This paper has two main purposes: to investigate value added contributions of business incubation programs (BIPs) from the perspective of incubator and to assess the effectiveness of BIPs by exploring circumstances (factors) where the BIPs are perceived as adding greater value and benefit to the incubator clients. Based on the previous research, this study developed a conceptual framework and several measures to assess the value added contributions and effectiveness of BIPs to incubator clients. It is conceptualized that while the value added contribution of the programs provide perceived clients’ benefits, effectiveness results in a higher level of benefits to clients. The effectiveness of BIPs was assessed by examining the factors affecting the variance of the value added contribution using a stepwise regression analysis. The proposed conceptual framework was tested using responses of 111 clients located in 24 business incubators in Australia. The results indicate that BIPs have resulted in significant value added contributions as perceived by the incubator clients. These include: reducing operational costs, enhancing business image, shortening learning curve, helping to solve business problems faster, increasing confidence, and accelerating overall business development. However, the perceived added value contributions varied among clients and the effectiveness of BIPs was found to be affected by seven factors: perceived usefulness of assistance services, intervention competence of incubator management, client age, client previous entrepreneurial experience in similar business area, length of clients’ tenancy in an incubator, business size and incubator age.

Key words – small business, enterprise development, business incubation program, business incubator.

INTRODUCTION

The establishment and growth of small and medium enterprises (SME) have been regarded as the main contributors into the development and growth of the economy of most nations including Australia. The majority of businesses in Australia are classified as SME. These businesses have created job opportunities for more than 60% of the Australian labor force and contributed significant amounts to the Australian GNP and tax income. Other significant roles of SME have also been well recognized including stimulating economic competition, promoting innovation, producing goods and services efficiently, and being potential sources or seedbeds for larger enterprises. Small businesses tend to use local resources and produce goods and services for local or new markets which might be uninteresting and unprofitable to larger companies (ABS; 2009; Acs and Audretsch, 1992; OECD, 1998).

Despite the significance of their role in the economy, the failure rate of SME is high. Evidence from relevant studies suggest that a majority of SME (more than 75%) failed during the first five years of their operation due to a wide range of factors. Barriers such as lack of managerial and entrepreneurial skills; limitation in technical know-how; insufficiency of capital needed to run and develop business; lack of access to capital sources, market information and business networks; and time and competition pressure were identified as major factors of business failure (Chetty, 2003; Martin and Staines, 1994; Scharborough and Zimmerer, 2002; Watson and Everett, 1996; Welsh and White, 1981).

In response to the importance of SME on one hand and the high failure rate on the other hand, a number of enterprise development programs have been promoted to assist SME to solve their problems.
and enhance their survival rate. Over the last decade, business incubators or business incubation programs (BIPs) have emerged to be an effective mechanism and strategy to enhance the formation, development, growth and survivability rate of new and existing SME. Evaluation of the incubation programs revealed amazing results indicating that well managed business incubators could boost the survival rate of start-up businesses to 80-90 per cent, as compared to that of new businesses under normal circumstances (Adkins, 2002; Allen 1985; Campbell 1987; Knopp, 2007; Verduin and Roberts 1984).

Initially, business incubators emerged as a response to growing economic problems such as declining industrial regions, high failure rates of small businesses and unemployment in Western Europe and North America (Campbell and Allen 1987; Gatewood, Ogden and Hoy 1985). The high success rate of the programs resulted in business incubators becoming a worldwide popular and promising strategy for entrepreneurship development (OECD 1999). Currently, business incubators have been established in both developed and developing countries including in Australia (Adegbite 2001; Bruton 1998, Colombo and Delmastro, 2002; Harwit 2002; Heydebrec, Klofsten and Maier, 2000; Lee, 1997; OECD, 1999; Peña, 2004; Yunos 2002). The number of incubators established over the world grew rapidly from 100 at the beginning of the 1980s to approximately 3,500 in 2001 (Lalkaka 2003; Nolan 2003; UN 2000).

