

Business support infrastructure

Business support infrastructure encompasses a variety of different institutions, including business incubators, science parks and accelerator programs. It can play a critical role in the success of innovative new ventures, as it may provide a wide range of support in the form of advice, networking, finance and accommodation. Yet evidence related to the impact of business support infrastructure is rare and often ambiguous. The concentration of specific types of business infrastructure varies widely between different countries. The success of such infrastructure critically depends on a good administrative framework for entry and growth, the existence of markets for technology and a suitable intellectual property (IP) system that can strengthen the infrastructure's contributions to the successful performance of innovators. Public policy can help innovative entrepreneurs by providing financing for business support infrastructure.

What is business support infrastructure?

Business support infrastructure includes the provision of business services to entrepreneurs, such as consulting and R&D services. In principle this could encompass a wide variety of activities and institutions, but here the focus is on infrastructure that relates to innovation (as opposed to more general business support activities) and on integrated activities based around a specific location (as opposed to, for example, specific consultancy services). In this context, we concentrate on business incubators, science parks and accelerator programmes. We define these as follows:

Business incubation is a systematic way to support the establishment and growth of a new company that has applied to and been selected by a business incubator. **A business incubator** is an institution that provides physical space and services to start-ups, helping them through the early stages of their development. In addition to business prospect assessment, due diligence process management and expert pooling, the incubation process may also include coaching and mentoring of managers, advice on financing and marketing issues, and facilitation of networking with industry experts. The goal of business incubation is to enable a start-up to begin generating revenue and thus attract external investment for future development.

Science parks, research parks or technology parks (technoparks) are organisations that seek to increase the wealth of the community by promoting the culture of innovation and the competitiveness of its associated businesses and knowledge-based institutions. Compared to business incubators, science and technology parks tend to be larger in size, often spanning large territories and housing various entities, ranging from corporate, government and university laboratories to private companies. Science parks do not necessarily offer a full range of business support services, but some may host a business incubator for early stage innovation-based ventures. Typically, however, science and technology parks provide services to companies at post-incubator stages of their life cycle or provide a launch pad for companies that are "spun out" from a university or company.

Accelerator programmes are a more recent phenomenon. While there is no clear definition, the following features usually distinguish them from more conventional business incubation:

- An application process that is open to all, yet highly competitive. Generally, a much larger proportion of applicants are turned down than in conventional business incubation.
- Provision of pre-seed investment, usually in exchange for equity. Most accelerator programmes are directly linked to seed finance.
- A focus on small teams, not individual founders.
- Time-limited support comprising programmed events and intensive mentoring. Accelerator

programme support typically lasts a number of months, compared to conventional business incubation where start-up companies stay in the incubator for a number of years.

- A process that is designed for cohorts or “classes” of start-ups, rather than individual companies. Start-ups are accepted and supported in cohort batches or classes. The peer support and feedback that the classes provide are considered important for the success of these programs.

How does business support infrastructure affect innovative entrepreneurship?

Business support infrastructure addresses a number of key problem areas that inhibit the establishment of new innovative enterprises. It seeks to do this most efficiently by co-locating a number of different services so that the enterprise can source them efficiently. In many cases such services are subsidised, but there are advantages to co-location even if they are not.

Specific areas of support include:

- **Advice:** Sources of advice are particularly important in innovation, since there may be a need for technical advice related to licensing and patents, as well as connections with universities and research institutions. Business support infrastructure may provide such advice or help entrepreneurs locate it. There is also a need for more basic business advice and support. Services may also include directing entrepreneurs to specific sources of expertise.
- **Networking:** Co-location of similar companies allows them to share ideas and perhaps trade with each other. It is easier to succeed if complementary companies are within a short distance. In addition, this allows staff to transfer between small (and large) companies.
- **Finance:** All start-up businesses have difficulties with finance and especially innovative companies, since they appear more risky and could put investment at risk if the enterprise fails. The capital investment required by innovative start-ups may be higher than that required by non-innovative start-ups, since the former typically need to invest in R&D and in other innovation-related activities. Business support infrastructure can provide assistance by locating sources of financ, through actual investment and through indirect subsidies (e.g. reduced rents).
- **Accommodation:** Innovative enterprises may well require accommodations for specialised equipment, which may not be easy to find in local property markets. Science parks and incubators typically have accommodation designed for new enterprises in a specific sector, and therefore help reduce the costs of finding, adapting and renting suitable premises.

