIC company also reported the same amount for the grant section, it is logical to assume this is a government grant that had been packaged as a loan, which is common for startups that have lots of traction. Figure 5 below illustrates the amount of debt capital reported by each business incubator.

Figure 6

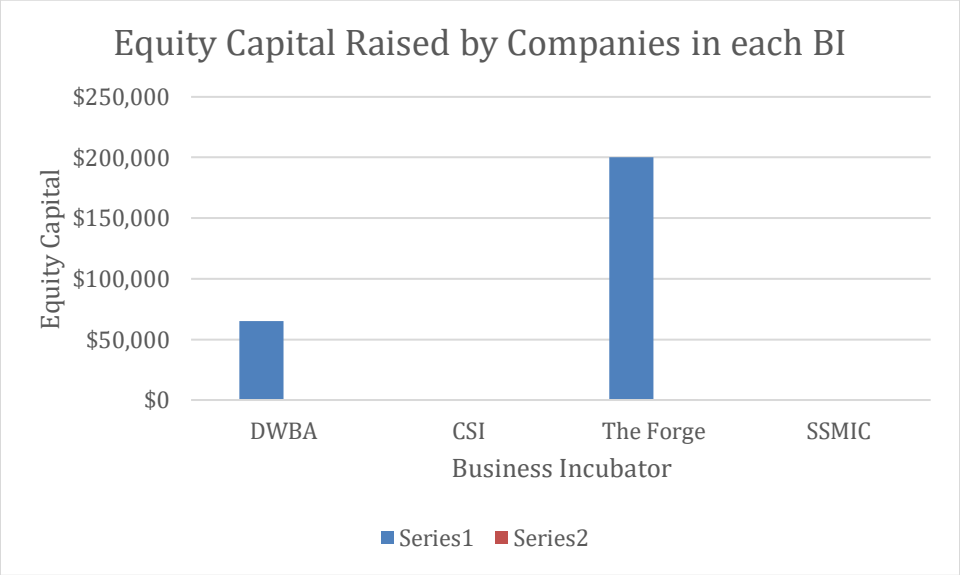
Debt Capital Across the Four BIs



In terms of equity capital (see Figure 7) only three companies were able to secure funding. Two companies from the Forge, $600 and $200,000 respectively and one company from the DWBA, which raised $65,000 in equity.

Figure 7

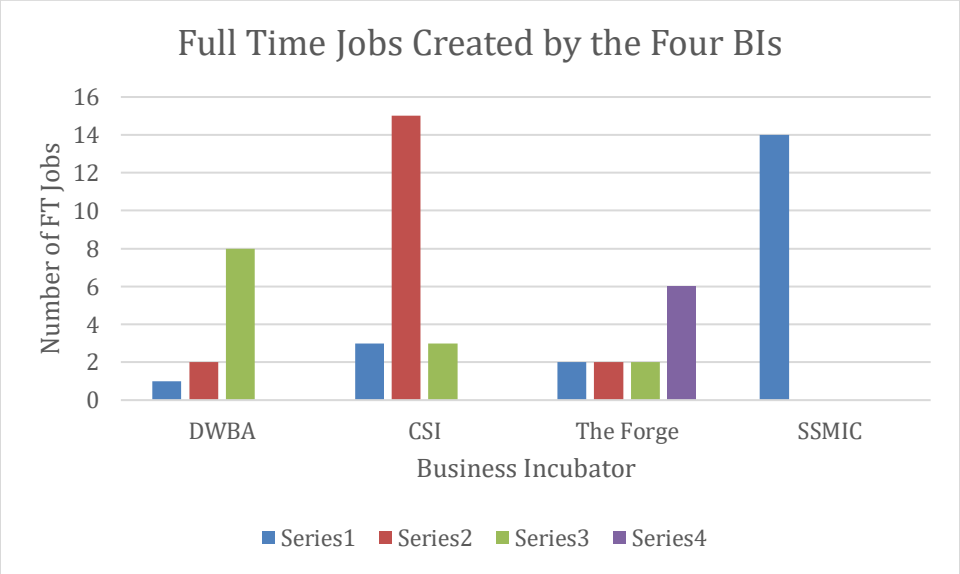
Equity Capital Across the Four BIs



In terms of job creation three out of nine companies from the DWBA reported full time staff, three out of the seven companies from CSI reported full time staff, four out five companies from The Forge and the company from SSMIC also reported having full time staff.

Figure 8

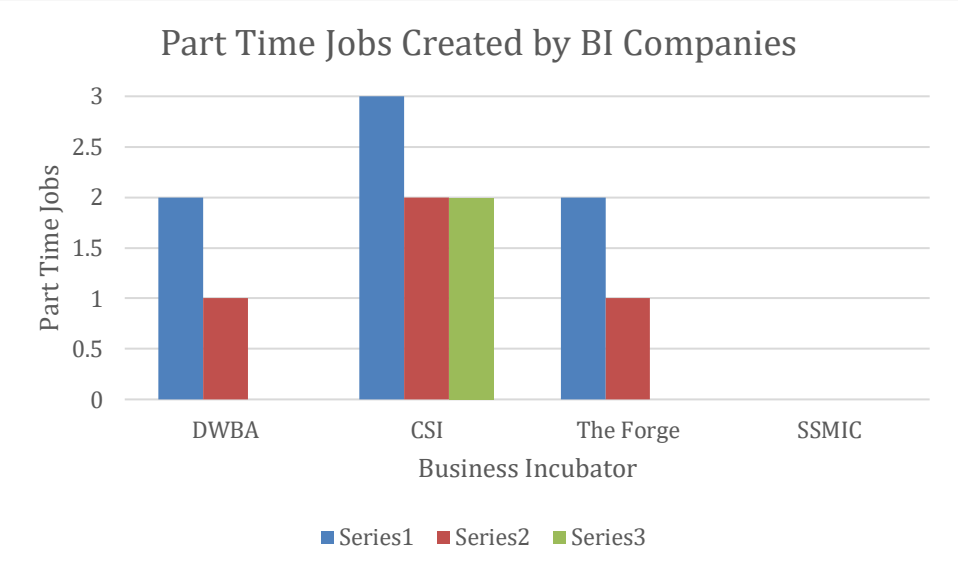
Full Time Employees Across the Four BIs



In terms of part time job creation two companies out of nine from the DWBA reported part time staff, three companies out of seven from CSI reported part time staff and two companies out of five from The Forge reported part time staff.

Figure 9

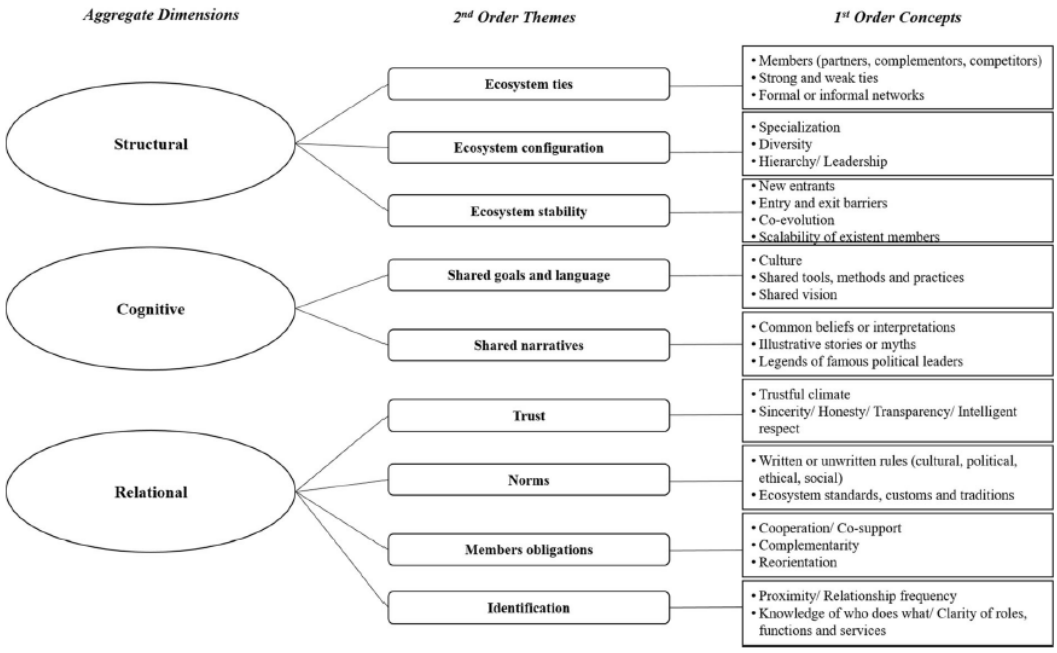
Part Time Employees Across the Four BIs



The second phase of data collection involved interviews of six founders and explored in more depth the experiences startup founders had with their respective business incubators in terms of social capital. In their research, Theodoraki et al. (2017) utilized a social capital approach to investigate the development of entrepreneurial ecosystems, and I utilized their framework to structure my qualitative data gathering and analysis. Utilizing this framework, I was able to connect results relative to the social capital components, i.e. structural, cognitive and relational, to the quantitative data captured by the survey, as diagrammed in Figure 10.

Figure 10

Social Capital Framework and Dimensions



Source: (Theodoraki et al. 2017)

In the next section, I present the results of the data gathered via the qualitative interviews, reporting them as they relate to the three research propositions outlined in Chapter 2.

Research Proposition Results

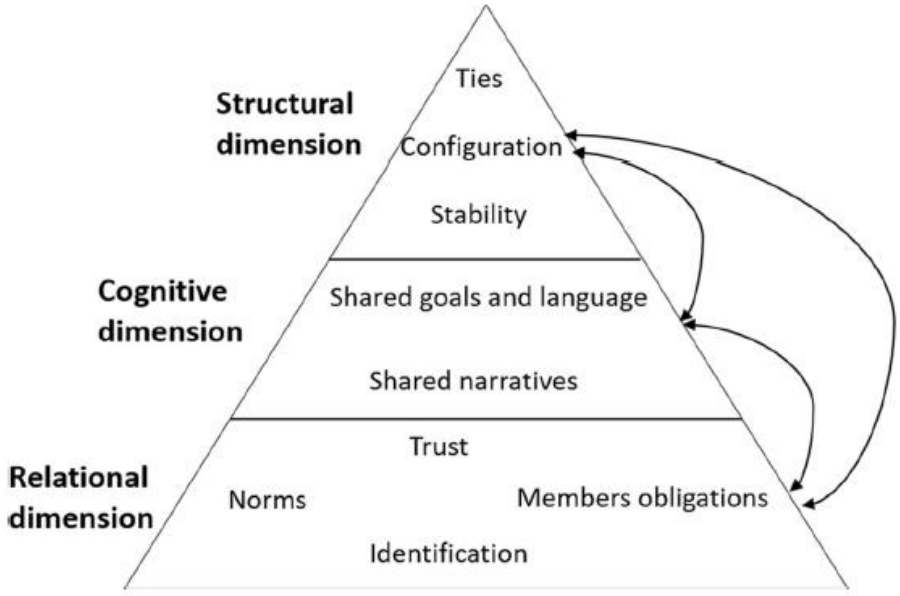
The propositions put forward build on previous research and attempt to unearth the process of how social capital is created across different types of business incubators. In their research investigating social capital and the development of sustainable entrepreneurial ecosystems, Theodoraki et al. (2017) found that all three social capital dimensions were important to the effective functioning of university based entrepreneurial ecosystems. They investigated three cases in the south of France and their

findings were based on 48 face to face interviews with different key members of the university based entrepreneurial ecosystem.

In addition, their research suggested that the sustainability and performance of university business incubator founders could be improved by understanding social capital theory and more importantly by enhancing the three dimensions of social capital and the interaction among them (Theodoraki et al. 2017). Theodoraki et al. (2017) identified that all three dimensions of social capital are interconnected. “The structural dimension defines the ties and their co-evolution, the cognitive dimension focuses on the goal of these ties, and the relational dimension focuses on trust and complementarity” (p. 164). The authors suggest that the performance and sustainability of a university business incubator ecosystem can be improved by implementing activities that enhance the three dimensions of social capital and their interaction. Below is an illustration of how the three dimensions interact and build on each other (see Figure 11).

Figure 11

Social Capital Dimensions and their Interactions



Source: (Theodoraki et al. 2017).

Next, I will restate each proposition that my research advanced, and outline the results for the data collected during both the quantitative and qualitative components of the data collection.

Proposition 1

Business incubators create social capital by expanding the network of the companies residing within the incubator.

A business incubator can provide an entrepreneur with the appropriate internal and external networks necessary to succeed (Lyons, 2002). Lyons (2002) further stressed that the most important service an incubator offers is the opportunity for networking among tenant companies. Because startups find themselves at a resource disadvantage, one of the most critical tasks performed by a business incubator is to identify local and

external partners and build linkages to them. These networks will assist entrepreneurs to overcome obstacles and help them build additional networks such as they require (Lee & Osteryoung, 2004). Hackett and Dilts (2004) conducted a systematic review of the incubator-incubation literature and one of their major conclusions was that network relationship building is the most important value-added component of the incubation process. However, entrepreneurs may encounter difficulties in locating the right individuals in a complex network, therefore it is important that incubator personnel support the creation and development of value-adding network relations (Rice, 2002). Business incubators support startups by providing them credibility and helping them build business networks (Tötterman & Sten, 2005).

This proposition was supported by the data I was able to collect through my surveys and interviews. Conclusions cannot be drawn based on the survey data. When looking at the survey questions related to the structural component of social capital, the following were some of the key findings. When asked if the incubator provides assistance finding appropriate resources for tenants, 20 out of the 22 founders (or approximately 90%) agreed or strongly agreed. When asked if incubator tenants interact with other tenants and are able to utilize their network, 18 out of the 22 founders (or approximately 82%) agreed or strongly agreed. When asked if tenants benefit from the network relationships of other tenants and the existing network of the incubator, 20 out of the 22 founders (or approximately 90%) agreed or strongly agreed. Due to the small sample size, no statistical difference between the results from the non-profit business incubator founders compared with university business incubator founders could be determined.

This proposition is also supported by the qualitative data. Gaining access to a

network was an important reason for founders to join a business incubator. For example:

"One of the main reasons I joined the Accelerator was for that aspect of meeting other people and meeting like-minded people. (Interview 5)".

Another statement from one of the founders interviewed captured the importance of networks.

"Through their partners, the networks. And that's all relationships. You just don't wake up one morning and say, 'I'm going to make the greatest company'." (Interview 4)

Providing access to the network can have a massive impact on business success. In their study of social capital in UBIs, Redondo and Camarero (2018) found that bonding social capital and building contacts within the business incubator did not increase the companies' business success, but bridging social capital had a positive impact on management efficiency. The driver of bridging social capital is the incubator manager and bridging depends on the manager's proactivity. Bonding is based on dense networks and multiplex relationships and occurs more easily among groups whose membership is homogeneous and who associate with each other over a period of time (Leonard & Onyx, 2003). In the study by Redondo and Camarero (2018) bonding social capital referred to the existence of close relationships and strengths between university business incubator incubatees. Bridging generally includes less dense networks and span among different groups (Wuthnow, 2002). These relationships are usually characterized by weak ties, which allow startups to gain access to new ideal opportunities and information (Putnam, 1995). Wu et al. (2020) in their study of Chinese startups found that both internal and external networks of business incubators have a positive effect on

new venture performance. This notion was captured by Leyden et al. (2014) in their theoretical model that is based on the notion that an entrepreneur is always searching for and the key to acquiring knowledge is having access to social networks.

Below is a description by one interviewee of how the university business incubator helped the company connect with networks outside the business incubator, such as Ontario Centres of Excellence (OCE), which led the company to succeed in securing grant funding as well access to human resources at a highly discounted price.

> And then we got two rounds of the OCE Talent Edge Supplement. So for recent grads, you can hire recent grads and they'll pay for 3/4 of salary. So the Forge helped us apply to those. Also in Hamilton, we have our campus- linked accelerator in one building. We also have our city accelerator in one building, as well as OCE has an office in our building. So we worked closely with everyone with the Forge. They connect us with OCE. There were two OCE reps that we worked with. They went through our applications. You know, this is gonna be where you're going to falter. This is how you need to word it better. (Interview 3)

Having access to human capital is also a crucial piece of the puzzle for startups (Isenberg, 2010; Spigel, 2017). One founder identified that one of the major resources provided by Canadian business incubators is access to talent.

"There is a great deal of talent in Canada so it's advantageous to have your R&D and staff in Canada and raise money and pursue market share in the US." (Interview 1)

There was also room for improvement regarding the way the incubator could create more value for their members. A number of the founders interviewed suggested

that although they found value in the network available through the incubator, there was often a lack of real direction. Most of the cross-pollination and networking happened at events. As one founder described it:

"Random collision model – drinks on a Friday afternoon, which is great for networking, but hardly effective… you connect with people who you may be able to help, or not, but it's not strategic". (Interview 2)

This sentiment was shared by the founders from Canadian and Danish business incubator program as outlined by the research of Lukosiute et al. (2019). Three out of the eight founders interviewed responded that the business incubation network did not align with the startup's product.