In line with the proliferation of the establishment of business incubators, numerous studies have also been conducted to assess the effectiveness incubation programs (Allen 1985; Allen and Bazan 1990; Bruton 1998; Campbell 1987; Dowling 1997; Colombo and Delmastro, 2002; Harwit 2002; Lalkaka 2003; Lee 1997; Lichtenstein 1992; Mian 1996; Molnar et al. 1997; Nolan 2003; OECD 1997; Rice 2002; Verduin and Roberts 1984; Xu, 2010; Yunos 2002). However, the existing incubator studies encountered several; limitations and a number of issues have been unexamined and were recommended for future research. There are at least three important limitations identified, including: (i) lack of consensus on how to measure the success of BIPs due to a wide variance between business incubators in terms of sponsorship, specific objectives; policy and services; (ii) most of the data in the existing studies were secondary data obtained from incubator managers and hence little is known about the value added contributions of incubation programs to clients; and (iii) few studies have used primary data obtained from incubator clients to assess the value added contributions of BIPs to clients and to identify factors contributing to the effectiveness of the programs to clients (Culp, 1996; Mian, 1996; Lichtenstein, 1993; Rice, 1993). However, the sample size of these studies was small and resulted lack of generalization in the findings. Accordingly, this present study was designed to address some of the limitations identified by the previous studies.

**Research Objectives**

Based on the background mentioned above, this study sets two main research objectives as follows:

a. To investigate value added contributions of BIPs from the perspective of incubator clients using a measure which was specifically developed from the existing concept and practice of BIPs, and

b. To find out situations where the incubation programs were perceived to add greater value to clients by investigating factors affecting the variation of the perceived value added contributions.

**Developing Theoretical Framework**

By definition, a BIP can be considered as an enterprise development strategy aimed at assisting and accelerating the process of formation, development, and survivability of new and existing enterprises in the community. It does this by pooling potential resources including potential businesses (clients) from the community in a business incubator facility and then providing the clients with a wide range of business assistance services (Abduh et al. 2007; Rice and Mathew, 1995). The practice of a business incubation program is like a metaphor of raising chickens (Temali and Campbell 1984). ‘Like a mother hen, the incubator helps the new ventures to hatch, grow and leave’ (Carroll 1986, p. 25). As illustrated in Figure 1, an incubator selects potential new and small businesses in the community to be its clients, facilitates the clients with a comprehensive and integrated range of support services to enhance the success of their businesses, and then, after a period of time, the incubator releases the assisted clients to become independent, self-sustaining businesses in their respective markets and to provide contributions to their community (Peters, Rice and Sundararajan, 2004; Rice and Mathews, 1995).
Management of business incubator

A business incubator is typically run by a manager and some staff. The incubator management has two main tasks: (a) managing the operation and administration of incubator facilities, including fundraising, marketing the incubators, and screening clients; and (b) ensuring, as the primary incubation objective, a positive and dynamic environment conducive to the success of clients’ businesses by providing a wide range of direct and indirect business assistance services (Abduh et al. 2007; Rice and Matthews 1995; Wolfe et al. 2001). The latter is usually undertaken by providing the clients with technical and moral support through either direct intervention, such as, counselling and mentoring or by linking the clients with assistance providers or resources within a network inside and outside incubators.

Evidence from previous research suggests that a well managed incubator could improve the effectiveness of intervention through services they provided to clients. The effectiveness of the intervention by the incubator management was found to be associated with several attributes such as a good understanding of problems faced by clients; communication skills; frequency of interaction between management and clients; being proactive and approach/intervention skills. The more competent the incubator management the more effective the incubator intervention to clients (Lichtenstein, 1993; Rice, 1993; Wolfe et al., 2001).

![Figure 1 The Process of Business Incubation](Source: Rice and Matthews (1995, p.25).

Incubator assistance services

A business incubator typically manages potential resources and provides a wide range of business assistance services aimed at assisting and benefiting its clients. The rationale of the provision of business assistance services is based on the fact that a majority of new businesses do not have all of the necessary and critical resources needed to start, grow and survive (Scarborough and Zimmerer 2002; Teepstra and Olson, 1993; van Auken, 1999; Welsh and White, 1981). Barriers faced by the majority of new businesses include insufficient initial capital and lack of access to financial sources; limitation in managerial/business skills and technical know-how; lack of access to technical assistance and market information; and lack of skills in dealing with time pressure and an uncertain business environment (Cromie 1991; Kazanjian 1988; Shepherd and Shanley 1998; Terpstra and Olson 1993; Van Auken 1999). The provision of a wide range of incubator services was aimed to assist clients to overcome problems associated with the barriers. Incubator services are typically managed and provided on the basis of resource sharing and are therefore expected provide significant benefits and value added to the clients (Lichtenstein and Lyons 1996; Tornatsky et al. 1996).

