

# **BUSINESS INCUBATORS: (HOW) DO THEY HELP THEIR TENANTS?**

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# **BUSINESS SUPPORT WITHIN BUSINESS INCUBATORS**

## **Abstract**

Business incubators (BI) have been established worldwide as tools for company creation and small businesses support. BIs claim to help their tenants by providing them with the optimal conditions for increasing early stage survival and long term performance. Practitioners and researchers agree that business support is a crucial feature of incubating businesses. Yet this is seldom researched. In this study we theoretically relate business support to help in solving problems and further investigate to what extent business incubators support their tenants overcome their developmental problems. Results show that tenants do not experience many problems and when they do business support is not necessarily sought. Furthermore, our data suggests that business support is not preferentially sought within incubator environment. When this happens, support provided by the BI does not contribute to problem solving. Finally, we discuss the impact of the type of BI in helping their tenants.

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## INTRODUCTION

Business incubators (BI) are a unique combination of people, space and business development processes (UKBI, 2007). The ultimate goal of business incubators is to support nascent companies and entrepreneurs till they become sustainable businesses (Lalkaka and Bishop, 1996), contributing to job and wealth creation (EC, 2002; NBIA, 2007). Usually property-based (Phan et al., 2005), BIs provide their clients with specialized services such as flexible space, shared equipment, administrative services, granting them networking opportunities and access to venture capital (EC, 2002; Hackett and Dilts, 2004; Lalkaka and Bishop, 1996). However, little is known about the impact of BI on tenants companies as there is no systematic framework to understand and identify the nature of their performance (Hackett and Dilts, 2004; Phan et al., 2005).

Business support services are part of BIs (Chan and Lau, 2005; Grimaldi and Grandi, 2005; Merrifield, 1987) and perhaps their most important dimension (Bergek and Norrman, 2008). Yet Peña (2004) found that general incubator services do not significantly explain that growth of incubated firms. Outside the incubator's context, the relationship between external business advice and small firm growth has already been researched (Robson and Bennett, 2000) as well as the role of an external support agency in new firm growth (Davidsson and Honig, 2003); both were found to have no impact. However, these studies did not use a comprehensive framework for business support, enquiring only about their existence.

Our main research proposition is: "Are BIs contributing to tenants' development?" In this study, we investigate the specific contribution of business support provided by BIs using a 20 problem framework. Business support is studied in the form of problem solving. The basis for defining the problems framework was inspired by the work of Parsons on social systems

(1964) and its more recent theoretical developments applied to entrepreneurial ventures (Groen et al., 2008). Our analysis will show whether business support within the BI impacts problem solving. To empirically test our framework, we researched 354 incubated companies across 12 BIs located in Northwestern Europe. Results will show where companies housed within a BI are more likely to seek support as well as in which specific problems that is more likely to happen.

## **THE NATURE OF BUSINESS INCUBATION**

We start by analyzing literature on BIs, searching for a definition while exploring the evolution of the concept since its emergence in the 1970s. Next, we describe briefly which business support services are more often provided to tenants. Finally, we present the operationalization of business support in the form of problems experienced, support sought and solution achieved.

### **Evolution of business incubation**

BIs have been evolving since the 1970s, when they initially emerged among other small and medium enterprise support initiatives. The first generation of BI offered mainly low-cost space and shared resources to entrepreneurs (Barrow, 2001; Lalkaka and Bishop, 1996). In the beginning of the 1980s, partly due to the unemployment rampage arising from traditional sectors, policy makers started to establish BI as tools for economic development as well as promoters of regional revitalization (Lewis, 2001). This second generation of BIs already included more developed services such as management training as well as access to finance (Lalkaka and Bishop, 1996). Today's BIs - the third generation - are collaborative service providers, offering a broad portfolio of business support services, such as consultancy, networking and access to venture capital (EC, 2002; Lalkaka and Bishop, 1996).

