

# **Stakeholder Goal Achievement in Australian Business Incubators**

By:

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## **ABSTRACT**

Australian state and federal governments have funded business incubators since the early 1990s, the typical purpose of this investment being to provide a nurturing environment for business start-ups while contributing to local economic development. However, this summation of the functions of business incubation does not identify an essential dichotomy concerning the goals of incubator sponsors.

Business incubators depend upon a range of stakeholders (including board members, managers and tenants) for their initial establishment, and subsequently, in their ongoing operation. A review of the extant literature suggests the presence of a ‘research gap’ in the literature. This ‘gap’ indicates a failure to consider the goals, benefits and costs accruing to, or being borne by, Australian business incubator stakeholders, especially those involved in boards of management, this group, usually without recompense, providing ongoing governance, mentoring, business advice and other essential services to their incubators.

The literature review provided the necessary background which allowed the researcher to develop a conceptual framework for the study acting as the foundation of the thesis. The research involves qualitative and quantitative methodology. In the first instance, a series of interviews of incubator board members, managers and tenants was completed and documented. Material derived from the interviews, along with internet sourced information, provided a qualitative data base of Australian incubation practice supporting the development of an e-mail survey that was distributed throughout the incubator industry. A series of propositions were tested using survey response material, interpretation including a descriptive investigation followed by bivariate and multivariate analysis.

This study has identified a link between institutional and stakeholder theories in the business incubation sector. The findings, concerning some issues, indicate that incubator stakeholders – particularly board members and managers – are satisfied that they are achieving their goals. However, tenant respondents, possibly due to the differing goals and composition of the tenant cohort, indicate that their goal achievement expectations are not being realised.

# STUDENT DECLARATION

I, Graeme Edward Trewartha, declare that the PhD thesis entitled ‘Stakeholder Goal Achievement in Australian Business Incubators’ is no more than 100,000 words in length exclusive of tables, figures, appendices, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

Signature ..... Date .....

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Although I did not receive the level of responses I might have preferred from survey participants, I was able to discuss, and to be advised about, business incubator issues with many people, Australia wide. Input from many of the incubator sector's 'true believers', including Brian Gould and Jeff Bothe, has made the journey a rewarding one.

In Bendigo, my home town, I was able to access photo-copying equipment from the Golden Dragon Museum thanks to the support of Anita Jack, while the senior librarian at La Trobe University, Bendigo, proclaimed me as one of the library's 'patrons' so that I could gain full access to library facilities. La Trobe's Professor Terry Mills also provided assistance concerning analysis of survey responses.

Completion of PhD studies on a remote basis is only possible if one is surrounded by supportive family and friends. My four children (Andrew, Nicole, Suzette and Yvette), their partners (Murray, William and Lee-Anne) and my siblings have provided valuable assistance whenever it was requested. I would hope that each of my grand-children (Erynn, Samara, Bridget, Callum, Jasmine, Miller, Sophia, Julia and Lola) are able to grasp every opportunity in pursuing education as a lifelong activity as has been my good fortune, culminating in participation in the PhD programme at Victoria University.

My thanks and love to my best mate, Jan, and to my late parents, Joyce and Edward. These three people provided initial encouragement and core support. I dedicate this thesis to them.

## LIST OF PUBLICATIONS AND AWARDS

### **Publications:**

Trewartha, G and Breen, J 2008, 'The Definition of a Business Incubator: Almost Forty Years of Trying', paper presented to the *Ninth International Business Research Conference*, Novotel Hotel, Melbourne, Australia, November 2008.

Trewartha, G and Breen, J 2010, 'Stakeholder Goal Achievement in Australian Business Incubators', paper presented to the *Eighth AGSE International Entrepreneurship Research Exchange Conference*, Swinburne University of Technology, Hawthorn, Australia, February 2011.

### **Awards:**

Recipient of the award of '*Fellow of the College*' provided by Bendigo College of Advanced Education, September 1990. The award was provided, as stated in the testimonial, in recognition of "sustained and distinguished contributions to the College" [and the recipient's] "role as President of Council for three years from 1987 to 1990, culminating in July 1990, with the signing of the affiliation agreement between the College and La Trobe University".

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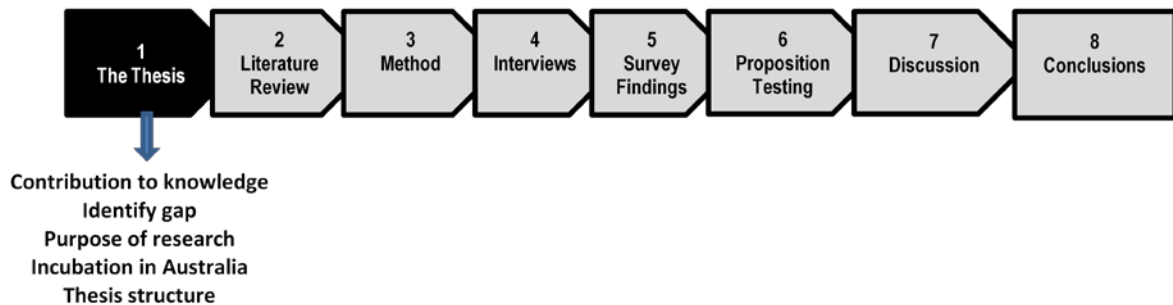
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# CHAPTER 1

## THE THESIS



### 1.1 Introduction

The existing Australian business incubation literature has not taken account of incubator goals, benefits and costs accruing to, or being borne by, various incubator stakeholders. Support for incubators has been based upon widespread application, and apparent international success, in promoting business start-ups. Business incubator stakeholders have been presented with the incubator concept as a ‘fait accompli’ rather than a researched, economic development option.

Business incubation worldwide is “... increasingly being used as a tool for promoting entrepreneurship and start-ups, leading to new policy initiatives” (Aernoudt 2004, p. 127) with significant funds having been allocated in support of the concept in Australia. Australian governments have funded 90 business incubators since 1990, the federal Government providing an amount of \$14.3 million in the 2006/07 budget for incubator support (Australian Government: Department of Industry 2007, p. 1).



## **1.2 Contribution to knowledge**

Considering the significant resource inputs by incubator stakeholders (over 4000 incubators worldwide (Nunberger 2004, p. 13)), “... the question of what return society gets on these investments has been raised” (Bergek & Norrman 2008, p. 20). Davidson, Hunter and Knofsten (2006) observed that, due to a high level of political, media and academic interest in entrepreneurial growth, there are now increased institutional pressures relating to business incubator sectors. Subsequently, the authors contend that there is an increased relevance in considering “... an institutional perspective for understanding entrepreneurial phenomenon” (p. 117).

This thesis, in examining the Australian business incubator industry, considers whether institutionalised conditions represent an environment in which start-up businesses will flourish, or does the setting exert a negative influence upon start-up business development, with subsequent failure to satisfy stakeholder goals? Research has not yet established a defensible theoretical basis for business incubator establishment or management (Bhabra-Remedios & Cornelius 2003, p. 14; Schaper & Lewer 2009, p.43) and this study examines that issue.

## **1.3 Identified gap**

The goals of business incubator stakeholders have been overlooked in research relating to the development of international business incubation. Business incubators depend upon a range of stakeholders (including board members, managers and tenants) for their initial establishment, and subsequently, in their ongoing operation. One particular group of stakeholders – board members – provide ongoing governance, mentoring, business advice and other services. The contribution of this group, in particular, has received little public acknowledgement or investigative attention.

## **1.4 Purpose of the research**

### **1.4.1 The business incubation concept**

In Australia, since the late 1980s, programmes designed to promote entrepreneurial business ‘start-ups’ have been launched with business incubators as a key element of business development policy. United Nations publications have defined a business incubator as “... an interactive development process aimed at encouraging people to start their own businesses and supporting start-up companies in the development of innovative products” (1999, p.4). The term ‘incubator’ relates to the manner in which a business incubation programme seeks to keep ‘infant’ entrepreneurial enterprises ‘warm and safe’, through provision of appropriate support, until they have reached a stage of maturity which allows them to graduate from the incubator and thrive (Maital et al. 2008, p. 2).

### **1.4.2 Goals of business incubator stakeholders**

The Australian Government perceives an incubator’s major goal as “... to produce successful firms that will leave the program financially viable and freestanding” (Allen Consulting 2003a, p. 8). This definition emphasises the importance of programmes designed to ‘start-up’ businesses as being the fundamental element in the decision by stakeholders to become involved in business incubation. Empirical evidence suggests that the underlying goal of business incubator participation typically seeks to support enterprise creation as part of a broad-based economic development and employment creation strategy (Wynarczyk & Raine 2005, p. 210).

The origin of business incubation funding frequently has the potential to “... determine the incubators’ strategic focus ...” (Chandra 2007, p. 20) to the extent that stakeholders exhibit multiple goals, which change over time (Haapasalo & Ekholm 2004, p. 268; Hansen et al. 2000, p. 82). Also, stakeholder goals do not always coincide, so that any evaluation of incubator goal attainment encounters problems in determining “... which weight should be attributed to each stakeholder” (Vanderstraeten & Matthyssens 2010, p. 10). The primary goals of incubator stakeholders are often closely related to the type of incubator involved and include business start-up targets, regional development plans, support of

entrepreneurial development, research commercialisation and achievement of social development initiatives (Aernoudt 2004, p. 128).

In a business start-up environment in which incubators are being funded and supported by a range of stakeholders with varied goals, it would be appropriate to expect that each of the constituent elements of this scenario had been subjected to significant research analysis before the process of establishing business incubators in the region commenced. In reality, incubators have been established in Australia through significant investment of public and private stakeholder resources to facilitate business start-ups with very little theoretical content to support these actions (Bhabra-Remedios & Cornelius 2003, p. 3).

### **1.4.3 Aims of the study**

Considering this state of affairs this study set out to investigate whether goals and aspirations of business incubator stakeholders in Australia had been satisfied.

Public funding providers are the most readily identifiable incubator stakeholder group, in particular, during the start-up phase of most incubators. Other stakeholder groups have exhibited multiple goals due to their wide variability in interests. These ‘non-public sector’ stakeholders appear to have been overlooked in the various evaluative exercises relating to incubator outcomes, to the extent that “... there is a lack of a theoretical base for incubator performance in general and the identification of best practices in particular” (Bergek & Norrman 2008, p. 21).

Academic research has consistently criticised the lack of analysis about the purposes and nature of business incubators, identifying a need to undertake holistic studies of the initial goals of the incubators’ stakeholders, and to consider whether the multiplicity of these stakeholders are satisfied with the state of this sector (Aerts, Matthyssens & Vandenbempt 2005, p. 21; Bearse 1993, p. 51; Bergek & Norrman 2008, p. 26; Bhabra-Remedios & Cornelius 2003, p. 12; N B I A 1998, p. 1).

In summary, this study seeks to identify the goals of business incubator stakeholders and to assess, through a detailed consideration of the responses to questions raised, whether those

goals are being met. The issue of incubator stakeholder goal definition and satisfaction is a complicated area of analysis, representing a potential research ‘gap’ in the Australian academic environment.

#### **1.4.4 Context of the study**

A body of American and European research analysis designed to consider the impact of business incubation has been developed since the 1960s. American analysis has been disjointed in scope, with the strongest emphases upon evaluative studies relating to employment creation and financial outcomes (Allen & McCluskey 1990, p. 75; Allen & Rahman 1985, p. 17; Eshun 2004, p. 30). European research, over the past decade, due to significant European Union funding allocations, has become more concentrated than earlier studies which focused on benchmarking as a key incubator development strategy option with the intention of producing best practice outcomes (Jorge-Costa 2005, p. 41; Malan 2006, p. 21). In both international incubator regions, research emphasis has indicated a disproportionate bias towards satisfying the research requirements of publicly funded stakeholders rather than the broader range of stakeholder needs (Hannon & Chaplin 2003, p. 868; VonZedwitz 2003, p. 181).