In summary, Proposition 1 received support based on the data collected.

Proposition 2

Business incubators create social capital by building trust between the companies residing within the incubator.

Relational social capital in a business incubator includes the degree of trust between tenants and the extent to which the tenants are friendly, identify with each other and feel a sense of community (Ascigil & Magner, 2009; Liao & Welsch, 2005; Nahapiet & Ghoshal, 1998). In their study of three Finnish business incubators, Tötterman and Sten (2008), found that trust was established within the incubator community and tenants were willing to share company related information with incubator staff and to a certain extent, other tenants. In addition, all the entrepreneurs that participated in the study confirmed that they were confident the incubator staff were trustworthy. An entrepreneur

that has achieved a higher degree of trust and trustfulness can leverage relationships to her or his advantage (Liao & Welsch, 2005).

Trust is the precursor to resource acquisition and knowledge exchange, thus an entrepreneur with a higher degree of trust will be more successful in appropriating knowledge and information from their social network. Tötterman and Sten (2008), as well as Coleman (1990), also suggested that there is a relationship between the level of trust and the level of risk between entrepreneurial actors. In their study Adlesic and Slavec (2012) confirmed that commitment to and trust in incubators are the outcomes of incubator clients' satisfaction with the incubators. According to Bøllingtoft and Ulhøi's (2005) study, networking is dependent on whether incubator tenants have a positive social relationship with each other, which leads to trust and ultimately determines if they will cooperate in the future.

This proposition was supported by the survey responses. When asked if there is a high level of trust and credibility within the incubator, 18 out of the 22 founders (or approximately 82%) agreed or strongly agreed. Interestingly, when asked if competing tenants have an adverse effect on trust within their incubator only 5 out of the 22 founders (or approximately 23%) agreed. 13 out of the 22 founders (or approximately 59%) disagreed or strongly disagreed. When asked if incubator personnel support trust, networking, and social interaction among tenants, 20 out of the 22 founders (or approximately 90%) agreed or strongly agreed. As before, no statistical difference could be determined between the results from the non-profit business incubator founders compared with university business incubator founders due to the small sample size.

According to Redondo and Camarero (2018) when incubatees trust each other and they share the same fears and concerns they might be more willing to help one another. "The feeling of identity and collectivism facilitates incubatees' will to help one another." (Redondo & Camarero, 2018, p. 607). This sentiment was certainly shared by all of the founders that I interviewed. One founder had the following to say:

> You have to genuinely want the other person to succeed. You can't create a trusting relationship if you don't want the other person to be successful as well. Because if it's going to be a relationship built on trust, then you have to be equals. (Interview 6)

Another founder summed it up this way: "I think it's like the human side of it is, trust. First and foremost. It's just trust. And then it's having a plan that you can confidently execute on." (Interview 4)

The following statement from a founder also highlights how trust leads to collaboration.

> And again it just falls down to the level of how comfortable they are and how comfortable the environment can make them be to alleviate their fears. And I think by seeing other people do it, then they start to realize, 'Oh maybe I can take a couple more steps a little quicker than I thought I could. Maybe I can take a little bit of risk here and see if I can trust this person. And maybe we can work together, and then hey, they work together, so maybe I can work with them too.' I think that happens quite often. (Interview 6)

In summary, Proposition 2 received support based on the data collected.

Proposition 3

Business incubators create social capital by providing opportunities for knowledge transfer and experience sharing between incubatees through shared norms and vision.

According to Allen and Rahman (1985), business incubators help firms indirectly by placing the entrepreneurial actor in an environment providing social inputs, resources, networks and psychological support between the incubatees. Hansen et. al., (2000) suggested that business incubators generate networking attitudes which foster partnerships among startups located in the same facility that can lead to sharing of information and talent. In addition, incubators provide a platform conducive to knowledge transfer and experience sharing among the incubatees (Bergek & Norrman, 2008). Tötterman and Sten (2005) found that tenants of business incubators find it beneficial to be able to share knowledge and experience regarding business matters. Liao and Welsch (2005) suggested that a community that places a high emphasis on entrepreneurship will be more accepting of failure and encourage exchange of information. According to Wasko and Faraj (2005) knowledge sharing requires shared understanding such as shared culture and norms. As such, one of the main reasons a startup chooses to reside in an incubator is to develop cognitively connected relationships to other members of the incubator ecosystem, which assists in creating a successful enterprise. Business incubators strengthen and enrich the existing skills of tenants by facilitating the transfer of knowledge and information (Ascigil & Magner, 2009). Chow and Chan (2008) found that social network and shared goals directly influenced the attitude and subjective norms about knowledge sharing.

This proposition was supported by the survey responses. When asked if the tenant mix leads to conversation and resource exchange among incubator members, 18 out of the 22 founders (or approximately 82%) agreed or strongly agreed. This was also supported by the data collected through the semi-structured interviews. One founder described his experience as follows:

"Because I'm at a certain point in my business development there's other people who are at a lower level or there's other people who have experience in different areas. So there's always the opportunity to have conversations: here's a challenge that I'm going through, have you been through this before?" (Interview 6)

One founder describes how she would share information of vendors with other startups in the ecosystem.

> So there's a lot of cross-pollination. We were, you know, at a conference and there were sensors at the conference. And we need certain types, but they only had the other type. And we knew there was a company who was working on, like fire detection and certain things. We were like, okay we kept his card and we'll pass that along. (Interview 3)

A founder also talked about how members of the business incubators use informal meetings to assist each other. "And there's also times when various tenants will just get together for coffee, or for lunch, and just talk and help each other out with different challenges they might be facing." (Interview 6)

In summary, Proposition 3 received support based on the data collected.

The following table outlines the different dimensions of social capital and the representative quotes from the founders interviewed.

Table 12

Dimensions of Social Capital with Illustrative Quotes

Social capital	**Ecosystem approach**	**Illustrative quotation**
Structural dimension	Ecosystem ties	One of the main reasons I joined the Accelerator was for that aspect of meeting other people and meeting like-minded people. (Interview 5)
		We worked closely with the Forge to apply for some OCE funding. Actually quite a bit of OCE funding. We got the Smart Start Grant for 30,000 dollars with the help of the Forge.(Interview 3)
		Having everything in the same building has been so convenient. Because my OCE application got screwed over like three times in the system. It was just misread some time and time again. So I just went down and I talked to him and said, Mark here's my application. What is wrong? Why is this not working? He's like, oh, well, it seems as though this person up here forgot to click a button which caused this person to think that you didn't fill out your form. So he just picks up the phone. And within 24 hours, money is released and we're good to go. And we didn't have to book an appointment. We didn't have to go downtown and or go into Toronto. I just walk downstairs. (Interview 3)
		Through their partners, the networks. And that's all relationships. You just don't wake up one morning and say, I'm going to make the greatest company. (Interview 4)
		The fact that we almost have a personal relationship with OCE has made it so much easier to get funding. I think it's something like eight or nine out of ten of the companies who apply for OCE funding out of our incubator get it. (Interview 3)
	Ecosystem configuration	And then we got two rounds of the OCE Talent Edge Supplement. So for recent grads, you can hire recent grads and they'll pay for 3/4 of salary. So the Forge helped us apply to those. Also in Hamilton, we have our campus- linked accelerator in one building. We also have our city accelerator in one building, as well as OCE has an office in our building. So we worked closely with everyone with the Forge. They connect us with OCE. There were two OCE reps that we worked with. They went through our applications. You know, this is gonna be where you're going to falter . This is how you need to word it better. (Interview 3)
		There is a great deal of talent in Canada so it's advantageous to have your R&D and staff in Canada and raise money and pursue market share in the US. (Interview 1)

	Ecosystem stability	Because that is the biggest challenge, I think, to anyone that's starting a business. You're working in the basement or you're working at the kitchen table and you've got an idea. You've got nobody to bounce it off of. And then you start overthinking and double thinking and backtracking and you just get stuck. 'Cause that's exactly what I was doing, was getting stuck. So being around other people, whether they're in a completely different field or not, you're still around people who are doing the same thing. They're risking everything to follow their passion and follow their dream. And whether they're just starting today or they've been here for three or four years, they're still going through the same challenges and that's inspiring. You inspire each other to keep going to get through things. And that social aspect is extremely, extremely important. (Interview 6)
Cognitive dimension	Shared goals and language	And our incubator its actually held once a month, I think it's the first Wednesday of every month. They call it Tea with OCE. So the reps have come up and we had a coffee maker. And we all just sit around and if you have questions, like what sort of funding is becoming available, do you have any suggestions on what we can apply to? (Interview 3)
		I think even new companies, the conversations always aimed towards how can we make money too? (Interview 4)
		It's just truly being you. Just do your story. Do you. Decide what you want your story to be, and you'll make it. (Interview 4)
	Shared narratives	Because I'm at a certain point in my business development there's other people who are at a lower level or there's other people who have experience in different areas. So there's always the opportunity to have conversations: here's a challenge that I'm going through, have you been through this before? (Interview 6)
		Which for me, I mean I'm an entrepreneur. So that's an entrepreneurial methodology. What's the cheapest way that I can meet this market need in the most effective way possible? (Interview 2)
		And again it just falls down to the level of how comfortable they are and how comfortable the environment can make them be to alleviate their fears. And I think by seeing other people do it, then they start to realize, Oh maybe I can take a couple more steps a little quicker than I thought I could. Maybe I can take a little bit of risk here and see if I can trust this person. And maybe we can work together, and then hey, they work together, so maybe I can work with them too. I think that happens quite often. (Interview 6)
		It's not a geographic thing or a city thing. It's just a mentality thing. It's a mindset. It's just whether or not that mindset is encouraged. Or rewarded. If it's not rewarded, it sometimes dies out.(Interview 4)
Relational dimension	Trust	You have to genuinely want the other person to succeed. You can't create a trusting relationship if you don't want the other person to be successful as well. Because if it's going to be a relationship built on trust, then you have to be equals. (Interview 6)
		I think it's like the human side of it is, trust. First and foremost. It's just trust. And then it's having a plan that you can confidently execute on. (Interview 4)

	Norms	And there's also times when various tenants will just get together for coffee, or for lunch, and just talk and help each other out with different challenges they might be facing. (Interview 6)
		But a lot of our professors were very supportive that way and sort of hired us back into the ecosystem. So they could keep us involved with the new cohort while also providing us some money that we can either live off of, or put back into a company. Now a lot of that wasn't necessarily supported by The Forge. However, it was, you know, emotionally supported by the Forge. (Interview 3)
	Members obligations	Yeah, I've stayed in touch with people. The whole community aspect is great because it's another community now that you're part of it. (Interview 5)
		And that's what I've learned early on in talking to people is that you can't do all of that on your own. That's one of the things I try now to in turn convey to other people as well. You have to be able to figure out what you can't do, and try to find somebody else to do that. (Interview 6)
		So there's a lot of cross-pollination. We were you know, at a conference and there were sensors at the conference. And we need certain types, but they only had the other type. And we knew there was a company who was working on, like fire detection and certain things. We were like, okay we kept his card and we'll pass that along. (Interview 3)
		And you also have to be able to realize when that's not happening. To be able to say, you know hey this isn't working out. But to be able to say that in a way that doesn't damage the future potential. It just might not be the right time. You know, maybe two years from now - don't burn the bridge. You just try to keep things professional. (Interview 6)
		He said we need more CEOs and startup people who can drive a uniquely Canadian cultural startup world. Because we do have unique cultural values of their dividend group corporations. (Interview 2)
	Identification	So the fact that everybody was in the same building, it didn't seem to make A lot of sense to me at first. Because we had no use for the city-based accelerator. We were a student group like, we're not real people. We're just students. But it made the transition from the campus-linked accelerated to the city-based accelerator very smooth. Because we'd already been attending courses through the city-based accelerator that were funded by The Forge. We'd already been working closely with them. (Interview 3)

Summary of Qualitative Results and Key Themes

In addition to the themes discussed above there are three additional themes that emerged from the interviews, which will provide greater depth and insight into the Canadian entrepreneurial ecosystem. The following themes emerged from the interviews:

- Too Much Focus on Grants

- Business Incubators Also Chase Grants – Feel Like Other Incubators are Competitors
- Canada's Entrepreneurial Culture and Values are Very Different than the US

Too Much Focus on Grants

A number of the founders interviewed stated that there is an overemphasis on applying for grants in the Ontario business incubation ecosystem. One founder who had the opportunity to experience both the Canadian and US entrepreneurial ecosystem, was very direct in stating: "There is too much emphasis in the Canadian ecosystem on startups chasing grants." (Interview 1)

This is captured by another founder, where she describes her experience working with the business advisor assigned to her by the business incubator.

> We worked closely with the Forge to apply for some OCE funding. Actually quite a bit of OCE funding. We got the Smart Start Grant for 30,000 dollars with the help of the Forge. And then we got two rounds of the OCE Talent Edge Supplement. So for recent grads, you can hire recent grads and they'll pay for three fourth of the salary. (Interview 3)

This ends up taking the focus away from the actual business and makes reporting to the grant the priority. Another founder interviewed expressed his frustration with the current grant structure for startups:

> Here, you have to apply for grants. They take forever. There's certain programs that you have to pay into it for the potential to maybe you get some grant money. Half of that is gone in the amount of money that you paid into the program. (Interview 6)

An independent evaluation of the CAIP program by the Circum Network noted that the structure of reimbursement for eligible costs added greatly to the bureaucratic burden of participants. While interviewees understood that a federal funding agency would want to have a clear sense of how their money is being spent, many recommended that future program design should give close consideration to streamlining the process to include just what reporting and administration is absolutely necessary, in order to reduce the burden on participants (Gauthier et al., 2016).

Although the entrepreneurs interviewed agreed that having access to seed capital funding through the Ontario Centres of Excellence (OCE) and other government channels was very useful at the early stage to help them prove their technology, the consensus was that government funding was very much a double edged sword. This was a quote from one of the founder's interviewed "The government funding allowed us to prove out our technology", but on the other end the reporting is incredibly heavy "you have to report on every penny that you spend".

There are a lot of hoops with the government funding and the reporting is incredibly time consuming. In addition the way the grants are set up the money cannot be spent on the things that were not specifically described in the grant, which makes it impossible to be flexible with the funding, as needs change, which is very often for a startup.

The entrepreneurs that had access to Ontario Centers of Excellence (OCE) in their business incubator ecosystem were also much more successful in acquiring funding because they developed relationships with the OCE representatives and were given guidance when completing their application. This again supports the findings in the

quantitative portion of my research, which suggests that business incubators are able to secure resources through the business incubator network.

> The fact that we almost have a personal relationship with OCE has made it so much easier to get funding. I think it's something like eight or nine out of ten of the companies who apply for OCE funding out of our incubator get it. (Interview 3)

The challenge companies face by focusing too much on grants is that they neglect their business model, as one of the founders described:

> But the challenge is we've got enough early stage capital but there are a lot of people who are chasing early stage capital instead of building their business. So I've seen entrepreneurs not just at my incubator, but other ones who are saying things they're actually going out and working pitch competitions to get start-up money. They're actually paying their bills by winning pitch competitions. Now that's fine because you've got to pay your rent. But at the end of the day, are we building people who could pitch well? Or are we building people who should be building businesses? (Interview 2)

Analyzing this theme through the lens of social capital, this outcome is not surprising, particularly for the structural and cognitive dimension of social capital. From a structural social capital perspective, key players in the business incubator ecosystem, particularly in university business incubators, will be government funders such as OCE and startups in the ecosystem will have a lot of interaction with this network. From a cognitive perspective, this outcome is expected if the norms and shared language within a

business incubator is focused on pursuing grants. The statement from this founder describes the challenge their startup faced:

> And then that's when we step back and we say, is it worth chasing another government grant to do either more research or more development? Or should we just say screw it, we have a little bit of money left in the bank. Can we turn this into sales? (Interview 3)

If business incubator practitioners want to change the behaviour of their entrepreneurs to be more business focused, they must change the narrative.

Business Incubators Also Chase Grants – Feel Like Other Incubators are Competitors

A number of the founders interviewed described the incubator itself as being set up to chase government grants and the reporting was mostly on events and website hits. This creates a focus on reporting events and building a social media presence as opposed to actually providing value to the startups.

