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Characteristics of Business Incubation in Canada, 2005

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Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses and governments. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

The science and innovation information program

The purpose of this program is to develop **useful indicators of science and technology activity** in Canada based on a framework that ties them together into a coherent picture. To achieve the purpose, statistical indicators are being developed in five key entities:

- **Actors**: are persons and institutions engaged in S&T activities. Measures include distinguishing R&D performers, identifying universities that license their technologies, and determining the field of study of graduates.
- **Activities**: include the creation, transmission or use of S&T knowledge including research and development, innovation, and use of technologies.
- **Linkages**: are the means by which S&T knowledge is transferred among actors. Measures include the flow of graduates to industries, the licensing of a university's technology to a company, co-authorship of scientific papers, the source of ideas for innovation in industry.
- **Outcomes**: are the medium-term consequences of activities. An outcome of an innovation in a firm may be more highly skilled jobs. An outcome of a firm adopting a new technology may be a greater market share for that firm.
- **Impacts**: are the longer-term consequences of activities, linkages and outcomes. Wireless telephony is the result of many activities, linkages and outcomes. It has wide-ranging economic and social impacts such as increased connectedness.

The development of these indicators and their further elaboration is being done at Statistics Canada, in collaboration with other government departments and agencies, and a network of contractors.

Prior to the start of this work, the ongoing measurements of S&T activities were limited to the investment of money and human resources in research and development (R&D). For governments, there were also measures of related scientific activity (RSA) such as surveys and routine testing. These measures presented a limited picture of science and technology in Canada. More measures were needed to improve the picture.

Innovation makes firms competitive and we are continuing with our efforts to understand the characteristics of innovative and non-innovative firms, especially in the service sector that dominates the Canadian Economy. The capacity to innovate resides in people and measures are being developed of the characteristics of people in those industries that lead science and technology activity. In these same industries, measures are being made of the creation and the loss of jobs as part of understanding the impact of technological change.

The federal government is a principal player in science and technology in which it invests over five billion dollars each year. In the past, it has been possible to say only *how much* the federal government spends and *where* it spends it. Our report **Federal Scientific Activities, 1998** (Cat. no. 88-204) first published socio-economic objectives indicators to show *what* the S&T money is spent on. As well as offering a basis for a public debate on the priorities of government spending, all of this information has been used to provide a context for performance reports of individual departments and agencies.

As of April 1999, the Program has been established as a part of Statistics Canada's Science, Innovation and Electronic Information Division.

The final version of the framework that guides the future elaboration of indicators was published in December, 1998 (**Science and Technology Activities and Impacts: A Framework for a Statistical Information System**, Cat. no. 88-522). The framework has given rise to **A Five-Year Strategic Plan for the Development of an Information System for Science and Technology** (Cat. no. 88-523).

It is now possible to report on the Canadian system on science and technology and show the role of the federal government in that system.

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Characteristics of Business Incubators in Canada, 2005

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Characteristics of business incubators in Canada, 2005

1. Executive summary

In Canada, two-in three new businesses do not survive to their fifth year. Previous studies (Bordt, 2006) have confirmed that to establish and grow a business; there is a need for business advice, formal organization, formal business planning and access to business development funding. Incubators provide these services. Beyond providing space, incubators provide advice and other support designed to assist new and growing businesses to become established and profitable.

Among the primary objectives of an incubator are building or accelerating the growth of a company, along with creating jobs in the local economy and commercializing technologies. This is accomplished through offering services such as management and business support; equipment and technical support; networking and training; access to financing; legal support and guidance with regulatory compliance; and management to commercialization of a product or service.

The fundamentals of help with business basics, marketing assistance, help with accounting or financial management, and offering linkages to angel or venture capital inventors or other fundamental services include basics such as creating office or laboratory space or access to a library.

In 2005, there were at least 83 operating business incubators in Canada and they generated funds totalling over 45 million. Their almost 900 client firms raised revenues in excess of $93 million while creating full and part-time employment for over 13,000 persons. Another indicator of the positive impact of incubation firms is evident that 2,958 client companies had generated revenues at the end of the year. In addition, 105 clients had received a Scientific Research and Experimental Development tax credit.

Incubators tend to be small businesses, but also include government offices and universities. Results show that the demand for incubation services exceeds supply.