#### **1.5 Business incubation in Australia**

In Australia, as had been the case with earlier international experience, incubators have been expected to act as supportive micro-environments for the development of start-up businesses (Karlsson et al. 2005b, p. 9). There have been a limited number of studies of incubator development in Australia, research usually being funded and supervised by governments, as part of a follow-up process associated with earlier public funding of incubator facilities. Australia’s first national study was commissioned by the Commonwealth Office of Local Government (Office of Local Government 1992, p. 1). At that time there were 40 incubators operating throughout Australia, 22 incubator managers having responded to the invitation to complete the survey.

The 1992 study provided information on the range of services available, at that time, in Australian business incubators. However, analysis was of a generalised and descriptive

nature and sought input exclusively from incubator managers. The study did however highlight the point that, in 1992, Australian business incubators enjoyed the support of multiple public and private sector sponsors, with state governments as the predominant stakeholders. Respondents were also asked to rate the importance of various incubator objectives. The predominant goals, in order of mean response levels, were: employment creation, regional economic diversification, sponsor income (especially rental income), commercialisation of research and opportunities for minorities (Office of Local Government 1992, p. 10).

The results of another Australian study were presented at the 1994 annual conference of the Australia and New Zealand Association of Business Incubators (ANZABI). The study examined service provision in 35 business incubators, suggesting that the range of services available was steadily expanding (Gardner & Kenyon 1994, p. 18).

The next major Australian study was completed by Dowling (1997). In this study 49 incubators were identified nationwide suggesting a gradual expansion of the incubator concept as compared with Gardner's analysis in which 68% of incubator managers responded to the questionnaire. Unfortunately, very few tenants returned their questionnaires, so the resultant data could not be interpreted as being representative of the Australia-wide incubator industry (Dowling 1997, p. 2).

From 1992 to 1999, the Australian Government approved total funding of approximately \$30 million to support 72 incubator projects with 60 (of 72) incubators still operating in 1999, and a further six having been approved for funding. Also in that year the Australian Government commissioned a study to consider key performance aspects of the national incubator industry, and to assess the effectiveness of financial support up to that point in time. The study criticised the administration of many of the publicly funded incubators as representing a poor 'return on taxpayer investment'. However, findings of the study did recommend that the incubator programme be extended as a central element of regional economic development policy, the government subsequently accepting these recommendations (Price Waterhouse Coopers 1999, p. 3).

In 1999, in keeping with many international business incubator programmes (Knopp 2007, p. 1) there was an upsurge in interest in information technology investments. As part of this international trend the Australian Government announced a funding commitment of \$158 million (over five years) for the establishment of the Building on Information Technology Strengths (BITS) programme. Half of this commitment was concerned with the development of incubators to assist ICT small to medium enterprise developments. A group of 10 BITS incubators were established throughout Australia, all providing chosen tenants with access to various types of early stage finance, with each incubator also providing business coaching, mentoring and market development support. Individual start-up companies were eligible to receive up to \$600,000 in BITS equity support, the funding being intended to overcome some of the identified venture capital deficiencies relating to the start-up enterprises sector. By June 2003, some 3,553 applicants had been screened by BITS incubators, with 267 entities being accepted (Allen Consulting 2003a, pp. 1-2).

The BITS programme was not intended to be a permanent source of finance for ICT start-ups and incubators being scheduled for completion in 2004. An independent evaluation of the BITS programme was conducted in 2003, and findings argued that further funding was required to promote long term sustainability of incubatees and incubators (Allen Consulting 2003b, pp. 100-03). The federal government accepted the study recommendations and set up the ICT Incubators Program (ICTIP) which extended funding, granting an additional \$36 million, to be terminated in 2008 ((DCITA) 2005, p. 3).

In 2001, as part of a doctoral study, Abduh circulated a questionnaire among 38 Australian incubators, targeting incubator tenants. Tenants from 24 incubators responded, indicating an overall response rate of 63.16%. The study was directed toward the question as to whether Australian incubator services provide value-added outcomes to tenants. Abduh (2003, p.287) concluded that incubators provide an effective value-added service for tenants. A subsequent study (Abduh, D'Souza, Quazi & Burley 2007, p.9) re-examined the issue relating to the value-added features of incubator service provision, the findings reiterating that incubator tenants perceive incubators as being a valuable source of essential services for start-up enterprises. However, analysis highlighted the existence of tenant

reservations concerning the capacity and record of incubators in supplying high quality services.

Availability of Commonwealth Government funding for business incubator support continued under the Building Entrepreneurship in Small Business Program (BESBP), with total funding in the 2008-09 financial year amounting to \$11.7 million (Australian Government 2007, p. 1). In the 2008-09 Commonwealth Budget the BESBP programme allocation was re-directed to fund the new Business Enterprise Centre's scheme, the initiative providing advisory services to small businesses without a specific allocation to incubator development and support.

At the National Small Business Development Conference held in Adelaide in 2006 Julian Webb, Director of Business Innovation and Incubation, Australia, asked 'is incubation dead'? Considering the apparent low level of recent business incubator activity in Australia, the question may have contemporary relevance. Webb's presentation continued wherein he argued that the 'incubator' concept is too narrow suggesting that innovative entrepreneurs involved in business start-ups, are really the key to business development. To Webb, the future of the incubation concept rests in the expansion of 'hybrid' organisations, combining elements of technology parks, incubation and cluster development (Webb 2006, p. 51), these features representing key aspects of a 're-branding' of the incubator concept.

## **1.6 Structure of the thesis**

This introductory chapter has introduced core issues including identification of a research 'gap', while considering how the study might contribute to the current level of knowledge in 'business incubation' research in Australia.

Chapter 2 examines the results of an extended review of relevant literature concerning the business incubation concept.

Chapter 3 details elements of the components of the conceptual framework upon which this study is based. Propositions about stakeholder goal achievement are introduced and

explained. This chapter also incorporates a detailed statement of the various elements of the research methodology.

Chapter 4 embodies a description and qualitative interpretation of the results of a series of interviews which were conducted with Australian incubator stakeholders.

Chapter 5 discusses the descriptive findings from the analysis of the e-mail survey.

Chapter 6, using quantitative analytical methodology, tests the validity of the range of propositions, in light of survey responses, testing the elements of the study's conceptual framework, and propositions drawn from the conceptualisation of the current literature. The chapter also utilises a correspondence analysis, the technique being a form of multivariate statistical analysis.

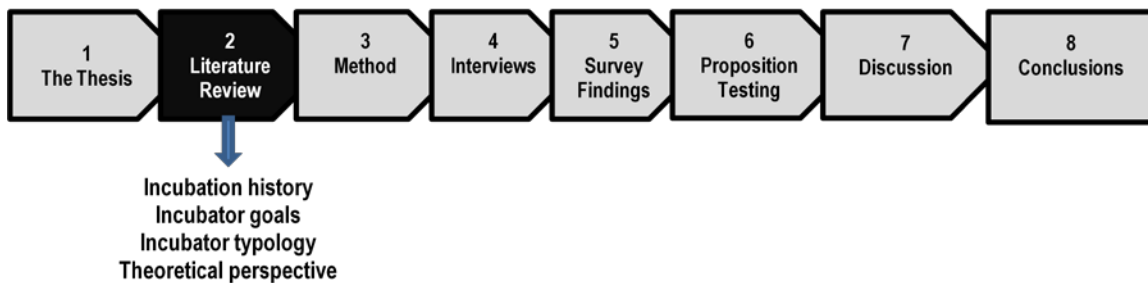
Chapter 7 incorporates a discussion about the implications of the findings of the study.

Chapter 8 begins with a review of the major stages of the study. This concluding chapter also identifies the limitations of the research while developing a series of recommendations for future research. The thesis concludes with a series of observations concerning the contribution of the research to the study of Australian business incubator goal achievement outcomes.



## CHAPTER 2

### LITERATURE REVIEW



#### 2.1 Introduction

To date there is no coherent body of objective knowledge on business incubation experience in Australia that informs scholars, policy planners and/or stakeholders. This review of relevant literature represents a necessary first step in advancing a theoretical understanding of the incubator concept, leading to the creation of a conceptual framework.

A systematic review of business incubation and associated theoretical literature follows, with various components examining key issues identified in this study. Section 2.2 embodies a brief history of the incubator concept, section 2.3 considers the advantages and disadvantages of business incubator development, and section 2.4 examines incubator goals. Section 2.5 examines associated issues in defining key terminology, section 2.6 discusses theoretical perspectives, and section 2.7 considers the relevance of stakeholder and institutional theory as they relate to this study. Finally, section 2.8 concludes the chapter.

## 2.2 A history of business incubation

Business incubation is a development concept which has come to be viewed by analysts as one of the appropriate tools to promote entrepreneurship. Business incubators are viewed as a means of promoting the "... complicated process by which valid business ideas and entrepreneurs emerge into real business ..." being seen, "... not as a panacea for economic development, but rather as one tool among many to nurture entrepreneurial and small business growth" (Campbell, Kendrick & Samuelson 1985, p. 46). Two of the earliest researchers described incubators as a place in which the owners of new businesses "... overcome the loneliness of entrepreneurship by associating with start-up firms and service providers" (Allen & McCluskey 1990, p. 62). Another frequently stated point of view is that business incubators typically seek to provide a nurturing business environment by actively ensuring that start-up firms get the resources, services and assistance they need, these resources usually being "... a luxury that new ventures lack or cannot afford yet" (Bollingtoft & Ulhoi 2005, p. 269).

Supporters of start-up ventures recognise that these businesses, due to their 'newness', face significant developmental difficulties. These establishment problems are especially applicable when a start-up business operator attempts to introduce a new product or service to the marketplace, to the extent that "... an entrepreneur must engineer consent, using powers of persuasion and influence to overcome the scepticism and resistance of guardians of the status quo" (Aldrich & Fiol 1994, p. 649).

Incubator support may range from strong intervention, involving the 'steady hand' of incubator staff, often including the complete management team. Another, 'laissez-faire', type of incubator model, typically leaves tenants entirely to themselves, receiving little assistance from incubator management, unless an incubator stakeholder takes the initiative. One very proactive incubator manager stated that the process "... is not lawn tennis at Wimbledon; it is more like mud rugby at Landsdown Road. You are in the dirt with your entrepreneur all day long" (Bergek & Norrman 2008, p. 24). The varied level of support, as described in these statements, highlights the diverse nature and interpretation of the business incubator concept.

Theorists argue that incubator sectors in the United States of America (USA) and Europe have developed through three chronological ‘forms’, commencing in the 1970s, and still evolving today. Table 2.1 provides a chronological summary of major developments in the international business incubator industry.

**Table 2.1 International developments**

Periods of change	Major developmental issues
<b>1970s to early 1980s</b>	Incubators were set up to fight the social costs of economic slow-down, targeted on job creation in specific industrial and geographic areas. Selected firms were provided with low-cost accommodation and collective provision of basic business services.
<b>1990s</b>	Business incubators supplying additional services to tenants, which include counselling, training and networking, along with access to professional support and seed capital.
<b>From 1998</b>	Appearance of a parallel ‘new model’ that aims to mobilize information, communications and technology start-ups with a strong focus on high technology-based ventures, increasingly relying on intangible assets and services.

Sources: (Callegati, Grandi & Napier 2005, p. 9; Lalkaka 2001, pp. 4-5)

Business incubation is now a worldwide phenomenon with differences between countries in their practical interpretation and local application. Abetti (2004) described the incubator model as having evolved with two extreme forms of application. Incubators in the USA are described as having developed as ‘wild flowers’, wherein the activities of stakeholders are often un-coordinated and some incubators are targeted as ‘for-profit’ investments, while others are not. Also, there has been significant duplication of incubators, with competition for funds and tenants, as well as an overemphasis on ‘fad’ technologies, with a high mortality rate for American incubators. Abetti (2004, p. 10) respectively described incubators in the USA and Finland as either ‘spontaneous flowers’ or as ‘a managed garden’, hypothesising that all incubator structures sit somewhere between these two extremes.

International research, particularly in the USA and Europe, has developed a theoretical basis for the introduction of a wide range of business incubator programme initiatives.

These have influenced the research methodology and content of this study, representing a useful starting point by examining the analyses of a range of practitioners and theorists.

Research, in the form of evaluative studies, first appeared in the United States in the 1990s and subsequently, in Europe, with Australian research still requiring formal development. The first extensive analysis of the US incubator industry did not appear until 1998 when the National Business Incubator Association published the results of a nationwide study (N B I A 1998). The body of relevant literature is therefore both brief and recent.

