

ARE THEY REALLY HELPING? AN ASSESSMENT OF EVOLVING BUSINESS INCUBATORS' VALUE PROPOSITION

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ABSTRACT

Most studies about business incubation describe an array of available services but often fail to present the tenants' assessment quality. We set out to investigate if business incubators differ in terms of their value proposition. To do so, we identify three distinct generations of business incubators based on different dimensions included in their value proposition. We pose the question of whether the generation affects the extent to which tenant companies use the different dimensions of the incubator's value proposition. Using data collected within business incubators and their respective tenants, the results show that while incubators claim to have similar support structures regardless of their generation, tenants in the older generations make less use of the incubator's service portfolio. We discuss the implications of our findings for incubator managers, prospective tenants and policy makers.

INTRODUCTION

The first BIs were established in the United States in the 1950s. These first generation BIs, which became widespread during the 1970s, consisted mainly in providing shared space to young firms. The offices rented combined space and shared resources, such as reception, car parking, meeting rooms as well as the usual commodities. The underlying idea was to reduce costs to start-ups while at the same time profiting from the economies of scale arising from renting large office space ready to use (Lalkaka and Bishop, 1996). This value proposition quickly evolved at the end of the 1980s when lack of business expertise was acknowledged to be an important barrier to new firms' success. Throughout the 1990s, the second generation of BIs expanded their value proposition by providing business support services geared towards accelerating the new firms' learning process (Lalkaka and Bishop, 1996). The most common business support services are training sessions and coaching. Recently, the value of the networks for new firms triggered the third generation of BIs to include preferred access to networks in their value proposition (Hansen et al., 2000). New firm can access valuable resources such as professional business services and venture capital through the BI's network of contacts (Bøllingtoft and Ulhøi, 2005). At the same time, networks are a source for knowledge acquisition and skill development. Also, gaining access to external networks increases the new firms' legitimacy in the market place.

The evolution of the value proposition of the BI, suggests that older generations of BIs should extend their value proposition to progressively meet tenants' needs by adding dimensions. However, path dependencies and organizational rigidities of BIs might keep them from doing so. Hence, our *first research question*: Are there differences between the value propositions across

generations of BIs? Arguably, real differences between the value propositions of BIs would be observable if assessed by the tenants themselves. Therefore, our *second research question* seeks to understand whether the value proposition of every generation of BIs is equally valuable to tenants.

LITERATURE REVIEW

What is a business incubator?

There are no universally accepted definitions for BIs. Definitions proposed for BIs do not focus conspicuously on physical space, but rather emphasize the effective combination of support services. Such services may include physical premises for incubated firms as the key defining feature. Yet incubation is much more than providing a key-in-hand office and shared building services (Aernoudt, 2004). Literature suggests business incubation to have several dimensions such as space, shared resources, business support, access to networks (e.g. Barrow, 2001; Smilor and Gill, 1986). There are a number of different definitions of business incubation put forth by large scale studies and industry associations (EC, 2002; NBIA, 2007; OECD, 1997; UKBI, 2007). These definitions share two key communalities related to the objective of BIs and the service portfolio they offer to tenant companies. First, BIs are focused on providing support to new start-ups with the goal to generate self-sustaining, successful companies. These organizations, in turn, contribute to the creation of economic growth and regional development. Second, BIs make certain resources available to their tenants: physical infrastructure, business support services and access to networks.

Evolution of business incubation: extending the value proposition

Infrastructure: economies of scale. The first generation of BIs offered affordable office space and shared resources (Barrow, 2001; Lalkaka and Bishop, 1996). This can be labeled as the basic function common among all BIs (Allen and McCluskey, 1990). The core of their value proposition was to provide tenants with infrastructure, which is often associated with space and shared resources. Space is traditionally linked to available office space rented in favorable conditions to incubatees (Bergek and Norrman, 2008). In addition, BIs often have small production facilities or mixed units available to their tenants (OECD, 1997). Provision of space is critical to business incubation and has been elected by tenants as the most beneficial feature of incubators (Chan and Lau, 2005). Shared resources such as reception, clerical services, meeting rooms, conference rooms or car parking (EC, 2002; McAdam and McAdam, 2008) complement the office space and are usually available in BIs. More specialized resources, such as laboratories and research equipment, can also be placed under infrastructure (Grimaldi and Grandi, 2005).