2. Background and purpose

In late 2004, Industry Canada and the Canadian Association of Business Incubators collaborated with Statistics Canada to conduct a survey of business incubators.

Industry Canada was in the research phase of the policy process in the area of business incubators and commercialization centres. The belief is that business incubators are important to supporting innovation and improving the commercialization of Canadian technologies. Data regarding the number of incubators and their operating characteristics is essential.

The 2005 survey will serve to benchmark the characteristics of the business incubator industry in Canada, providing reliable indicators of the current status of the industry including business incubation affiliation; infrastructure; sources of funding; admission and graduation policies; clients and activities; services; impact; management and barriers. Future surveys would be required to track changes over time with a need to conduct the survey at least every two years.

3. Concepts, definitions and approach

The concept of business incubation is not new but the definition and terminology are not standardized across countries. The Canadian Association of Business Incubator (CABI, www.cabi.ca) has been in existence for at least 10 years and the American association; the National Business Incubation Association (NBIA, www.nbia.org) has operated since 1985. In general, a *business incubator* is a business unit that specializes in providing space, services, advice and support designed to assist new and growing businesses to become established and profitable.

Business incubators have been evolving with changes in the economy, technology and capital markets. In this paper, we identify the two most common types: general and technology. The former is usually oriented towards local economic diversification, while the latter focuses on technology transfer and commercialization.

For the purpose of statistical measurement, for a *private company*, a business unit generally corresponds to an *establishment*. For a large organization such as a *university, college or government department*, a business *unit may be any distinguishable office or program*.

A *technology incubator* is a business unit that specializes in providing space, services, advice and support designed to assist businesses in developing new technologies. We included technology incubators since this is the main purpose of some incubators attached to federal government departments.

In establishing a survey frame, extensive research was completed to locate active business incubators in Canada. The questionnaire was developed in close consultation with Industry Canada and the Canadian Association of Business Incubators, built upon the work done by the National Association of Business Incubators in the U.S., and incorporated the feedback gained from interviews with the industry.

Industry Canada, CABI and Statistics Canada all consulted internally on the draft questionnaire. These comments were combined with the result of respondent testing which included direct consultation with industry experts. The result was a 12 page questionnaire comprised of 9 sections and required an average of less than an hour for a respondent to reply.

The first question in the survey was designed to filter out recipients that do not operate as a business incubator. If providing these services is not a main activity, then the recipient is considered out of scope. Other questions were designated as mandatory to ensure response to key characteristics of the incubator (for example, a comprehensive list of business services).

As there is no one standard definition of business incubation (Hamdani, 2006) the first question in the survey was designed to filter out recipients that do not operate as a business incubator. If providing these services is not a main activity, then the recipient is considered out of scope. Other questions were designated as mandatory to ensure response to key characteristics of the incubator (for example, a comprehensive list of business services).

To establish a legitimate population of incubators, the survey questionnaire was mailed to potential business incubator respondents (569 in total). It was not known how many of the initial questionnaire recipients were incubators. Some Community Futures Development Corporations, for example, operated as incubators while others did not. The mass mail-out was intended to avoid missing a legitimate incubator. A total of 94 respondents were deemed in-scope, of which 83 (88% response rate) completed the survey questionnaire. Generally, the quality of responses to the questions was good. Of the 83 respondents, 55 do offer space and services and had clients; an additional 22 respondents offer services only and had clients. The remaining 6 respondents were set up to operate an incubation unit, but did not yet have clients.

The survey was assigned a mandatory status as it is the only source of information to the maintenance of existing, or the development of new programs and major policies and lack of data could compromise program objectives. As noted by Hamdani, 2006, current studies of business incubation are typically

exploratory attempts to describe a young phenomenon. His research provides further details to conceptualizing and measuring business incubation.

4. Main findings

4.1. Incubators in Canada: Number, type and location

In 2005, there were 83 business incubation units in Canada of which 77 identified themselves as having clients. The other 6 incubators were in the process of preparation for operation beginning in 2006 and although operating, did not yet have clients.

Of the 77 companies offering business incubation services, 55 or 71% of the incubators identified themselves as providing space to client companies. The remaining 22 companies offered can be viewed as 'virtual' incubators, that is, those that provided services, but no office or laboratory space.