Based on these factors, business support infrastructure aims to provide collective solutions for innovative entrepreneurs in the form of advice, finance, access to research and specialists, and specially designed accommodations.

Evidence for the impact of business support infrastructure on entrepreneurial success

Evidence related to the impact of business support infrastructure and business support services is ambiguous and often lacking. This reflects on the one hand the wide heterogeneity of services and infrastructure, and on the other hand the lack of rigorous independent evaluation and the difficulties of avoiding self-selection bias. Nonetheless, a number of studies endorse the general approach,

suggesting that there is a real impact on client enterprises.

Mole et al. (2009) suggests that intensive support of selected firms is beneficial (particularly in relation to more general untargeted support). Batra and Mahmood (2003) show that there is some success in direct support, although they raise some qualifications. Zouhaïer M'Chirgui (2012) gives a comprehensive review of recent French incubators and shows that they have some degree of self-sufficiency, though they need to adapt to changing circumstances. Phan et al. (2005) reviews literature and shows that there is evidence for their positive effect, even if much more research needs to be done.

Although individual incubators claim a great deal of success, many of the studies do not account for self-selection and do not determine what happened to clients over the long term. Amezcua (2010), through a large study that sought to make comparisons using a large public database and to find out what happened to post-incubation firms, shows that while incubated companies have higher growth rates, they also fail sooner (suggesting that the sheltered environment of the incubator does not adequately prepare all firms to function on their own). In general, we can conclude that the incubator concept is sound and adds value but does not have as significant an impact as some of its proponents would suggest. Little is known about survival rates.

Accelerator programmes are much more novel and therefore there is less evaluation. Also, the final results of such programmes are likely to be several years in the future. High profile programmes in the United States claim very high rates of success. For example, Techstars (which publishes full data on its website) claims that 76% of its clients are still active, 10.5% have been acquired by others and only 13.5% have failed. Average funding per company was more than USD 1.5 million. However, since the programme started in 2007, most of the companies have not had time to fail, while the selection process may be as important in the success rate as the actual quality of support given.

What is the evidence on business support infrastructure and innovative entrepreneurship?

The concentration of specific types of business infrastructure varies widely between different countries, perhaps showing the heterogeneity of business support strategies. In addition, different approaches have been popular for longer in some countries than in others; for example, business incubators have been in existence in the UK for some time but are seen as a relatively new idea in many countries. A survey of European business incubators in 2006 (Goddard et al. [2006] quoted in UN [2012]) showed that they exhibited the following characteristics:

- The average number of employees in an incubator was six and the median number was four. A small staff of one to three employees ran half of the existing business incubators and 90% of them employed less than ten people.
- The average number of tenant start-up firms in an incubator was 25 and the median number was 18. The large majority of incubators supported less than 30 tenant firms.
- Some 48% of the existing incubators were publicly sponsored, 12% were privately sponsored and 38% had mixed sponsorship. In addition, 70% of business incubators were non-profit institutions while 30% were for profit.
- The bulk of incubator tenant firms (76%) were based at the incubator facilities. The rest were located off-site in rented space or in industrial or science parks. The minimum incubator space required for efficient operation was estimated at around 3,000m².
- The study showed that 70% of the incubators offered all or most of the services and business support required by start-ups, while 50% of incubators also hired external business service providers. In addition to business services proper, many business incubators assisted tenant firms in raising early stage financing from external sources.

- Start-ups obtained public support both through the incubator itself and independently. According to the survey, 64% of incubator-based SMEs enjoyed support from the national programmes for SMEs, 58-59% from regional development agencies and national programmes for innovative firms, and 45% benefited from the support of local authorities.
- Most incubators (73%) applied standardised entry criteria and procedures, while 43% used such criteria for exit. It is generally considered that tenant firms should not need more than four years in the incubator to graduate (some firms graduate earlier). The incubators estimated the survival rate of firms reared in their environment at 80-90%, which was significantly higher than the average survival rate for start-up firms operating in an open market environment.