One founder who had experience with a number of business incubators in Canada, both as a founder and as a practitioner, described the following experience. “A lot of incubators are starting up and there’s a cottage industry around incubation that is essentially chasing government money that's available for entrepreneurship.” (Interview 2)

Because of large government investment in business incubation and acceleration there is a trend to build for the sake of building. There is a lot of money in business incubation and the feeling is if you don’t take it your competitor will take it. This is unfortunate as it fractures the ecosystem. This quote from one of the founders puts into

perspective. Our business incubation ecosystem "is not about innovation, it is more about self-preservation". (Interview 2)

Robbins and Crelinsten (2018) review Canada's push for innovation through the Canadian Incubator and Accelerator Program (CAIP) and provide some invaluable insights into what is working and more importantly not working so well. One of the findings in the report was "that innovation intermediaries try to identify and attract the best companies as clients, innovation intermediaries are technically one another's competition, especially for those which operate in the same industry sector." (p. 23) Ironically, all the CAIP participants interviewed in the report claimed that nobody else was operating in the same space as they were.

The research by Theodoraki and Messeghem (2020) on incubators' coopetition strategy provides some great insights through their research into Start-up Incubation Ecosystem (SUPIE) in the South of France. Coopetition is a term used to describe a simultaneous relationship of competition and cooperation (Theodoraki & Messeghem, 2020). Coopetion strategy is found in industries with complex and dynamic environments where knowledge provides a competitive advantage (Theodoraki & Messeghem, 2020). Business incubators have to provide valuable services to their clients and therefore gaining access to information is critical. Business incubators create networks by adopting collaborative behaviours leading to profits and benefits (Bengtsson & Kock, 2000; Theodoraki & Messeghem, 2020). Theodoraki and Messeghem (2020), utilized the framework developed by Bengtsson & Kock, (2000), which looks at coopetition as a continuum between two extremes: competition and cooperation. They found that coopetition changed along the incubation process continuum. The selection process was

highly competitive in nature, with business incubators competing to attract the best talent. When it came to providing services for their startups there was an equal relationship between cooperation and competition. Business incubators had to develop strategies cooperate ultimately ensuring their survival and success. Finally, when looking at coopetition in network access the process was highly cooperative in nature.

Table 13

Intensity of the Coopetition Relationships During the Incubation Process

Incubation Process	Cooperation intensity	Competition intensity	Coopetition Type
Selection	Low	High	Competition-dominated relationship
Resources & Skills	High	High	Equal relationship
Network Access	High	Low	Cooperation-dominated relationship

Source: Theodoraki and Messeghem (2020)

Business incubators and accelerators are a relatively new phenomenon in Canada and policy makers have introduced programs such as CAIP, which may lead to a more competitive landscape among business incubators and accelerators moving forward. The CAIP program itself was very competitive where 15 successful organizations were chosen for funding from roughly 100 applications (Robbins & Crelinsten, 2018). The competitive nature of the process is captured by one of the CAIP participants, “Trying to spread the money around to make everyone happy will get you nowhere. You need to pick winners and let losers wither on the vine.” (p. 24) This raises some very important questions in terms of the entrepreneurial culture we are creating in Canada from a policy perspective. Particularly from a cognitive social capital view this type of narrative will

only ensure that competition and not collaboration is the prevalent relationship and that the larger intermediaries will always have a massive advantage.

Canada's Entrepreneurial Culture and Values are Very Different than the US

Of the six founders interviewed, four had extensive knowledge and exposure to the US entrepreneurial ecosystem. This created some of the most interesting discussion points of the research and provides fertile ground for further research.

Canada has tried to emulate the Silicon Valley model, but it has not exactly translated into the success that our US counterparts have experienced creating unicorn companies such as Uber, AirBnb, and Snapchat. According to Jim Balsili, former co-CEO of BlackBerry, innovation becomes valuable when it is commercialized and we do not do that very well in Canada. Balsillie (2019), wrote an article in the *Globe and Mail* criticizing Canada for its lack of investment the past 30 years in commercialization of intellectual property (IP), which has become the primary driver of new wealth. Instead Canada has focused on "immigration, traditional infrastructure such as roads and bridges, tax policy, stable banking regulation and traditional trade agreements are all 19th- and 20th-century economic levers that advance Canada's traditional industries, but they have little impact on 21st-century productivity." Balsillie (2019), further suggested that if we followed a similar innovation policy to the United States, which has invested aggressively towards its innovation productivity over the past three decades, Canada would be generating an extra $100 billion dollar annually towards our economy.

In a story published by The Logic, McIntyre (2019) reports that Canada's top universities and research institutes spent $5.7 billion on research and development, but generated a modest return of $75 million from licensing their innovations or 1.3% return

on investment in 2017. Compare that to the US where universities spent $68.2 billion on research and development and generated $3.1 billion in licensing income, a 4.6% return on investment. Another alarming statistic is patents filed by Canadian institutions, which dropped to 687 patents in 2017, down from 790 in 2016 and the fewest since 2008.

In February, 2020 a report was generated for the Government of Ontario, by an expert panel focusing on Ontario's innovation ecosystem. The study focused on university technology transfer offices, college technology transfer/liaison offices, regional innovation centres, medical and other research organizations and northern Ontario stakeholders. The report suggest that "sophisticated IP literacy is lacking across the ecosystem and we heard no feedback suggesting that existing IP education initiatives have sufficiently addressed the IP knowledge deficit." (2020, p. 27).

To date there has not been a clear mandate focusing on IP and commercialization and as such stakeholders in Ontario's innovation ecosystem have not made these activities core drivers of business growth. The report also outlines concerns related to the absence of accountability mechanisms to report on support intermediary activities and outcomes. In addition, participants from the broader innovation ecosystem suggested that lack of dedicated IP resources lends itself to support intermediaries discouraging patenting for ventures they are engaged with. "Several support intermediaries suggested that if a start-up asked them whether they should spend their money on marketing or filing a US provisional patent application for $10,000, they would always recommend the former." (2020, p. 23)

When looking specifically at UBIs in Canada, Myra Tawfik, one of the expert panellists, provides some insight in a Globe and Mail article titled *University of Waterloo case highlights holes in Canada's university innovation ecosystem*.

> However, although incubators offer commercialization assistance, they do not generally provide start-ups with independent IP legal advice, leaving students particularly vulnerable in matters relating to IP ownership. The university treats them like independent actors, operating at arms' length and with sufficient expertise to make informed IP decisions. Nothing could be farther from the truth. (Tawfik, 2018)

From my interviews there are some very interesting insights into the perceived differences between Canada and the US when it comes to innovation. First and foremost, Canada has yet to develop a distinctive entrepreneurial culture. Colin McKillop served as the Executive Director of Windsor Essex Capital Angel Network (WECAN), is an accredited angel investor in both Canada and the US, and sits on the board at the Downtown Windsor Business Accelerator. Colin refers to the Canadian ecosystem as the "farm team" to the US. This was a sentiment that was also echoed by National Angel Capital Organization (NACO), on their recent Zoom conference with the Minister of Economic Development, The Honourable Mélanie Joly.

According to one of the founders: "We need to focus on creating more CEO's who can drive a uniquely Canadian entrepreneurial value proposition." He further suggested that in Canada "we are focusing on creating the gizmo, not focusing on creating individuals who know how to take a gizmo and turn it into a successful company". (Interview 2)

Another founder had this to say about his experience in Canada: He related that as a young and impressionable entrepreneur coming straight from the classroom, the advice and feedback provided by the incubator staff in retrospect seemed almost dangerous. Often non-entrepreneurs provide advice based on funding metrics that don't actually help the entrepreneur in the long term. According to this interviewee, "the best thing young people can do for their city is leave". (Interview 1)

This particular entrepreneur had the opportunity to spend a year in San Francisco building his startup. He found a pay it forward attitude in Silicon Valley that is simply not found in Canada. There is a great deal of information sharing and often times founders will share their angel investor and VC lists with other founders even though they may be perceived as competing for the same funding.

Another founder who spent time in San Francisco also supported this position with the following statement: "everyone is comfortably ready to play their part". (Interview 4). There is a common drive and desire to make it. There is also a great deal of urgency because everyone who is in San Francisco is there for a purpose – they either want to work for an amazing tech company like Google or Facebook or they came to the Valley to create their own.

Another notable outcome of the US entrepreneurial culture, particularly Silicon Valley, is that nobody tells you your dream is too big. Anything and everything is possible. In a recent report by the Impact Centre (2018, p. 15), *Measuring Canada's Scale Up Potential*, the authors suggest that the narrative is "Canada is good at creating technology companies but often fails to scale them to a world-class size". The report also suggests that although both the federal and provincial governments are launching

programs and funding to support the growth of tech companies, currently there is no clear standard to define success and measure progress. This fits with the findings of Wolfe (2018), which can be found in a recently published paper titled: *Creating Digital Opportunity for Canada*.

> Canada's record in building local successes into global powerhouses is decidedly mixed. Promising start-ups all too often end up either moving to the US or being sold to foreign (usually US) investors. (p. 9)

This leads to a larger challenge: without examples of high growth Canadian companies we do not have an ecosystem that can provide guidance for startups to transform into successful scale-ups.

There are a numbers of insights we can draw by using social capital theory to understand our current predicament and improve our future prospects. The US, particularly Silicon Valley, is considered an entrepreneurial mecca and has one of the most advanced entrepreneurial ecosystems on the planet. From a structural social capital dimension all the network elements are present, including angel investors, VCs, an exceptionally skilled workforce, excellent higher education organizations, and an entrepreneurial culture that has been forged over seventy years. The entrepreneurial culture can be understood through cognitive social capital is expressed through common beliefs and shared narratives such as success stories which build a common culture within the ecosystem (Theodoraki et al., 2017). The relational dimension of social capital provides insights into trust and willingness to share knowledge and information. From the feedback provided by three of the founders interviewed it was much easier to build

relationships and trust in the Valley, which is evidenced by founders willing to share their VC contacts.

Given the rich history of entrepreneurship in the US this outcome is to be expected. In their research comparing top accelerators in Brazil, India and the USA, Shetty (2020) and colleagues found that mentor and investor network capabilities of US accelerators are nearly 20 times higher than Brazilian accelerators and 30 times higher than Indian accelerators.

This chapter conveyed the findings for both the quantitative and qualitative data that were collected for this research. The qualitative data are descriptive only, and not statistically significant. The next chapter will discuss these findings in more detail.

Chapter 5: Discussion

From a theoretical perspective there is presently limited research that captures the creation of social capital from the perspective of incubatees operating in different types of business incubators.

There were a total of 22 responses from companies located across four different business incubators in terms of the survey data, which are too few to claim statistical significance, but which add some context to the qualitative data gathered. The Downtown Windsor Busines Accelerator (DWBA) had nine responses, the Centre for Social Innovation (CSI) had seven responses, The Forge (Forge) had 5 responses and Sault Ste. Marie Innovation Centre (SSMIC) had one response. In addition, there were follow up interviews with six founders, three from the DWBA, two from the Forge and one from CSI. Provided that SSMIC had only one respondent on the survey, which did not participate in the interview portion of the research, we will not include this respondent in the discussion section.

This research is exploratory in nature and it is intended to provide new insights into how social capital is created in different business incubators. Given the intent of the research and the small sample size, the purpose is not to generalize the findings across business incubators in Canada, but provide new insights and inform future research.

Although the sample size is small, both types of business incubators – academic and nonprofit - were successful in creating social capital for their clients. In terms of total social capital the DWBA scored highest with 4.38, followed by CSI with 3.93 and the Forge with 3.70. The conclusions of the research are based on small data and therefore cannot be generalized to the population of business incubators in Canada. The aim is to

raise awareness of these two types of business incubators and the challenges they face in Ontario, which can create new insights and be of value to other incubators in the region and potentially for incubators elsewhere in Canada.

In terms of structural social the DWBA had the highest score with 4.42, followed by the Forge with 3.96, followed closely by CSI with 3.94. The structural dimension of social capital received the highest score overall. Both the CIS and the Forge scored highest on the structural dimension of social capital, and the DWBA scored only slightly higher on the cognitive dimension of social capital.

Structural social capital refers to formally established relationships within a network their configuration and stability (Inkpen & Tsang, 2005; Theodoraki et al., 2017; Totterman & Sten, 2005). When reviewing structural social capital this outcome is very interesting because it would be expected that a university setting would provide access to a greater network through access to faculty, researchers, alumni groups and the pre-established relationships with government bodies. This was very much evident with the academic business incubator founders who had access to funding through the OCE offices that were present on the university campus. In their research on stimulating business incubation performance in India, Kiran and Bose (2020) discuss the importance of business incubators having links to universities in order to achieve their goal of innovation and growth. Tsai et al. (2009) found that business incubators closely linked to governments and universities have institutional and resources advantages when compared with those without links.

Both founders from the Forge mentioned the accessibility to a network of government granting agencies, which assisted startups in securing funding for

development and to hire staff. One founder in particular was extremely successful at securing funding and this played a crucial role in the developing their technology.

> The government grants allowed us to do that. So that allowed us to sort of prove our technology. Because sales were not going to be possible without hard evidence at this point. (Interview 3)

The structural dimension of social capital in the DWBA and CSI focused more on the network and relationships with other members of the business incubator. In many instances this provided value to the founders, but sometimes the system of connecting founders with others in the network was found to be less than optimal. The first example is focusing on how connections are made organically and the second example is where the business incubator could be more strategic with their networking events.

This is an example where the founder benefited from the internal network of business incubator to create new business opportunities.

> I've worked on various projects, probably worked with five or six different start-ups in recent memory. Either utilizing their services, or they've used my services. Or we've actually created a new product together type of arrangement. (Interview 6)

The following example is from one of the founders who identified that the events could be better designed to offer more value to their startups.

> Well they do have events, that are more like they sponsor the random collision model. They'll have innovator drinks on a Friday afternoon. Which a lot of kids do. And you're standing next to somebody who might be able to help or might not. But it's not strategic. (Interview 2)

For future research into the Canadian business incubation ecosystem, it will be interesting to look into what networks business incubators have access to and the process of how business incubators choose and connect their startups to these networks.

The cognitive social capital scores across the different business incubators are as follows: the mean across companies from the DWBA was 4.48; the mean across the companies from the CSI was 3.90; the mean across the companies from the Forge was 3.53.

This dimension of social capital refers to shared narratives, common beliefs and a shared culture (Theodoraki et al., 2017). From the interviews with the six founders there were varying degrees of shared narratives and common beliefs. The first founder interviewed was rather critical of the business incubator and suggested that the best thing a young entrepreneur could do is search opportunities elsewhere. This founder had an opportunity to receive a funding and spend a year in San Francisco to develop his application. On the other end of the spectrum many of the founders interviewed had a strong sense of shared culture.

> Joining The Accelerator, that's exactly what I was looking for, was other like-minded people. And having some of those questions answered for. I've definitely met a lot of people and shared a lot of ideas with a lot of people. (Interview 5)

> So I think it's very important to be open, and to be able to take what you need from the ecosystem if you will, and then to be able to give back to that. And if you're not willing to do that in this type of environment they don't tend to be as successful. (Interview 6)

Relational capital refers to the extent to which members of the network maintain close relationships and cognitive capital refers to shared values and norms (Redondo & Camarero, 2018). One reason may be that members of nonprofit business incubators spend more time together in the business incubator space and are able to build stronger connections with one another.

As identified in Redondo and Camarero's research of UBIs the "incubatees are in the incubator for a period of time too limited to establish relationships". (2018, p. 600) This is illustrated by the experience of one of the Forge founders who had to move their startup out of the incubator to make room for the new cohort.

> And this was at the same time that the Forge was looking to change their cohort model. So we had been in the Forge for almost a year and a half at that point and you know, steadily making improvements and progress. But we weren't making the leaps and bounds that a tiny, brand new start-up makes. So we had already been talking within ourselves. Looking for alternative spaces and ideas. And then The Forge came up to us and said hey, look we're hoping to take on a new cohort and you take up a ton of space because it's just the nature of your project. (Interview 3)

The following two quotes provide insight into the shared norms and closeness of relationships. The first illustrates a more personal approach to collaboration and solving challenges, while the second is more formalized with the focus on identifying new funding sources. The first one is from a nonprofit business incubator founder and the second quote is an academic business incubator founder.

> Because I'm at a certain point in my business development there's other people who are at a lower level or there's other people who have experience in different areas. So there's always the opportunity to have conversations: here's a challenge that I'm going through, have you been through this before? (Interview 6)

> At our incubator it's actually held once a month, I think it's the first Wednesday every month. They call it Tea with OCE. So the reps come up and we had a coffee maker. And we all just sit around and if you have questions, like what sort of funding is becoming available, do you have any suggestions on what we can apply to? (Interview 3)

The relational social capital scores across the different business incubators are as follows: the mean across companies from the DWBA was 4.16; the mean across the companies from the CSI was 3.96; the mean across the companies from the Forge was 3.50. At the core of relational social capital is trust and trust takes time to build. The following statement from one of the founders captures the challenge founders face building trust, but ultimately it can lead to successful outcomes.