Typical business incubators offer various business assistance services ranging from tangible (e.g. physical facilities and office equipment) to intangible services (e.g. emotional support) through direct
counselling by incubator managers, and interaction with other clients and bridging networks to business people outside incubators. The provision of incubator services is adopting a holistic mechanism by considering the needs of start-up businesses for solving entrepreneurial issues (Dowling 1999; Temali and Campbell 1984; Rice, 1993; Tornatzky et al., 1996). Incubator services and their expected benefits can be classified into three main groups: facilities related services, counselling and business assistance services and accessibility to incubator networks (Abduh et al. 2007) as will be discussed in the following passages.

**Facilities related services**

Provision of various facilities to clients’ businesses at a lower price compared to market price has been one of the most unique attributes of incubator services. Since rent is a major expense for fledging enterprises, incubators provide clients with affordable and flexible space. Other building facilities typically include shared conference or meeting rooms, cafeteria and lunch rooms, building security, and other amenities associated to physical infrastructure and real estate. Business incubators also provide clients with shared office services and equipment that start-up business require but typically cannot afford or often neglect or ignore. The practice of resource sharing is intended to yield a synergistic cost advantage (Govindajaran and Fisher 1990; Porter 1985). Accordingly, by offering these basic office services, business incubators at a minimum level provide opportunities to reduce costs and to save time for entrepreneurs who want to start their businesses immediately (Lichtenstein and Lyons 1996; Tornatzky, et al. 1996; von Zedtwitz 2003; Wolfe et al. 2001).

Other important services related to facility includes an enhancement of visibility and credibility of clients’ businesses by transferring the credibility and visibility of the incubator facility to clients through the use of incubator postal address, positive word-of-mouth among business people within the incubators’ networks and contacts (Culp 1996; Martin 1997; Smilor and Gill 1986). The provision of these services would add value to clients in many ways including enhancing business image, increasing confidence and reducing advertisement and marketing costs.

**Counselling and business assistance related services.**

Counselling or mentoring services cover a wide range of professional business development assistance services including developing a business plan and offering support in strategic planning, accounting, financial management, sales or marketing advice, legal advice, educating on government regulations, product development, and employment assistance. Typical incubators also offer training or educational services such as short courses, seminars, or workshops (Dowling 1997; Rice 1993). Since capital is necessary at various stages of the business development process, business incubators also offer or assist their clients to obtain capital by acting as a broker to facilitate the interaction between the clients and the potential investors. Added value or benefits expected from these services by clients include improved entrepreneurial and managerial skills, better understanding of technical know-how, shortened learning curve, increased confidence, access to more business information, solve problem faster, reduce business costs, and accelerate the development of businesses (Lichtenstein and Lyons 1996; Robson and Bennett, 2000; Temali and Campbell 1984; Tornatzky, et al. 1996; von Zedtwitz 2003; Wolfe et al. 2001).

**Accessibility to internal and external incubator networks.**

Admission into an incubator facility implies that the clients are provided with wide access to the incubator network as a means of broadening sources of information, transmitting information between entrepreneurs, building markets, lowering business costs and saving time for their client firms (Hansen et al. 2000; Lichtenstein 1992; Smilor and Gill 1986). By locating clients under one roof and providing them with a common meeting room, cafeteria and the like, incubators create opportunities and an environment conducive to client interaction and the creation of synergy amongst them. This environment allows clients to interact spontaneously, to communicate closely with one another, share resources, experience and learn from each other and share the ups and downs feelings leading to reduction of isolation (Lichtenstein 1993; Molnar et al. 1997; Wolfe et al. 2001). Clients are also given access to resources, information and to business people outside incubators. Access to outside information sources, for example, may place the entrepreneur clients in a unique position to capitalize on opportunities, which are not evident to others (Cooper, Folta and Woo 1991; Heydebreck, Klofsten, and Maier 2000; Ritter and Gemunden, 2003).
Value added and effectiveness of BIPs