There are no universally accepted definitions for BIs. Looking at several definitions proposed in both academic and practitioner literature, it transpires that definitions do not focus exclusively on physical space, but also include the provision of services as well as access to professional networks. Business support services generally include physical premises for incubated firms as the key defining feature (Table 1). Yet BIs are much more than providing a key-in-hand office and shared building services (Aernoudt, 2004). Literature suggests business incubation to have additional dimensions such as shared resources, business support and access to networks (e.g. Barrow, 2001; Smilor and Gill, 1986). Practitioners often claim that BI have several multi-level impacts, such as firm performance and long-term survival, economic growth, job creation as well as active contribution to an entrepreneurial culture (EC, 2002; NBIA, 2007; OECD, 1997; UKBI, 2007) (Table 1).

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The population of BI is far from being homogenous. Several models have been proposed based on characteristics such as ownership (Carayannis and von Zedtwitz, 2005; Grimaldi and Grandi, 2005), management characteristics (Aerts et al., 2007; Clarysse et al., 2005), strategic objectives (Hackett and Dilts, 2004; Koh et al., 2005; Schwartz and Hornyh, 2008; von Zedtwitz and Grimaldi, 2006), competitive focus (Carayannis and von Zedtwitz, 2005; von Zedtwitz and Grimaldi, 2006) and available services (Grimaldi and Grandi, 2005; Hansson et al., 2005). According to the National Business Incubation Association, the most common type of BIs in the USA are mixed use (54%) and technology based (39%) (Knopp, 2007). Also, Aernoudt (2004) lists these types of business incubation among the most important. Mixed use BIs do not show any focus in terms of sector of activity of incubated companies and aim mainly at employment creation. Conversely, technology based BIs are often focused in terms of sector of activity of incubated companies and aim mainly at

bridging an entrepreneurial gap and address market failures (Aernoudt, 2004).

### **Dimensions of business incubation**

Business incubation operates along three dimensions: infrastructure, business support and access to networks (e.g. Barrow, 2001; Smilor and Gill, 1986). Therefore, business incubation services include all services provided to tenants which cover these dimensions.

#### Infrastructure

Infrastructure consists of space and shared resources. Providing space has always been part of BI (Lalkaka and Bishop, 1996). Available premises are generally an office although some BI show different approaches such as hot-desking (more common in pre-incubation schemes) (Barrow, 2001). Provision of space is critical to business incubation (Bergek and Norrman, 2008; Lee and Osteryoung, 2004; McAdam and McAdam, 2008) and empirical evidence suggests it as the most beneficial feature to tenants (Chan and Lau, 2005). Additionally, the office space already includes some services which can be classified as shared resources. These include reception, secretariat, meeting rooms, conference rooms or car parking (Aerts et al., 2007; EC, 2002; McAdam and McAdam, 2008). More specialized premises, such as laboratories and research equipment, can also be placed under shared resources (Grimaldi and Grandi, 2005).

#### Business support services

Professional business services emerged in the second generation of BIs and are integral part of the third generation (Lalkaka and Abetti, 1999; Lalkaka and Bishop, 1996). These include mentoring, coaching and counselling (Chan and Lau, 2005; EC, 2002), business plan development support (Peña, 2004) and training (Aerts et al., 2007; Barrow, 2001).

Some BIs were found to provide directly or indirectly seed and venture capital (Bøllingtoft and Ulhøi, 2005; Sofouli and Vonortas, 2007). Recently, the concept of virtual business support emerged alongside the use of web-based technologies (Carayannis and von Zedtwitz, 2005; Durão et al., 2005; Nowak and Grantham, 2000).

#### Access to networks

Access to a network of professional contacts is also part of the incubator concept (Hansen et al., 2000). Some authors actually define BIs as networks of individuals and organizations (Hackett and Dilts, 2004, p. 57). Also, networking both among tenants, and graduates and tenants is reported in some empirical studies as crucial (Aernoudt, 2004; Grimaldi and Grandi, 2005). Linking tenants to the most appropriate networks will ultimately help them to build their social capital (Bøllingtoft and Ulhøi, 2005; Totterman and Sten, 2005). The value of social capital for new ventures is already ascertained (Davidsson and Honig, 2003), found critical among incubated companies (McAdam and McAdam, 2008) and crucial in the development of high-tech spin out companies (Vohora et al., 2004).