4.1.1. Number and type of incubators

Incubators pursue multiple objectives but their most common goal, according to the survey results, is to create jobs in the local economy. Helping an industry grow and commercializing technologies were also important.

Most Canadian incubators (88%) provided business incubation services (Table 1) although 44% did offer both technology and business incubation services. Only 12% identified themselves as primarily technology incubators.

Table 1 Number and type of incubators in Canada, 2005

Type	Number	%
Primarily business incubation services	73	88.0
Primarily technology incubation services	10	12.0
Mixed incubation services	44	53.0
No clients	6	7.2
Total	**83**	**100.0**

From a regional perspective, the largest number of incubators are located in Ontario (Table 2). The rest of them are rather evenly distributed of incubators across Canada regardless of whether they are primarily business, technology or mixed in nature.

Table 2 Number and Type of Incubators by Province/Region, Canada, 2005

Region/Province	Primarily business	Primarily technology	Mixed	Total
Atlantic	14	1	6	15
Quebec	13	2	6	15
Ontario	21	3	13	24
Prairies	13	2	9	15
B.C. / Territories	12	2	9	14
Total	**73**	**10**	**44**	**83**

4.2. Affiliation: Business type, co-location and partnerships

4.2.1. Business type

The nature of an incubator relates to type of legal business unit the unit is, if it is co-located with any specific institution or agency, and who are the main partners that participate in the operation of the incubator.

Table 3 provides information on the various types of affiliation. Incorporated non-for-profit firms account for over half (54%) of the incubators in Canada. Twenty-seven percent (12) of the incorporated non-for-profit firms are Community Future Development Centres. These are non-profit corporations run by a

volunteer Board of Directors and supported by salaried staff. They deliver a variety of services including economic planning, technical and advisory services and business loans to small and medium sized businesses. There were also 8 specific federal government agencies.

Table 3 Business type

Business affiliation type	Number	%
Incorporated non-for-profit firm	45	54.0
Part of a federal, provincial or municipal government department or agency	13	16.0
Part of a university or college	10	12.0
Other	7	8.4
Incorporated private for-profit firm	6	7.2
Part of a larger incorporated private for-profit firm	2	2.4
Total	**83**	**100.0**

4.2.2. Nature of location

Co-location on the same premises with the incubator is regarded as a very important facet of incubation. Being located in the same building makes it easier to maintain a close working relationship, allowing for many brief, important discussions throughout the day, without having to make an appointment every time there is a question. It also fosters partnerships among start-ups, facilitating the flow of knowledge and forging of marketing and technology relationships among them.

The survey results reveal that while a majority of clients are located on the same premises as the incubator manager, 48% of incubators in Canada are not co-located (Table 4). Nonetheless, the co-location with a university or college (26.5%) is the leading type of co-location.

Table 4 Nature of location

This business is co-located with (or adjacent to): Type of institution	Number	%
Not co-located	40	48.1
University or college	22	26.5
Other	9	10.8
Federal government laboratory	11	13.3
Private company	1	1.2
Total	**83**	**100.0**

In examining business type by nature of co-location (Table 5), it is revealed of the total number of incorporated non-for-profit firms 56% of those incubators are not co-located. Only 7.5% of not co-located firms are private for profit firms.

Table 5 Business type by co-location

	Nature of co-location					
Business Type	Not co-located	University or college	Other	Federal government lab	Private company	Total
Incorporated non-for-profit firm	25	9	7	4	0	45
Part of federal, provincial, or municipal government	6	0	0	7	0	13
Part of university or college	0	9	0	0	1	10
Other	6	1	0	0	0	7
Incorporated private for profit firm	3	1	2	0	0	6
Part of larger incorporated private for profit firm	0	2	0	0	0	2
Total	**40**	**22**	**9**	**11**	**1**	**83**

4.2.3. Key partners

Having a variety of partners gives an incubator the capacity to leverage inputs. Incubators with only one or no partner are an exception. The data confirm that the government role in incubator development has been important. In regards to the main partners that participate in the operation of the incubator unit, given that an incubator can have multiple partners, respondents were asked to requested to 'mark all that apply'. Of the 169 responses, the federal, provincial and municipal governments accounted for 59%

(Table 6). Individually, the federal government was cited as the leading partner (28%). Also important was the role played by the institutions of higher learning, universities and community colleges.