Supporters of business incubators suggest they are “... vehicles for job creation, regional economic development, export promotion, and even as possible future sources of revenue for public and private sponsors, including universities” (Abetti 2004, p. 19). As a result, the pattern, in terms of incubator sustainability, is one in which, worldwide, “... incubators continue to receive some form of subsidy ... and the numbers continue to grow” (Lalkaka 2001, p. 27).

It is estimated that there are now in excess of 5000 incubators worldwide, with the largest numbers in the USA and China (Xu 2010, p. 91). Colombo and Delmanstro argued that incubators in Europe have typically been established through partnerships between national and local governmental institutions, private firms and local universities, being intended to replicate earlier US success stories (Colombo & Delmanstro 2002, p. 1105).

Recent experience in American business incubation, in a recessed economy, may serve as a source of additional background and act as a baseline for the study of incubators in the Australian context. One of the reported effects of the economic recession in the American economy has been evidenced in increased efforts, in recent years, for economic development organisations to expand their efforts to encourage entrepreneurship by supporting the development of new incubators (Anderson, L. 2010, p. 158). Incubators in the United States are primarily funded as ‘not-for-profit’ organisations and are frequently sponsored by local economic development organisations, which are reported to more likely focus on job creation, re-industrialisation, or revitalisation of the local economy (Anderson & Mubarak 2010, p. 213; Knopp 2010b, p. 1)

Incubators in the USA are well established, being located “... at the heart of an environment that encourages entrepreneurship ...” (Al-Mubarak & Busler 2010, p.337). Incubators being the recipients of two types of support: formal and informal. Formal support, in the form of competitive grants, is provided from State legislatures for incubator infrastructure while informal sources of support include tax credits for investment in incubators, low interest loans to local government to support investment in incubators and private partnership funding (Chandra & Fealey 2009). In a recent study published by the National Business Incubation Association of America, 55% of the incubator managers who responded to the study were managing incubators which had been established since 2002 while 32% have opened since 2007 (Knopp 2012, p.15). These results suggest that the American incubator industry is still expanding at a significant rate, the numbers of incubators in that country now approximating 1800 establishments (Anderson & Al-Mubarak 2010, p. 208).

One recent change in the American incubator industry involves a move toward a service mix which emphasises higher value-adding services such as networking which is now viewed as more valuable in the continuum of services available than traditional services provision, such as mentoring (Chandra & Fealey 2009).

In the NBIA study of 2012 only 7% of the incubation programmes responding to the survey were ‘for-profit’, compared with 16% in 2002, this trend having continued in the responses to the 2012 study (Knopp 2006 p. 5, 2012 p. 6). Also, over half of respondents to the 2006 study by the NBIA indicated that their primary sponsors were non-profit economic development organisations while many of these sponsors ranked job creation and support of the community’s entrepreneurial spirit as their top priorities (Knopp 2006, p.1). The source of incubator funding in many instances determines the strategic focus and tenant selection of the incubator. For example, government funded incubators usually operate with a goal of economic development, relative to a university-affiliated incubator that may have technology transfer as its major goal (Chandra 2007, p. 20).

In the USA and Europe, the investigative emphasis indicates a preference towards satisfying the research requirements of publicly funded stakeholders rather than researching the needs of the broader range of stakeholders (Bergek & Norrman 2008, p. 20; Hannon &

Chaplin 2003, p. 868; Lalkaka 2001, p. 5; VonZedwitz 2003, p. 181). Analysts have consistently criticised the lack of research regarding the purposes and nature of business incubators, identifying a need to undertake holistic studies of the initial goals of incubator stakeholders (Bearse 1993, p. 51; Bergek & Norrman 2008, p. 26; Bhabra-Remedios & Cornelius 2003, p. 12; N B I A 1998).

Hackett and Dilts (2004b) provided an overview of the incubator-incubation literature suggesting there have been four chronological stages, as identified in Table 2.2.

**Table 2.2 Incubation research analysis**

<b>Time period</b>	<b>Type of study</b>	<b>Observations</b>
<b>1984-1987</b>	Incubator development studies	Findings suggest that incubators provide a protected environment for new ventures, in which job creation is minimal. Services include low rent, shared services, graduation policies, networking, consultancy support.
<b>1987-1990</b>	Incubator configuration studies	Analysis of the incubator/incubation concept. Studies seeking to expand knowledge beyond the definitional level.
<b>1990-1996</b>	Incubator/Incubation impact studies	Studies identifying a positive correlation between incubator availability and incubatee survival, also showing that incubation is a cost-effective job creation technique.
<b>1996-2000</b>	Studies theorising about incubators and incubation	Identifying incubators as a means of keeping start-up costs down, that incubators must meet local needs and emphasising the need for incubatees and incubator managers to interact. Theorists argue that institutionalised knowledge enhances incubatee success.
<b>2000-2010</b>	Studies examining the effectiveness of various perceived incubation improvements	Assessment of critical success issues and endeavours to identify the expanding range of perceived 'best-practice' management techniques.

Sources: (Hackett & Dilts 2004b, pp. 63-71; Hytti & Ljunggren 2011, p. 608.)

An alternative interpretation of the ‘incubator’ literature which groups the existing research literature around three dimensions includes:

- **descriptive** – an examination of definitions and efforts to classify incubators;
- **prescriptive** – attempts to describe the role of incubators in economic development and to set out best practices based on research about the key features of successful incubation programmes; and
- **evaluative** – endeavours to establish the ‘metrics’ of incubator programmes and to assess the impact and effectiveness of incubation programmes (Aerts, Matthyssens & Vandenbempt 2007, p. 258).

A descriptive study of the American incubator sector was completed by Allen and McCluskey (1990, pp. 65-6). This study, discussing incubator developments in the USA, depicted a shift away from an emphasis on real estate towards a focus on ‘nurturing’ new businesses as the incubator life cycle progresses.

In one of the earliest ‘incubator’ studies, Campbell, Kendrick and Samuelson (1985, p. 46) suggested that the US public sector would recognise the incubator as a tool for encouraging import replacement and export expansion, by providing an environment in which existing companies could develop and test their new ideas. The study also asserted that business development occurs in specific societal groups when incubators provide their services to women and minority owned start-ups, which often fall outside their reach. These authors anticipated that the private sector would become interested in the incubator concept through the university sector, via big business involvement, various financial institutions, law firms and accounting practices, and even foreign companies, who may see incubation as a ‘window of technology’ through which they might gain access to US financial and professional service networks. One attempt to provide a statement of the various forms of incubator models was proposed by Albert, Bernasconi and Gaynor (2002, p. 20) when their research grouped incubators into four subgroups. The first and largest subgroup were those

incubators initially designed to stimulate local economic development, and the second largest subgroup were those incubators created by academic and scientific institutions. The third group identifies those incubators that have emerged from corporate sources while the fourth group have been created by entrepreneurs or private investors. This typology represents an attempt to provide a concise listing of incubator models. However, the concept suffers severe disadvantages because the four identified categories are not homogeneous, or inclusive, and their ‘boundaries’ are therefore flexible. A recent endeavour to provide a typology indicating the multiplicity of purpose of business incubation projects is provided in Table 2.3., this treatment providing a clear indication that the incubation concept embodies a wide range of philosophical objectives.

**Table 2.3 Typology – business incubators**

<b>Incubator types</b>	<b>Main philosophy</b>	<b>Main objective</b>	<b>Secondary objective</b>	<b>Sectors involved</b>
<b>Mixed incubators</b>	Business gap	Create start-ups	Employment creation	All sectors
<b>Economic development incubators</b>	Regional – focus on narrowness of regional development gaps	Regional development	Business creation	All sectors
<b>Technology incubators</b>	Entrepreneurial gap	Create entrepreneurship	Stimulate innovation, technology start-ups and graduates	Technology focus, strong emphasis in late 1990s
<b>Social incubators</b>	Social gap – create employment for those with low employment capacities	Integrate social categories	Employment creation	Non profit sector
<b>Basic research incubators</b>	Discovery gap – link incubation to fundamental research	Blue-sky research	Spin-off technologies by capitalising on intellectual property	High technology

Source: (Aernoudt 2004, pp. 128-9)



### **2.3 Business incubator formats – advantages and disadvantages**

Research concerning perceived reasons for establishing incubators, and their advantages and disadvantages, consistently argues that new and small ventures often fail because their developers lack basic managerial skills and/or access to high risk capital, particularly high technology ventures (Allen & Rahman 1985, p. 12). Incubation, as an area of research, especially in the USA and Europe, has received extensive attention among the research community. Many studies have sought to assess critical success issues and the endeavours to identify the expanding range of perceived ‘best-practice’ management techniques have been inconclusive due, particularly, to the different dependent variables identified by researchers (Alsos, Hytti & Ljunggren 2011, p. 608).

There has been an on-going suggestion that ‘entrepreneurial actors’ frequently possess specialised knowledge, but lack general business skills (Lyons 2000, p. 8) so that small business proprietors “... are poorly equipped to deal with the continual and relentless issues that face business today” (Walker, Redmond, Webster & Le Clus 2007, p.295). In this environment incubators not only appear to provide a ‘breadth’ of business skills but also help to combat the ‘loneliness and stress’ of setting up a business (Wynarczyk & Raine 2005, p. 219).

Incubators usually provide assistance, and access to, administrative support and reduction of early stage operational costs (through provision of sub-market rents and reduced service fees). These programmes, and other forms of assistance from incubators, address typical critical barriers “... which many new infants have difficulty in overcoming” (Bollingtoft & Ulhøi 2005, p. 268). Table 2.4 provides a compilation of the range of issues forwarded by those researchers who support, or have actively criticised, business incubation as an instrument of start-up business development. The list of ‘pros’ and ‘cons’ presented in Table 2.4 provides an indication that research which seeks to evaluate the effectiveness of business incubation will encounter significant difficulties in trying to produce a sound argument in support of or in rejecting the incubation concept. Lalkala (2001) contends that all incubator stakeholders, including tenants, managers, board members and policy makers, should be fully briefed before they become involved in an incubator project (Lalkala 2001,

p. 9) so that they are aware of the risks of commitment to this concept. Many studies have sought to assess critical success issues and the endeavours to identify the expanding range of perceived incubator ‘best-practice’ management techniques have been inconclusive due, particularly, to the different dependent variables identified by researchers (Alsos, Hytti &

**Table 2.4 Incubation – pros and cons**

Advantages of business incubation	Disadvantages of business incubation
Incubators create improved access to information, finance and work- space for start-up enterprises	Incubators are viewed as being elitist because they seek to select ‘winners’
Incubators extend the State’s role in providing public goods in the form of knowledge and infrastructure	Incubators usually require external subsidies for extended periods of time, some not achieving self-sustainability
Incubators act as a dynamic model of sustainable business operation	Incubatees can be sheltered from the harsh realities of the market and can become dependent upon this environment
Incubators become a visible symbol of the State’s commitment to job creation and regional economic development	By depending upon public funding incubators may fail to correlate expenses with overall performance so that viability is threatened
Incubators create additional jobs and income beyond those directly employed with tenant firms	Incubation’s contribution to economic growth is minimal because most new businesses start outside an incubator
Incubators reduce the costs and consequences of business failure	When incubator business models and/or operative modalities are not tailored to the local community then their overall impact may be limited
Incubators empower backward areas, youth and women entrepreneurs	Incubators focus attention on a select few business
Incubators rehabilitate and re-use existing buildings and infrastructure	Incubators that are not part of an broad economic development strategy may not be able to achieve their potential
Incubators enhance the community’s image by providing a centre for innovation and entrepreneurship	Sharing of incubator technical resources might only be advantageous if the incubator specialises in a specific technological field
Incubators provide a one-off form of start-up assistance	Incubators are usually dependent upon government (public) support
Incubators exhibit a potential to raise incomes, exports and sales of goods and services for the nation	Incubators can be seen to be limited in outreach, only making a marginal contribution to job creation
Incubators create networking opportunities and information exchange	Incubators can undermine existing markets for business services and can be duplicative
Incubator tenancy can assist a view of business credibility for start-ups	In providing tailored services to tenant firms incubators may negate networking opportunities with external industries
Incubators create the opportunity for private sponsors (including universities) to develop new technologies and to earn significant income	
Incubators stimulate innovation and entrepreneurship as prime forces in the ‘new’ economy	

Sources: (Abetti 2004, p. 19; Bergek & Norrman 2008, p. 21; Callegati, Grandi & Napier 2005, p. 9; Campbell, Kendrick & Samuelson 1985, p. 45; Chan & Lau 2005, p. 1227; Haapasalo & Ekholm 2004, p. 259; Lalkaka 2001, pp. 7-8; Szabo 1999, p. 6).