> And again it just falls down to the level of how comfortable they are and how comfortable the environment can make them be to alleviate their fears. And I think by seeing other people do it, then they start to realize, oh maybe I can take a couple more steps a little quicker than I thought I could. Maybe I can take a little bit of risk here and see if I can trust this person. And maybe we can work together, and then hey, they work together, so maybe I can work with them too. I think that happens quite often. (Interview 6)

In addition, my research confirms previous findings that business incubators are well suited for creating social capital for the companies residing within their ecosystems. From the quantitative data it was evident that both non-profit and UBIs create social capital for their clients. All the founders interviewed found value, some more than others, in the networks available through the business incubator. Certainly, some of the founders were able to leverage that network to secure significant resources, such as grants.

One founder from DWBA was able to secure grant of $5,000 and one founder from CSI was able to secure a grant of $600,000. The success rate of startups was low with only two companies out of sixteen securing grant funding. Three founders from the Forge were able to secure funding, $10,000, $53,000, and $70,000 respectively. The founder from the SSMI was able to secure the largest grant of $1,000,000. The success rate of founders located in a UBI setting is much higher and this could be as a result of having grant funding organizations such as OCE, located in close proximity to the business incubator and having regular information sessions with the founders.

It appears that social capital played an important role in assisting university business incubator startups, which is supported by the feedback provided in the interviews:

> The fact that we almost have a personal relationship with OCE has made it so much easier to get funding. I think it's something like eight or nine out of ten of the companies who apply for OCE funding out of our incubator get it. (Interview 3)

On the revenue side, only one startup out of six (or approximately 17%) in the academic ecosystem reported any gross revenue, while nine of the sixteen (or

approximately 56%) startups in non-profit BIs reported earning gross revenues. There certainly is a push for entrepreneurs in UBIs to apply for grants, while there is a stronger focus on generating revenue from the startups in NEDBIs.

Therefore, it would appear that the social capital created in the two types of business incubators lead to different types of resources for the founders located within their ecosystems. Founders from the nonprofit business incubators that were interviewed focused more on the relationship with other business incubator members and knowledge exchange as a benefit of belonging to the business incubator. “One of the main reasons I joined the Accelerator was for that aspect of meeting other people and meeting like-minded people.” (Interview 5)

Another founder from a nonprofit business incubator had the following to say about working with others:

> And that’s what I’ve learned early on in talking to people is that you can’t do all of that on your own. That’s one of the things I try now to in turn convey to other people as well. You have to be able to figure out what you can't do, and try to find somebody else to do that. (Interview 6)

From the interviews with the university business incubator startups the focus on grant funding was more pronounced.

> They call it Tea with OCE. So the reps have come up and we had a coffee maker. And we all just sit around and if you have questions, like what sort of funding is becoming available, do you have any suggestions on what we can apply to? (Interview 3)

> And then we got two rounds of the OCE Talent Edge Supplement. So for recent grads, you can hire recent grads and they'll pay for 3/4 of salary. (Interview 3)

The focus on grants versus revenue for university business incubator founders is not completely surprising. As Redondo and Camarero (2018) identified in their study, founders located in UBIs have not worked outside the academic field and will encounter many obstacles in generating business activity because they are not familiar with market reality. This was very evident from my interview with one university business incubator founder (interview 3) that was very successful at securing grants and winning pitch competitions, but when they took their product to market their target customers told them they did not have a viable product. The other university business incubator founder (interview 1) I interviewed was very critical of the entrepreneurial ecosystem in his region and attributed his success to being accepted into an entrepreneurial program in San Francisco.

That being said, UBIs have other important networks such as government funding offices that can provide access to grants for UBI clients. Below is an explanation from one of the founders on the process of being introduced to OCE, which is a provincial government organization that provides grants to startups in Ontario.

> So we worked closely with everyone at the Forge. They connect us with OCE. There were two OCE reps that we worked with. They went through our applications. You know, this is gonna be where you're going to falter. This is how you need to word it better. (Interview 3)

Both the quantitative and the qualitative data suggest a greater focus on generating revenue from founders located in NEDBIs. The following is a quote from one of the founder's interviewed that captures that sentiment.

"I think even new companies, the conversation's always aimed towards how can we make money too?" (Interview 4)

Another founder in a non-profit business incubator described how important it was to ask for help and search out the right resources from the ecosystem. This is very much in line with the research by Leyden et al. (2014) that suggests that entrepreneurial opportunities are created endogenously by the entrepreneurs themselves. This is also in line with the research by Redondo and Camarero (2018) that suggest when incubatees trust each other there is a feeling of identity and collectivism that encourages founders to help one another.

> I've seen other companies do similar progressions. I've also seen companies who don't follow through with that and those companies tend to not make it. They tend to fizzle out or fade out or realize that you know this isn't for me and then they kind of burn themselves out too. So I think it's very important to be open, and to be able to take what you need from the ecosystem if you will, and then to be able to give back to that. And if you're not willing to do that in this type of environment they don't tend to be as successful. (Interview 6)

From the interview data it appears that founders from UBIs find it a big leap to go from the classroom to running a startup. There is clearly a disconnect between the expectations that have been set out and the reality of building a successful startup. This was the statement from one of the university business incubator founders.

> They walk you through the theory of a startup company, and how to grow from a start-up to a medium to large. Oh perfect. This is going to be easy. You just have to get over the Valley of Death and then you're a millionaire. And then you start to get into the real world and you're like okay. Our professor had a successful startup which again is statistically not going to happen. And had a lot of success with this and that in a time where his technology was very needed. And it was an obvious niche. And then we get the government grants and we're like, yeah, we're going to go off the theory that we worked on in the timelines that we worked on in school. And then we get into real life and we're like, none of this is reality. (Interview 3)

The other university business incubator founder that I interviewed had more critical feedback. Again it speaks to the disconnect between the goals of the business incubator and the goals of the entrepreneur.

> As a young entrepreneur, very impressionable, the advice and feedback provided, in retrospect seems almost dangerous; we often have non entrepreneurs providing advice based on funding metrics that don't actually help out the entrepreneur. (Interview 1)

With regards to the important question of job creation, companies located in UBIs reported more full-time employees with the median around two employees. Four out the five companies from the Forge reported having full time staff, as well as the company from SSMIC, which reported the second highest number of full-time employees from all the respondents.

One driver of this outcome could be attributed to the access to talent through the university internal networks which includes students, undergraduate, masters' and doctoral (Theodoraki et al., 2017). There are also financial incentives for startups located in UBIs to hire recent graduates as related by one of the founders interviewed.

> And then we got two rounds of the OCE Talent Edge Supplement. So for recent grads, you can hire recent grads and they'll pay for 3/4 or salary. So the Forge helped us apply to those. (Interview 3)

The university provides a great pool of talent and there are credits available through government partners such as Mitacs who help place graduate students with companies. As described on their website:

> Mitacs is the platform to allow you to reach your goals, whether they're commercializing your projects or developing innovative products. We provide funding for projects — up to 55% — and connect highly trained researchers with the businesses that need them and help guide you through the process. https://www.mitacs.ca/en

Interestingly the two highest grant recipients reported having the largest number of employees, one startup from CSI with $600,000 in grant funding reporting 15 full time employees and the startup from SSMIC, which received a grant of $1,000,000 and reported 14 full-time employees. This goes back to job creation being the most important metric that government funders focus on as described in the CAIP program (Robbins & Crelinsten, 2018). The focus on job creation is certainly an important goal, but if the goal is to create a truly successful and sustainable innovation ecosystem, these startups must

eventually generate revenues or they will die. Neither of the companies that received the largest grants and reported the highest number of full-time jobs reported any revenue.

Another founder from a university business incubator provided some additional insight supporting this point. When we discussed what the advantage was for building a startup in a university business incubator, he suggested that it was access to talent and R&D. “There is a great deal of talent in Canada so it’s advantageous to have your R&D and staff in Canada and raise money and pursue market share in the US.” (Interview 1)

Surprisingly only two companies from the 22 total respondents reported securing significant equity capital. One founder from the DWBA reported securing $65,000 in equity capital and one founder from the Forge securing $200,000 in equity capital. The opportunity to raise equity capital in Canada has been picking up lately. According to Crunchbase, Canadian venture capital funding and investment was at an all-time high in 2019. Investors put in US$1.8 billion in the third quarter of 2019 alone, the highest quarterly total since they started tracking this figure. It will be interesting to see whether this trend continues with Covid-19 and the new economic landscape. (https://news.crunchbase.com/news/canada-is-having-a-record-year-for-vc-funding/)

Implications for Practice and Policy

This research is novel because it looks at how different types of business incubators create social capital and confirms that although both non-profit and UBIs create social capital for their members, the benefits may be different. In the past researchers have investigated the performance of different types of business incubators across performance measures (Barbero et al., 2012), but presently there is no research that investigates how different types of business incubators create social capital for their

clients and examines how that social capital translates into positive outcomes for their clients.

This study indicates that university business incubator startups have a very high chance of leveraging structural social capital to connect with funding organizations such as OCE and successfully apply for funding. For the founders of non-profit business incubator startups knowledge sharing was a big benefit. This needs to be investigated with a much larger sample size in future research.

This research is also novel because it attempts to identify how the components of social capital relate to tangible performance data, or data which are used to measure the performance of Canadian business incubators and accelerators as per Canada's federal policy.

From a practical perspective, this research highlights the importance for practitioners in both nonprofit and UBIs of understanding how social capital is created within their own ecosystem and how to leverage that social capital to create value for their startups. It's clear from the data and feedback that UBIs are very good at leveraging relationships with funding organizations to assist their startups secure grants. Nonprofit business incubator startups focused more on relationship building and knowledge exchange. Business incubators and business accelerators should aim to capture social capital items in the surveys they send to their members. This will provide real and relevant insights into which areas of social capital are providing value to their members and which areas of social capital need improvement. For example a business incubator may be great at providing workshops and courses, but they may not have a committed pool of mentors and advisors as found in the study of Danish and Canadian business

incubators by Lukosiute et al. (2019). This is where structural capital can play a significant role in connecting startups with the right mentors and advisors. As Redondo and Camarero (2018) found in their research only the entrepreneur's relationship with external agents was relevant to their business success.

Potentially more important than understanding what business incubators are doing well, is understanding where there may be weaknesses. For example, it is very clear that university business incubator startups felt the transition from the theoretical to the practical was a difficult transition. Building a pool of reputable advisors and mentors can help a great deal, as well as maintaining ties with graduate companies who can come back and speak to the new cohorts. For nonprofit business incubators it is clear that they can do a better job providing access to grant funding to their startups. Only one out of 16 (or approximately 6%) of nonprofit business incubator startups received grant funding. Building relationships with OCE, Mitacs, IRAP and other grant funding partners is critical. This also needs to feed back into the policy loop and ensure that federal partner agencies are encouraged to support all business incubator clients. As identified in their review of the CAIP program by Robbins and Crelisten (2018):

> The most significant issue affecting Canada's supports for innovation intermediaries is its fractured nature, distributed decision making and overwhelming emphasis on responding to the incentives and needs of the political level. (p. 40)

It also important to note that three of the six founders interviewed found the focus on grants to not be always strategic. Therefore, an important lesson for business incubator practitioners is to keep in mind that they should connect startups to the resources that

they need to succeed, not just the metrics that are most relevant to government funders for reporting purposes. Business incubator practitioners must engage in ongoing conversations with their members and identify what the needs are. An important factor in the framework created by Wright et al. (2017) is the time dimension and successful business incubators ecosystems will have to continuously evolve to meet the needs of their members.

Applying the cognitive dimension of social capital would suggest that focusing on a shared vision and narrative can strengthen the relationship among ecosystem members (Theodoraki et al., 2017). If the main focus from the grant funders is job creation and the matching grant activity this narrative will permeate to the startups themselves. As described in the CAIP review the pursuit of job creation the government risks confusion the political objective the fundamentals of innovation (Robbins & Crelisten, 2018). Two responses from their study capture this sentiment.

"They (governments) are optimizing their policies for the wrong metric" one interviewee explained. Another interviewee noted, "The number of people employed is not a priority for how we measure our own success, but governments like it." (p. 14)

Finally, business incubator practitioners should be encouraged to start collecting data other than simply tangible outcomes. Measuring social capital along with the economic impact data can provide powerful insights that can improve the delivery of services by business incubators in Canada.

In terms of policy implications, first and foremost the federal government should create an organization that is responsible for keeping accurate data on business incubators and accelerators in Canada, and that could also act as a resource connector between all

the organizations. The lessons learned by the CAIP participants as well as any materials that have been developed through government grants should be available to all business incubators and accelerators in Canada. Originally, the Canadian Association of Business Incubation (CABI) was created for that purpose. CABI was renamed the Canadian Acceleration and Business Incubation (Association) in 2015, but no recent activities of the newly named organization are evident. (https://betakit.com/cabi-gets-new-name-and-focus-with-leadership-change/)

Another recommendation is that it is important for policy makers to have a strategy that does not exclude the small players. The funding data from CAIP make it very clear that the largest organizations receive the lion's share of grant funding in Canada. Ultimately that will not create a truly national entrepreneurial strategy that supports regional players. The current status quo seems to favour the very large innovation intermediaries and a desire to foster Canadian "unicorn" firms, but this needs to be balanced with competing interests from regional demands (Robbins & Crelisten, 2018).

Government funding agencies for business incubators and accelerators in Canada should request that funding recipients start collecting data on intangible measures, along with tangible outcomes in order to get a better understanding of the needs of the startups. Measuring social capital along with the economic impact data can provide powerful insights that can improve the delivery of services by business incubators in Canada and improve the success of our startups.

At the federal level, Canada needs to work towards creating an entrepreneurial "Canadian" identity. This will help Canada move from the "farm team" perception to

finding an authentic entrepreneurial path. It is especially important to be able to tell that story if Canada is to become the global destination for entrepreneurs. For example, having Canadian success stories such as Shopify is important.

The lack of a unified federal focus seems to be something that is echoed across the Canadian innovation landscape. In a recent paper Wolfe (2018) described the ecosystem as follows:

> Canada has a loose innovation system that links initiatives in advanced technologies and software, but lacks a coherent focus. All too often, the various players—colleges, universities, small and mid-sized businesses, large companies, public laboratories, innovation intermediaries and governments—are not working towards a common goal or, even worse, are working at cross-purposes. (p. 9)

A number of the founders interviewed described the incubator itself as being set up to chase government grants. Because of the federal government's heavy investment in business incubation there is a trend to build for the sake of building. There is a lot of money in business incubation and the feeling is if you don't take it, your competitor will. This is unfortunate as it fractures the ecosystem.

Another issue that Canada faces is creating policy that can create innovation across the country. Presently there are a number of clusters of innovation that stand out, but as a whole, Canada does not seem to have a coherent strategy. It is critical to create opportunities for business incubation to thrive in all areas of the country, because it builds the local entrepreneurial culture. For example, data from a Swedish study suggest that 65% of graduate entrepreneurs start businesses in their regions after graduation (Larson, J., Wennberg, K., Wiklund, J., & Wright, M., 2016).

From a policy perspective all nations must now look at entrepreneurship as an instrument to help guide economic recovery. In their recent article, Audretsch and Siegel (2020) outline the importance of entrepreneurship in both public and non-profit sectors, particularly as we find ourselves in truly uncharted territory.

> We will also need entrepreneurship in the public and nonprofit sectors to help us recover from the COVID19-induced world depression caused by mandatory shutdowns, and we need guidance on how to address this issue from scholars of public administration and public management. (p. 468)

From a Canadian perspective, this is particularly important as the federal government is committing significant resources towards creating innovation ecosystems. In order to succeed, policy makers must understand that successful innovation systems must be able to adapt to changing circumstances (Heaton, Siegel, & Teece, 2019) thus their policies must also reflect that flexibility. Continuous engagement with business incubators and accelerators, and the entrepreneurs that reside in those ecosystems, is a must. It is also vital that feedback from all business incubators and accelerators across Canada, be provided and reflected in future policy, not simply from the largest and most successful organizations. By the virtue of their size and continuous government funding, those particular ecosystems are set up to attract the best clients and be more successful, and therefore they do not provide a holistic picture of entrepreneurship in Canada.

The field of business incubation/acceleration is relatively new in Canada and there are a number of interesting lessons that we can draw from Owen-Smith and Powell's research on networks and institutions (2007). They looked at the evolution of the biotechnology industry in Boston and the San Francisco Bay Area. Owen-Smith and

Powell (2007), argue that networks and institutions jointly determine when different types of capital can be invested, who will invest it and the expected returns. The Boston network evolved from the public sector and public science formed the foundation, while the San Francisco Bay network evolved from a commercial and entrepreneurial orientation (Owen-Smith & Powell, 2007). This also reflected in their patent activity as well as the type of research each Boston biotechnology firms engaged in compared to their counterparts in the San Francisco Bay Area. The co-evolutionary relationship between institutions and networks creates a phenomenon where "they set the conditions of possibility for each other" (Owen-Smith & Powell, 2007, p. 616). It is particularly important that policy makers have an understanding of the differences between business incubators and accelerators across Canada and how they are shaped by their regional institutions and networks.