Table 6 Key partners or stakeholders -- Main partners that participate in the operation of the incubator

Type	Number	%
Federal Government	47	28.0
Provincial Government	29	17.0
Municipal Government	23	13.6
University	18	10.6
Private non-profit organization	13	7.7
Other	11	6.5
Private Company (for profit)	9	5.3
Community College	7	4.1
Regional Government	5	3.0
Lending Institution	5	3.0
No Partners	2	1.2
Total	**169**	**100.0**

4.3. Infrastructure: Human resources; floor space; financing

The age of an incubator in Canada ranged from just established in the year 2005 to 30 years in existence, with average of 9 years.

4.3.1. Employment

Incubators often draw on the expertise of a host institution, whether it is a government agency, university or private sector firm. These employees may or may not be paid specifically to work with the incubator. In 2005, the average number of full-time employees (paid or unpaid) employed to operate the incubator is 3.2. Nearly 70% of these were professionals. The number of professional staff (managers, scientists, senior technical advisors, mentors) that are employed (paid or unpaid) by the incubator, on average is 2.2.

4.3.2. Average floor space

The average floor space occupied by an incubator in Canada is 11,527 square feet. The amount of space available to clients averaged 9,081 square feet. Overall, incubators used for clients on average 69% of their available capacity, that being 6,309 square feet.

4.3.3. Source of funds

In Canada, funding for incubators totalled over $45 million (Table 7). Just over 39% consisted of grants from government. The federal government was the largest provider of funding accounting for $10.1 million (22.6%). Public funding serves as a bridge from the early stages of operation of the incubator to the stage when it has established itself to raise equity in the capital markets. Rents and fees from clients also make a significant contribution, accounting for one-quarter of the funds raised. Loans equalled $8.9 million (19.7%).

Table 7 Financing and operating costs

Sources of Funding	Amount in Canadian dollars	% of total
Federal government grants	10,161,939	22.6
Provincial government grants	5,671,712	12.6
Municipal or regional government grants	1,779,237	4.0
Operating funds from parent organization	1,386,800	3.0
Rent from clients	7,163,842	15.9
Fees from clients	3,619,519	8.0
Sponsorship from private companies	851,722	1.9
Loans	8,852,531	19.7
Cashed-in equity from current or former clients	567,879	1.3
Other	4,946,599	11.0
Total	**45,001,780**	**100.0**

4.4. Policies: Incubator role and objectives; selecting clients; graduating clients

4.4.1. Program objectives

A critical aspect of the operation of an incubator is the objectives of the program. Incubators are created by various organizations for various reasons. Over time, business incubation has been viewed as a tool of urban renewal, a community development program, a mean of technology transfer, a commercialization mechanism and an enabling technology for entrepreneurship (Hamdani, 2006).

Survey recipients were asked to identify the three most important goals of their program. The results provided in Table 8 establish that creating jobs in the local economy is by far the most important goal. Building or accelerating growth of a local industry, commercializing technologies and diversifying the local economy follow in order.

Table 8 Incubator role and objectives (by rank) – Three most important goals of the program

Objective/goal	Number of Responses
Creating jobs in the local economy	53
Building or accelerating growth of a local industry	35
Commercializing technologies	33
Diversifying local economies	30
Fostering a community's entrepreneurial climate	29
Retaining businesses in the community	22
Identifying potential spin-in or spin-out business opportunities	12
Generating complementary benefits for the sponsoring or partner organization (e.g., creating joint research opportunities)	10
Generating net income for the incubator, sponsoring organization or investors	6
Creating international partnerships	4
Other	3
Encouraging minority or women entrepreneurship	2
Revitalizing a distressed neighbourhood	0
Moving people from social assistance to work	0

4.4.2. Selecting applicants

One of the key value added functions of an incubator is its admission program. At any one time, there are numerous proposals competing for a place in an incubator, but the incubator can accommodate only a few. It has to decide which ones are the most promising and among them which ones stand to benefit the most from its services and expertise. Incubators in Canada received 4,517 applications for admissions in 2005. Only thirty-four percent (1,539) of the applicant were selected to become clients. While applications may be rejected for several reasons, including lack of a convincing business case, demonstration of need for incubation and lack of space, only one in three proposals submitted in 2005 were accepted. This can be interpreted as an indication that there is more demand for business incubation services than the current incubators can provide.