Ljunggren 2011, p. 608). One researcher recently prepared an analysis (Tamasy 2007) which suggests that a 'rethink' is required before planners and investors establish technology-oriented business incubators, most of such projects being involved with the commercialisation of research from universities and often being known as science parks (Massimo and Colombo 2002, p.1105).

Tamasy's paper presents the results of various studies which apparently support expenditure on business incubators, emphasising that the examples she uses "... provide neither an evaluation nor the basis for evaluations of the effectiveness of the incubation industry" (Tamasy 2007, p. 461). She argues that the most suitable methods for analysis of the effectiveness of business incubators involve the use of a longitudinal 'before-and-after' incubation comparison and the control-group concept.

Another researcher used this methodology to analyse data (sales, employment growth and survival rates) from a sample of approximately 35,000 incubated and un-incubated American businesses. His results suggest that incubated firms outperform their peers in terms of employment and sales growth but they fail sooner (Amezcuca 2012, p. 2).

The results of the analysis suggest that claims that incubators are very successful may be an overstatement, suggesting that "... research is still relatively agnostic on the benefits of business incubation" (Blanchard 2012, p. 3).

Another area in which there is a high level of division amongst researchers concerns the issue of definition of the term business incubator.

## **2.4 Definition of the term 'business incubator'**

The business incubator concept has been operational, in the international environment, since the 1980s and yet there is a wide diversity of opinion about the issue of providing a precise definition. The 'incubation' literature has yet to provide a universally acceptable definition of business incubators and incubation (Maglana 2006, p. 1). Albert, Bernasconi and Gaynor (2002, p. 16) argued that business incubators can be defined in terms of six principal variables including the nature of the incubator's promoters, their aims and

objectives, the types of projects they deal with, the type of services offered, the financial model and the environment in which the incubator operates. Key to any precise definition relates to the nature of incubator promoters in that the goals of major promoters effectively determine the definitional path of the nascent business incubator. These findings suggest that the task of defining a business incubator is a straightforward one. This is not so, upon consideration that although the analysis lists the nature of the promoters of an incubator as the principal variable in arriving at a workable definition, the theory is somewhat complicated by the realisation that the abovementioned study (2002) identified 15 promoter groups. Furthermore, many of these groups have multiple categories, suggesting several sub-categories of incubator stakeholder. The ‘promoters’ range from public sector funding agencies through a series of private sector stakeholders with their common underlying theme being the desire to participate in the process of company creation as a value adding tool (Albert, Bernasconi & Gaynor 2002, p. 16).

Additionally, the task of defining the nature of a business incubator is further complicated by the realisation that “... schemes that are successful in one environment, region or context cannot be merely imitated in another” (Clarysse et al. 2005, p. 213). The implications are clear – business incubation means different things to different stakeholders. During the 1990s the business incubator sector was invested with a wide range of new titles including research parks, science parks, knowledge parks, seedbeds, industrial parks, innovation centres, technopoles, networked incubators and accelerators. The variation in titles relates to a proliferation of new and varied purposes for business incubators. The standard themes involving regional economic development have been expanded as new concepts, such as capitalisation of investment and commercialisation of academic research, which have been added to the typology, making the provision of a standard definition increasingly complex.

In the benchmarking study commissioned by the European Union and published in 2002, a typology of business incubation processes (not necessarily European or American) was presented. The typology showed that incubation has diverse roots (Centre For Strategy Evaluation 2002, p. 3) whereby a variety of shared workspace initiatives gradually came to

utilise the incubation concept as their answer to the survival and developmental needs of start-up tenant enterprises.

The issue concerning the multiplicity of business incubator definitions is well illustrated in an example whereby the OECD (1997) proposed a range of incubator definitions, based on the over-riding objectives and characteristics of tenant firms. Resultant definitions varied according to the chosen criteria. For example, economic development incubators were defined as business incubators. Their main aim was to stimulate specific economic objectives, such as job creation and industrial restructuring, often the result of local government initiatives (Callegati, Grandi & Napier 2005, p. 9). This definition is of limited practical value when dealing with the greater part of the incubator industry.

As the precursor for a 1997 conference on ‘Best Practice in Business Incubators’, the European Commission proposed the following definition for application in subsequent business incubator project initiatives:

A business incubator is a place where newly created firms are concentrated in a limited space. Its aim is to improve the chance of growth and rate of survival of these firms by providing them with a modular building with common facilities (telefax, computing facilities, etc.) as well as with managerial support and back-up services. The main emphasis is on local development and job creation. The technology orientation is often marginal.

Source: ‘Best Practice in Incubator Infrastructure and Innovation Support seminar’, Espoo, Finland, 1997 (Szabo 1999, p. 1).

By 2002 the European Commission had extended its involvement in the development of the business incubator sectors in member nations, to the extent that it had commissioned a major study targeting business incubator best practice. The definition included in the study’s final report incorporated a major ‘expansion’ of the concept. The revised definition was expressed as follows:

A business incubator is an organisation that accelerates and systematizes the process of creating successful enterprises by providing 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.

Source: (Centre For Strategy Evaluation 2002, p. 9)

This is a much broader definition which sets out to capture the range of business incubator activities. The definition takes account of a need for a classification of various categories of incubators. However, a detailed statement of this breadth of definition may be of limited practical value. The US National Business Incubator Association sought to address the definitional issue as follows:

Business incubation is a dynamic process of business enterprise development. Incubators nurture young firms, helping them to survive and grow during the start-up period when they are most vulnerable. Incubators provide hands-on management assistance, access to financing and orchestrated exposure to critical business or technical support services. Most also offer entrepreneurial firms shared office services, access to equipment, flexible leases and expandable space - all under one roof. An incubation programme's main goal is to produce successful graduates - businesses that are financially viable and freestanding when they leave the incubator, usually in two to three years. Incubator clients are at the fore-front of developing new and innovative technologies - creating products and services that improve the quality of our lives - on a small scale today, and on a much grander scale tomorrow.

Source: (NBIA 2004, p. 2)

This definition appears to add little to the discussion because it places excessive focus on business incubator physical features and graduation outcomes. The definition is less applicable to the third generation of American incubators, sometimes called 'virtual' incubators, because it does not take account of the intangible nature of their requirements.

The question of definition is somewhat confused as a result of variations in business incubator support policies between different nations. For example, the French regard incubators as business support structures which exist before new companies are formed, their definition indicating that "... incubators are support structures for enterprise creation.

They bring together specialised resources dedicated to supporting and assisting companies before their creation, or during their initial years” (Albert, Bernasconi & Gaynor 2002, p. 10).

One current ‘operational’ definition was provided by UK Business Incubation Limited in one of its recent publications, where it is stated that business incubation is “ ... a unique and highly flexible combination of business development processes, infrastructure and people designed to nurture new and small businesses by helping them to survive and grow through the difficult and vulnerable early stages of development” (UKBI 2008, p. 1).

Each of these definitions emphasises the importance of programmes designed to encourage ‘start-up’ businesses as a crucial element in the decision by incubator stakeholders to become involved in this type of business development initiative.

Not all components are equally important when delineating incubator models, suggesting that most incubators provide a similar set of general administrative services, (Aernoudt 2004, p. 127; Allen & McCluskey 1990, p. 62; Chan & Lau 2005, p. 1217; Clarysse et al. 2005, p. 187; Colombo & Delmanstro 2002, p. 1105; Hackett & Dilts 2004a, p. 41; Peters, Rice & Sundarajan 2004, p. 83; VonZedwitz 2003, p. 176) but selection, business support and mediation are the distinguishing components of incubator models (Bergek & Norrman 2008, p. 21).

Bergek and Norman (2008, p. 21) highlight key elements of the literature, listing the following key definitional components which include:

- selection – the processes involved in deciding which ventures to accept or reject for entry into an incubator;
- infrastructure – provision of physical accommodation plus the provision of office facilities and administrative services;
- business support – provision, by host incubators, of business coaching and training activities designed to develop incubatees;
- mediation – consideration of how the incubators connect incubatees to each other and the outside world; and
- graduation – do incubators have specific graduate exit policies and are they actively implemented?

Diverse attempts to define the business incubator/incubation concept reflect a desire, among incubator stakeholders, to express their understanding of the process in terms of the goals of such concepts and organisations. As a result, business incubator definitions, in their endeavours to become all encompassing, tend to lose focus in identifying the true nature of incubators. These definitions have been consistent in that they generally perceive incubators as " ... a kind of infrastructure geared to support and nurture the establishment and development of small and medium sized enterprises" (Bollingtoft & Ulhøi 2005, p. 268), but usually go beyond this simple statement and therefore confuse the issue.

The business incubator concept is undoubtedly polysemic in nature, exhibiting multiple meanings according to the needs and expectations of individual stakeholders. Any universal definition of the term must take account of this factor (Trewartha & Breen 2008, p. 9). For the purposes of this study it would appear that the precise definition provided by Peters, Rice and Sundarajan (2004), and re-stated by Bergek and Norrman (2008), is the most effective and consistently accurate, in that a business incubator is an organisation defined as "... a support environment for start-up and fledgling companies" (Bergek & Norrman 2008, p. 21; Peters, Rice & Sundarajan 2004, p. 83).

## **2.5 Business incubator goals**

Have the goals of business incubator stakeholders been satisfied in the international environment? Have stakeholder goals been satisfied in the business incubator sector in Australia? In 2002, the Australian Government perceived an incubator's major goal as one of producing "... successful firms that will leave the programme financially viable and freestanding" (Allen Consulting 2003a, p. 8). A statement of this type appears to have the advantage of brevity, however, the question arises as to whether or not incubator goals are (or should be) more diverse in scope. Can an examination of the international literature, in studying the goals of business incubators, contribute to the discussion in the Australian context?

Albert, Bernasconi and Gaynor (2002, p. 14), in a study of incubator sectors in the US, United Kingdom, Germany and France, identified generational 'waves' in the processes of



creation of incubators in these four countries. Incubators of the first generation emphasised job creation and real estate appreciation, wherein prospective tenants were offered office space and a variety of shared facilities at sub-market prices. In the 1990s these services were expanded to include consultancy services, training sessions, network access and venture capital. In the incubator literature, this is usually referred to as the second incubator generation. The third generation of incubator development was generally identified as having started in the late 1990s, being concentrated on provision of incubation assistance to start-ups in the ICT and high technology sectors.

To Bollingtoft and Ulhoi (2005, p. 269), the overall aim of a business incubator is to leverage entrepreneurial talent. Their study broadened the discussion by suggesting that the ‘primary drive’ of new business ventures is neither the availability of funds nor the rate of technological advance, but entrepreneurial agency. Their study identified a deliberate analytical linkage between entrepreneurial agency and the commercialisation process.

The presence of multiple sponsors has the potential to bring a variety of concerns and strengths (and conflicting goals) into the incubator environment.

Lalkaka (2001, p. 5) contended that the “... predilections of leading sponsors exert a major influence upon incubator goals ...”. Interactions which illustrate this point include:

- universities involved in incubation in science parks aiming to expand research and encourage learning;
- governments becoming involved, to promote supportive policies and to provide business infrastructure;
- established businesses seeing incubators as opportunities for product development, along with sub-contracting and networking opportunities; and
- community groups anticipating cultural change (Lalkaka 2001, p. 5).

Albert, Bernasconi and Gaynor (2002, p. 17) provided an alternative grouping of the goals of incubator stakeholders relating to employment creation, stimulation of economic activity through company creation, profit, technology transfer and commercialisation,

revitalisation of disadvantaged or rejuvenated zones, diversification of the industrial profile and promotion of certain population groups.