One observation was that Canadian incubators are run very much like a government organization, i.e. very risk averse, bureaucratic and always a desire to check boxes. Ultimately this strategy is not long term sustainable as it creates a system of anti-innovation, i.e. a standard model where we can check the "right" boxes. This quote from one of the founders puts this into perspective: "[it] is not about innovation, it is more about self-preservation". (Interview 2)

In a recent report by the Impact Centre (2018, p. 15), *Measuring Canada's Scale Up Potential*, the authors suggest that the narrative has been "Canada is good at creating technology companies but often fails to scale them to a world-class size." The report also suggests that although both the federal and provincial governments are launching programs and funding to support the growth of tech companies, currently there is no clear

standard to define success and measure progress. This fits with the findings of Wolfe (2018), which can appear in a recently published paper titled: *Creating Digital Opportunity for Canada*:

> Canada's record in building local successes into global powerhouses is decidedly mixed. Promising start-ups all too often end up either moving to the US or being sold to foreign (usually US) investors. (pg. 9)

This leads to a larger challenge: without examples of high growth Canadian companies there is no ecosystem that can provide guidance for startups to transform into successful scale-ups. In a recent article (Silcoff, 2017), Jim Balsilie, former BlackBerry co-CEO, captures the challenge facing Canada:

> The challenge for Canada is how do we stop this incessant focus on branch plants and creating pre-revenue startups that are 'built to flip' and instead build an ecosystem that allows proper innovators – our most successful, revenue-generating entrepreneurs – to quickly get their revenues to $100-million and then go beyond?

This ties very well to Canada's culture and entrepreneurial identity, or lack thereof. As evidenced by this research, Canada needs to focus on creating more CEO's who can drive a uniquely Canadian entrepreneurial value proposition. As one of the founders suggested, in Canada "we are focusing on creating the gizmo, not focusing on creating individuals who know how to take a gizmo and turn it into a successful company." This type of culture takes time to build and it requires more successful role models, very much in line with the research done by Spigel (2017) where he compared the Waterloo, Ontario ecosystem with the Calgary, Alberta entrepreneurial ecosystem.

The above recommendations will require both federal and provincial governments to dramatically change their approach to innovation and to creating an entrepreneurial ecosystem. There is a great deal of money currently being spent on innovation and business incubation in Canada, but there has to be a more strategic approach if Canada is to become a leading entrepreneurial nation. Appendix 8 provides a list of all the investments the federal government has made towards innovation, including business incubators and accelerators, in Ontario since 2010, and the figure is almost $2 billion. This trend is expected to continue across Canada, which will require policies that reflect the ever-changing needs of Canadian business incubators and accelerators and the entrepreneurs they serve.

Social capital provides interesting insights of how we can create a more robust entrepreneurial business incubation ecosystem by intentionally focusing on the three dimensions of social capital. The structural dimension can provide access to resources and an external network that can assist startups grow and thrive. The cognitive dimension provides insights into building a collective culture with shared norms and values. The relational dimension creates the trust and complimentary relationships that create the foundation for resource and knowledge sharing. The key is to build a culture of trust that provides access to the right resources and network to ensure that startups receive the support they require to survive and become success stories.

Limitations of the Study

One of the major limitations of this study is the small sample size for both the quantitative and qualitative data collection. On the quantitative side, it was impossible to do any in-depth, statistical analyses and the data could only be used for descriptive

purposes, while a sample size of six for the qualitative data collection may have resulted in a narrow range of perspectives. Additionally, the sample population was drawn from a finite area in Canada, that likely differs in context to other areas of the world. Consequently, the study results cannot be generalized due to the small sample size.

A further limitation is that the study is focused on the point of view of the incubatees. While this could also be a strength, given the research intent, future research should consider the manager's perspective as well. Despite these limitations, however, the research findings contribute to theory and practice, and leads to future research endeavors, as discussed in the next chapter.

Chapter 6: Conclusion and Future Research

Contribution of Research to the Body of Academic Knowledge

Investigating social capital across different types of business incubators has created three main contributions to the study of business incubation in Canada. First, it confirmed that both NEDBIs and UBIs are well suited for creating social capital, which can help startups access much needed resources, such as grants, mentorship and knowledge. This falls in line with the theoretical perspective provided by Leyden and his colleagues (2014) where they present a model that positively relates the entrepreneur's probability of a successful innovation with the size of the region to be searched for knowledge. Entrepreneurs are searching for knowledge and they key to acquiring knowledge is access to social networks (Leyden et al., 2014). Incubators through their network function as system builders and develop networks that otherwise would not be exist (van Rijnsoever, 2020). The three social capital dimensions provide powerful insights for busines incubators. The structural dimensions speak of the importance of creating a network that provides access to a reliable internal and external network. The cognitive dimension highlights the importance of creating a culture of shared values, norms and narratives. The relational dimension is critical to creating trust and relationships that ensure mutual benefit. This provides us with a better conceptual understanding of the different types of business incubator ecosystems and the value they create for their incubatees through the lens of social capital.

Second, this is one the first studies in Canada to look at measuring the performance of business incubators through more than simply tangible economic outcomes such as grants, revenues and job creation. Hausberg and Korreck's (2018), in

their literature review of business incubators and accelerators, identified the need for multi-dimensional frameworks for business incubator performance evaluation that utilize both quantitative and qualitative methods. Incorporating social capital into future data collection from business incubators and accelerators clients will provide a rich source of data that can assist future policy creation. The current approach does not capture the intangible aspects of business incubation and that makes it difficult to understand what lies at the heart of successful innovation. As suggested by Gedajlovic et al. (2013, p. 456), social capital is "uniquely situated to address the integrative theoretical needs of entrepreneurship scholars because it helps explain processes and outcomes of social interactions at multiple levels of analysis and across a diverse set of situations and contexts".

This leads me to the third point. For Canada to achieve its ambition of becoming a leading entrepreneurial nation and a destination for aspiring entrepreneurs it must understand that innovation ecosystems continually evolve (Heaton et al., 2019), and thus policy must reflect this. As identified by the Impact Centre (2018) report, although both the federal and provincial governments are launching programs and funding to support the growth of tech companies, currently there is no clear standard to define success and measure progress. Given the massive resources Canada is dedicating towards business incubators and accelerators in Canada it is important that policy is supported by continuous research in the field. Utilizing social capital theory can provide policy makers with new insights that can lead to the creation of more robust entrepreneurial ecosystem across Canada.

Opportunities for Further Study

For future research it would be beneficial to explore how social capital is created across Canadian, US and global business incubators and gain further insight into how a culture of entrepreneurship can be built. In terms of future research, it would be advantageous to partner with InBIA and ask them to distribute the survey to their 1,200 members that lead entrepreneurship support organizations in 62 countries.

Another opportunity for future research, particularly in Canada, is identifying a way to incorporate better metrics for measuring success of business incubators. The main drivers currently seem to be job creation and economic growth, but those metrics do not provide a clear picture of what the entrepreneurs themselves need from the ecosystem. The government will be much more successful in creating jobs and economic wealth if the proper foundations to allow startups to flourish are set up. For that to happen, a lot more data from Canadian startups would be required. Collaborating with the federal government on a research project focusing on collecting this data would be a great opportunity.

There is also a need for more research regarding what happens once startups graduate from business incubators. The research to date suggests that very few business incubators in Canada keep track of their clients once they graduate (Robbins & Crelinsten, 2018). Do they stay connected to the ecosystem? Do they add to the fabric of social capital by advising and mentoring new startups?

Finally, the business incubator manager has been identified as a key driver of social capital (Redondo & Camarero, 2018), therefore future research should consider the manager's perspective.

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Appendix 1

Declaration of Originality

I hereby certify that I am the sole author of this dissertation and that no part of this dissertation has been published or submitted for publication.

I certify that, to the best of my knowledge, my dissertation does not infringe upon anyone's copyright nor violate any proprietary rights and that any ideas, techniques, quotations, or any other material from the work of other people included in my thesis, published or otherwise, are fully acknowledged in accordance with the standard referencing practices. Furthermore, to the extent that I have included copyrighted material that surpasses the bounds of fair dealing within the meaning of the Canada Copyright Act, I certify that I have obtained a written permission from the copyright owner(s) to include such material(s) in my dissertation and have included copies of such copyright clearances to my appendix.

I declare that this is a true copy of my dissertation, including any final revisions, as approved by my dissertation committee and the Graduate Studies office, and that this dissertation has not been submitted for a higher degree to any other University or Institution.

Appendix 2

Survey Measuring Social Capital Dimensions, Economic Impact and Demographic Data

Structural Social Capital

1. The incubator provides assistance to find appropriate resources for tenants.
2. The incubator is capable of providing scarce resources to tenants
3. Tenants regularly interact with other tenants and are able to utilize their network.
4. Tenants benefit from the network relationships of other tenants and the existing network of the incubator.
5. The incubator offers relevant space for stimulating the level of social interaction.

Cognitive Social Capital

6. There is tenant interaction and loyalty within the incubator community.
7. The tenant mix leads to conversation and resource exchange among incubator members.
8. Incubator tenants are a good fit with the incubator community and engage in social association.

Relational Social Capital

9. There is a high level of trust and credibility within the incubator.
10. Competing tenants have an adverse effect on trust within my incubator.
11. Incubator personnel supports trust, networking, and social interaction among tenants.
12. There is commitment among incubator tenants towards collaborative action.

Note. Each item will be measured using a 5-point Likert type scale, ranging from "strongly disagree" (1) to "strongly agree" (5). Survey taken from Tötterman & Sten (2005, p. 497), as illustrated below.

Economic Impact Information

13. Number of people currently employed full-time

14. Number of people currently employed part-time

15. Current monthly salaries and wages paid

16. Gross revenues of the most recent full year

17. Dollar amount of debt capital raised in most recent full year

18. Dollar amount of equity capital raised in most recent full year

19. Dollar amount of grant funds raised in most recent full year

Demographic Information

SEX: M F

Age: 15-24
25-44
45-64
65-74

Education Level: High School Degree
College Degree
Bachelor's Degree
Master's Degree
Doctorate Degree

How long have you been in the incubator? [fill in box]

Would you be interested in doing a follow up interview to help further this research project? Y N

Appendix 3

Online Consent Form

The Creation of Social Capital Across Different Types of Business Incubators

ONLINE PARTICIPANT CONSENT FORM (for anonymous survey-based research)

Principal Researcher: Arthur Barbut **Supervisor: Dr. Kay Devine**
arthurbarbut@gmail.com

You are invited to participate in a research study about the creation of social capital within the business incubator ecosystem. To date most of the research has focused on direct, tangible outcomes of business incubator performance. While tangible factors are important, the research reveals that intangible factors, particularly social capital plays a crucial role in allowing young firms access the resources embedded in the entrepreneurial network. I am conducting this study as a requirement to complete my doctoral degree in business.

As a participant, you are asked to participate in this study by completing a short online questionnaire about perceived levels of social capital and economic impact metrics. Participation will take approximately 15 minutes of your time.

The research findings will enable business incubators to provide better services and support to the startups they service. Involvement in this study is entirely voluntary and you may refuse to answer any questions or to share information that you are not comfortable with. You will not be asked to provide any personal or identifiable information or data.

You may withdraw from the study at any time by simply closing out of your browser. Once you submit your completed survey, however, data cannot be withdrawn as the survey is completely anonymous. Please print a copy of this consent form for your records.

Please note that the survey data may be initially collected and stored on a server in the U.S. and is subject to access under the U.S. Patriot Act until it is transferred from that server to the researcher's computer.

All hard copy data will be kept in locked cabinets in my office. All electronic data will be kept on a password protected computer at my office. All information and records will be destroyed by confidential shredding; electronic records will be deleted, when all project requirements have been met approximately by September 2017.

Results of this study may be disseminated through peer reviewed journals, industry publications, and conference presentations. Interested participants can always contact me for any articles and presentations.

If you have any questions about this study or require further information, please contact Arthur Barbut at arthurbarbut@gmail.com or by phone at 519-564-8456.

This study has been reviewed by the Athabasca University Research Ethics Board. Should you have any comments or concerns regarding your treatment as a participant in this study, please

contact the Office of Research Ethics at 1-800-788-9041, ext. 6718 or by e-mail to rebsec@athabascau.ca.

Thank you for your assistance in this project.

CONSENT:
The completion of the survey and its submission is viewed as your consent to participate.

BEGIN THE SURVEY

Appendix 4

Athabasca University
RESEARCH CENTRE

CERTIFICATION OF ETHICAL APPROVAL

The Athabasca University Research Ethics Board (REB) has reviewed and approved the research project noted below. The REB is constituted and operates in accordance with the current version of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2) and Athabasca University Policy and Procedures.

Ethics File No.: **22257**

Principal Investigator:
Mr. Arthur Barbut, Graduate Student
Faculty of Business\Doctor of Business Administration (DBA)

Supervisor:
Dr. Kay Devine (Supervisor)

Project Title:
The Creation of Social Capital Across Different Types of Business Incubators

Effective Date: July 04, 2016 **Expiry Date**: July 3, 2017

Restrictions:

Any modification or amendment to the approved research must be submitted to the AUREB for approval.

Ethical approval is valid *for a period of one year*. An annual request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.

A Project Completion (Final) Report must be submitted when the research is complete *(i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable))* or the research is terminated.

Approved by: **Date: July 4, 2016**

Fathi Elloumi, Chair
Faculty of Business, Departmental Ethics Review Committee

Athabasca University Research Ethics Board
University Research Services, Research Centre
1 University Drive, Athabasca AB Canada T9S 3A3
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Telephone: 780.213.2033

Appendix 5

Ethics Renewals

Athabasca University
RESEARCH ETHICS BOARD

The future of learning.

CERTIFICATION OF ETHICAL APPROVAL - RENEWAL

The Athabasca University Research Ethics Board (AUREB) has reviewed and approved the research project noted below. The AUREB is constituted and operates in accordance with the current version of the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS)* and Athabasca University Policy and Procedures.

Ethics File No.: 22257

Principal Investigator: Arthur Barbut, Faculty of Business, Doctorate in Business Administration

Supervisor (if applicable): Kay Devine, Professor, Faculty of Business

Project Title: 'The Creation of Social Capital Across Different Types of Business Incubators'

Effective Date: June 23, 2017 **Expiry Date**: June 22, 2018

Restrictions:

- Any modification or amendment to the approved research must be submitted to the AUREB for approval.
- Ethical approval is *valid for a period of one year*. An annual request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.
- A Project Completion (Final) Report must be submitted when the research is complete *(i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable))* or the research is terminated.

Approved by: **Date: June 23, 2017**

Sherri Melrose, Chair
Athabasca University Research Ethics Board

Athabasca University Research Ethics Board
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Athabasca University
RESEARCH CENTRE

CERTIFICATION OF ETHICAL APPROVAL - RENEWAL

The Athabasca University Research Ethics Board (AUREB) has reviewed and approved the research project noted below. The AUREB is constituted and operates in accordance with the current version of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS) and Athabasca University Policy and Procedures.

Ethics File No.: **22257**

Principal Investigator:
Mr. Arthur Barbut, Graduate Student
Faculty of Business\Doctorate in Business Administration

Supervisor:
Dr. Kay Devine (Supervisor)

Project Title:
The Creation of Social Capital Across Different Types of Business Incubators

Effective Date: June 11, 2018 **Expiry Date**: June 10, 2019

Restrictions:

Any modification or amendment to the approved research must be submitted to the AUREB for approval.

Ethical approval is valid *for a period of one year*. An annual request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.

A Project Completion (Final) Report must be submitted when the research is complete *(i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable))* or the research is terminated.

Approved by: **Date:** June 11, 2018

Joy Fraser, Chair
Athabasca University Research Ethics Board

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Supervisor:
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Project Title:
The Creation of Social Capital Across Different Types of Business Incubators

Effective Date: June 10, 2019 **Expiry Date**: July 11, 2020

Restrictions:

Any modification or amendment to the approved research must be submitted to the AUREB for approval.

Ethical approval is valid *for a period of one year*. An annual request for renewal must be submitted and approved by the above expiry date if a project is ongoing beyond one year.

A Project Completion (Final) Report must be submitted when the research is complete *(i.e. all participant contact and data collection is concluded, no follow-up with participants is anticipated and findings have been made available/provided to participants (if applicable))* or the research is terminated.