The presence of a good business plan (Table 9), followed by a sound management team and perception that it was a good business opportunity were the three most common criteria used in the selection process.

Table 9 Main criteria utilized to select applicants

Criteria	Number of times applicable
A good business plan	62
A sound management team	46
A good business opportunity	46
A technology transfer or commercialization opportunity	35
Availability of financing	32
A collaborative research opportunity	29
Other	26
The applicant is a spin-off from a stakeholder organization	10
A working prototype	4
The foreign applicant has a reference from its host country	1

4.4.3. Graduating client

Successful graduation of a client from the incubation unit is the eventual objective for an incubator. This is often defined by a predetermined graduation period, for example 24 or 36 months. Data from the Survey of Business Incubators supports this notion as it was the leading response (Table 10). Facility no longer suitable is also a positive indicator for client graduation as it usually indicates the client has grown to the point of needing different or larger facilities, having experienced growth or development.

Table 10 Main criteria utilized to determine when a client graduates

Criteria	Number of times applicable
Predetermined period	53
Facility no longer suitable	35
Reached or failed to reach another predefined milestone	34
Demonstration of sufficient autonomy from the incubator's	
management team	30
Other	24

4.5. Clients and services: Clients by type; services offered and utilized

4.5.1. Clients by industry type

The respondents included some 'virtual' incubators, that is, those that provided incubation services but no office or laboratory space. As businesses are classified by their product (goods or services), the data revealed that incubator firms serve an array of client types. Canadian incubators served over 4,500 clients in 2005. Literally half of the clients fell into one of two categories – the sector of "Arts, entertainment and recreation; accommodation and food services"; along with "Professional, scientific and technical services" (Table 11).

Table 11 Number of current client firms by industry sector

Industry group	Number	%
Arts, entertainment and recreation; accommodation and food services	1,123	24.9
Professional, scientific and technical services	1,119	24.9
Other services (except public administration)	416	9.2
Wholesale and retail trade, transportation and warehousing	368	8.2
Manufacturing	289	6.4
Unknown	285	6.3
Educational services: health care and social assistance	236	5.2
Mining and oil and gas extraction: utilities: construction	227	5.0
Agriculture, forestry, fishing and hunting	207	4.6
Administrative and support, waste management and remediation services	121	2.7
Information and cultural industries	65	1.4
Public administration	25	0.5
Finance and insurance, real estate and rental and leasing, management of companies and enterprises	21	0.5
Total	**4,502**	**100.0**

4.5.2. Services the incubation program offers client firms

Incubators offer a variety of services to clients. Given that many of the client firms admitted into an incubator are new businesses hoping to develop, the fundamental management/business support cited as being offered most frequently is “help with business basics”, followed by “marketing assistance” and “help with accounting or financial management” (Table 12).

Table 12 Overall top 5 utilized services offered to client

Service	% of firms indicating service as highly utilized
Help with business basics	61
Marketing assistance	47
Help with accounting or financial management	39
Linkages to angel or venture capital investors	34
Office space	22
Library	22

More detailed information regarding services most utilized by clients is provided by category in Table 13. Of the six categories of service, the top 3 services are all in the management/business support category.

Table 13 Most utilized services offered to clients, by category

Services offered	% offering
Management/business support	
Help with business basics (developing business plan, refining business concepts, etc)	61
Marketing assistance (advertising, promotion, market research, market strategy)	47
Help with accounting or financial management	39
Equipment and technical support	
Office space	34
Library	22
High-speed Internet access	18
Networking and training	
Business training	18
Linkages to strategic partners	16
Networking activities among incubation program clients	15
Financing	
Linkages to angel or venture capital investors	22
In-house investment funds	17
Help accessing specialized non-commercial loan funds or loan guarantee programs	12
Legal support and regulatory compliance	
Assistance with applying for government grants and tax credits	10
General legal services	2
Intellectual property management	2
Commercialization	
Technology transfer	5
Business management process, customer assessment service, inventory management	4

4.6. Employment and business activities by client firms

A major impact of the success of incubators is found in the number of employees by client firms (jobs created by incubates). In 2005, client firms of Canadian incubators created almost 13,000 full time job and additional 300 part-time positions (Table 14). Another indicator of the positive impact of incubation firms is evident that 2,958 client companies had generated revenues at the end of the year. In addition, 105 clients had received a Scientific Research and Experimental Development tax credit.