An associated point of view could argue that it is very difficult to classify incubators by type because no two incubators are exactly alike. This thesis suggests that individual incubators have different priorities, contending that, even among similar incubator models, there are differences between their operations and goals (Bollingtoft & Ulhoi 2005, p. 270). Analysis of incubator stakeholder goals has been based on varied criteria. Allen and McCluskey (1990, p. 64) used occupancy, jobs and graduations. Phillips (2002, p. 314) added tenant revenue, number of patents per firm and number of discontinued businesses. For the majority of studies, outcome criteria have been ignored, with the exception of Mian's analyses (1996, 1997), where management policies and effectiveness as well as services and their value added.

Bollingtoft and Ulhoi (2005, p. 270) suggested that a failure to take goals into account in incubator analysis creates problems. These authors argued that any comparison between incubators with different goals becomes very difficult, lacking in credibility, and that different goals correspond to different outcome indicators. Evaluation of indicators (such as the number of graduates or jobs created) must therefore be chosen with care, since incubator goals may differ. One of the central elements of the contemporary international discussion concerning incubator development promotes the principle of best practice, being defined as "... a process that is better at delivering a particular result than any other process" (Bergek & Norrman 2008, p. 22). If there is confusion over incubator goals or 'particular results' then how can this much lauded incubator development principle be implemented? Goal satisfaction, in relation to this basic definition of best practice, may therefore be the means of achieving incubator success.

The current international call for identification of best practice incubator models means that there is a need to describe and distinguish between different incubator models and to measure outcomes in relation to goals. Earlier studies (Bearse 1998; Sherman & Chappell 1998) tended to assume that all incubators have the same outcome objectives, with very

few studies examining outcome criteria. The exceptions to this generalization include Bhabra-Remedios (2003) and Bergek (2008).

Mian sought to change the paradigm by arguing that incubators identify objectives differently, depending upon the interests of stakeholders, or they have different priorities within the same basic goals (Mian 1996, p. 194). This point of view parallels Albert's contention that the goals of stakeholders are the central issue in incubator development and outcomes (Albert, Bernasconi & Gaynor 2002, p. 16). Bearse (1998, p. 325) argued that goal categories should be allowed to "fall out of the data", due to their 'crude' nature and the inherent difficulties involved in taking account of the differences in goals between different incubator models. Other researchers suggest that the goals do not matter as much as the outcome, which is a better measure (Bergek & Norrman 2008, p. 22).

Many idealised hopes and expectations identify with the creation of business incubators. Various advocates envisage business incubators as instruments to promote the growth and survival of entrepreneurial businesses by facilitating their establishment with subsidies and incentives to stimulate job creation and economic growth. Considering the range of expectations and possible outcomes, business incubators have attracted a growing diversity of stakeholders who have adopted (and adapted) the concept in pursuing a wide variety of goals and objectives. This analysis of contemporary research concerning incubator goal achievement is further developed in Section 3.2 where the discussion examines the issue within the Australian context while formulating the conceptual framework of the study.

## **2.6 Theoretical perspectives**

### **2.6.1 Introduction**

In reviewing the range of incubator industry literature, specific theoretical concepts repeatedly appear in the discussion. Concepts, relating especially to stakeholder and institutional theory, have been consistently identified as offering explanations, and practitioner-oriented techniques, for explanation and development of the incubator concept.

A key element relates to the requirement to provide a theoretical underpinning for practical application (McNair & Watts 2006, p. 10). Subsequently, the conceptual framework for this study is designed to provide a theoretical conceptualisation that supports practitioner-orientated techniques (Zimmerman & Zeitz 2002, pp. 428-9). Llewelyn (2003, pp. 662-3) argues that analysts frequently face situations in which they ask how organisational structures and processes can be explained, asserting that the usual response is to 'incorporate some theory' into the study, drawing from "... the supermarket shelves of social theory ...".

Arguably studies of organisational phenomena should not be constrained by any single theoretical framework. To ensure that a phenomenon receives thorough examination, conceptual models should comprise "... synthesised formulations of explanations from disparate theories" (Ang & Cummings 1997, pp. 249-50).

On a parallel theme, McNair and Watts (2006, pp. 11-12) highlighted the need for the researcher to provide an analytical base that creates meaning and significance, arguing that this must be done by linking theoretical concepts with practical aspects of business sector experience. Subsequently, a conceptual model should be designed to provide the theoretical rigour required by critics. And thus linking theory with the subjective and objective realms of experience in the business incubator industry. To achieve this outcome the researcher has developed and tested relevant theories explaining observed practice in the Australian business incubator sector. Initial review of the limited Australian literature suggests that this sector is both extremely competitive and highly institutionalised, offering an opportunity (or possibly a requirement) to juxtapose theories that emphasise the outcomes of stakeholder and institutional influences on organisational actions.

## **2.6.2 Entrepreneurship**

In Europe, especially since the late 1990s, European Union economic development policies have sought to use business incubation as one of the programmes intended to create a more entrepreneurial business environment (Aernoudt 2004, p. 132). This study examines the nature of entrepreneurship followed by an analysis of policies being implemented by the

European Union, the major initiative involving the creation of best practice guidelines for incubation (Centre for Strategy Evaluation, 2002).

### **2.6.2.1 Definition**

A *Dictionary of the English Language*, published in 1755, defined an entrepreneur as "... an adventurer, he that seeks occasion of hazard; he that puts himself in the hand of chance" (Landstrom 2005, p. 7). Since the eighteenth century, entrepreneurship appears to have become a prominent and strategically important issue when discussing the driving forces of prosperity and job creation. The term 'entrepreneurship' has been utilised, throughout the incubation literature, to describe the means through which incubation plays a role in business development. In combination with ideas about emerging regional economies and new information and communication technologies, entrepreneurship is increasingly perceived to be a universal key that provides, within itself, fruitful paths into the future (Bogenhold 2004, p. 4).

Contemporary discussion relating to the issue of development of an appropriate definition of entrepreneurship appears to emanate from the work of Schumpeter (1934), whose analysis has two well-known facets. First, Schumpeter saw entrepreneurs as innovators who leave behind routines, devoting their attention to new options by taking unusual risks. Second, he described simultaneous destructive and constructive consequences resulting from entrepreneurial innovation (Beckert 1999, p. 786). This dynamic environment in which new firms emerge, existing firms grow and unsuccessful businesses die, is now known as the Schumpeterian "... notion of creative destruction" (Organisation for Economic Co-operation and Development 1998, p. 42).

Academic interpretation of an important topic often seeks to present the researcher with a universally acceptable definition of the term under consideration: not so with the term 'entrepreneurship'. At an official level the Organisation for Economic Co-Operation and Development (OECD), while acknowledging the importance of entrepreneurship in market-based economies, asserted that it is an elusive concept. Entrepreneurship is defined, at its

most general level, as “... the ability to marshal resources to seize new business opportunities” (Organisation for Economic Co-operation and Development 1998, p. 41).

One of the earlier definitions described an entrepreneur as an individual who establishes and manages a business for the prime purposes of profit and growth, the entrepreneur being characterised principally by innovative behaviour (Carland et al. 1984, p. 358). A more recent analysis argued that the problem in defining entrepreneurship relates to the fact that most researchers only define the word in terms of the entrepreneur and what he or she does. The analysis continues by suggesting that the entrepreneurial process actually involves a nexus of two phenomena, namely, the presence of lucrative opportunities and the existence of enterprising individuals. Shane and Venkataraman (2000, p. 218) saw these unilateral definitions as ‘incomplete’, preferring to define the field of entrepreneurship as “... the scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited”. Development of a generally accepted definition of the term, entrepreneurship, appears to have progressed very little. Audretsch et al. (2002, p. 13), in describing entrepreneurship as a ‘multi-dimensional’ concept, argues that the definition depends upon the focus of the research undertaken, the study using the terms ‘self-employment’ and ‘business ownership’ as being equivalent in nature to entrepreneurship.

Another examination describes the diversity of opinion on the nature of entrepreneurship as ‘definitional chaos’, most definitions being based upon outcomes of entrepreneurial activity, or process based, involving the creation of new enterprises or organisations (Yeung 2002, p. 37). Wai-Chung’s entrepreneurial development encompasses “... more than the initial quality of owners to start business venturing; more importantly, it is about the exceptional qualities required in the processes of both creating and sustaining particular business ventures ...” (Wai-Chung 2003, p. 30). However, Wai-Chung (2003, p. 37) also counselled against any attempt at rigid definition of the term ‘entrepreneur’, on the basis that whatever entrepreneurial attributes are selected, they are certain to prove excessively restrictive, ruling out some feature, activity or accomplishment of this inherently subtle character, the ‘entrepreneur’.

Analysis undertaken in 2004 suggests that this area of study still lacks any ‘consensual understanding’ wherein the most conventional practice is to translate entrepreneurship to mean ‘self-employment’. Unfortunately, self-employment is a fragmented concept, having different socio-economic attributes and rationalities. Analysis has led to the conclusion that entrepreneurship, as a concept, is difficult to define because it has multiple meanings and consequences (Bogenhold 2004, p. 3).

Bollingtoft and Ulhøi (2005, p. 267) made a recent contribution to the definitional discussion by defining entrepreneurs as “... individuals who recognise and exploit opportunities made possible by combinations of existing production factors and/or recognised changes in the market and/or new technology”. This interpretation makes a valuable contribution to the discussion because it adds an element of fluidity to the definition. Landstrom (2005, p. 21) responded to the inherently complicated and ambiguous nature of the entrepreneurship phenomenon by deciding to make no attempt to define the term. However, he did acknowledge the close research link that has existed between entrepreneurship and small business, to the extent that he chose to treat them as one and the same. This suggests the beginnings of a definition, but also leaves the clear indication that a precise definition of ‘entrepreneur’ is still a matter of intense academic debate. And even though the term ‘entrepreneurship’ lacks precise definition, the concept still serves as the basis of enhanced interest, during the past decade, in a perception that business incubation can act as a key process in making the European continent more ‘entrepreneurial’, as a means of promoting economic development.

#### **2.6.2.2 Entrepreneurship ‘policies’**

As knowledge has become more important to production, knowledge spillovers have also gained ascendancy as a source of economic growth, and thus entrepreneurship has taken on a new importance in the ‘knowledge’ economy. There is increased support for the view that entrepreneurship policies are one of the essential instruments for economic growth. Just as monetary and fiscal policies were the mainstays for creating employment and growth in the post-war economy, entrepreneurship policy is likely to emerge as the most important policy

instrument for a global and knowledge-based economy (Minniti & Levesque 2008a, p. 604).

Entrepreneurship is a phenomenon worthy of attention from those who worry about economic growth and particularly from those charged with sustaining growth. Public policy involves the intentional use of powers of government to affect a societal outcome, for example, a change in the number of entrepreneurial ventures having the ability to "... shape virtually all the contextual determinants of the demand for entrepreneurship and, over a longer time scale, the supply of entrepreneurs as well" (Hart 2003, p. 8).

As has been the case with the issue of defining entrepreneurship, research findings are divided regarding the effectiveness of so-called 'entrepreneurship policies'. A recent study by van Stel, Storey and Thurik (2007, p. 183) examined the relationship between regulation and entrepreneurship in 39 countries. Findings from the study suggest that there is no significant impact on nascent or young business formations of administrative considerations such as time, cost or number of procedures needed to start a business, suggesting the labour market exerts the strongest influence upon nascent and young business rates. Considering the enthusiastic manner in which this possible link between policy initiative and entrepreneurial growth, and its removal, has been grasped by public policymakers, there may be a need to reconsider such initiatives.

To suggest that a set of readily applicable entrepreneurship development policies now exists may be a misrepresentation of public policy reality. Since 1990, expectations have been set in place in many communities, which anticipate that long-running productivity levels in these 'knowledge-based' economies will be motivated and advanced via an outbreak of entrepreneurially initiated business activity.