Approved by: **Date:** July 12, 2019

Carolyn Greene, Chair
Athabasca University Research Ethics Board

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Appendix 6

Interview Protocol

Introduction
My name is Arthur Barbut and I am a DBA (Doctorate in Business Administration) student at Athabasca University. As a requirement to complete my degree, I am conducting a research project on the creation of social capital across different types of business incubators in Canada. To date most of the research has focused on direct, tangible outcomes of business incubator performance. While tangible factors are important, the research reveals that intangible factors, particularly social capital plays a crucial role in allowing young firms access the resources embedded in the entrepreneurial network. I am conducting this project under the supervision of Dr. Kay Devine.
Below are questions and corresponding answer about this research project.

Question: Why am I being asked to take part in this research project?
You are being invited to participate in this project because you have completed the online survey that is part of my research and have agreed to a follow up interview.

Question: What is the purpose of this research project?
The purpose of this research is to obtain your thoughts on the business incubator ecosystem you are currently a member of and identify how social capital is created within that ecosystem and how that translates into value to startup founders.

Question: What will I be asked to do?
You will be asked to participate in a one-on-one interview with the principal investigator. The interview will last approximately 45 - 60 minutes, will require little effort and will be audiotaped if you agree. If you do not agree to be audiotaped, notes will be taken. If you agree follow-up conversations may be scheduled if clarification on certain comments is required.

Question: Do I have to take part in this project?
Your involvement in this project is entirely voluntary.

Appendix 7

Semi-Structured Interview Questions

1. How does the business incubator and its staff promote networking among the tenants?

2. How have you benefited from the network that has become available through the incubator ecosystem?

3. How does the culture of the business incubator impact your startup? Does it lead to more collaboration and sharing of information?

4. How is trust built among the tenants of the incubator? Are you more likely to do business with companies inside the incubator?

5. How does the incubator staff promote collaboration and exchange of information among the tenants?

Appendix 8

Article Matrix used to Develop Propositions

Paper	Study Objective	Research Methodology	Sample	Key Findings
Adlešič, R. V., Slavec, A., (2012) Social capital and business incubator performance: Testing the structural model.	The authors investigate how do social network size, role models, individual experiences, and establishment of a firm as a result of incubator activities influence on proactive exploitation of social networks within incubators.	A survey methodology utilizing the tailored design method (Dillman, Smyth, & Christian, 2009), was used to guide and support the survey process. The survey was developed based on an in depth literature review.	The survey was mailed to the representative random sample of 290 entrepreneurs, which have their firms in Slovenian business incubators. The sample consisted of 24% female entrepreneurs and 74% male entrepreneurs.	The results of the study showed that incubatees' proactive exploitation of social networks within the environment of an incubator has a significant positive influence on incubatees' satisfaction. In turn, satisfaction with incubators significantly and positively impacts on incubatees' commitment to and trust in incubators.
Aernoudt, R., (2002) Incubators: Tool for entrepreneurship?	The paper focuses on the dynamic process of incubation and concludes by underlining the importance of close links between incubators and business angels networks.	This paper aims to combine a conceptual analysis with an analysis of economic reality, both in the U.S.A. and in Europe.	The study reviewed a number of reports, data and literature related to business incubators in Europe and the USA.	One of the biggest barriers for the development of incubators in Europe is the lack of entrepreneurship and the underdevelopment of seed financing and business angel networks.
Bøllingtoft, A., & Ulhøi, J. P. (2005) The networked business incubator—leveraging entrepreneurial agency?	This paper addresses the rationale behind the networked incubator model, why it has emerged, and what distinguishes it from the more traditional incubator model.	Empirically, the paper is based on 6 months of ethnographic data collected in one of the first known and documented networked incubators.	The empirical material for this research has been gathered from MG50 (the name of the incubator)—a practical example of what in theory has been referred to as a networked BI.	Two key types of internal business networks and collaborative approaches have been identified. One type relates to a specific use of in-house business networks in the form of direct collaboration in relation to specific contracts. The other

				type is informal network activities.
Hackett, S. M., & Dilts, D. M. (2004) A systematic review of business incubation research	The primary objectives of this article are to systematically review the incubator-incubation literature and to provide direction for fruitful future research.	This article systematically reviews the literature on business incubators and business incubation. Focusing on the primary research orientations, problems with extant research are analyzed and opportunities for future research are identified.	38 studies were included in our review. When examining the literature chronologically, five primary research orientations are evident: incubator development studies, incubator configuration studies, incubatee development studies, incubator-incubation impact studies, and studies that theorize about incubators-incubation.	While much attention has been devoted to the description of incubator facilities, less attention has been focused on the incubatees, the innovations they seek to diffuse, and the incubation outcomes that have been achieved. As interest in the incubator-incubation phenomenon continues to grow, new research efforts should focus not only on these under-researched units of analysis, but also on the incubation process itself.
Hansen, M. T., Chesbrough, H. W., Nohria, N. and Sull, D. N. (2000) Networked incubators hothouses of the new economy	The objective of this paper is to help fill the knowledge gab about Internet-related incubators.	The researchers studied several leading incubators in depth and conducted a large-scale survey identifying more than 350 incubators worldwide.	To gain a representative sampling, the researchers interviewed executives at 169 of the 350 incubators identified, over the telephone.	Organizational models that exploit entrepreneurial drive and network access while preserving the benefits of scale and scope will be the most potent models for long-term success in the new economy. Networked incubators are one such emerging form, and others are likely to follow.

Campbell, C. (1989) Change agents in the new economy, business incubators and economic development.	This research describes a cross-section of business incubators and measures their effectiveness, particularly as it relates to job creation and economic development.	The research team conducted in depth reviews of a number of incubators in the US and Canada over an 18 month period.	Rensselaer Polytechnic Institute Incubator Program; Bennington County Industrial Corporation; Montgomeryville Technology Enterprise Center; Discovery Parks BCIT Multi-Tenant Facility; Broome County Industrial Incubator; Control Data St. Paul Business and Technology Center; Technology Commercialization Program; Fulton Carroll Center for Industry; Model Works Industrial Commons; Rockford Business Center; and Southwest Germantown Community Development Corporation.	Small businesses are starting up in record number. They have an important, but disputed role in job creation. Their failure rates are high, but unequal across industries. They are the potential source of large businesses and new industries. A variety of public and private initiative have been undertaken to assist in their formation and survival.
Allen, D. N., & Rahman, S. (1985) Small business incubators: A positive environment for entrepreneurship	The purpose of this article is to present a descriptive overview of incubators and address their potential for enterprise development.	Twelve incubator facility managers in Pennsylvania were called to inform them of the study and to obtain the names of all tenant firms currently occupying the facility and that of the chief executive officer of each firm. Two data files form the source of information contained in this article. The first, based on the site visits, contains	Surveys were sent to 126 firms in late February, 1984. The sample for the analysis consisted of 56 firms, a 44 percent response rate. Comprehensive information concerning the twelve incubator facilities was collected by the Pennsylvania Department of Commerce. Site visits were made along with follow-up telephone calls.	Incubator facilities offer an interesting set of opportunities for small business. First, and perhaps most important, they provide a sheltered environment for young, growing firms. The incubator location assists a firm directly through affordable rent and services, and indirectly by placing the entrepreneur in an environment of peers. A second opportunity involves the eventual expansion of the local economy,

		information about the twelve incubator facilities. Thus, the incubator is one unit of analysis. The second data file, based on the survey of incubator tenants, focuses on the firm as the unit of analysis.		which provides small businesses with new opportunities for service provision and trade relations. Third, many of the young firms in an incubator offer sound investment opportunities for local individuals and firms.
Lyons, T. S. (2002) Building social capital for sustainable enterprise development in country towns and regions: Three case studies in the United States	This paper examines an approach to rural social capital building for enterprise development that is based on the specific needs of the entrepreneurs to be served as defined by the context in which they operate.	This was a case study approach to using social capital for enterprise development in rural regions and was evaluated by investigating the efforts of two business incubator programs and a regional community based economic development program.	The two business incubators studied were the Northeast Alabama Entrepreneurial System, which is both a business incubator and a network of multiple incubators, and the Foodworks Culinary Center of Arcata, California, an industry focused incubator that has reach out beyond the boundaries of its local community. The third case explored is The Appalachian Center for Economic Networks, whose mission is built around the concept of networking.	What the three programs share in common is a commitment to identifying both local and external partners and building linkages with them. It is this social capital building that creates the economic critical mass, on a variety of levels, which helps to make rural regions more competitive, thereby enhancing the chance of entrepreneurial success.
Lee, S. S. and Osteryoung, J. S. (2004) A comparison of critical success factors for effective operations of UBIs in the United States and Korea	The present study suggests investigates critical success factors for effective operation of business incubators and it compares the perceived importance of	This research employs a questionnaire survey methodology. The questionnaire was developed to measure critical success factors for effective	After the pilot survey from the members of the UBI in the Kangnam University, a two-page questionnaire was prepared and was sent randomly to the incubator managers and their staff at 39 Korean UBIs. In addition,	The findings provide an exploratory analysis and comparison of perceived critical success factors for effective operations of UBI between two countries. It is interesting to note that there appear to be no significant

	them between managers of U.S. and Korean firms.	operations and general information of UBIs. The respondents are the UBI managers and entrepreneurs of tenant and graduate firms.	information was collected from surveys mailed to 200 tenant firms and to 100 graduate firms. The same questionnaire sent to the managers of UBI in Korea was sent to 46 university-affiliated incubators of National Business Incubation Association (NBIA) members.	differences except perceived goal/operations strategy.
Rike M.P. (2002) Co-production of business assistance in business incubators: An exploratory study	This study explores the types of business assistance provided through co-production, the modes of co-production, and factors that affect the variability of impact.	This research project employs a multiple case study methodology. Case study research involves the examination of a phenomenon in its natural setting.	The sample was constructed in two steps. First, the researcher selected the incubators. Second, using guidelines provided by the researcher, the managers of the selected incubators nominated entrepreneurs for participation in the study. The final sample of entrepreneurs was composed of 16 Group I and 16 Group II entrepreneurs, resulting in a total of 32 co-production pairs in eight incubators.	The study reveals that the incubator managers with greater impact invest more hours in co-production, invest more time on average in each co-production episode and engage in a broader range of co-production modalities. With respect to co-production modalities, the majority of incubators in this study engage primarily in reactive co-production. Finally, those entrepreneurs for whom co-production activities had greater impact exhibited greater ‘‘readiness’’ to engage in co-production.

Grimaldi, R., and Grandi, A., (2005) Business incubators and new venture creation: An assessment of incubating models	This study looks at the dynamics of the incubator industry, it is possible to identify two main incubating models, Model 1 and Model 2, which in our view may provide incubators with useful strategic indications on how and where to position themselves.	Empirical evidence is provided on the two incubating models derived from case studies of eight Italian incubators.	The 8 incubators categorized under 4 four (different) main types of incubators: Business Innovation Centres (BICs), UBIs (UBIs), Independent Private Incubators (IPIs), and Corporate Private Incubators (CPIs)BIC Friuli Venezia Giulia;	Empirical evidence through case studies support our initial working hypothesis of two main models of incubations. We believe that the rationale behind different incubating initiatives lies in their ability to target different types of client companies, having different objectives and requirements. Potential depends on 'structural' characteristics, the size of the market they are targeting, the industrial sectors involved, business innovativeness, its degree of technological obsolescence and hence on speed to market, on the specific phase of the business development cycle.
Bergek, A., & Norrman, C. (2008) Incubator best practice: A framework	This paper deals with two problems regarding business incubators. First, there does not seem to be much consensus with regard to the definition of ''performance'' and how it should be evaluated and compared (Nolan, 2003; Phan et al., 2005). Second, most of these studies have focused on outcome (e.g.	The aim of this paper is, therefore, to develop a framework that can serve as a basis for identifying best practice incubator models using an empirical illustration. This framework can be used as a tool both for policy makers' resource allocation decisions and for those involved in incubator	The framework was applied on 16 Swedish incubators that were supported by the government VINNKUBATOR programme for incubator support.	We concluded that comparisons should only be made between incubators that have the same goal(s) and that outcome indicators should be chosen carefully as to correspond to these goals. Consisting of the following strategies: ''picking-the-winners and idea'', ''picking-the-winners and entrepreneur'', ''sur-vival-of-the-fittest and idea'' and ''survival-of-the-fittest and entrepreneur''. We

	number of new firms, jobs and firm survival), but without relating it to how different incubators organise and manage their incubation processes.	activities at the practical level.		also suggest that business support strategies may be positioned on a scale from ‘‘strong intervention’’ to ‘‘laissez-faire’’. Second, the issues of how incubator support is currently provided, i.e. which incubator models that are used, and how incubators differ in this respect are usually neglected.
Tötterman, H., & Sten, J., (2005) Start-ups: Business incubation and social capital	The main research question is: how can business incubators support entrepreneurs, in their efforts to build up business networks for the benefit of their own company, by focusing more on social capital?	The study applies an exploratory approach and aims to describe the role of business incubators in supporting entrepreneurs. More accurately, the study relies on a combination of two traditional research strategies: survey and case studies.	This article evaluates three not-for-profit managed business incubators from different parts of Finland. The personnel of each business incubator were interviewed as well as entrepreneurs who still have their companies at the premises of the business incubators.	The results indicate that tenants desire multifaceted factors from the business incubator and its network, but their desires are often contradictory. For example, in structural terms tenants are sometimes ready to profit at other tenants’ expense, in order to get hold of a scarce resource available through the incubator network. On the other hand, in cognitive terms, tenants seek belonging and a spirit of comradeship from other tenants. In relational terms, tenants seek safety, trust and identification from being a member of a community.

Ascigil, S. F. & Magner, N. R. (2005) Business incubators: Leveraging skill utilization through social capital	This study examines the role that social capital plays among tenant companies of a business incubator in the acquisition and utilization of business skills by those companies.	A survey methodology was utilized with a packet of questionnaires sent to the manager of each incubator, which then distributed to the incubator's tenant companies. Respondents were promised anonymity and returned their sealed envelopes through the incubator manager.	Questionnaires were distributed to a total of 135 tenant companies across five business incubators in Turkey. 59 questionnaires were returned but 6 were eliminated due to incomplete data, resulting in 53 final respondents.	From a broad perspective, the results show that social capital derived from relations among incubator tenant companies is associated with greater acquisition and utilization of business skills by those companies. More specifically, the results indicate that tenant companies' skill utilization is enhanced primarily by social capital generated from the content of the relationship between companies – Do the companies trust each other and identify with each other? Do they share a common language and perspective? – rather than from the structure of the relationships between them.
Liao, J., & Welsch, H., (2005). Roles of social capital in venture creation: key dimensions and research implication	This study was built upon Nahapiet and Ghoshal's three dimensions of social capital—structural, relational, and cognitive. It addresses three research questions: (1) Are there significant differences in social capital between nascent entrepreneurs and the general public (control group)? (2) Are there	The researchers subscribe to a network model of organization formation (Larson and Starr, 1993; Aldrich and Zimmer, 1986). The assumption is that the creation of new ventures and their success depend on the entrepreneur's ability to establish a network of relationships. The research	PSED data used in this study involved samples of individuals, all of whom were initially identified through a random-digit dialing (RDD) telephone survey followed by a detailed mail questionnaire. During 1998 and 1999, an initial sample of RDD calls was made, totaling 31,261 adults (aged 18 years or older) in the United States. Of these, 15,662 are	The findings on social capital across different sample groups and the patterns of associations among various dimensions were counterintuitive. Although we were not disputing the importance of an entrepreneurial network and its role in venture creation, our results indicated that there are truly no significant differences in social capital between the general public

	significant differences in social capital between technology and nontechnology nascent entrepreneurs? (3) How do the three dimensions of social capital interact among themselves across different sample groups?	questions were examined by using the Panel Study of Entrepreneurial Dynamics data set.	female and 15,599 are male. Telephone screening was used to identify nascent entrepreneurs.	(control group) and nascent entrepreneurs.