### **THE PROBLEM-SOLUTION FRAMEWORK**

We developed a framework for analyzing business support within BI. The key assumption here is that tenants experience problems throughout their development and the best way BI can provide support is by helping them to overcome such problems. This premise is also used by Nickerson and Zenger (Nickerson and Zenger, 2004) according to which companies develop their capabilities through learning processes (Zollo and Winter, 2002) triggered by searching for solution to problems encountered. The list of problems was inspired by the work of Parsons (1964) using also more recent insights applied to entrepreneurship (Groen et al., 2008) (Table 2). Furthermore, we considered empirical literature on business

incubation (e.g. McAdam and McAdam, 2008), business support (e.g. Robson and Bennett, 2000) and new venture development (e.g. Vohora et al., 2004).

According to Groen et al.'s four capital theory (2008) entrepreneurs will develop along four main dimensions: strategic, cultural, economic and social. In each one it is therefore necessary that entrepreneurs possess a certain minimum capital threshold to evolve (Groen et al., 2008). *Strategic Capital* encompasses the strategy of the firm's and also its position and authority in the field (Kirwan et al., 2007). In a broader sense, strategic capital is defined by set of capacities that enables actors to decide on goals and to control resources and other actors to attain them (Groen et al., 2008; Kirwan et al., 2007). Increase the firm's credibility will be the key problem to increase this kind of capital (McAdam and McAdam, 2008; Vohora et al., 2004). For new ventures, writing a business plan is also particularly important (Delmar and Shane, 2003). Furthermore, to introduce new products, accelerate their time-to-market and generating new business ideas are also part of the firm's strategy. Finally, get advantage over competitors is also part of this kind of capital (cf. Covin and Slevin, 1991). *Economic capital* is traditionally linked to financial resources. This capital is a set of mobile resources used in the relationships between the firm and its environment, mainly in processes of acquisition, disposal or selling (Groen et al., 2008). Obtaining finance is a key problem most new ventures face (Bryson et al., 1997; Honjo and Harada, 2006; Vohora et al., 2004). Further problems in this kind of capital are: i) save on equipment costs; ii) improve cash flow; and iii) save on labor costs.

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*Cultural capital* comprises the firm's and the entrepreneurs' knowledge and experience (Kirwan et al., 2007) as well as the valid set of values, norms, beliefs, assumptions, symbols,



rule sets, behaviours and artefacts (Groen et al., 2008). Hence, in order to increase this kind of capital, the venture will need to professionalize its management and hire qualified personnel to enhance their entrepreneurial skills. The premise that management skills may hinder firm's growth is known as Penrosian effect (Penrose, 1959; Thompson and Wright, 2005). Also, Richardson (1964) and Shen (1970) investigated the availability of managerial talent as a determinant of firm's growth. External advice can also be a source of cultural capital. The impact of external advice in firm's performance have already been investigated (Robson and Bennett, 2000). We also added compliance with administrative regulations as well as introducing new technologies as problems that can arise when trying to increase the firm's cultural capital. As some firms might be about to leave the incubator or in need of production space, we included finding suitable office space in cultural capital. Lastly, *social capital* is related to the actors in the firm's network through which it can acquire other kinds of capital (Coleman, 1988; Groen et al., 2008; Portes, 1998). Problems to develop this kind of capital relate to alliances (Gomes- Casseres, 1997; Larson, 1991; suggested by Peña, 2004 in the incubation context; Wright et al., 2004), establish supplier contacts and market base expansion.

## **BUILDING HYPOTHESES**

Our main research proposition is: "Are business incubators contributing to tenants' development?". Young ventures experience problems throughout their development (e.g. Groen et al., 2008; Vohora et al., 2004). Our chief assumption here is that young ventures housed within a BI will have privileged access to business support for those specific problems. In other words, the BI support will have a determinant role in solving problems. It is crucial to consider also the effect of problems experienced: tenants would not seek support

if they would not experience any problem (Figure 1).

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*H1: The total amount of problems solved is related to the total amount of problems experienced controlling for the total of amount of support given by the incubator.*

However, companies located within incubators do not necessarily enjoy business support provided only by the incubation management. Support provided directly outside can also exist. This means that companies might solve their problems without the specific help of the incubator but rather with help of any support sought.

*H2: The total amount of problems solved is related to the total amount of problems experienced controlling for the total of amount of any support.*

We will also analyze both hypotheses for each problem to investigate whether differences between problems exist.