Tenant companies profit from existing economies of scale within the BIs when renting office space together with shared resources. Scale economies exist and are advantageous to tenants when their existence allows the BI to provide a certain shared resource at a lower price. As suggested by Bøllingtoft and Ulhøi (2005), scale exists as a sum of the total amount of shared resources provided. Offering company space together with shared resources has several advantages to tenants. First, the existence of scale economies causes a reduction of the tenants' overhead costs. Each tenant enjoys office space together with a bundle of shared resources including energy, water, telecom and cleaning, among others. Second, BIs provide new firms with services they probably would not have access to during such early stages of development such as meeting rooms, reception services or private parking space. The start-ups also have access to top-tier-service providers at preferred rates and terms through the BI (Hansen et al, 2000). Finally, this

also eliminates the burden of planning, setting up and paying individual providers. Tenant companies do not have to put effort and time in managing complementary services which allows them to concentrate on their core activities.

Business support: accelerating the learning curve. New firms are by definition inexperienced and founders often lack the necessary management skills and experience to cope with sudden environmental shifts and rapidly changing environments. Through a process of learning-by-doing, new firms change their behavior and develop a set of routines. These routines include forms, rules, procedures, and strategies around which organizations are constructed and through which they operate. People evaluate, make sense of the effects and organizational outcomes of past actions, and draw conclusions, which result in reshaping their cognitions (Bigley and Margarethe, 2002) and changing behavior of the company. Developing routines and capabilities through experiential learning is a slow and gradual process. The lack of such routines in firm's early stages contributes to a higher death propensity (Freeman et al., 1983). Due to market imperfections, identifying and hiring relevant expertise and experience is very difficult. In contrast to consultants who typically have little experience with start-up companies, tailored, hands-on business advice from seasoned incubation management is more productive and helpful. Furthermore, founders need active coaching in addition to training (Clarysse and Bruneel, 2007). Consequently, the incubated firms do not have to go through a process of trial and error but can ramp up the learning curve. As a result, these new ventures will be able to make better and faster decisions, which results in better strategies and eventually higher firm performance (Eisenhardt, 1989). Furthermore, training sessions on relevant topics can contribute to increase the ventures' knowledge base and therefore have a positive impact on their development and performance (Colombo and Grilli, 2005).

Business support services, such as coaching and training, became an integral part of the second generation BIs (Lalkaka and Bishop, 1996) together with infrastructure. Coaching is typically mentioned as a crucial service BIs provide to their tenants (Hansen et al., 2000; Mian, 1996). Coaching generally means that tenant firms are assigned coaches or mentors either for a fee or free of charge. This kind of service is critical to tenants' timely graduation (Peters et al., 2004), proving its impact on firm development. Training is also often available within BIs (Aerts et al., 2007; Barrow, 2001).

Networks: facilitate access to resources. Since the end of the 1990s a third generation of BIs emerged. Today's BIs differ in their value proposition compared to older generations given their emphasis on a much broader service portfolio that includes access to external networks (EC, 2002; Lalkaka and Bishop, 1996). A central feature of third generation is the exploitation of networks by the BI, providing therefore tenants with preferential access to potential customers, suppliers, technology partners and investors (Hansen et al., 2000). These networked incubators established institutionalized networks which implies that networking is no longer dependent on the personal networks or contacts of individuals (Bøllingtoft and Ulhøi, 2005). Furthermore, the literature posits that the networking is the most important factor in successful incubator programs (Hansen et al., 2000) and empirical evidence suggests that access to networks is critical for the development of BIs' tenant companies (McAdam and McAdam, 2008). In essence, facilitating access to external networks by BIs eases the acquisition of resources and specialized expertise, provides learning opportunities and allows the new firms to build up legitimacy faster.