Table 14 Employment and business activities of client firms

People employed by the client firms	number
Number of full time	12,874
Number of part-time	292
Number of clients that had revenue at the end of the year	2,958
Number of clients that received SR&ED tax credit	105

4.7. Impact of incubators: Status of clients; revenue sources and amounts

4.7.1. Status of clients at year end

When queried as to the status at the end of the reference year of clients who occupied the incubator during the reference year, 69% were continuing clients (Table 15). Almost one-quarter (23.2%) had graduated. A few more had been bought out or merged – an indication of their promising prospects. Only a small number (5%) were closed either because the client did not want to proceed or the monitoring activity of the incubator determined that the probability of success was low. This together with the finding that only 34% of applicants are accepted sends an encouraging message that the incubator units are having a positive impact.

Table 15 Status of clients at end of reference year

Status	Number	%
Continuing clients	609	68.8
Graduated	206	23.2
Closed	48	5.4
Merged or bought out	18	2.0
Don't know	6	0.6
Other	1	0.1
Total	**888**	**100.0**

4.7.2. Generation of revenue and the sources

In regards to revenue sources and amounts generated, the incubator clients were very active (Table 16). With almost $94 million raised over, $50 million came through venture capital sources. The relatively large amount of venture capital along with the small contribution (1%) is noteworthy. Apparently, investors have confidence in the activities of clients and are willing to place their money at risk.

Table 16 Revenue source and amount raised by incubator clients in 2005

Source of Funds	Amount	% of total
Venture capital	50,750,000	54.1
Other	13,571,747	14.5
Loans	13,401,978	14.2
Revenues	12,614,900	13.4
Grants	2,434,837	2.6
Angel investment	1,045,000	1.1
Total	**93,818,462**	**100.0**

4.8. Management: Experience; area of expertise

Information collected from the survey uncovered that the average number of years the manager of an incubator had been specializing in supporting new business was 11.3 years. In addition, managers operating incubators had an average of 12.6 years managing a business other than the incubator. Clearly, the managers of incubators are not inexperienced. Those facts aside, more than one-quarter (26.3%) of managers had 5 or less years of experience and only 7.9% had more than 20 years experience (Table 17).

Table 17 Incubator manager's experience in 2005

Experience in year	Number of managers	% of total
0 to 5 years	20	26.3
6 to 10 years	23	30.3
11 to 15 years	15	19.7
16 to 20 years	12	15.8
Greater than 20 years	6	7.9
Total	**76**	**100.0**

Note: One respondent did not report.

Incubators are operated by personnel with expertise from various fields. However, as might be expected, the primary area of expertise was in the area of business management and finance (Table 18).

Table 18 Incubator management expertise

Main areas of expertise of the incubator management team	Number of times applicable
Business management, finance	65
Marketing	35
Engineering	16
Technology transfer	16
Business law, intellectual property	15
Education	14
International business	12
Other	12
Natural science	8

4.9. Barriers

A majority of clients responded that finding appropriate candidates clients (65%), having candidate clients with no start-up financing (65%), and obtaining funding for incubator operation (63%) were significant barriers to their success (Table 19).

Table 19 Barriers to the operation and success of the incubator

Challenges/barriers	% citing as important
Finding appropriate candidate clients	65
Candidate clients have no start-up financing	65
Obtaining funding for incubator operation	63

5. Conclusions

The survey did accomplish its primary objective of measuring the business incubator sector in Canada by producing new statistical information. The results of the survey provide data on this largely unknown sector of the Canadian business community. Information collected provides the basis for standardized data on the activities and benefits of business incubators. The number of incubators is relatively small, but their population has been increasing steadily since the 1980s. The demand for incubation services apparently exceeds supply. While applicants may be rejected for several reasons, including the lack of a convincing business case, demonstration of need for incubation and lack of space, only one in three proposals submitted in 2005 were accepted.

6. References

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