The term ‘value added’ in the business incubator industry refers to ‘specific ways that an incubation program enhances the ability of its clients to survive and grow in business that represents ‘the tangible ways incubators provide benefits to their clients’ (Allen and Bazan, 1990, p.2). This suggests that the effectiveness of BIPs is associated with benefits resulting from the programs as gained by incubator clients, implying that the more benefits to clients the more effective the BIPs (Abduh et al, 2007).

Factors affecting the effectiveness of BIPs

BIPs are assumed to be effective if they add significant value or benefits to their clients. However, findings from the previous incubator research indicated that value adding contributions or benefits of the practice of BIPs varied among clients (Allen and Bazan, 1990; Culp, 1996; Lichtenstein 1993; Mian, 1996; Rice, 1993). The variation of the value added contributions and benefits of incubation programs was found to be associated with several factors including; quality or usefulness of incubator services (Allen and Bazan, 1990; Rice, 1993); intervention competence of incubator management (Lichtenstein, 1993; Rice, 1993); size, sponsorship and location of business incubators (Allen and Bazan; Lichtenstein, 1993); types of clients’ businesses (Allen and Bazan, 1990; Culp, 1996) clients’ personal characteristics (Allen and Bazan, 1990; Culp, 1996; Lichtenstein 1993; Mian, 1996; Rice, 1993). These existing studies however faced some limitations such as lack of generalization due to a small sample size and they then recommended that more research is needed to confirm their research findings.

To respond to the issues identified in the previous research, the second research objective of this present study aimed to investigate circumstances where BIPs have added more value or benefits to their clients by investigating factors affecting the variation of the added value. Most factors considered in this study are the factors found by the previous studies. The considered factors include the usefulness of incubator services (Allen and Bazan, 1990; Rice, 1993); intervention competence of incubator management (Rice, 1993; Lichtenstein, 1993); characteristics of incubators in terms of location, size, and age (Allen and Bazan, 1990; Rice, 1993; Lichtenstein, 1993); characteristics of clients’ business in terms of types, age, stage and size (Allen and Bazan, 1990; Rice, 1993; Lichtenstein, 1993); and clients’ characteristics in terms of gender, age and entrepreneurial experience (Allen and Bazan, 1990; Culp, 1996).

RESEARCH METHOD

Measures.

Besides using relevant existing measures, this research also developed and tested two measures, namely the value added contributions of BIPs to clients and the intervention competence of incubator management, by referring to the concepts and findings of the previous research. The value added contributions in this study refer to benefits resulting from the practice of BIPs to incubator clients. These include enhanced business image; reduced operating costs; shortened learning curve; solve business problem faster; obtain more business information; increase confidence; and accelerate overall business development. This variable was estimated through clients’ perceptions of those benefits using a five-point Likert scale ranging from strongly disagree to strongly agree. The overall value added contribution was measured using a composite score of benefits items. The higher the composite score the greater the added value. The intervention competence of incubator management was assessed using a composite measure and was measured through clients’ perceptions of their incubator management in terms of management’s understanding of clients’ business problems, frequency of interaction, closeness of interaction, approach and intervention skills of incubator management using a five point Likert scale ranging from strongly disagree to strongly agree.

The quality of incubator services was measured through clients’ perceptions of 21 types of common services using a four point scale ranging from not at all to very useful. Incubator age and size, business age and size, length of tenancy, and clients’ age were measured using ordinal numbers. Business size was measured using the number of employees and was classified into two variables: size when the business entered the incubator and the business size as the survey was being conducted. Clients’ entrepreneurial experience was classified into three groups: unexperienced, experienced in a different business area, and experienced in a similar business area.
Data

The data for this study were collected following a survey method using a self administered questionnaire. An assessment was undertaken to ensure the content validity and readability of the questionnaire prior to sending it to respondents. At the time the survey was being conducted, information about the precise number of operating incubators in Australia was not available but 38 incubators could be contacted. Of the 38, a total of 24 contactable incubators were willing to participate in the survey. The questionnaire was then mailed to 502 clients who were located in the 24 participating business incubators. After follow up a total of 129 questionnaires were returned of which 111 responses representing clients from 24 incubators were deemed usable for analysis. The final response rate stood at 22.11 per cent, which is deemed acceptable as it was relatively high compared to the typical response rate of mail surveys ranging from 5-15 per cent (Alreck and Settle, 1995). Moreover, a non-response bias analysis was conducted by using a method proposed by Armstrong and Overton (1977) and revealed that there is no non-response bias.