Access to networks is the BIs' contribution to help new firms to overcome their inherent resource scarcity. The lack of financial capital, experienced management teams, and capabilities hinders the development and subsequent growth of these companies. Research shows that young

firms overcome their resource constraints through networking and thereby accelerate firm growth. Larson (1992) argues that entrepreneurial companies use networks to access resources that are beyond their financial capacity. In an incubation context, such networks are established and managed by the incubator. BIs build networks with early stage investors such as business angel networks and venture capitalists, which reduce the search costs for tenants companies. Next to providing the necessary funds, venture capitalists contribute to the firm's development by covering their financial needs as well as professionalizing organizational structure and managerial processes (Hellmann and Puri, 2002). Similarly, new firms seldom have access to established networks for hiring specialized advice on very specific topics. For instance, a venture trying to gain access to professional advice on a specific field of IP expertise might fail to do so because it does not have enough financial means to pay high consultancy fees.

Selection criteria and exit policy of business incubation

BIs also require appropriate selection criteria and exit policies. These managerial features have been considered to be among one of the most important management features of business incubators (Aerts et al., 2007; Lee and Osteryoung, 2004; Lumpkin and Ireland, 1988). If incubators select heterogeneous populations of tenants in terms of sector and firm age, effective support becomes more difficult to provide. If business incubators select tenants from a variety of sectors, the infrastructure, consulting services, knowledge provision, and access to networks are less effective than incubators which focus on specific sectors (Schwartz and Hornych, 2008). Also, sector-specific incubators achieve higher levels of economies of scale as their offerings are more specialized and tailored. Specialization increases the value added of the BI for the tenant. Heterogeneity in terms of firms' age implies that the incubator has to implement different kinds of support mechanisms because firms' needs vary as they develop (Vohora et al., 2004). The dominant problems companies face are fundamentally different in each stage of development (Kazanjian, 1988) and therefore need to be addressed using different support structures. Incubators use a wide range of selection criteria which typically include financial ratios (liquidity, profitability), personal traits of the entrepreneurial team (skills, experience) and market factors (business plan, innovativeness of product or service) (Aerts et al., 2007; Lumpkin and Ireland, 1988).

The exit policy is tightly related to the selection criteria. Similarly to the selection of tenants, a proper exit policy guarantees an adequate turnover of tenants contributing therefore to a more specialized service portfolio. Large scale studies report a formal graduation time typically after 3 years stay in the BI (EC, 2002). Others report income level, performance indicators agreed between the tenant and BI (Peters et al., 2004) or specific deadlines (Allen and McCluskey, 1990; Peters et al., 2004) set by the BI as operational exit policies. Finally, BIs often incrementally increase rental rates to induce tenant graduation (Allen and McCluskey, 1990; Peters et al., 2004).

RESEARCH DESIGN

Research context

We purposefully sampled the cases for our study. First, we wanted to have a representation of BIs created in the three generations. This way, we can examine the differences and communalities between the generations regarding the infrastructure, business support, and access to resources. Second, we only selected BIs with the mission to support new business creation. Incubators may position themselves to support new business ideas and develop them to become new ventures (the

idea hatchers) while others may help already established companies to grow. Most researchers, however, conceptualize incubators as those that support ventures in the earliest stages of development (Bergek and Norrman, 2008).

For the first generation of BIs, we study the Bedrijfs Technologisch Centrum Twente (NI) and Technologieförderung Münster (De). The Bedrijfs Technologisch Centrum Twente (BTC) started to operate in 1982. Located next to the University of Twente campus in Enschede, the incubator offers about 4700 m² of office space, workshops and laboratories to tenants. The centre is profit oriented and its shareholders are the University of Twente, Saxion University of Applied Sciences, ABN AMRO and a local real estate company. Its current mission is to house innovative high-tech companies preferably spinning out from the University of Twente. Technologieförderung Münster (TFM) inaugurated its first building in 1985. Owned mainly by the City of Münster (88%), TFM is a non-profit regional development agency providing 6900 m² of office space, workshops, laboratories and mixed use units. The cases for the second generation BIs include Erasmus European Business & Innovation Center (Be) and Jülich Technologiezentrum (De). The Erasmus European Business & Innovation Center (EEBIC) was created as a for-profit incubation centre in 1992 by the Brussels – Capital Region and the Université Libre de Bruxelles. The aim of the 6000 m² centre is to stimulate and support high-tech entrepreneurs in the region. The incubation centre has a strong link with the Université Libre de Bruxelles and plays an important role in the valorization of the university's research. Jülich Technologiezentrum (JTZ) is part of a large network of BIs in Germany (360 in total) and located in the Cologne-region. The centre was created to stimulate research commercialization of the nearby Research Centre through the creation of spin-off activity. Finally, we selected Chalmers Innovation (Se), Normandie Incubation (Fr), and the Innovation Centre (UK) as cases to represent the third generation BIs. Chalmers Innovation (CI) has been widely recognized as a best practice and subsequently discussed in the literature. Chalmers Innovation was created in 1999. Given the strong link with Chalmers University of Technology, the BI focuses on the incubation of technology-oriented start-ups. Normandie Incubation (NI) was established in 2000 and promoted jointly by the Université de Caen Basse-Normandie, the Ecole Nationale Supérieure d'Ingénieurs de Caen and the Grand Accélérateur National d'ions Lourds as founders. NI is a small non profit incubator (300 m² for tenants) and gets its revenue mainly from the national and regional public institutions, its members and European projects. The Innovation Centre (IC) at DeMontfort University was founded in 2001 within the Leicester City Centre campus. It was founded by DeMontfort University and the Leicester City Council bringing together several others partners, such regional development agencies. The BI rents office units including two dedicated workshops. The centre operates a non profit; revenues come mostly from the public sector (75%) and tenants rent (25%). **Error! Reference source not found.** provides an overview of the main characteristics of the seven BIs.