Appendix 9

FedDev Investment Towards Innovation, Including Business Incubators and Accelerators in Ontario, Since 2010

#	FED DEV SOUTHERN ONTARIO INVESTMENTS	PROJECT DESCRIPTION	DATE	AMOUNT
1	**Economic Action Plan Invests in Southern Ontario Future Leaders**	PROJECTs focusing on the adaptation and adoption of new technologies, processes and skills aimed at enhancing productivity; the development of new industries or opportunities to diversify a community or regional economy; and the development and expansion Scientists and Engineers in Business will provide up to $50 million over four years to not-for-profit organizations and post-secondary institutions to help build the entrepreneurial skills of recent graduates and graduate students in the science, technology, engineering and mathematics fields who have developed fresh ideas for business start-ups, and support them as they bring their ideas to market, launch or expand their businesses. http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/00381.html?OpenDocument	**Wednesday, October 13, 2010**	**$50,000,000.00**
2	**Minister Goodyear Recognizes the Contribution of Local Entrepreneurs During Small Business Week**	There are 37 Community Futures Development Corporations supported through FedDev Ontario that serve southern Ontario rural businesses and communities. In the last year, the government invested $47 million in small businesses through these organizations. They offer a wide variety of programs and services supporting community economic development and small business growth and are run by a board of local volunteers and staffed by experienced business professionals. http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/00388.html?OpenDocument	**Friday, October 22, 2010**	**$47,000,000.00**
3	**Prosperity Initiative**	Projects focusing on the adaptation and adoption of new technologies, processes and skills aimed at enhancing productivity; the development of new industries or opportunities to diversify a community or regional economy; and the development and expansion of strategic economic clusters that will have an impact on the global economy.http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/00405.html?OpenDocument	**Friday, November 26, 2010**	**$210,000,000.00**
4	**New Initiative Encourages Young People to Discover Careers in Science and Tech**	Youth STEM will provide up to $20 million for not-for-profit organizations to enhance or expand educational science and technology outreach programs that increase young people's awareness about the rewards of pursuing an education or career in the	**Monday, November 29, 2010**	**$20,000,000.00**

		sciences.http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/00405.html?OpenDocument		
5	**Jobs, Growth and Innovation in Southern Ontario**	The Prosperity Initiative, which is providing up to $210 million to encourage businesses, not-for-profit organizations and post-secondary institutions in southern Ontario to undertake projects that will result in a more productive, diversified and competitive economy in the region. Funding is available for projects that enhance productivity, diversify the regional economy, and build a competitive advantage for southern Ontario. http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/00325.html?OpenDocument	**Tuesday, December 7, 2010**	**$625,000,000.00**
6	**Government of Canada Supports Francophone Communities in Southern Ontario**	To promote the development of new expertise through innovation, diversification of economic activities, partnerships, and increased support of small- and medium-sized businesses in southern Ontario Francophone communities. http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/00432.html?OpenDocument	**Monday, December 13, 2010**	**$4,000,000.00**
7	**Prosperity Initiative**	The Prosperity Initiative will encourage businesses, not-for-profit organizations and post-secondary institutions in southern Ontario to undertake projects that will result in a more productive, diversified and competitive economy in the region. http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/00450.html?OpenDocument	**Monday, February 21, 2011**	**$210,000,000.00**
8	**Vaughan Health Campus of Care**	Vaughan Health Campus of Care will begin developing an innovative network of health-related industries, by bringing health facilities, new life science businesses and educational and research institutions together on one site. The campus will have a strong innovation and commercialization focus, and by encouraging collaboration, it will help bring new advancements in the life sciences to market. http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/00461.html?OpenDocument	**Wednesday, March 16, 2011**	**$10,000,000.00**
9	**Niagara Interactive Media Generator (nGen)**	The Government of Canada invested $3,028,000 dollars for the Niagara Interactive Media Generator (nGen) through FedDev Ontario's Community Adjustment Fund. This investment has helped nGen expand its facilities and strengthen its sustainability as a hub for interactive media development in St. Catharines and the Niagara Region. http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/00624.html?OpenDocument	**Friday, September 9, 2011**	**$3,028,000.00**

10	**Government Supports Angel Investors**	The Government of Canada will be contributing up to $2,016,563 to four angel networks and two organizations representing angel networks across southern Ontario. These investments will allow four angel networks, located in Cambridge, Collingwood, Kingston and Toronto, to expand their membership bases. In addition, the Ontario and national organizations will receive contributions to develop their online resources and perform outreach activities that will help recruit new angel investors from Ontario and outside the province, including foreign investors. http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/00684.html?OpenDocument	**November 29, 2011**	**$2,016,563.00**
11	**Innovation in Southern Ontario**	With this funding, the Research Innovation Commercialization Centre will provide mentoring and financial support for 160 innovative new start-up businesses in southern Ontario, which will create jobs and growth for our people and our communities."In addition, the Research Innovation Commercialization Centre will use the contribution to provide business skills development and entrepreneurship training to up to 450 graduates program support of an innovation community in connecting entrepreneurs with critical start-up resources like investment and mentoring." http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/00773.html?OpenDocument	**March 16, 2012**	**$4,999,575.00**
12	**Supports Angel Investors in Southern Ontario**	Angel One Investor Network will receive up to $50,000 to expand its membership base and increase its pool of angel investors through outreach activities such as recruiting and training seminars, a web site and other promotional tools. The group is aiming to increase its investor group from the current 11 members to a total of 40 members. http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/00803.html?OpenDocument	**Monday, May 14, 2012**	**$50,000.00**
13	**Supports Angel Investors in Southwestern Ontario**	Southwestern Ontario Angel Group will receive up to $50,000 to expand its membership base and increase its pool of angel investors through outreach activities. The group is aiming to increase its investor group from the current 35 members to more than 50 members, resulting in an additional $1 million in available angel funding. http://www.feddevontario.gc.ca/eic/site/723.nsf/eng/00804.html?OpenDocument	**May 14, 2012**	**$50,000.00**

14	**Government of Canada Supports Skills Development through Collège Boréal**	Windsor, Ontario — The Government of Canada is investing up to $762,000 in a virtual classroom at the Collège Boréal d'arts appliqués et de technologie (Collège Boréal) to promote business skills and French-language training in southern Ontario.Collège Boréal to equip two of its campuses with computers, as well as with multimedia and videoconferencing facilities. By enabling entrepreneurs and small- and medium-sized businesses to access the expertise of bilingual students with business skills at the Collège Boréal, Collège Boréal will be able to offer more services and increase the accessibility of its programs: the project is expected to benefit more than 600 people each year. https://www.feddevontario.gc.ca/eic/site/723.nsf/eng/01596.html?OpenDocument	**Monday, January 14, 2013**	**$762,000.00**
15	**Ryerson Centre for Cloud and Context Aware Computing (RC4)**	Ryerson Centre for Cloud and Context Aware Computing (RC4), the first centre of its kind in Canada. RC4 will support southern Ontario companies to develop context aware applications—the future of mobile computing—for smart phones, tablets and other mobile devices. Context aware computing automatically provides users with timely content in response to physical surroundings, activities and time of day that is relevant to their gender, age and preferences. . Ryerson expects that up to 60 context aware products, resulting in an estimated 25 patents and 161 highly skilled, full-time jobs will be created in small- and medium- sized businesses and in the RC4. https://www.feddevontario.gc.ca/eic/site/723.nsf/eng/01627.html?OpenDocument#backgrounder	**Feb. 19, 2013**	**$2,000,000.00**
16	**Supports Innovative Entrepreneurs in Southern Ontario**	An investment of $367,500 from the Government of Canada will allow Bioenterprise Corporation to provide business skills training and seed financing to 10 science, technology, engineering and mathematics (STEM) entrepreneurs who are looking to launch businesses in southern Ontario's agri-technology sector. https://www.feddevontario.gc.ca/eic/site/723.nsf/eng/01695.html?OpenDocument	**Thursday, May 16, 2013**	**$367,500.00**
17	**Ontario Chamber of Commerce (OCC) is receiving a contribution of up to $2.67 million to support the expansion of its Global Growth Fund.**	Through the Fund, the OCC provides support to small- and medium-sized businesses in southern Ontario, including access to training and expertise as they develop and execute export market access strategies for their products and services. https://www.feddevontario.gc.ca/eic/site/723.nsf/eng/01696.html?OpenDocument	**Thursday, May 16, 2013**	**$2,670,000.00**

18	**Government of Canada Supports Innovative Entrepreneurs in Southern Ontario**	The Accelerator Centre will provide entrepreneurship training and seed funding to help up to 30 science, technology, engineering, and math entrepreneurs launch new innovative start-up businesses, thanks to a new investment of $945,000 from the Government of Canada. The investment is being provided through FedDev Ontario's Scientists and Engineers in Business initiative. The Accelerator Centre expects the project will create up to 30 new start-up businesses and 70 to 90 new full-time jobs, and anticipates up to $5 million in private investments could be generated for these new companies through its support. https://www.feddevontario.gc.ca/eic/site/723.nsf/eng/01707.html?OpenDocument	**Monday, June 24, 2013**	**$945,000.00**
19	**Future Plans for Jobs, Growth and Long-term Prosperity**	Our discussions today focused on generating prosperity and a healthy economic climate and I am glad that the Minister shares our vision for creating this climate in southern Ontario."Minister Goodyear and MP Van Loan started the day with a tour of the Creative Community Hub in the Town of Georgina which received $990,000 in FedDev Ontario funding towards creating a community hub in downtown Sutton. https://www.feddevontario.gc.ca/eic/site/723.nsf/eng/01763.html?OpenDocument	**Wednesday, September 4, 2013**	**$990,000.00**
20	**Government of Canada Supports Innovative Young Entrepreneurs in Southern Ontario**	A new investment of up to $626,000 from the Government of Canada will allow the Canadian Youth Business Foundation (CYBF) to provide entrepreneurship training for up to 225 young entrepreneurs and seed funding to help launch up to 12 new innovative businesses in southern Ontario. The investment was announced today by the Honourable Gary Goodyear, Minister of State for the Federal Economic Development Agency for Southern Ontario (FedDev Ontario).The project is receiving a joint investment from FedDev Ontario and the National Research Council of Canada (NRC). The Agency is investing up to $378,000 through its Scientists and Engineers in Business initiative to help entrepreneurs launch their businesses, while the NRC, through the Industrial Research Assistance Program (NRC-IRAP), is providing up to $248,000 to help entrepreneurs engage with customers early in the innovation life cycle. "This pilot project is designed to bring technology-based firms in contact with target clients as early as possible in the innovation process and thus increase the likelihood of commercial success," said Bogdan Ciobanu, Vice President of NRC-IRAP. **Under the project, the CYBF will focus on assisting recently displaced** science, technology, engineering and mathematics employees to acquire entrepreneurial skills and seed funding needed to start an innovative company.	**September 18, 2013**	**$626,000.00**

		NOW KNOWN AS FUTURE-PRENEUR https://www.feddevontario.gc.ca/eic/site/723.nsf/eng/01788.html?OpenDocument		
21	**Border Security and Logistics in Windsor**	The Government of Canada's $19.9-million contribution in these two projects will assist in the establishment of an Institute for Border Logistics and Security (IBLS), which will allow Windsor to become a world-leader in cross-border logistics and security, supply-chain expertise and related technology development. The City of Windsor and the University of Windsor will be able to establish the IBLS, which will include a facility on the University's campus dedicated to research and development support for businesses, and a facility at the Windsor International Airport aimed at providing real-world testing for new technologies in the logistics sector.These projects, through FedDev Ontario's Prosperity Initiative, will directly create an estimated 105 jobs.This initiative will also include the construction of a multi-modal cargo terminal at the Windsor International Airport. This initiative will support the development of a Windsor/Detroit logistics corridor that has the potential to create thousands of jobs in the long term, and build on the strengths of the region while diversifying the area's economy and industries.https://www.feddevontario.gc.ca/eic/site/723.nsf/eng/01816.html?OpenDocument	**Wednesday, October 2, 2013**	**$19,900,000.00**
22	**Entrepreneurship in Greater Toronto Area**	The RIC Centre received funding up to $7.5 million through FedDev Ontario's Scientist and Engineers in Business initiative and has developed a unique approach to business skills development and entrepreneurship training. VentureStart was launched in April 2012, and has more than 200 entrepreneurs registered for its training program. Successful program participants complete a suite of online training modules designed to give them the business skills needed to complement their	**Thursday, November 14, 2013**	**$7,500,000.00**

		technical expertise. In addition, participants are paired with an "entrepreneur-in-residence" at their local regional innovation centre, who offers real-life coaching and business advice. https://www.feddevontario.gc.ca/eic/site/723.nsf/eng/01890.html?OpenDocument		
24	**Government of Canada Launches New Initiatives for a Stronger Southern Ontario**	Investing in Business Innovation Initiative Not-For-Profit Organizations. Incorporated not-for-profit organizations (NFPs) such as Regional Innovation and Commercialization Centres, incubators, accelerators, angel networks and Community Futures Development Corporations located in southern Ontario, are eligible to apply for projects related to providing entrepreneurial skills development, education, and seed financing to new entrepreneurs and businesses to help them to be investment ready.Eligible applicants will be considered for a non-repayable contribution to a maximum of $20 million per project for up to 100 percent of eligible costs. Funding of up to $10,000 per new entrepreneur may be provided for business training, and matching funding to new start-up entrepreneurs will cover up to 50 percent of eligible costs to start a business, up to a maximum of $30,000. ALL project activities must be completed prior to December 31, 2018. https://www.feddevontario.gc.ca/eic/site/723.nsf/eng/01923.html?OpenDocument	**Friday, December 6, 2013**	**$530,000,000.00**
25	**Manufacturing Skills Training Program Celebrates Success**	Today, Minister of State for FedDev Ontario Gary Goodyear celebrated a successful partnership and investment of up to $1 million for the Yves Landry Foundation (YLF). The funds are a top-up to a previous Government of Canada investment that is allowing the continuation of a thriving skills training program. The $1-million top-up brings the total FedDev Ontario investment in YLF to $18 million. In November 2009, the Agency committed $12 million to YLF through the Southern Ontario Development Program. A $5-million contribution to YLF through the Agency's Prosperity Initiative was announced in January 2012. https://www.feddevontario.gc.ca/eic/site/723.nsf/eng/01964.html?OpenDocument	**Friday, January 31, 2014**	**$1,000,000.00**

26	**Waterloo Accelerator Centre's AC JumpStart Program**	Through the Investing in Business Innovation initiative, the Harper Government is providing the Waterloo Accelerator Centre with an investment of up to $8 million to extend and expand its AC JumpStart Program. The Waterloo Accelerator Centre is a not-for-profit organization dedicated to building and commercializing technology start-ups.The new funding for AC JumpStart is expected to help 180 high-potential businesses grow, which will result in the creation of an estimated 700 jobs. This will help diversify businesses in the region by boosting technology companies in fields like cloud computing, green energy and eCommerce. https://www.canada.ca/en/news/archive/2015/01/feddev-ontario-contribution-waterloo-accelerator-centre-ac-jumpstart-program.html	**Thursday, January 15, 2015**	**$8,000,000.00**
27	**Support for Entrepreneurs and Early-stage Businesses in Southern Ontario**	New entrepreneurs in southern Ontario will benefit from an investment of up to $4.84 million in Bioenterprise Corporation and Innovation Guelph, will provide entrepreneurs and early-stage businesses with seed funding, access to specialized industry expertise and business coaching. These resources will help companies develop and commercialize new products and, as a result, will help build a strong and diversified southern Ontario economy. https://www.canada.ca/en/economic-development-southern-ontario/news/2016/03/feddev-ontario-announces-support-for-entrepreneurs-and-early-stage-businesses-in-southern-ontario.html	**Tuesday, March 1, 2016**	**$4,840,000.00**
28	**Vineland Research and Innovation Centre's new Collaborative Greenhouse Technology Centre**	$5.76 million in the Vineland Research and Innovation Centre to develop and commercialize innovative horticultural and greenhouse technologies. https://www.canada.ca/en/economic-development-southern-ontario/news/2016/06/mp-badawey-and-mp-bittle-celebrate-the-collaborative-greenhouse-technology-centre-opening-in-niagara.html	**Friday, June 3, 2016**	**$5,760,000.00**
29	**Support for Women-led Businesses in the Waterloo Region**	With this funding, Communitech will establish the Fierce Founders Accelerator program, a seed funding program designed to support women-led early-stage businesses.One of the first of its kind in the Waterloo area, the Fierce Founders Accelerator program will help increase representation of women in the technology sector and enhance the technology cluster in the Waterloo Region, which accounts for approximately 10% of the region's workforce. https://www.canada.ca/en/economic-development-southern-ontario/news/2016/06/feddev-ontario-announces-support-for-women-led-businesses-in-the-waterloo-region.html	**Friday, June 10, 2016**	**$880,000.00**