## **RESEARCH DESIGN**

To investigate to what extent BIs are helping their tenants to solve problems, we sent out written questionnaires to a 354 incubated companies housed at each of the selected 12 BIs at the time of research.

### **The business incubators**

The BIs were part of the Nensi project - North European Network of Services Incubators. The Nensi incubators were a self-selected network of BIs and EU funded for a total of 3 years. Located across five European countries (France, Germany, Ireland, the Netherlands and the United Kingdom), the 12 BIs share most of their basic characteristics: they are owned by

a combination of universities and regional authorities and mostly located in urban regions or within cities. Furthermore, no specific focus in terms of sectors of activity or nature of their tenants was found. All the BIs offer approximately the same bundle of business support services, i.e., space, facility support, counselling, business plan development, training, brokerage, access to seed and venture capital and virtual support (one of the deliverables of the project). Finally, tenants are already established companies and trading; average tenant entry age is about 2 years and age the time of research was above 4 years (Table 3).

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### **Data collection and methods**

During the Nensi project, we collected data from supply (incubators) and demand (tenants), using two questionnaires (one for the initial moment and other for the periodic follow-up). However, for this initial analysis, we only focus on a small part of the database related to problem experienced, support sought and problem solution (for a detailed description of both questionnaires and the monitoring tool see Jenniskens, 2006). From the initial call to 354 companies, 164 answered (46%). However, while conducting the second monitoring exercise only 101 returned questionnaires (29%). The problem solution approach was only asked in the follow up questionnaire and referred to problem support since entrance in the incubator.

For each of the problems described above (Table 2), we enquired on their seriousness using a five point scale. Subsequently, we enquired if support was sought and where using the following three options: incubation management, fellow tenants or directly outside. Finally, we asked whether the problem was solved or if still persisted.

## **RESULTS**

To test our hypotheses, we used partial correlations analysis. Looking at partial correlations of problems solved, problems experienced and support sought (either generally or specifically in the incubator) will allow us to investigate what proportion of support sought explains problems solved (Cohen et al., 2003). The incubation hypothesis (H1) will meet the conditions

$$\begin{cases} r_{PS,SuppInc} < r_{PS,Supp} < r_{PS} \\ r_{PS,SuppInc} \approx 0 \end{cases} \quad (1)$$

where  $P$  is the total amount of problems solved,  $S$  the amount of problems solved,  $SuppInc$  the total amount of problems for which support was sought within the incubator and  $r$  are the partial correlations.

In the first condition we require that the partial correlation controlling for BI support is smaller than the partial correlation controlling for business support sought anywhere and both are smaller than the zero order correlation. Partial correlations have to be smaller than zero order correlations. If this is not the case, then spurious relationships and different causal relationships between the variables are present (Cohen et al., 2003). The farther the partial correlation is from the zero order correlation, the bigger the effect of control is (Cohen et al., 2003). Hence, if  $r_{PS,SuppInc}$  is smaller than  $r_{PS,Supp}$ , it follows that the support sought within the incubator explains a bigger proportion of problems solved. The second condition requires that the partial correlation controlling for business support sought within the incubator is close to zero. If  $r_{PS,SuppInc} \approx 0$  it follows that problems solved could not be correlated to problems experienced without the presence of business support (Cohen et al., 2003).

Similarly, the non-incubator hypothesis will meet the conditions

$$\begin{cases} r_{PS,Supp} < r_{PS} \\ r_{PS,Supp} \approx 0 \end{cases} \quad (2)$$

The same conditions are valid when analyzing individual problems.

### **Descriptive statistics**

Table 4 shows the descriptive statistics on problems, support and solutions. The first column represents the percentage of tenants who experienced a given problem in any degree of seriousness. The second column relaxes the construct by considering the first two points of the five point scale as no problem occurring. The remainder columns represent the percentage of tenants who sought support within the incubator, who sought support anywhere, and who solved their problems, respectively.

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These results show that while large percentages of tenants experience problems, their seriousness is not so high. The most frequent problems and most serious problems are mainly strategic and relate to introducing new products (63.4%), accelerate time to market (64.4%) and get advantage over competitors (69.3%). Expanding market base (80.2%), improving cash flow (62.4%), professionalize management (65.3%) and hire personnel (54.5%) are also among the most frequent and most serious problems.