++ INSERT TABLE 1 ABOUT HERE ++

Data collection and methods

We employed a two-step research design that spans a qualitative study of the BIs and a quantitative study of their tenants. First, we performed in-depth case studies of the supply side of incubation (BIs). The qualitative research methodology is preferred given the need for a deep understanding and local contextualization of the topic. As suggested by Yin (2009), we did a comparative study to benchmark the different generation of BIs. The data for the first step was collected during semi-structured face-to-face interviews with key staff of BIs. The number of interviews ranged from three to six per BI. The goal of these interviews was twofold: a) to gain

insight about the BI's background, enquiring on characteristics such as shareholders, strategy, and brief history; b) to map the value proposition offered to tenants in terms of portfolio of available services. In the second step of data collection, we interviewed top management of tenant companies. Together with the general information about each company (such as age, size and sector of activity), a key issue of these interviews was to gain insight about the extent to which tenants enjoy the value proposition of their respective the BI. This was assessed in terms of usage of each available service. Data collection took place from late 2004 to early 2007.

THE SUPPLY SIDE OF BUSINESS INCUBATION

Infrastructure. We compared infrastructure within BIs using two variables: space and shared resources. Space is mostly related to office space while shared resources are any available shared service related to infrastructure. No significant differences across generations of BIs were found (Table 2). All provide key-in-hand office space and the majority also has small workshops and mixed premises for prototyping or small scale production. Reception, clerical services, parking and meeting rooms exist in every BI.

++ INSERT TABLE 2 ABOUT HERE ++

Business Support. BIs of every generation provide coaching to their tenants companies (Table 2). Coaching refers to any one-to-one support initiative geared to accelerate tenants' learning process and develop their skills (e.g. Barrow, 2001; Knopp, 2007). The coaching teams typically cover both scientific and managerial areas of expertise. There are differences though in the way they provide this kind of service. Erasmus European Business & Innovation Center (EEBIC), Chalmers Innovation (CI) and Normandie Incubation (NI) stated they have in-house coaches: EEBIC and CI assembled a team of experts while within NI the management team is the main source of coaching. Conversely, Bedrijfs Technologisch Centrum Twente (BTC) and the Innovation Center (IC) act as brokers to provide their tenants with coaches: BTC through one coach who is also an incubator tenant while the IC via a network of experts. Technologieförderung Münster (TFM) did not mention any kind of formal coaching either in-house or external.

We considered training as any kind of formal organized workshop, seminar and access to complementary information. All generations of BIs cover provide this service to their tenants. While some frequently organize training sessions about several small business and entrepreneurship topics (EEBIC and IC), others provide further training passively (BTC and TFM frequently distribute newsletters and announcements to their tenants) or grant access to workshops of some of their stakeholders (Jülich Technologiezentrum and CI).