In 2002, the chairman of the European Union, Mr Romano Prodi, made a speech in which he indicated that the organisation supported the promotion of entrepreneurship as a cornerstone of European economic growth policy, arguing that "... the key to economic growth and productivity improvements lies in the entrepreneurial capacity of an economy" (cited in Audretsch & Beckmann 2007, p. 36). If entrepreneurship is to provide the answer in developing European and other economies, the question arises as to how this process is



progressing. In a study published in 2005 all appeared to be well when the authors suggested that Europe showed itself to be a subcontinent of a new entrepreneurial and innovative culture, growing into one region and being supported by an ever expanding European Union (Fayolle, Kyro & Ulijn 2005, p. 26).

Subsequent research findings suggest that the expectations of European entrepreneurial development are not producing the expected outcomes. One study of the role of entrepreneurship in the 'new knowledge economy' cited a concept known as 'The European Paradox', suggesting that Europe has large investments in knowledge generation, but is comparatively weak in exploiting that 'new knowledge', and in transforming it into economic growth. Analysis of European economic history suggests that, in the immediate years after World War 2, the role of entrepreneurship and small business seemed to fade away (Audretsch, Bonte & Keilbach 2008, p. 697).

However, there appears to have been a reversal in the 1970s when the 'cultivation' of entrepreneurship, as a remedy to a depressed local economy, emerged as an employment creation concept whereby small businesses were perceived as deserving of the majority of 'credit' for regional job creation (Brooks 1986, p. 24).

In a recently published study Audretsch and Beckman (2007, p. 40) argued that "... emergence of entrepreneurship policies in many countries is a phenomenon of the 1990s". However, in a more recent analysis, Audretsch, Bonte and Keilbach (2008, p. 697) suggested that entrepreneurial development processes in Europe are still at a developmental stage. In the late 1990s there was a positive movement, especially at a governmental level, to promote European business start-ups as a form of economic development initiative, this being evidenced in the decision by the European Commission (EU) to commission a major benchmark study in business incubators initiatives. In commissioning the study the EU indicated support for benchmarking, best practice and network building as crucial factors in developing entrepreneurship, incubators and business angel networks in Europe (Aernoudt 2004, p. 134).

The benchmark study was published by the European Commission's Enterprise Directorate in 2002. The study aimed to define benchmarking for business incubators, to advise on

operational benchmarks to headline performance and to provide assistance to business incubators to improve performance.

The study also recommended that “... incubators should be promoted by an inclusive partnership of public and private stakeholders” (Centre For Strategy Evaluation 2002, p. 83). The recommendation was based on the supposition that business partnership structures reflected overall regional, technology and business support strategies. The report’s findings argued that incubators are promoted by a wide range of stakeholders from public and private sectors, both groups having the potential to assist incubator development with public sector ‘pump-priming’ and private sector leveraging.

The final EU benchmarking report also made a series of recommendations (see Table 2.5 below) concerning items requiring attention at the incubator operational level if the organisation is to achieve best practice outcomes.

**Table 2.5 EU benchmarking study**

<b>Recommendations</b>	<b>Incubator operational issues</b>
1	Ensure that incubator operations are integrated into wider regional (technology) development strategies and supported by broadly based partnerships.
2	Clearly define the incubator target market.
3	Adopt admission criteria that focus on projects where an incubator can genuinely add value.
4	Place particular emphasis on developing high quality business support services.
5	Ensure that incubators are managed in a business-like manner with the aim of maximizing value for money.
6	Develop ‘virtual’ incubation services so that more businesses can benefit though after-care/graduate networking.
7	Focus on the provision of four key incubator services – entrepreneur training, business support (including a virtual dimension), financing and technology support.

Source: (Centre For Strategy Evaluation 2002, pp. 89-90)

Aspects of the study's methodology exhibit potential value for the researcher's development of a study questionnaire while providing key recommendations for incubator operational best practice standards and targets.

### **2.6.2.3 Best practice in European incubators**

Best practice has been defined as "... a process that is better at delivering a particular result than any other process ..." being "... better because it does the right things" (Bollingtoft & Ulhoi 2005, p. 23). Bollingtoft's and Ulhoi's article focused on incubator effectiveness and performance where performance is defined as the extent to which incubator outcomes correspond to incubator goals. Therefore, on the basis of this study, to identify best practice incubator models, a researcher needs to describe and distinguish between them and to measure outcomes in relation to their goals.

Abetti (2004, pp. 28-29) described best practice as a 'recent concept' that is not 'clearly' defined. He suggested that the concept of 'best' is not absolute, but is relative to the population or sample selected. In Abetti's Helsinki study (2004, p. 29), the best practices described are those among 16 incubators involved in the study, arguing that the "... best practice principles from Finland may not necessarily translate to other countries with different cultures".

This reservation was expressed due to the strong infrastructure of technical entrepreneurship in Finland, and the unique cultural and social characteristics of the Finnish people. However, Abetti argued that there will be value in the 'global village' for the Finnish model and experiences, especially in the use of best practice examples as benchmarks for performance, rather than as templates for duplication.

Bergek and Norrman's (2008, p. 21) analysis of a group of incubators in Finland set out to develop a framework that would serve as a basis for identifying best practice incubator models: the framework to be used as a tool both for entrepreneurial policymakers' resource allocation decisions and for those involved in the operation of incubators (managers, stakeholders, financiers and entrepreneurs). One of the key outcomes of this study flagged

the imperative that long-term government incubator funding arrangements should be set in place before other strategic developmental decisions are made.

Researchers studying incubation have identified best practice initiatives in Europe during this past decade.

Scaramussi (2002, p. 26) identified three groups of incubator best practices: issues relating to internal functioning (incubator strategy, positioning and long term sustainability, internal organisation and governance systems); output (including admission, incubation and incubatee exit mechanisms); and the horizontal flow of activities (including the monitoring and evaluation processes adopted to measure the performance of the incubators themselves).

Many incubation studies use the terms ‘good’ or ‘best’ practice interchangeably, the problem with the terms being that they are very difficult to define. This lack of an objective definition of ‘good’ practice in incubator operation constitutes an obvious weakness in research design (Autio & Klofsten 1998, p. 42) .

The use of the phrase ‘good practice’ is part of an associated discussion in the European environment, where the term ‘best’ has been criticised as being inappropriate. For the purposes of this study, since the terminology of best practice has been used universally to describe this aspect of incubator management improvement, the phrase will continue to be utilised and etymological discussion will not be addressed further here.

Discussion relating to European incubator best practice might be best concluded by referring to a recent analysis by Atherton and Hannon (2006). The paper develops a synthesis of research on European incubation good (best) practice that identifies eight key principles for deploying incubation as an economic development strategy and intervention.

The synthesis is documented in Table 2.6 and issues presented therein have direct application to the development of the major questionnaire in this study.

**Table 2.6 Best practice – synthesis**

Best practice issue	Explanation
Incubator design	Incubators that decide to focus on incubation need to be described and structured in ways that specifically facilitate this process. Provision of premises and services may not be enough.
Role model	Incubator practice should act as a role model of best practice for tenant firms.
Recognition of pressures in incubator phases	Incubator projects pass through different phases and the pressure on boards, management and tenant firms needs to be recognised.
Specific needs of tenants	Tenant firms are unique to their owners and require inputs to meet specific needs at particular times.
Services should meet varying needs	The incubation service portfolio needs to change and grow with the requirements for building successful growing businesses.
Care in tenant selection regarding 'fit'	Selection processes need to consider how individual businesses fit with the notion of an incubation project.
Incubators as part of a network	Successful incubators appear to act as a catalyst or a node in a network and are embedded in their environment.
Incubators are long term projects	Incubator development is a long term project taking 5 -10 years to achieve a regional impact.

Source: (Atherton & Hannon 2006, p. 52)

### **2.6.3 Stakeholder theory literature analysis**

#### **2.6.3.1 Business incubator stakeholders**

Australian business incubators usually operate through the relationships of a number of stakeholders who blend their talents (and/or resources) to produce sustainable businesses.

Incubators have also been attributed with increasing income levels, employment creation and economic development for the local community and, where appropriate, have provided a return on shareholder investment (Barrow 2001, p. 5). Albert, Bernasconi and Gaynor (2002, p. 16) described incubator stakeholders as the 'key' to sustained development of this new industry sector, the group being diverse, and the motivations promoted to justify their involvement in this sector, being multifaceted.

In various analyses of international business incubator industries, researchers have developed extensive listings of stakeholder groups. Studies identify the following range of stakeholders, the list closely paralleling the groups of incubator stakeholders in Australia including:

- federal and state governments;
- local or regional authorities;
- chambers of commerce and industry;
- local economic development associations;
- universities and colleges;
- research centres;
- large corporations and consulting firms;
- independent entrepreneurs;
- venture capitalists;
- business angels; and
- religious institutions;

Sources: (Albert & Gaynor 2001, p.16; Eshun 2004, p. 192; Lalkaka 2001, p. 8)

The diverse nature of business incubator stakeholder groups and the need for the development of a theoretical construct was recognised in one of the earliest studies of the ‘incubator’ sector. An initial analysis of American business incubator incubation (Allen & Rahman, 1985, p. 12) noted that stakeholder goals and objectives often differ, as do their organisational arrangements. Lalkaka (2001, p. 8), for example, found that in pursuing these varied objectives, different stakeholders typically seek the development of research and learning, while community-based stakeholders are more concerned with cultural change and/or employment creation, thus incubator management strategies can be highly variable. In another study the analysis reinforces the contention that business incubators are an idiosyncratic reflection of local conditions, due to the domination of stakeholders in incubator policy development. This observation has relevance to the development of incubator policy while acknowledging the predominant role of stakeholders (Allen & McCluskey 1990, p. 74).

### **2.6.3.2 Stakeholder theory**

Awareness of stakeholders as being separate, but still influential in corporate terms, began to emerge in the academic literature in the USA in the 1970s: stakeholder behaviour being taken as given, while acting as a constraint on strategy development and implementation. When the term was used it included all individuals or groups that depend on the company for the realisation of their personal goals, and on whom the company is dependent, including shareholders. Stakeholders were viewed as the traditional 'relatives' of stockholders (Freeman 1984, pp. 35-41).

A body of theory has now been developed around the 'stakeholder' concept. Freeman (1984) is regarded as the originator of the stakeholder construct, to the extent that the role of the stakeholder in business management theory has now been recognised, with the definition developed to suggest that the term 'stakeholder' should denote those groups which 'make a difference' (Freeman 1984, p. 53). The theory "... calls on business leaders to serve their stakeholders because these stakeholders hold the key to the firm's survival. The firm depends on them" (Walsh 2005, p. 428). Freeman (1984, p. 165) also asserted that "... organisations which ignore their stakeholders are in for big trouble, sooner or later". The essential premise of stakeholder theory is that to remain competitive the organisation must attend to the relevant stakeholders' legitimate interests (Tate, Ellram & Brown 2009, p. 59). Freeman's seminal presentation has stood the 'test of time', with little variation in essential direction since the 1980s.

Stakeholder theory has recently been described as a body of analysis which "... seeks to systematically address the question of which stakeholders do and do not deserve or require management attention through evaluation of relationships between organisations and stakeholders" (Doh & Guay 2006, p. 55; Mitchell, Agle & Wood 1997, p. 856). Freeman's 1984 thesis recommended that the most practical management policy, as associated with the findings of stakeholder theory, would be evidenced in the conduct of regular stakeholder audits, these activities examining stakeholder relationships, levels of efficiency, standards of behaviour and objectives (Freeman 1984, p. 129).

In 2007 Freeman published a revised publication that re-iterated this central thesis (Freeman, Harrison & Wicks 2007, p. 81). Freeman's analysis suggests that effective strategic management, involving stakeholder issues, should be based on the creation of a 'stakeholder map'. The 'map' provides an overview of all of the associated stakeholder organisations which may influence the firm, followed by a strategic audit of key stakeholder issues leading towards development of appropriate stakeholder orientated strategies (Freeman 1984, pp. 45-128). The 'map' concept, as depicted in Figure 2.1, has been adapted to match the stakeholder environment confronting Australian business incubators.