However, apart from building market base, the most frequent and serious problems are not among the one for which support is sought for. Tenants mainly seek support in cultural and social issues such alliances (33.7%), external advice (47.5%) and comply with regulation (30.7%). Also, support on obtaining finance is highly sought for (42.6%). Yet support within the incubator management is sought for strategic and cultural issues such as increase

credibility (14.9%), write and present a business plan (15.8%) and get external advice (29.7%).

### **Hypotheses testing**

Aggregated results show no support for any hypothesis (Table 5). Aggregated partial correlation between problems experienced and problems solved mediated by incubator support is not low enough to satisfy the condition (1). Similarly, aggregated partial correlation between problems experienced and problems solved mediated by support sought anywhere is not low enough to satisfy the condition (2). Conversely, the results show that support sought within fellow incubated companies does not mediate solving problems. Aggregated partial correlation between problems experienced and problems solved mediated by incubator support is not low enough to satisfy the condition (1).

Results for each problem are shown in Table 6. Some moderation effects were observed: support given by the incubator management is partially responsible for solving problems for introducing new products and writing the business plan. On the other hand, this is not true for improving cash flow, save on labour costs and introduce new technologies. In this case we found that support provided by the BI was partially helping tenants to solve problems but to a lesser extent than support provided anywhere. This confirms condition (2) for those problems.

Our population of BIs is not homogeneous (Table 3). We also tested hypothesis 1 and 2 using only aggregated measures grouping our cases by type of BI: mixed-use vs technology based. Results show moderate support for hypothesis 1 only for technology based incubators (Table 7). This means that tenants housed within technology based BIs who seek support within the incubator management are more likely to solve their problem than those seeking

support directly outside. No analysis was made for individual problems per type of BI given the small number of either samples of mixed-use and technology BIs.

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## **DICSUSSION AND CONCLUSION**

We set out to investigate to what extent BIs help their tenants to develop. Our chief assumption is that tenants experience problems during their development and business incubation comes in the form of help to overcome such problems. Results show that incubators are not intensively helping their tenants even though they (the tenants) experience frequent and serious problems. Tenants experience only about half of the problems we inquired about. Support for solving those problems is not necessarily sought and it is even less likely to be sought within the incubator. Yet differences across the type of problems for which support is sought are visible: while strategic problems are among the most frequent and serious problems tenant face, incubator support is mostly likely sought in human capital development areas. This suggests that tenants' perspective about their problems and their actual needs are not the same. It might also imply a mismatch between the support currently provided by BI and the needs of tenants: while BIs are helping tenants in developing their human capital, their most immediate needs are strategic. This type of mismatch is potentially serious in what regards to solving tenants' development problems. At the same time, it impacts the effectiveness of the BI outcomes as it provides new venture with different skills than those needed.

We hypothesized the relationship between problems experienced and problems solved to be moderated by support sought within the incubator environment. Zero order correlations between experiencing and solving problems are generally low. This means that tenants who experienced problems did not solve them, regardless of help sought. Partial correlations show that having support whether inside or outside the BI does not help explaining the problem solution. Also, differences between seeking support anywhere, within the BI or directly outside are not significant.

The analysis per problem shows that two strategic problems (introduce new products, write and present a business plan), two economic problems (improve cash flow, save on labour costs) and one cultural problem (hire personnel) are being partially solved with the BI's support. While we could not satisfy any of the condition (1), condition (2) is satisfied indicating that on the problem level support anywhere but not specifically from the BI is partially explaining problems solved. The lack of significance in most problems suggests that solving those problems is unrelated to support delivered and, surprisingly, not related to experiencing problems. If solving problems is not correlated to seeking support it means that either problems are not being solved or that solutions are dependent of other unobserved variables. We speculate that this is a result of tenant firms solving problems on their own, that is, without seeking support. Our research design also allows for tenants to declare problems solved that were not necessarily declared as experienced. In this case, this lack of significance in the individual problem analysis might emerge from the fact that tenants remember solution for problems they were previously unaware of.

Condition (2) was confirmed for some specific problems. As hypothesised, this means that the BI is not necessarily helping solving those problems. Again, we speculate that this might be the results of a mismatch of lack of capabilities to help tenant solving those



problems. Tenants are, in this case, seeking support somewhere else than the BI and receiving it effectively.