Access to networks. We investigated access to networks enquiring BI about two distinct services: professional business services provided through a network of contacts, and access to financial resources. Professional business services through a network of contacts include basic services such as accounting, legal or administrative support, as well as more specialized services such as strategy consulting (Lee and Osteryoung, 2004) or patent attorneys (Rice, 2002). Professional business services are available for all generations of BIs. Access to such services can be provided passively by locating a university technology transfer office as well as consulting firms, insurance companies and project management firms (e.g. Jülich Technologiezentrum) within the incubator's premises. Conversely, Chalmers Innovation (CI) negotiated preferential agreements with major accounting, law and consulting firms to provide their tenants with a minimum level of free hours. Normandie Incubation (NI) subsidizes its tenants to access professional services including usage of scientific equipment and materials. The Innovation Center

(IC) grants its tenant firms access to professional services through a regional network of BIs – EMIN, the East Midlands Incubation Network. This network provides the region's incubators with online training, workshops, seminars and frequent consultation with experts. Finally, first generation BIs - the Bedrijfs Technologisch Centrum Twente (BTC) and Technologieförderung Münster (TFM) - are similar to the extent that provision of professional services is done by request and on demand.

Every generation of BIs claims to give access to financial resources to their tenants, apart from the first generation (BTC and TFM). Jülich Technologiezentrum (JTZ) refers to one of their shareholders as the source for venture capital. Conversely, EEBIC and CI created and manage their own business angel network and venture capital fund, respectively. Furthermore, CI cooperates intensively with private venture capitalists. NI and the IC mentioned preferential access to finance resources within their networks.

Selection criteria and exit policy. Regardless of their generation, BIs seldom mention a structured set of selection criteria. Yet, criteria such as technology focus, innovative products, high growth potential of the company are always preferred. BTC also demands solvability of the company and EEBIC put greater emphasis on the analysis of the entrepreneurial team. TFM houses only biotechnology, nanotechnology and ICT companies. NI is the only one having an extensive selection procedure. In order to be selected, their prospective tenants have to present a business plan to a committee composed of representatives of several shareholders. Additionally, NI provides punctually business plan writing support. Clearly defined exit policies are mostly inexistent across generations of business incubators. EEBIC loosely mentioned time and performance criteria, i.e. companies have to graduate after reaching a certain level of maturity, while BTC, TFM and JTZ did not mention any. The IC has the strictest criteria for exit: all tenants should leave after 36 months of stay within the incubator.

THE DEMAND SIDE OF BUSINESS INCUBATION

Usage of business incubation

Infrastructure was compared using the same constructs as in the supply side on incubation. Space was described to tenants as available office or workshop space; shared resources was described as any complementary infrastructure related shared service such as reception, car parking, meeting rooms and commodities. We did not find any statistically significant differences between the three generations regarding the usage of infrastructure.

The situation is different when looking at the extent to which tenants use business support services, either coaching or training (Table 3). We asked tenants about any kind of coaching provided via their BI. This include assigned coaches either part of the BI team or provided through the BI's networks of contacts. Statistically significant differences we found for coaching ($p \leq .001$). Third generation BIs provide almost the entirety of their tenants with coaching while older generation BIs' tenants are not all enjoying this service: first generation BIs provide coaching to roughly half of their tenants while second generation BIs provide about a third of their tenants. A similar picture can be found in training services provision ($p \leq .001$); less than a quarter of both first and second generation BIs' tenants make use of this kind of service. Conversely, the overwhelming majority of third generation BIs' tenants enjoy training services.

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The access to networks shows the same pattern as the dimensions discussed above (Table 3). We enquired tenants on the availability of professional business services and access to finance. Professional business services are any specialized support services the BI provides in a formalized manner through their network of contacts. These include accounting, legal or administrative support, as well as more specialized services such as strategy consulting or patent attorneys. Data suggests that especially the third generation BIs' tenants make use of professional service providers. Only about half of both the second and third generation BIs' tenants enjoy this kind of service. The differences are statistically significant ($p \leq .001$). The same is true for seed or venture capital ($p \leq .001$). While more than two thirds of third generation BIs' tenants have access to finance, only about half of their second generation counterparts stated the same. First generation BIs' tenants barely declared access to financial means through their BI.

These results show that tenants value differently their BI's value proposition. More third generation BIs' tenants are enjoying the service portfolio than their counterparts housed in older generation BIs. Interestingly, the relationship between share of tenants enjoying a certain service and their BIs' generation is not always positive. In terms of business support, first generation BIs' tenants enjoy more coaching and training than their second generation counterparts (Table 3).