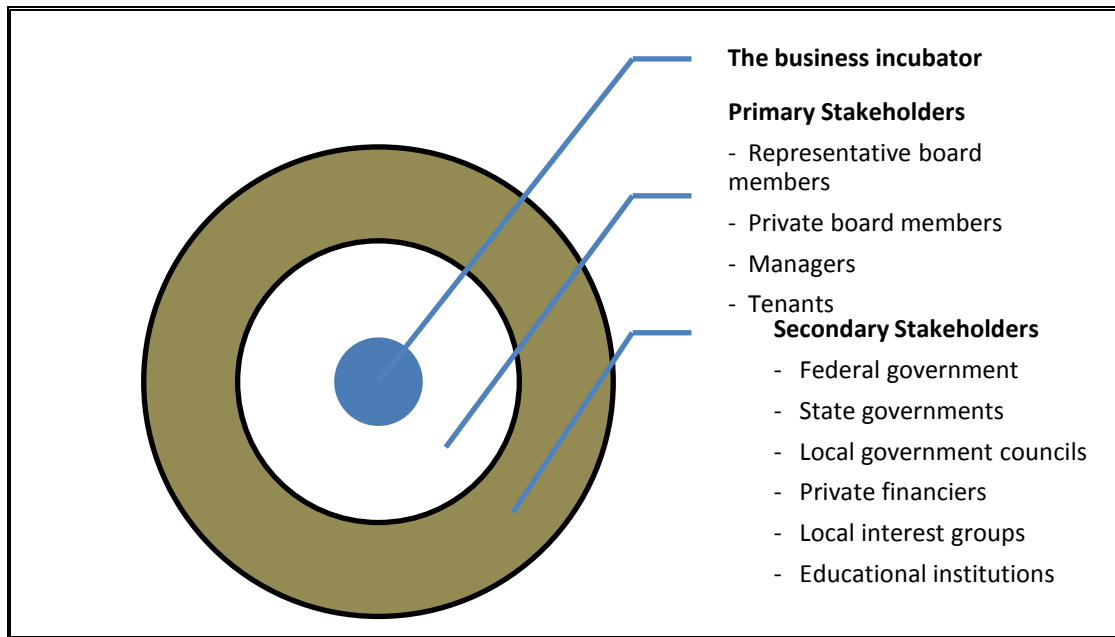
In this figure, primary or definitional stakeholders (those involved in the management of the incubator) are located in the inner ring, while secondary stakeholders (those groups who affect an incubator's primary business relationships) appear in the outer ring.

Each of the secondary stakeholders influences the strategic decision-making processes of the incubator but does so indirectly, via representation on boards of management. Freeman's essential purpose in using this descriptive technique was one of identifying stakeholders while providing a visual indication of their potential impacts upon primary business relationships.

To express the concept in an alternative format, primary stakeholders of an incubator are those whose continuing participation the incubator cannot survive without, including board members, managers and tenants. Secondary stakeholders are those who influence the incubator and include governments, private financiers, local interest groups and educational institutions (Pedersen 2004, p. 31).



**Figure 2.1 Incubator stakeholder map**



### **2.6.3.3 Alternative stakeholder theory**

An alternative explanation of stakeholder theory has been expressed by Phillips (2003, p. 82) in criticising Freeman. Phillips argued that current theory, based on Freeman's concepts, is unable to rule out any group from stakeholder status. Phillips identified an inability in Freeman's analysis, to "... properly discern stakeholders from non-stakeholders ..." and thus "... threatening the meaningfulness of the term". Phillips (2003, p. 82) asks, "if everyone is a stakeholder then what value is added through the use of the term stakeholder"? As an answer to his own question Phillips added the principle of stakeholder 'fairness'. His purpose was one of clearly defining the stakeholder concept to distinguish which groups are stakeholders and which groups are not, in the sense of having additional moral obligations over and above those one is presumed to have toward human beings in general (Phillips 2003, p. 82).

Walsh (2005, pp. 435-6) suggested that Phillips was 'provocative' in trying to identify non-stakeholders, stating that the contribution of Phillips' work was one of seeking to provide a theory of organisational ethics, which Walsh dismissed as "... an aspiration that is more

prayer than axiom”. The observation is appropriate in that Phillips’ analysis has not made a contribution towards the issue of clarifying the definition of stakeholder, but instead, the work tends to cause further division in defining the term.

As stakeholder theory developed, various issues emerged as being relevant to the body of learning, one involving the matter of salience to managers, that is, “... the degree to which managers give propriety to competing stakeholder claims” (Eesley & Lenox 2006, p. 766). Mitchell, Agle and Wood (1997, pp. 865-8) proposed three significant attributes in the manager/stakeholder interrelationship, the first being stakeholder power (where social actor A can cause social actor B to do something that B would not do otherwise). The second attribute identifies involved legitimacy (a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate, within some socially constructed system of norms, values, beliefs and definitions). The third attribute is urgency (the degree to which stakeholder claims call for immediate attention).

The theory contends that the greater the degree of application of these three features by stakeholders, the greater the stakeholder group’s saliency will be in the eyes of managers. As the Mitchell, Agle and Wood (1997, p. 882) concluded, managers must know about entities in their environment that hold power and have the intention to impose their will upon the firm. Power and urgency must therefore be attended to if managers are to serve the legal and moral interests of legitimate stakeholders.

Frooman (1999, p. 199), in expanding Freeman’s earlier analysis, identified the ‘influence pathways’ available to stakeholders seeking to affect business decision-making processes. His *Typology of Resource Relationships* (1999) offered insights into business manager and stakeholder levels of interdependence with potential for application to business incubator analysis.

As indicated in earlier discussion, Freeman (2007), in collaboration with various associates, has maintained a steady input into the development of stakeholder theory as evidenced in a recent contribution which offers a group of seven practical techniques to be utilised by managers in their dealings with stakeholders.

These techniques incorporate the following combination of management processes:

1. **Stakeholder assessment** – a generic stakeholder analysis to be conducted by the manager, on the underlying activities of the incubator and its impact on stakeholders.
2. **Stakeholder behaviour analysis** – a manager study of stakeholder observed behaviour, co-operative potential (how could the organisation achieve its objectives) and competitive threats (what might hinder goal achievement).
3. **Understanding stakeholders in more depth** – understanding the stakeholder's point of view.
4. **Assessing stakeholder strategies** – reviewing stakeholders' 'strategic posture' or capacity for change, in order to influence the outcomes of a decision.
5. **Developing specific strategies for stakeholders** – adoption of generic postures that can be put to work to formulate specific strategies for value creation (for example, 'change the rules' strategies).
6. **Creating new modes of interaction with stakeholders** – ranging from 'ignoring the stakeholders' to 'engagement, dialogue, and negotiation'.
7. **Develop integrative strategies for stakeholders** – find ways to satisfy multiple stakeholders simultaneously.

Source: (Freeman, Harrison & Wicks 2007, p. 103)

Although the abovementioned authors were discussing business development in general terms their 'programme of seven techniques' to better manage stakeholder relationships is capable of ready application to Australian business incubators as a practitioner-oriented set of theoretical 'tools'.

In a recent analysis of the status of stakeholder theory, Freeman et al. (2010, p. 113) quote a number of empirical references, which add support to the idea that business managers who choose to address a broad group of stakeholder interests also simultaneously enhance

financial and societal performance. These authors hypothesised that the ‘practical’ orientation of the stakeholder approach to strategic management has caused the concept to be taken up by many practising managers. Further, Freeman et al. contend that ‘stakeholder’ concepts have gained popularity in modern society, which is “... becoming increasingly sensitive to issues such as corporate wrongdoing, environmentalism and sustainability, and the treatment of workers ...”, so that many corporate websites now include a statement of stakeholder goals as major elements of corporate purpose.

Availability of this stakeholder organisational programme represents a useful device for a researcher involved in dealing with business incubator stakeholders. In the business incubator environment Freeman’s recommended management techniques raise a number of important issues which need to be evaluated in determining whether stakeholder goals are being considered in Australian incubators. When incubator managers utilise these management techniques in deliberate strategies, intended to take full account of the aspirations of all stakeholders, they are in fact taking up Freeman’s assertion that stakeholders ‘make a difference’ (Freeman 1984, p. 53).

This analysis of stakeholder theory relates to the conceptual framework of this study, offering the opportunity to examine a new realm of theoretical discussion in Australia (Jawahar & McLaughlin 2001, pp. 401-10).

#### **2.6.3.4 Stakeholder behaviour and gender**

The stakeholder literature suggests that systematic managerial attention to stakeholder interests is critical in achieving successful operation of enterprises (Freeman, Harrison & Wicks 2007, p. 103; Choi & Shepherd 2004, p. 377). As female entrepreneurs involved in small business development become more prominent then satisfaction of this identified requirement of stakeholder theory can only be achieved if research projects include analyses of key differences and motivations among stakeholders on the basis of gender (Breen 2010, p. 127).

Initial findings of this study suggest that only a small number of women are members of Australian incubator boards of management while, conversely, the findings suggest that

women are playing an expanding role as incubator managers and as tenants. Female involvement in business management, as indicated by numbers of women owning their own business, appears to be expanding worldwide. For example, in the USA (2005) 66% of home-based businesses are owned by women, the figure representing a 77% increase since 1983 (Kephart & Schumacher 2005, p. 3). Also, Loscocco and Bird (2012, p. 183) indicate that during the 1980s and 1990s women-owned businesses represented the fastest growing segment of the small business sector in the USA.

Much of the literature on the role of women as business owners does not address the consequences of adapting theory, developed through analysis of men's lives, to the experiences of women (Johnson & McMahon 2005, p. 117). For example, Embry, Padgett and Caldwell (2008, p. 31) hypothesise that there are gender stereotypes specifically for male and female business managers. They argue that males are agentic (independent, masterful, assertive and instrumentally competent) while females tend to be more communal (friendly, unselfish, concerned with others and expressive) in fulfilling business management roles. Two researchers, in summarising the content of the literature on male/female business stereotypes, suggest that affiliation, attachment, receptivity and co-operation are essentially female values with self-assertion, separation, control and competition as male values (McGregor & Tweed, 2004, p. 430).

Other researchers describe women as 'transformational' business managers whose goals have much to do with participative management in which the overall leadership goal is one of creating a collaborative and trusting team environment (Stelter 2002, p. 97; Moore D., Moore J. & Moore L., 2011, p. 225).

A study of female Canadian business owners (Zinger, Lebrasseur, Robichaud & Riverin 2007, p. 110) summarised hypothesised differences in male and female manager stakeholders by suggesting that males often place greater weight on economic objectives. Female small business owners are perceived as exhibiting a greater tendency to consider aspects such as personal enjoyment and the opportunity for self actualisation – in other words, intrinsic factors are more apparent for women than men.

These indications of a range of gender stereotypes suggest that their identification creates expectations as to how male and female stakeholders in business leadership should behave. If their management behaviour were found to be consistent with these expectations then such stereotypes may be limiting the behavioural choices of men and women in leadership roles in incubators. (Loscocco & Bird 2012, p.191).

The literature also indicates that female business proprietors seek out experienced business owners as mentors more often than is the case for males (McGregor & Tweed 2002, p. 433). The European Union, in 2009, recognised the importance of mentoring as an effective process for the informal transmission of knowledge while providing psychological support for start-up entrepreneurs (Price & McMullen 2012, p. 2) by funding a mentor support programme for female entrepreneurs.

According to the literature, female entrepreneurs also engage more in formal and informal networking than is the case for males (Tonga 2008, p. 485). The networking process has been interpreted as providing a means of offering tenant access to internal and external networks of other incubators as a means of promoting entrepreneurial agency (Bollingtoft & Ulhoi 2005, p. 273). Also, the literature suggests that entrepreneurial agency is strongly linked to level of education of incubator stakeholders. The aforementioned Canadian study indicates that the number of women small business owners who hold a university degree rose at an annual rate of more than 10% since 1990 – double the pace among Canadian men (Zinger, Lebrasseur, Robichaud & Riverin 2007, p. 123).

The literature provides a series of indicators of important differences between male and female small business owners, the female notions of business development not necessarily fitting traditional typologies so that new interpretations are needed (McGregor & Tweed 2002, p. 436).

These findings concerning the relevance of gender in the small business development debate have the potential to impact upon incubator stakeholder goal achievement, the issue representing an unanticipated digression in the process of completing a literature review. However, if an examination of gender issues in Australian incubation serves to fuel the

debate about the relationship between gender and management styles then the diversion would appear to be justified.