Data analysis technique

The data were analyzed using descriptive and quantitative analysis techniques including Cronbach alpha, one-sample t-test and multivariate of a stepwise regression analysis (Hair et al. 1995; Malhotra et al. 1996; Tabachnick and Fidell 1996). The Cronbach alpha was used for assess validity and reliability of the developed measures. The one sample t-test was used to test the significance of the individual benefits of BIPs to clients with a constant of ‘3’ representing ‘no effect’ and the stepwise regression technique was used to investigate circumstances or factors affecting the effectiveness of BIPs.

Findings and Discussions

Value added contributions of BIPs.

This developed measure consists of nine types of conceptualized benefits of incubation programs to incubator clients. The results of the survey (n=111) and data analysis using one-sample t-test to indicate the significance of individual items are summarized in Table 1 in a descending order of the mean value.

The findings indicate that BIPs do add value to their clients. ‘Enhanced my business professional image’ was found to be the greatest benefit of BIPs as perceived by the majority of responding clients (71% on the basis of agree and strongly agree). It is followed by ‘reduced my business operating costs’ (66%), ‘accelerated the overall development of my business’ (62%), and ‘increased my confidence to develop my business’ (60%). The results of t-test suggest that the mean value of these for benefits was higher than the middle point of ‘3’ and the difference was statistically significant. However, less than 50% of the respondents perceived that they gained the remaining five types of the benefits from the process of BIPs, namely ‘enhanced competitiveness of my business’ (44%), ‘provided me with information I needed to develop my business’ (45%), ‘increased my entrepreneurial and business skills’ (39%), ‘shortened my learning curve’ (33%), and ‘saved time, helped me to solve my business problems faster’ (37%).
Table 1. Clients’ ratings on value added contributions of BIPs and the results of t-test (N=111)

<table>
<thead>
<tr>
<th>Value added contributions of BIPs</th>
<th>Ratings</th>
<th>One sample t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree (%)</td>
<td>Disagree (%)</td>
</tr>
<tr>
<td>Enhanced my business professional image</td>
<td>1.8</td>
<td>5.4</td>
</tr>
<tr>
<td>Reduced my business operating costs</td>
<td>5.4</td>
<td>18.0</td>
</tr>
<tr>
<td>Accelerated the overall development of my business</td>
<td>3.6</td>
<td>9.9</td>
</tr>
<tr>
<td>Increased my confidence to develop my business</td>
<td>2.7</td>
<td>14.4</td>
</tr>
<tr>
<td>Enhanced the competitiveness of my business</td>
<td>5.4</td>
<td>15.3</td>
</tr>
<tr>
<td>Provided me with information I needed to develop my business</td>
<td>5.4</td>
<td>20.7</td>
</tr>
<tr>
<td>Increased my entrepreneurial or business skills</td>
<td>6.3</td>
<td>16.2</td>
</tr>
<tr>
<td>Shortened my learning curve</td>
<td>3.6</td>
<td>19.8</td>
</tr>
<tr>
<td>Saved time; helped me to solve my business problems faster</td>
<td>2.7</td>
<td>23.4</td>
</tr>
</tbody>
</table>

As seen in Table 1, in spite of not being a majority, approximately one-fourth of the responding clients did not agree with the following three statements: ‘saved time, helped me to solve my business problems faster’ (26 per cent), ‘provided me with information I needed to develop my business’ (26 per cent), and ‘shortened my learning curve’ (23 per cent). The results of t-statistics suggest that these two benefits were significant at a confidence level of 10 and 11%, respectively. However, the responses on the basis ‘neither disagree nor agree’ or ‘not sure’ were found higher for these two benefits, especially ‘shortened learning curve’ compared to those on the other benefits. These
responses were regarded as plausible as many of the respondents were novices seminal and had no business experience. It was assumed that those respondents might not have a basis to make a comparison. Nevertheless, the findings could have several important implications for incubator management in serving their clients in the future as will be further discussed below.