Selection criteria and exit policies: profile of tenant companies

We researched the selection criteria and exit policies by looking at the tenant profile. Tenants' characteristics such as age at entry, share of serial entrepreneurs, and share of relocated companies can be translated in to the selection criteria. BIs accepting a large share of companies which have passed the start-up phase, relocated and without experience in starting businesses are selecting an inappropriate target group to be incubated. Years at incubator and firm size are seen as manifestation of exit policies. BIs allowing their tenants to stay longer than three years (threshold for incubation according to EC, 2002) and bigger than the entrepreneurial teams are not graduating companies which are (or should) be capable of surviving by their own means.

We start by looking individually at each one of the variables we considered to reflect the selection criteria. Firm age plays an important role in building of capabilities and routines of organizations. In contrast to older organizations, young firms have to shape their organizational structure, processes, and routines. Older organizations have developed substantive capabilities (Zahra et al., 2006) which hampers their ability to change their existing capability set and makes it more difficult to unlearn established routines. Table 4 shows that there is a significant difference between the tenants firms regarding their age at entry ($p \leq .05$). Third generation BIs' tenants are very young (less than one year old) at the moment they enter the BI. First generation BIs' tenants are almost two years old while the firms located in second generation BIs are more than seven years old.

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To complement the tenants' profile, we also examine whether there are differences among the firms' entrepreneurial team. Here, we consider the extent to which the entrepreneurial teams have previous experience in starting businesses. Previous entrepreneurial experience of founders plays an important role in the development and success of ventures (Politis, 2005). Table 4 shows that the majority of third generation tenant firms are established by entrepreneurs who have previously founded a company. Conversely, less than half of the second generation and only a quarter of the first generation firms have serial entrepreneurs in their team. Finally, we looked at the percentage

of relocated firms in the BIs at moment of data collection. We considered relocated firms as companies created one year or more before entering the BI. Table 4 shows that almost half of the tenant firms of the first generation BIs and more than 50 percent of the second generation BIs were founded one year or more before entering the BI. Conversely, only about a fifth of the third generation BIs' companies were not created at the incubator's premises or moved there before one year of existence. Third generation BIs' tenants stay less than two years in their respective BIs whereas their first and second generation counterparts stay for much longer periods ($p \leq .001$) (Table 6). Since the tenants of the first and second generation BIs are significantly older when entering the BI and show longer incubation periods, it is not surprising to see that the first and second generation BIs tenants are significantly larger in terms of employees ($p \leq .01$).

DISCUSSION AND IMPLICATIONS

Our results show that every generation of BIs is very similar in terms of what they provide to their tenants. They tend to provide approximately the same bundle of services to tenants. Over time, first generation BIs extended their value proposition by adding business support services (characteristic for the second generation) and access to networks (characteristic for the third generation). We found a similar trend for the second generation BIs as they also added networking to their service portfolio. As a result, today's BI landscape appears as very homogeneous in terms of the value proposition to prospective tenants. This might be a result of the industry's attempts to standardize BIs through associations (e.g. NBIA, UKBI) and the pressure to comply with the expectations and needs of tenants and the institutional environment. Although BIs' service portfolios are the same regardless of their generation, tenants' levels of usage are significantly different. Our results show that tenants in each generation use services to a different extent, apart from infrastructure. In other words, business support and access to networks are not being used in the same way across the different generations of BIs. Further, we investigated the tenants' profile in each generation and the results also show significant differences. Third generation BIs' tenants are younger, smaller and have shorter incubation periods than tenants housed in first and second generation BIs. The tenants' profile and the level of service usage are related: the tenants' profile determines the level of usage of services. This is unsurprising since the needs and dominant problems faced by nascent companies differ significantly from those experienced by older companies (Kazanjian, 1988; Vohora et al., 2004).