30	**Supports Innovative Initiatives at the Innovation Centre at Bayview Yards**	Due to open in the fall of 2016, the Innovation Centre at Bayview Yards will provide the office space and business supports for local entrepreneurs and early-stage firms to scale up faster. That includes getting faster access to global markets and supply chains.FedDev Ontario's contribution will support the development and delivery of three of the centre's initiatives. They include the Advanced Digital Media Lab and Maker Space, which will provide a space for entrepreneurs and small- and medium-sized businesses to test products. https://www.canada.ca/en/economic-development-southern-ontario/news/2016/06/feddev-ontario-supports-innovative-initiatives-at-the-innovation-centre-at-bayview-yards.html	**Wednesday, June 15, 2016**	**$8,000,000.00**
31	**Invests $1.32 Million to Support 30 Companies and Create Jobs**	A new incubation program, BURST, will provide 30 innovative technology entrepreneurs in southwestern Ontario with the skills they need to succeed now and in the future. FedDev Ontario is providing TechAlliance of Southwestern Ontario with up to $1.32 million to deliver the new program. Companies will receive mentoring and business guidance, seed funding, exposure to potential investors and access to a dedicated working space in Western University's Discovery Park.As entrepreneurs establish and grow their businesses with help from this program, it is expected that up to 45 new full-time jobs will be created. https://www.canada.ca/en/economic-development-southern-ontario/news/2017/03/feddev_ontario_invests132millionto support30companiesandcreatejob.html	**Friday, March 3, 2017**	**$1,320,000.00**
32	**$2.5M to support growth of tech companies in southern Ontario**	$2.5 million to Wilfrid Laurier University to support a national scale-up data platform. The platform will capture and track growth metrics of Canadian companies and provide invaluable insights into why early-stage companies fail or succeed. The Lazaridis Institute for the Management of Technology Enterprises, part of the Lazaridis School of Business & Economics at Wilfrid Laurier University in Waterloo, will deliver this platform with Toronto-based private market data network Hockeystick. https://www.canada.ca/en/economic-development-southern-ontario/news/2017/04/minister_chaggerannounces25mtos upportgrowthoftechcompaniesinsout.html	**Thursday, April 27, 2017**	**$2,500,000.00**
33	**Invests Over $2 million in York Region Accelerator**	FedDev Ontario, investment of up to $1.98 million York Entrepreneurship Development Institute to deliver its Incubator Track program. The York Entrepreneurship Development Institute is delivering Incubator Track in three intensive 16-week skills development and mentorship programs to 45 entrepreneurs in York Region and the City of Toronto. As entrepreneurs establish and grow their businesses with help from this program, it is expected that up to 70 new full-time jobs will be created. https://www.canada.ca/en/economic-development-	**Friday, April 28, 2017**	**$1,980,000.00**

		southern-ontario/news/2017/04/feddev_ontario_investsover2millioninyorkregionaccelerator.html		
	Investment in additive manufacturing innovation lab	$8.9 million for the University of Waterloo to establish the Multi-Scale Additive Manufacturing Lab. The investment from the Federal Economic Development Agency for Southern Ontario (FedDev Ontario) will support up to 18 new partnerships, help commercialize up to 21 advanced manufacturing technologies and create over 80 jobs.Industry partners, spanning sectors such as aerospace, mining and automotive, will work to create solutions in 3D printing that will help manufacturers across Canada adopt new technologies and compete globally. It will also provide opportunities for students from the University to prepare for the manufacturing jobs of tomorrow. https://www.canada.ca/en/economic-development-southern-ontario/news/2017/05/minister_chaggerannounces89millioninvestmentinadditivemanufactur.html	**Wednesday, May 24, 2017**	**$8,900,000.00**
35	**Invests in Training and Seed Financing for Start-ups**	NEXT Canada to deliver three programs that provide mentoring, training and seed funding for high-potential entrepreneurs. The announcement took place during the opening of National Selection Weekend, where finalists from across Canada compete for a spot in NEXT Canada's signature program for student founders, Next 36.The funding will support young entrepreneurs launching new start-ups, support founders of existing companies looking to scale-up and help entrepreneurs build the companies of the future by creating artificial intelligence-enabled businesses. Through this project, NEXT Canada expects to create up to 450 permanent, full-time jobs through the 100 businesses that are selected to participate. https://www.canada.ca/en/economic-development-southern-ontario/news/2017/11/feddev_ontario_investsintrainingandseedfinancingforstart-ups.html	**Thursday, November 30, 2017**	**$3,570,000.00**
36	**FedDev Ontario Launches New Support for Francophone Communities in Southern Ontario**	The Government of Canada recognizes that strong official language minority communities (OLMCs) not only celebrate our shared history and identity, they are essential to Canada's competitiveness in an increasingly globalized world.		

		Funding is available for projects that support technology adoption through innovation, that foster economic growth in Francophone knowledge-based and manufacturing industries, or enhance the competitiveness of Francophone communities. Priority may be given to projects related to tourism, the social economy (early childhood, integration of newcomers, etc.), immigration, clean technologies, youth and women. https://www.canada.ca/en/economic-development-southern-ontario/news/2018/04/feddev-ontario-launches-new-support-for-francophone-communities-in-southern-ontario.html	**Monday, April 30, 2018**	**$800,000.00**
37	**Bioenterprise to provide more than 50 additional start-ups with the tools they need to succeed**	Bioenterprise Corporation to deliver the Bioenterprise Seed Fund and Innovation Guelph's Fuel Injection program. https://www.canada.ca/en/economic-development-southern-ontario/news/2018/11/feddev-ontario-announces-increased-support-for-innovation-in-southern-ontario.html	**Nov. 15, 2018**	**$2,280,000.00**
38	**$440,000 to support 10 additional start-ups through TechAlliance's BURST**	To continue BURST and enable another cohort of 10 innovative start-ups to receive seed funding, skills development opportunities and mentorship. https://www.canada.ca/en/economic-development-southern-ontario/news/2018/11/feddev-ontario-announces-increased-support-for-medical-innovation.html	**Nov. 15, 2018**	**$440,000.00**
39	**Increased Funding for Women Entrepreneurs**	$264,000 for Communitech's Fierce Founders Accelerator to support more women-led technology start-ups with seed funding, training and mentoring to help accelerate the growth of their businesses through another cohort. https://www.canada.ca/en/economic-development-southern-ontario/news/2018/11/feddev-ontario-announces-increased-funding-for-women-entrepreneurs.html	**Nov. 16, 2018**	**$264,000.00**
40	**An additional $5.5 million for Accelerator Centre to help over 125 start-ups and create 400 more jobs**	FedDev Ontario funding of up to $5.5 million to create more jobs, companies and innovative products through the Accelerator Centre. https://www.canada.ca/en/economic-development-southern-ontario/news/2018/11/feddev-ontario-bolsters-support-for-start-ups.html	**Nov. 30, 2018**	**$5,500,000.00**

		The additional FedDev Ontario investment in AC JumpStart means this much-sought-after program will be extended by more than two years and be able to offer seed funding, mentoring and coaching to another 126 start-ups. Working with established partners University of Waterloo, Conestoga College, Wilfrid Laurier University and new partner University of Guelph, AC JumpStart will extend its reach into the technology hardware, advanced manufacturing, clean technology, sustainable energy, agri-tech and agri-food sectors.		
41	**FedDev Ontario Supports New Innovative Collaboration Space at McMaster University**	This funding will allow The Forge, McMaster University's start-up incubator, to expand its makerspace as it moves into 10,000-square-feet shared with partner Innovation Factory. It will also purchase additional 3D printers and other fabricating equipment, and increase support to entrepreneurs through mentoring. As a result, the number of companies supported will almost double from 24 to up to 40 annually, and up to 75 new jobs will be created. https://www.canada.ca/en/economic-development-southern-ontario/news/2018/12/feddev-ontario-supports-new-innovative-collaboration-space-at-mcmaster-university.html	**Friday, December 14, 2018**	**$1,200,000.00**
42	**Announces New Funding for Innovative Start-Ups in Eastern Ontario**	Today's announcement builds on a previous FedDev Ontario contribution of $1.1 million to launch N1M. To date, the program has supported over 30 start-ups and helped to create over 70 new full-time jobs. This new funding will support another 25 innovative start-ups, and as entrepreneurs establish and grow their businesses, it is expected that 17 additional jobs will be created. https://www.canada.ca/en/economic-development-southern-ontario/news/2018/12/feddev-ontario-announces-new-funding-for-innovative-start-ups-in-eastern-ontario.html	**Tuesday, December 18, 2018**	**$1,100,000.00**
43	**Canada Supports Innovation Hub in Mississauga**	$1.5 million to provide a broader range of entrepreneurial support and services at EDGE (Entrepreneurship Discovery and Growth Engine)—Sheridan College's innovation hub, located at the Hazel McCallion Campus in downtown Mississauga. https://www.canada.ca/en/economic-development-southern-ontario/news/2019/02/government-of-canada-supports-innovation-hub-in-mississauga.html	**Monday, February 11, 2019**	**$1,500,000.00**

44	**SCALEUP 30 Companies**	The Government of Canada, through FedDev Ontario, is investing $52.4 million in the Scale-Up Platform over five years. The Scale-Up Platform will support 30 companies in southern Ontario to grow and achieve revenue objectives of $100 million or more by 2024. Communitech will receive $18 mill; MaRS Discorvery District will receive $17.5 mill; and Invest Ottawa will receive $16.9 mill. https://pm.gc.ca/en/news/news-releases/2019/04/16/new-growth-and-innovation-network-ontario-help-create-18000-jobs	**Tuesday, April 16, 2019**	**$52,400,000.00**
45	**Investment in quantum and artificial intelligence-related innovation to create and support hundreds of jobs**	Quantum Valley Ideas Lab (QVIL), a non-profit charitable organization, to develop a unique facility that will create new quantum-related products and businesses. This project will allow Ideas Lab to establish dedicated teams of quantum researchers, engineers and technology experts. These teams will develop new innovations in the areas of quantum sensors, navigation, security, encryption and computing. https://www.canada.ca/en/innovation-science-economic-development/news/2019/04/government-of-canada-partners-with-digital-industries-to-invest-in-ground-breaking-technology-and-businesses.html	**Thursday, April 18, 2019**	**$20,000,000.00**
46	**Invests up to $6.7 million to help 1,000 small and medium-sized businesses in Ontario export**	Announced a $5-million FedDev Ontario investment in the Toronto Region Board of Trade to expand its Trade Accelerator Program (TAP) to 15 communities across Southern Ontario. Plus another $1.7-million. https://www.canada.ca/en/innovation-science-economic-development/news/2019/04/minister-ng-announces-investment-in-the-toronto-trade-accelerator-program.html		
			Monday, April 22, 2019	**$6,700,000.00**
47	**Invests in New Program to Support Francophone Entrepreneurs**	Collège La Cité (La Cité) with $1.35 million to launch new entrepreneurial programming for Franco-Ontarians.		
		This funding will allow La Cité to offer personalized coaching to Francophone entrepreneurs, with a focus on women, youth and immigrants, under the umbrella of the college's accelerator for established Francophone businesses. The programming will be delivered at a new centre for Francophone entrepreneurs, called La Factorie	**Thursday, May 23, 2019**	**$1,350,000.00**

		Desjardins. https://www.canada.ca/en/economic-development-southern-ontario/news/2019/05/feddev-ontario-invests-in-new-program-to-support-francophone-entrepreneurs.html		
48	**Announce Government Support for New World-Class Cybersecurity Hub**	$10-million investment will support Ryerson University-led hub to deliver skills training, research and talent development, supporting over 790 jobs. https://www.canada.ca/en/economic-development-southern-ontario/news/2019/06/minister-bains-joins-brampton-mps-to-announce-government-support-for-new-worldclass-cybersecurity-hub.html	**Friday, June 14, 2019**	**$10,000,000.00**
49	**FedDev Ontario Supports Growing Advanced Electronics Hub in Southern Ontario**	$5 million for ventureLAB to establish the Hardware Catalyst Initiative (HCI), a state-of-the-art lab and incubator that will help hardware technology companies grow and scale up to become globally competitive. https://www.canada.ca/en/economic-development-southern-ontario/news/2019/06/feddev-ontario-supports-growing-advanced-electronics-hub-in-southern-ontario.html	**Thursday, June 27, 19**	**$5,000,000.00**
50	**FedDev Ontario Invests in Services for Windsor–Essex Francophone Entrepreneurs**	Contribution of $285,749 to the Conseil de la coopération de l'Ontario (CCO) to expand its French-language entrepreneurship services to the Windsor–Essex regionhe CCO will provide coaching, support programs and training to accelerate the development of cooperatives and social enterprises. Francophone entrepreneurs, including immigrants, youth and women, will have access to networking sessions, as well as opportunities to pitch their projects to access development grants. A total of 75 businesses will participate in over 60 networking or training activities organized by the CCO. This project will also create and maintain 30 jobs in the region. https://www.canada.ca/en/economic-development-southern-ontario/news/2019/08/feddev-ontario-invests-in-services-for-windsoressex-francophone-entrepreneurs.html	**Thursday, August 1, 2019**	**$285,749.00**
51	**Women Entrepreneurship Strategy investment**	Announced an investment of $1.7 million in ventureLAB, a local tech incubator. This investment will enable ventureLAB to help a greater number of women-led tech companies that build software- or hardware-enabled solutions for priority growth sectors. These include digital health, advanced manufacturing and digital media. https://www.canada.ca/en/innovation-science-economic-development/news/2019/08/minister-ng-announces-women-entrepreneurship-strategy-investment.html	**Wednesday, August 7, 2019**	**$1,700,000.00**

52	**Women Entrepreneurship Strategy investments**	HalTech Regional Innovation Centre, located in Burlington, will receive up to $307,800 to create an accelerator to help women entrepreneurs scale up and reach global markets. It will provide mentorship, skills training and programming to help women develop and grow their businesses. https://www.canada.ca/en/innovation-science-economic-development/news/2019/08/minister-ng-announces-women-entrepreneurship-strategy-investments.html	**Thursday, August 8, 2019**	**$307,800.00**
53	**Women Entrepreneurship Strategy investments**	an investment of up to $11,951,076 through the WES Ecosystem Fund (Regional Stream) in the following nine organizations or institutions for projects supporting women entrepreneurs. https://www.canada.ca/en/innovation-science-economic-development/news/2019/08/minister-ng-announces-women-entrepreneurship-strategy-investments2.html	**Thursday, August 22, 2019**	**$11,951,076.00**
54	**Investment to support women entrepreneurs in Waterloo**	Laurier will be receiving up to $1,385,000 to offer support to women entrepreneurs at the early start-up stage and those looking to accelerate their businesses through their incubation/acceleration space. A particular focus will be given to non-tech sectors and entrepreneurs creating social enterprises. https://www.canada.ca/en/economic-development-southern-ontario/news/2019/08/minister-chagger-announces-investment-to-support-women-entrepreneurs-in-waterloo.html	**Thursday, August 22, 2019**	**$1,385,000.00**
55	**Supports Indigenous Entrepreneurship Hub in Toronto**	Contribution of up to $5 million for the City of Toronto towards the creation of the Indigenous Centre for Innovation and Entrepreneurship (ICIE). This Toronto-based centre will be the first Indigenous business incubator of its kind in southern Ontario, and will support Indigenous entrepreneurs as they develop, launch and grow their businesses. https://www.canada.ca/en/economic-development-southern-ontario/news/2019/08/feddev-ontario-supports-indigenous-entrepreneurship-hub-in-toronto.html	**Wednesday, August 28, 2019**	**$5,000,000.00**
56	**Support for Francophone Women Entrepreneurs**	contribution of up to $350,000 for La Fondation franco-ontarienne (FFO) to establish a new micro-loan pool for Francophone women entrepreneurs. https://www.canada.ca/en/economic-development-southern-ontario/news/2019/09/feddev-ontario-announces-support-for-francophone-women-entrepreneurs.html	**Friday, August 30, 2019**	**$350,000.00**
57	**FedDev Ontario investments drive innovation and growth in Niagara Region**	Announced a total FedDev Ontario contribution of nearly $13 million for three Niagara projects that will support economic growth, create good jobs and continue to drive innovation across the region.https://www.canada.ca/en/economic-development-southern-ontario/news/2019/09/feddev-ontario-	**Tuesday, September 3, 2019**	**$13,000,000.00**

		investments-drive-innovation-and-growth-in-niagara-region.html		
	Support to drive automobility innovation in Windsor-Essex	$5 million to grow an automobility innovation cluster in the Windsor-Essex region. As a result of this project, WE EDC is expected to support 165 companies, establish 20 new partnerships, attract $9 million in foreign direct investment, and create and maintain 665 jobs in the region. https://www.canada.ca/en/economic-development-southern-ontario/news/2019/09/feddev-ontario-announces-support-to-drive-automobility-innovation-in-windsor-essex.html	**Friday, September 6, 2019**	**$5,000,000.00**
59	**Supports new network to help agri-food businesses scale up. Bioenterprise to create single source virtual network and provide 200 businesses with support they need to succeed**	Contribution of up to $6,296,000 for Bioenterprise Corporation to lead the creation of an agri-food hub in southern Ontario. This announcement was made on behalf of the Honourable Navdeep Bains, Minister of Innovation, Science and Economic Development and Minister responsible for FedDev Ontario. https://www.canada.ca/en/economic-development-southern-ontario/news/2019/09/feddev-ontario-supports-new-network-to-help-agri-food-businesses-scale-up.html	**Tuesday, September 10, 2019**	**$6,296,000.00**
				$1,952,464,263.00

Appendix 10

Vita Auctoris

NAME:	Arthur Barbut
PLACE OF BIRTH:	Timisoara, Romania
YEAR OF BIRTH:	1979
EDUCATION:	Hon. Kennedy Collegiate Institute, Windsor, ON, 1998 University of Windsor, B.Comm., Windsor, ON, 2002 University of Windsor, M.B.A. Windsor, ON, 2005