**The effectiveness of BIPs**

The assessment of the effectiveness of BIPs in this paper is presented on an aggregate basis of the overall value added contributions by using a composite variable consisting of the nine types of the incubation benefits. Accordingly, a composite score of the overall benefits to a client ranges from ‘9’ indicating that ‘the client strongly disagreed with each of the nine benefit types to ‘45’ indicating ‘the client strongly agreed with each of the nine benefits types’. The calculated Cronbach alpha for this composite variable using the 111 clients’ responses revealed a value of 0.809 suggesting a high degree of internal consistency and hence was regarded as a reliable measure.

The results of data analysis indicated that the composite benefits of individual clients ranged from 16 to 45 with a mean value of 30.75 and the results of one sample t-test using a constant of ‘27’ indicated that the mean difference is statistically significant at a confidence level of 1%. These findings suggest that BIPs were viewed by the participating clients as adding significant values and as a mechanism for cultivating their businesses through the tangible and intangible benefits resulting from the process of business incubation. These findings also provide more evidence to indicate that BIPs in general were an effective strategy to boost the establishment and growth of new enterprises as identified by previous research.

However, the scores of the composite variable which were ranging from 16 to 45 also indicated that the overall value added contributions of BIPs considerably varied among clients, suggesting that the incubation programs were effective to the clients on average or more effective for some clients but were less effective for other clients. As the second objective of this research, the variation of the clients’ perceived benefits was examined to find out circumstances when incubation programs had added more value (more effective) to clients by using a stepwise regression analysis. The composite variable of benefits served as the dependent variable and the considered factors (incubator services, intervention competence of incubator management, clients’ business characteristics, and clients’ persona characteristics) were served as the independent variables. Table 2 presents a summary of the results of the data analysis.
Table 3: Results of the stepwise regression analysis

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>R Square Change</th>
<th>Regression Coefficients</th>
<th>t-statistics</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of Incubator Services</td>
<td>.318</td>
<td>3.462</td>
<td>0.33</td>
<td>9</td>
</tr>
<tr>
<td>Intervention Competence of Incubator Management</td>
<td>.105</td>
<td>.081</td>
<td>0.34</td>
<td>0</td>
</tr>
<tr>
<td>Client Age</td>
<td>.052</td>
<td>-.235</td>
<td>-0.359</td>
<td>3</td>
</tr>
<tr>
<td>Client Entrepreneurial Experience in Similar Business Area</td>
<td>.053</td>
<td>4.158</td>
<td>0.22</td>
<td>3</td>
</tr>
<tr>
<td>Length of Tenancy</td>
<td>.045</td>
<td>.861</td>
<td>0.25</td>
<td>2</td>
</tr>
<tr>
<td>Bus. Size at Entry</td>
<td>.045</td>
<td>-2.671</td>
<td>-0.238</td>
<td>-3</td>
</tr>
<tr>
<td>Incubator Age</td>
<td>.023</td>
<td>-.270</td>
<td>-0.170</td>
<td>-2</td>
</tr>
<tr>
<td>Intercept</td>
<td>-</td>
<td>25.400</td>
<td>-</td>
<td>9.187</td>
</tr>
</tbody>
</table>

| R² = .641 | Note: This regression met the assumptions of multivariate regression analysis: the residuals (error terms) are normally distributed and linear, variance is constant (homoscedastic); and there is an absence of significant multicollinearity, |

The results of the stepwise regression procedure revealed that the variation of the clients’ perceived benefits was significantly affected by seven of the considered factors namely: (a) quality of incubator services, (b) intervention competence of incubator manager, (c) clients’ age, (d) client entrepreneurial experience in similar business area, (e) length of tenancy in business incubator, (f) business size at entry, and (g) incubator age. The results also indicated that the regression met the assumptions of multivariate regression analysis: the residuals (error terms) are normally distributed and linear, variance is constant (homoscedastic); and there is an absence of significant multicollinearity. The value of R² of 0.641 suggests that approximately 64% of the variation in the clients’ perceived benefits was affected by those seven factors.