Our results yield several important implications for BI managers, prospective tenants and policy makers. First, third generation BIs can hardly be profitable because they select nascent ventures. As a result, their tenants are more likely to use the complete service portfolio while in the process of establishing their companies. Being nascent ventures, these tenants do not generate enough revenue to cover the BIs' operational costs for offering business support and access to networks. Therefore, this generation of BIs requires significant and long-term public funding to be sustainable. Conversely, first and second BIs may aim for a self-sustainable model with limited government funding. The little usage of business support services suggests that first and second generation BIs' tenants are already experienced, having developed a capability base and a set of business routines. In other words, these companies are more mature and therefore are more likely to have established a stable revenue base. Previous work already suggests that the BIs' business model (profit vs not-for-profit) impacts the nature and quality of the services provided to tenants (Grimaldi and Grandi, 2005). Yet our results show that the generational effect is much stronger. Additional non-parametric independence tests using business model as grouping variable showed no statistical significant differences.

Second, if no adequate turnover of tenants is promoted and supported by clear selection criteria and exit policy, the tenants will have developed skills and capabilities through experience and do not require business support services anymore. This is even more pronounced when first generation BI added access to networks to its service portfolio. Our results show that first and second generation BIs select older tenants that stay longer in the BI thus needing less business support services and access to networks than newly founded ventures. BIs' service portfolio is established and geared towards supporting nascent and young companies. We extend previous work that links differences in usage of incubation services according to the venture's stage in its lifecycle (e.g. McAdam and McAdam, 2008) by providing evidence that not only each service becomes less important but it also might be unnecessary.

Third, going from infrastructure to coaching and networking turns out to be a very difficult step for BIs and involves much more than establishing an extended service portfolio. First and second generation BIs extended their value proposition while not adjusting their selection criteria and exit policy. In fact, most BIs in our sample do not have clear selection criteria and exit policies in place. We found that first and second generation BIs are selecting more mature companies and, in case of second generation BI, even beyond the typical incubation period of three years (EC, 2002). The length of the incubation period is also much higher in first and second generation BIs. As a result, a mismatch between the tenant profile and the services being offered emerges and, ultimately, renders those services inadequate. Therefore, BI managers should be more aware of the impact of updating their value proposition. Adding dimensions such as business support and access to networks only makes sense if combined with adequate management practices. Appropriate selection and exit procedures guarantee the admission of tenants who will be more likely to use services such as business support or networking and assure that tenants graduate timely. Since the value proposition for the three generations is similar, all generations of BIs should accommodate new ventures as they are most likely to use all three components: infrastructure, business support, and access to networks.

CONCLUSIONS

We set out to research whether there are differences between the value propositions of each generation of BIs and the extent to which tenants use the service portfolio offered by each BI generation. Based on seven case studies representing the three generations of BIs, we observe no significant differences across generation in terms of their service portfolio. Using survey data of 71 tenants across the seven BIs, we find that only firms located in third generation BIs make full use of the service portfolio. This paper suggests that a lack of clear selection criteria and exit policies are at the root of the mismatch between supply and demand for business incubation. Furthermore, the failed extension of the BIs' value proposition can be seen as a sort of an imprinting effect: older generation BIs are not capable of adapting to the newer models of incubation not so much because of difficulties in establishing new services, but due to rigidities in their management practices. We hope that our study encourages researchers on business incubation to take our approach as a departure point for large scale longitudinal studies.

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TABLES AND FIGURES

Table 1 – General characteristics of the researched business incubators.

	First generation		Second generation		Third generation		
	BTC	TF Münster	EEBIC	Jülich TZ	Chalmers Innovation	Normandie Incubation	Innovation Centre @DMU
Foundation	1982	1985	1992	1992	1998	2000	2001
Region	Overijssel (NL)	Münsterland (Ge)	Brussels-Capital Region (Be)	Cologne area (De)	West Sweden (Se)	Lower Normandy (Fr)	East Midlands (UK)
Business model	Profit	Not-for-profit	Profit	Not-for-profit	Profit	Not-for-profit	Not-for-profit
Office space (m ²)	4700	6900	6000	8000	5000	300	650
Number of tenants	68	42	23	36	18	18	18