In 2007, the International Association of Science Parks (IASP) conducted a survey of its members (including parks from all over the world) and identified the following main characteristics of science and technology parks (quoted in UN [2012]):

- Science and technology parks were situated mostly in urban environments, and 36% of the parks were located on a university campus or adjacent to one.
- Some 45% of parks had relatively small territories (less than 200,000 square metres). On the other hand, 33% of parks had territories exceeding 600,000 square metres, of which 22% occupied territories of over 1 million square metres.
- Nearly 60% of parks reported having hosted up to 100 resident companies, and 23% more than 200 companies. Middle-size parks (101 to 200 companies) represented 19% of the total number.
- Publicly owned science and technology parks prevailed (54% of the total), while 16% of parks were entirely private and 30% reported mixed (public-private) ownership.
- Most science parks received public financial support of some sort. The most widespread forms of such support were grants (45.4% of parks), subsidies (40.3%), tax incentives (27.3%) and subsidized loans from governments and public administrations at the national, regional and local levels (20.8% of parks).

There is much less information on accelerator programmes, with most of them launched since 2009. Miller and Bound (2011) gives a good qualitative review of the current state of the art. Their paper describes some of the ongoing criticism of the model (that it works to the detriment of other high growth start-ups and that it exploits start-up founders, for example) and the difficulties of measuring success (particularly when there is strong selection bias, and where different accelerators have very different objectives). The paper also shows how the accelerator concept has started to be used in more conventional economic development contexts and considers whether the model could usefully be transferred to wider sectors.

What other topics relate to business support infrastructure and innovative entrepreneurship?

Access to finance for innovative entrepreneurship (see [Access to finance for innovative entrepreneurship](#) [1]). Most business support infrastructure has some degree of support for **access to finance**. This ranges from implicit subsidies (i.e. through lower rents), to assistance in finding finance, to accelerator programmes where an actual investment is made in all participants.

Administrative framework for entry and growth (see [Administrative framework for entry and](#)

[growth](#) [2]). The extent to which business support infrastructure can be effective depends on the overall administrative framework innovative entrepreneurs face, which can raise substantial barriers to entry and growth, thereby affecting their performance.

Technological co-operation between firms (see [Technological co-operation between firms](#) [3]). Business support infrastructures can notably play the critical role of facilitating co-operation between businesses, including co-operation between innovative entrepreneurs and established firms or other innovative businesses.

Interface with universities and public research institutes (see [Interface with universities and public research institutes](#) [4]). Business support infrastructures can also help enhance the relationship of innovative entrepreneurs with universities and PRIs.

Intellectual property rights for innovative entrepreneurship (see [Intellectual property rights for innovative entrepreneurship](#) [5]). The functioning of the IP system will shape opportunities for innovative entrepreneurs, including the way it impacts on commercialisation efforts by universities and public research organisations.

Markets for technology (see [Markets for technology](#) [6]). The extent to which innovative entrepreneurs have opportunities to trade technology facilitates the extent to which business support infrastructure can help their business performance.

What policies relate to business support infrastructure and innovative entrepreneurship?

While it is possible that business support infrastructure can be directly planned and financed by government, in practice this is rarely the case. Nonetheless, public financing is important as almost all business infrastructures have some public subsidy. Depending on the exact targeting, this can be related to building the infrastructure itself, the level of rents and charges for services (which would normally slowly increase as an incentive for firms to move out), and the provision of services (free or subsidised business support services often operate within business incubators or similar establishments). Actual policies depend on local or national strategies for business support and the way in which infrastructure fits into them.

Typically, the following situations arise:

- Business incubators are established by local authorities and regional development agencies as part of their economic development activities. Normally this would be part of a local development strategy. Finance may come from national sources.
- Universities establish science parks as part of their policy for encouraging spin-outs, developing better linkages with industry and as a revenue stream. Again, finance may come from national sources.
- Business incubators are established by non-profit organisations typically through some local or national subsidy. Such non-profit organisations usually have social objectives (e.g. combating unemployment and poverty) and therefore may establish incubators in locations which would not be seen as optimal from an economic point of view. National policy may be to subsidise such organisations. Some business incubators work on a purely commercial basis, based on the idea that defining a building as an incubator will make it more attractive to rent. In general, such projects offer minimal business support services.
- Accelerator programmes are likely to be private-sector dominated, with funding coming from potential investors. Objectives will be keenly commercial and related to return on investment rather than job creation and social objectives.

As a complement to business support infrastructure, many countries provide some subsidised advice and training, which may or may not be connected with a particular location. Delivery of these services varies; they can be provided through a defined organisation or through a system of vouchers, whereby advice from approved consultants/advisors is subsidised subject to appropriate criteria.

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