The quality of incubator services was found to be the most significant factor affected the overall value added contributions of BIPs to clients in terms of the nine types of incubation benefits. This finding supports that of the previous studies indicating that the most important feature of an incubator is the provision of excellent services. The better the quality of various services provided by a business incubator the greater the value added to its clients (Allen and Bazan, 1990; Culp, 1996; Kang, 1992; Lichtenstein, 1993; Rice, 1993). For example, affordable space, shared office equipment and facilities, and networking with others could significantly reduce business operating costs, solve problems faster, and accelerate the overall development of clients’ businesses. This finding also suggests that the better the incubator services the higher the effectiveness of BIPs to their clients (Abduh et al., 2007).

The intervention competence of incubator management was found to be the second most significant factor affecting the effectiveness of BIPs to clients. As mentioned previously, this variable was
assessed using a developed measure consisting of five attributes of effective intervention by incubator management as derived from the concept and findings of previous research (Lichtenstein, 1993; Rice, 1993, Wolfe et al., 2001). The developed measure had a calculated Cronbach alpha of 0.85 indicating a high degree of internal consistency and was assumed to be a reliable measure. The findings suggest that it is clear from the perspective of incubator clients that incubator management should involve a combination of several skills in providing intervention or assistance to clients in order to improve the effectiveness of BIPs. The intervention competence includes: having a good understanding of clients and their business problems; being proactive rather than reactive; providing more time to interact with clients or the frequency of interaction; having good interpersonal communication skills; and skill in arranging the right time and the remit of the direct intervention to clients.

Another incubator-related factor which was found to be statistically significant but negatively related to the value added contributions of incubation services was the age of incubators. The finding suggests that the clients of younger incubators perceived greater value added contributions than the clients who were located in older incubators. There are some plausible explanations of this finding. Firstly, the initial capital to establish a business incubator was usually supported by government. However, the government financial support for an incubator decreased as the incubator age increased (Allen and Bazan, 1990). This means that older incubators should self support. In this situation, incubator management may pay more attention to the ways of making money from and for their incubator and hence have less time and attention to assist their clients. Secondly, older incubators were typically established in vacant and old government owned buildings while most younger incubators were established in new buildings located in a more strategic area and were organized by private organization with a more professional management (Adkins, 1997; Allen and Bazan, 1990). The differences in building layout, management and location could be regarded as the causes of differences in the contributions of incubators to their clients (Lichtenstein, 1993).

Two of clients’ personal characteristics were found to be statistically related to the value added contributions of BIPs. Previous entrepreneurial experience in a similar business area was found to be statistically significant and positively related to the perceived value added contributions of BIPs. This finding suggests that business incubation services are felt to be more effective for entrepreneurs who run a firm which is in a similar business area to their previous business. The finding may also imply that entrepreneurs experienced in a similar business area have a better understanding about their businesses problems and needs which could be solved and accommodated easily in their incubator compared to outside the incubator. In contrast to the previous entrepreneurial experience, clients’ age was found to be negatively related to the value added contributions of BIs. It is also important to note that no significant relationship between entrepreneurial experience and clients’ age was found suggesting no multicollinearity among those two variables. Compared to older entrepreneurs, young entrepreneurs typically do not have sufficient resources to start and run their business (Cromie, 1991; Kazanjian, 1988). The results of this study suggest that the BIPs were perceived as adding greater value by younger entrepreneurs than older ones. This may also suggest that older clients tended to have a higher level of expectation of the benefits from the practice of BIPs than younger clients. This tentative finding however needs to be examined in the future research.