Finally, we found that the type of BI impacts the value of support given to tenants. Support within technology based BIs helps explaining problem solving while within mixed use BIs no significant correlation was found. The reason might lie in some of the differentiating characteristics of mixed use BIs.

Our results contribute to the current discussion about the impacts of business incubation (e.g. Hackett and Dilts, 2004; Phan et al., 2005) by investigating the current state of business support within business incubators. Our analysis challenges the often accepted view that incubators provide their tenants with a comprehensive, unique and constant package of services. The results can be used to differentiate business incubators based on their ability to help tenants to solve problems.

We highlight two future avenues for research. Firstly, investigate the reason behind tenants not looking for support. This suggests that tenants are solving their problems without any help. This *independence hypothesis* is potentially related to tenants' experience or company age. Secondly, further analysis of the defining characteristics of each type of incubator and its relationship to business support patterns is needed. For instance,, technology based incubators might have a more proactive way of providing support while mixed use incubators deliver on demand.

This study is not without its limitations. We compared support sought for problems to the specific support sought within the BI management. These categories are not mutually exclusive. Further analysis should compare directly the business support provided by the BI and business support sought directly outside. Also, we did not focus in any characteristics

of each BI, except mixed use BIs and technology based BIs. Further analysis will investigate which BI differences impact business support.

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## Tables and Figures

Table 1 – Definitions of Business Incubation

**National Business Incubation Association.** Business incubation is a business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator management and offered both in the business incubator and through its network of contacts. A business incubator's main goal is to produce successful firms that will leave the program financially viable and freestanding. These incubator graduates have the potential to create jobs, revitalize neighbourhoods, commercialize new technologies, and strengthen local and national economies (NBIA, 2007).

**United Kingdom Business Incubation.** Business Incubation is a unique and highly flexible combination of business development processes, infrastructure and people, designed to nurture and grow new and small businesses by supporting them through the early stages of development and change (UKBI, 2007).

**United Nation Development Programme.** (...) incubators exist to support the transformation of selected, early-stage business with high potential, into self-sufficient, growing, and profitable enterprises. By reducing the risks during the early period of business formation, the incubator is intended to contribute to economic growth through sustaining enterprises that otherwise fail due to a lack of adequate support; creating present and future jobs, and other socio-economic benefits (Lalkaka and Bishop, 1996).

**European Commission.** A business incubator is an organisation that accelerates and systematises the process of creating successful enterprises by providing them with a comprehensive and integrated range of support, including: Incubator space, business support services, and clustering and networking opportunities.

By providing their clients with services on a 'one-stop-shop' basis and enabling overheads to be reduced by sharing costs, business incubators significantly improve the survival and growth prospects of new start-ups.

A successful business incubator will generate a steady flow of new businesses with above average job and wealth creation potential. Differences in stakeholder objectives for incubators, admission and exit criteria, the knowledge intensity of projects, and the precise configuration of facilities and services, will distinguish one type of business incubator from another (EC, 2002).

**Organisation for Economic Co-operation and Development.** Technology incubators are a specific type of business incubator: property-based ventures which provide a range of services to entrepreneurs and start-ups, including physical infrastructure (office space, laboratories), management support (business planning, training, marketing), technical support (researchers, data bases), access to financing (venture capital funds, business angel networks), legal assistance (licensing, intellectual property) and networking (with other incubators and government services) (OECD, 1997).

Table 2 – List of problems organized according to Groen et al.'s four capital model (2008)

<b>Capital</b>	<b>Problem (derived from Groen et al., 2008; cf. Parsons, 1964)</b>
Strategic	Accelerate Time-to-Market
	Get advantage over competitors
	Introduce new products
	Increase credibility
	Write/Present BP
	Generate new business ideas
Economic	Obtain finance
	Save equipment costs
	Improve cash flow
	Save on labor costs
Cultural	Professionalize management
	Hire personnel
	Comply administrative regulations
	Get external advice
	Enhance entrepreneurial skills
	Introduce new technology
	Find office/production space
Social	Build/expand market base
	Ally with enterprises
	Establish suppliers contacts