Table 2 – Supply of business incubation in the researched BIs

	First generation		Second generation		Third generation		
	BTC	TF Münster	EEBIC	Jülich TZ	Chalmers Innovation	Normandie Incubation	Innovation Centre @DMU
<p>Infrastructure:</p> <ul style="list-style-type: none"> - Space - Shared resources 	<p>BTC provides key in hand office space. Further shared resources include parking, reception and meeting rooms.</p>	<p>TFM provides key in hand office space as well as production facilities and mixed units. Further shared resources include reception, parking and meeting rooms.</p>	<p>EEBIC provides key-in-hand office space as production facilities, laboratories and mixed units. Shared resources such as parking, reception and meeting rooms are also available.</p>	<p>Jülich TZ IC provides key-in-hand office space as well as production facilities and laboratories.</p>	<p>Chalmers provides key-in-hand office space as well as laboratories. Shared resources such as parking, reception and meeting rooms are also available.</p>	<p>NI provides key in hand office space to tenants who only pay for it after graduation and interest-free. No further shared resources are included.</p>	<p>IC provides office key in hand space as well as small production facilities (2 units). Further shared resources include parking and reception.</p>
<p>Business Support:</p> <ul style="list-style-type: none"> - Coaching/Mentoring - Training 	<p>Tenants access coaching on an ad hoc basis via incubator manager. One of the tenants is a consultancy firm who provides mentoring on a commercial basis and partially funded by external sources. Further training is only offered by the mentor.</p>	<p>No formal coaching team exists. Training is offered to tenants in the form of information brochures, emails newsletter or punctual group sessions.</p>	<p>Coaching team of three in-house dedicated experts. Their backgrounds cover fields such as accounting, finance, marketing or engineering.</p>	<p>Coaching is provided by a team of two coaches on a part time basis. Training session such as seminars and workshops are organized on regularly basis in collaboration with Aachen Chambre of Commerce.</p>	<p>Own coaching team of five multidisciplinary experts: accounting, finance, commercial and business consulting experience.</p>	<p>Coaching team of two dedicated project leaders and a coach manager. Their background is mainly scientific.</p>	<p>Coaching is provided by a network of external coaches. Their backgrounds cover fields such as management, marketing or finance.</p>

	First generation		Second generation		Third generation		
	BTC	TF Münster	EEBIC	Jülich TZ	Chalmers Innovation	Normandie Incubation	Innovation Centre @DMU
Access to Networks - Professional services - Finance	Access to professional services is provided by request and on demand via incubator staff. ABN is one of the shareholders which might provide financial resources.	Access to professional services is provided by request and on demand via incubator staff. A local savings bank owns 6% of the incubator which might provide financial resources	Professional services such as patent attorneys, legal counseling or strategy consulting are also available. EEBIC also created its own business angel network in 1999 with as office within the premises.	Professional services: one of the tenants is the Technology Transfer Office of that research centre. Also, a legal consulting firm, an insurance company and a project management consulting firm are located within the premises. One shareholder is a local venture capital fund and it is based within the centre.	Close collaboration with Centre for Intellectual Property. Other professional services include contractual agreements with accounting, law and business consulting firms. Chalmers manages its own seed and venture capital funds. Also, it cooperates with local and regional authorities, private venture capitalists and business angels. Chalmers also collaborates intensively with CONNECT.	NI provides a subsidy which can be used for accessing professional services (external advice and expertise) as well as scientific equipment and materials. Access to finance is done via a network of contacts including business angels, public and private financial organizations	The IC is part of a regional network to exchange best practice both for incubators and incubatees which includes a grand total of 16 BIss. Through this network, tenants can access professional services such as training or online support. Through this network, tenants can also access preferred sources of finance .

Table 3 – Usage of business incubation per generation of incubation centre (%)

	1 st generation (N=25)	2 nd generation (N=19)	3 rd generation (N=27)	p- value
Business support				
Coaching/ Mentoring	48.0	31.6	96.3	≤ .001
Training to develop business skills	24.0	21.1	81.5	≤ .001
Access to networks				
Professional services providers	48.0	63.2	96.3	≤ .001
Seed or venture capital	12.0	52.6	70.4	≤ .001

Table 4 – Profile of tenants per generation of incubation centre

	1 st generation (N=25)	2 nd generation (N=19)	3 rd generation (N=27)	p- value
Entry age	1.76	7.1	.85	≤ .05
Relocated tenants (%)	44.0	52.6	22.2	≤ .10
Years in incubator	5.12	5.00	1.70	≤ .001
Firm size	3.68	8.21	2.33	≤ .01
Serial entrepreneurs (%)	25.0	36.8	53.8	≤ .10