The results of the stepwise regression indicate that two of clients’ business characteristics were found to be significantly related to the value added contributions of BIPs to clients. Namely, length of tenancy and business at entry to the incubator. A business incubator typically sets a policy of the length of tenancy for clients’ business to stay in the incubator facility during the process of BIPs. However, there has been no consensus on how long the clients’ business should stay in the incubator facility. Each incubator usually has their own policy in line with the main and specific objectives of their incubator establishment (Aerts, MatthysSENS, and VandenbemPPT, 2007; Allen and McCluskey, 1990). According to the results of data analysis in this research, the length of tenancy in an incubator facility was found to be statistically significant and positively related to the overall value added contributions of BIPs to clients. The finding was plausible and obvious since an incubator provides a wide range of services and benefits which are not affordable or available in the other places. However, the finding may suggest that incubator management should set an appropriate length of tenancy. A too long tenancy may discourage independency and competition ability of the respective clients as well as the turnover of tenancy and opportunities for other new businesses.
Another business characteristic found to be significantly related to the overall value added of BIPs was the size of clients’ business. The relationship was negative suggesting that smaller businesses perceived the BIPs as adding more value than bigger businesses did. This finding is plausible since the majority of new businesses lack potential resources, which is attributed in the literature as “resource poverty” (Welsh and White, 1981). Size of business can be regarded as a level of the resources poverty or the ability of a business to develop and grow, and the ability is typically greater for bigger businesses than smaller ones. Compared to bigger ones, smaller businesses have lesser resources and ability to grow by themselves. Provision of typical incubator assistance services were more useful and provided greater benefits to smaller businesses than bigger businesses due to their ability to establish by their own resources prior to entry to an incubator. This finding may also suggest that the needs of bigger businesses may be greater than those that incubator could provide. In relation to this finding and that of the length of tenancy, it is suggested that incubator management should prepare a set of screening practices in selecting clients to enter and incubator as well as the length of tenancy policy in order to add greater value and improve the effectiveness of BIPs to clients (Aerts, Matthyssens, and Vandenbempt, 2007; Allen and McCluskey, 1990). These findings merit for future research.

CONCLUSIONS AND RECOMMENDATIONS

This study has strived to shed light on some previously unexplored areas in business incubation services by developing a number of measurement instruments as well as investigating factors influencing the effectiveness of the practice of BIPs to incubator clients. Research findings suggest that BIPs do add significant value and contribute to the establishment, operation and development of new businesses as perceived by incubator clients. The value added contributions include reducing operational costs, enhancing business image, shortening learning curve, helping to solve business problems faster, increasing confidence, providing information, and accelerating overall business development. From the viewpoint of the incubator tenants, the implications of the findings are obvious. True to their name, BIPs were viewed by the participating tenants as a mechanism for cultivating their firms through both the provision of various types of necessary services and the tangible and intangible benefits resulting from the incubation programs, both of which have been recognised in the literature as the critical factors for the success of start up businesses. This clearly reflects that business incubators are ‘a safe haven’ (Brand, 1991), to ‘bring new businesses out of their shell’ (Buss, 1997).

The value added contributions of BIPs were however varied among clients suggesting a variation of the effectiveness of BIPs between the clients. The variation was found to be affected by seven of the considered factors: quality of incubator services, intervention competence of incubator manager, clients’ age, client entrepreneurial experience in similar business area, length of tenancy in business incubator, business size at entry, and incubator age. The findings suggest that a business incubator would be effective if it provides quality services and is managed by experienced managers having a high level of intervention competence in terms of an ability to understand the problems faced by clients, good communication skills, and proactive and intervention skills. The incubator management should also be aware of the personality of its client as several clients’ characteristics were found to be significantly associated with the value added contributions. These features can be gained from the process of business incubation services such as previous entrepreneurial experience which helped the clients to develop a better understanding of their business problems and needs.

Limitations and future research

As with other studies, this research also has some limitations that are worth noting. Firstly, the study is exploratory in nature and limited in its focus in terms of collection of data from a single country. Therefore, the findings may not be generalisable across other countries and cultures. Future research can broaden the scope of the study by including samples from another country with similar background such as New Zealand. Secondly, the paper uses stepwise regression analysis to explore causal relationships between variables. Future research can use more sophisticated statistical techniques such as structural equation modeling (SEM) to make the analysis more rigorous.
REFERENCES


Australian Bureau of Statistics (2009), Small Business in Australia, Cat. No. 1321.0, ABS, Canberra.


NBIA. (2010). Business Incubation FAQ. (http://www.nbia.org)