## **2.6.4 Institutional theory**

### **2.6.4.1 Introduction**

As discussed above, external stakeholders face varying levels of institutional pressures. This suggests that institutional theory has relevance to this study in the examination of stakeholder goals in Australian incubators.

Institutional theory acknowledges several different types of responses to operational pressures in business management. Selznick's (1957, p. 17) seminal theoretical statement asserts that institutions tend to act in an isomorphic manner, becoming similar in nature. Subsequently, a group of analysts (DiMaggio & Powell 1983; Meyer & Rowan 1977; Zucker 1987) developed a realm of study known as 'institutional theory', to the extent that it is now considered to be a legitimate vehicle for the study of business phenomena (McNair & Watts 2006, p. 3).

North (1991, 1997) argued that institutions are the 'rules of the game' in a society, or in a more formal context, they are the humanly devised constraints that shape human interaction. As a consequence, institutions structure incentives in exchange, whether political, social, or economic in an environment in which economic theory has little to say about the issue, so we take them for granted (North 1997, p. 2).

Contemporary institutional theory encompasses both the early version of institutional theory and the neo-institutional perspective. The old and new 'institutionalisms' are programmes of research that arose out of a concern with the almost complete lack of consideration given to institutions in conventional neo-classical economics. That institutions 'matter' in shaping economic behaviour and economic performance is a central tenet of both the old and new institutionalism, as is the recognition that institutions themselves change over time and often respond to economic factors (Veciana & Urbano 2008, p. 371).

Applications of institutional theory are now diverse and several co-existing streams which study the topic exist in organisational theory. Institutional theory has been successfully utilised in diverse areas of study which include information technology outsourcing (Ang & Cummings 1997), TQM (Westphal, Gulati & Shortell 1999), online industry pricing conventions (Farjoun 2002), benchmarking (McNair & Watts 2006), business planning (Karlsson 2004), venture capital availability (Cornelius 2005) and management of museums (DiMaggio 1991). One of the heavily investigated streams deals with externally generated homogeneity of organisational management originated by DiMaggio (1983) with several subsequent applications (Abrahamson 1991; Slack & Hinings 1994).

Institutional outcomes reflect the effect of the institutional process, the commonly discussed outcomes in institutional theory being legitimacy and efficiency. New ventures suffer from both liabilities of newness as a result of their age and size. It could therefore be observed that new ventures lack 'legitimacy', a situation which threatens their development and survival. To survive, it has been argued that it is therefore of crucial importance that new ventures conform to institutional pressures (Baum & Oliver 1996; Karlsson 2005, p. 40). Outcomes have been positively related to legitimacy, wherein start-ups are viewed as lacking industry relevance and therefore lacking 'legitimacy' in institutional terms (Aldrich & Fiol 1994; Baum & Oliver 1996; Delmas & Toffel 2004; Suchman 1995).

Abrahamson (1991, p. 261) contended that a 'theory of fashion' should also be incorporated in institutional analysis, suggesting that start-up enterprise profitability depends upon normative influences. This circumstance was theorised as having created a typical business environment in which stakeholders expect firms to behave rationally, that is, they must be seen to parallel the forms of rationality by adhering to contemporary management 'fashions'.

Initially, proponents of institutional theory placed strongest emphasis upon a 'taken for granted character of institutional rules' (DiMaggio & Powell 1983, p. 148; Oliver 1991, p. 145; Selznick 1957, p. 17), assuming that institutional strictures towards conformity will be enforced upon start-up enterprises (like business incubators) and implemented without question. This assumption disregarded the fact that successful entrepreneurial development



does not necessarily relate to compliant activity by institutions but might actually be aggressive in nature, as firms capitalise on growth opportunities.

Early institutional theory was concerned with an alternative to functional and rational explanations of organisational forms, seeking to understand similarity and stability with organisational fields (Ashworth, Boyne & Delbridge 2005, p. 3). At the heart of the argument that institutional theory provides a conceptual framework for business sector analysis is the belief that institutional theory describes processes by which structures including rules, norms and routines become established and authorised as acceptable business practice (McNair & Watts 2006, p. 3). The literature indicates a mechanism through which this can occur, namely through organisational isomorphism.

#### **2.6.4.2 Isomorphism**

The concept that external pressure might exert a strong influence on the development of new organisations is not new, nor is the suggestion that external pressures can direct organisations towards implementation of similar strategies. Di Maggio (1983) called this a process of competitive isomorphism, a circumstance where forces impact on an organisation and exert a direct influence of greater complexity than just competition and efficiency considerations (Davidson, Hunter & Klofsten 2006, p. 117).

Initially, institutional isomorphic change was seen as the desire of organisations to adopt similar structures, strategies and processes to other organisations in their environment through three key drivers: (a) coercive isomorphism, stemming from political influence and the problem of legitimacy, (b) mimetic isomorphism resulting from standard responses to uncertainty, and (c) normative isomorphism associated with professionalism (DiMaggio & Powell 1983, p. 150).

Coercive isomorphism stems from organisational dependence and political influence. It results from both formal and informal pressures exerted on organisations by other organisations upon which they are dependent, and by cultural expectations in the society within which these organisations function (DiMaggio & Powell 1983, p. 146). One observer suggested that failure to submit to coercive pressures can, at the extreme, lead to

the termination of the organisation. The notion is that coercion is the primary mechanism of control, interpreted as force, or persuasion (Karlsson 2005, p. 29).

Mimetic isomorphism describes the tendency of organisations, confronted with environmental uncertainty or difficulties, to imitate the practices of other organisations. This tendency occurs especially where organisations perceive other systems, products, functions and activities as being superior, or more successful. Mimicking of pre-existing models reduces uncertainty, often seen to be easier than going through the process of creating new models. To Aldrich and Fiol (1994, p. 81) mimicking provides new ventures with a means of getting established. Normative isomorphism stems primarily from professional, social or moral obligations relating to “... concern over the nature of what is desirable and considered good and appropriate behaviour” (Karlsson 2005, p. 30). An associated definition sees this realm of isomorphism as the collective struggle by members of an organisational field or occupational group to define, control and/or make legitimate their occupational autonomy (DiMaggio & Powell 1983, p. 152).

The basis for compliance is seen as expedience, with legitimacy provided through the organisation acting in accordance with relevant legal or quasi-legal requirements (McNair & Watts 2006, p. 8). For example, one case study examines the application of normative pressures in the Finnish newspaper sector where businesses accepted normative pressure arising out of a willingness to comply with authority, to fit into society, and to play a role for some greater good (Dacin 1997, p. 80). To Karlsson the normative incentive is the outcome of industry ‘prominence’, wherein the participating organisation is seen to be ‘efficient’, having ‘legitimacy’, so that a start-up enterprise receives a positive evaluation from the marketplace with resultant improved levels of profitability. Non-compliance, as associated with normative pressure, may lead to bad word-of-mouth, bad publicity and loss of credibility among organisational stakeholders (Karlsson 2005, p. 31).

#### **2.6.4.3 A process model**

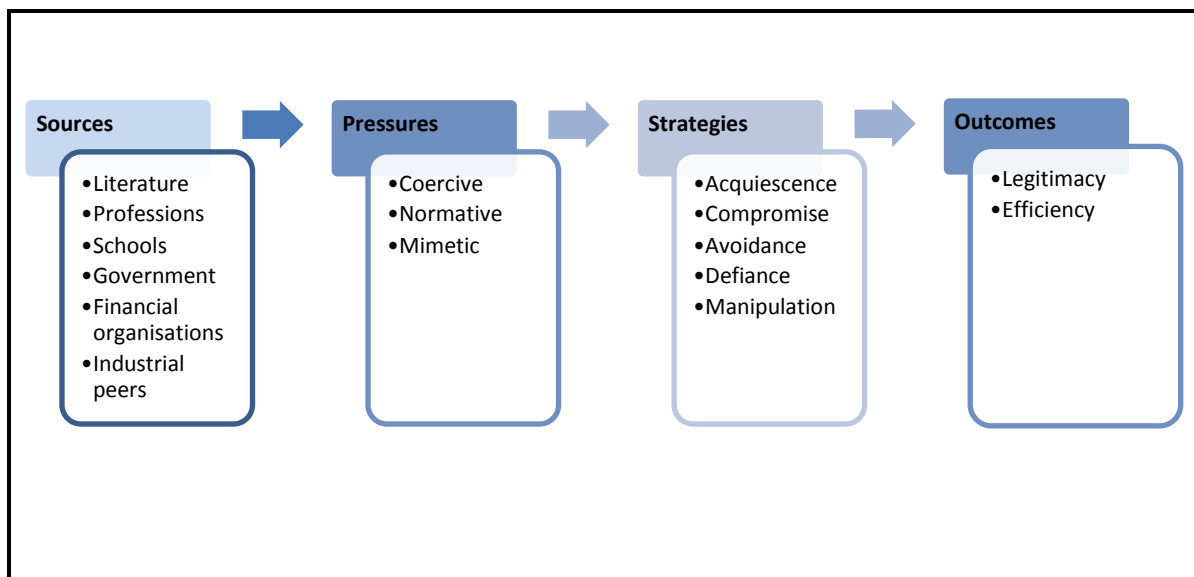
As previously mentioned, institutional theory acknowledges several different types of response to pressures, this awareness being evidenced in Karlsson’s (2005, pp. 23-44)

*Process Model of Institutionalisation* in new ventures, in which he adds consideration of the divergent view of institutionalisation. The model exhibits potential application to this study in an amended format. This model shows how, for example, a management tool reaches an organisation, how this tool is dealt with and the consequences of dealing with a tool in this way. The management tool in the Karlsson model, which is the basis of his study, relates to the writing of business plans. The model simplifies the dynamic process in which business plans may be institutionalised in new ventures. The model illustrates the central process in which institutions are commonly understood to reach and change an organisation.

#### 2.6.4.4 The institutionalisation process

The institutionalisation process in organisations has been conceptualised in Figure 2.2.

**Figure 2.2 The Karlsson Model**



Source: (Karlsson 2005, p. 23)

Institutional sources, according to Karlsson (2005), exert isomorphic pressures leading to different strategic responses being available to the organisation and so creating certain outcomes.

Institutional theory analyses have advanced these observations by developing variations in organisational responses in the face of institutional pressures (Ang & Cummings 1997; Bigelow & Middleton 1995; Oliver 1991).

Oliver (1991) listed an array of different responses in a statement of organisational reactions to isomorphic pressures, the concepts being summarised in Table 2.7.

**Table 2.7 Institutional responses**

Strategy	Actions	Definition
<u>Acquiescence</u> – many alternatives (conformity to institutional pressures in speech, writing and actions).	Habit Imitate Comply	Acquiescence is the action taken by a firm to conform to institutional pressures.
<u>Compromise</u> – (organisations may try to balance, pacify or bargain with the institutional pressures and/or try to balance, pacify or bargain with the institutional pressures and or the sources exerting the pressures).	Balance Pacify Bargain	A compromising strategy indicates that the firm tries to reduce the extent to which conformity is necessary.
<u>Avoidance</u> – (the organisational attempt to preclude the necessity of conformity. Avoid institutional pressures by escaping from the context in which the institutional rules and expectations are expressed).	Conceal Buffer Escape	Avoidance is the attempt to preclude the necessity to conform to institutional pressures.
<u>Defiance</u> – (an active form of resistance. Oliver noted three tactics - dismissal, challenge and attack).	Dismiss Challenge Attack	Defiance is an active response to an institutional pressure when non-conformity is openly admitted. But change of the institutional pressure is precluded.
<u>Manipulation</u> – (may seek to try to influence or control the institutionalised values - change the institutionalised criteria of acceptable practices, for example, by lobbying. Unlikely among new ventures as such strategies require substantial bargaining power and other types of resources).	Co-op Influence Control *	Manipulation is an active response to an institutional pressure where change of the institution itself is the goal.

Source: (Oliver 1991, p. 152). \* The 'action' terms are also derived from Oliver 1991, p. 152.

Oliver's thesis provides an effective response to the observation that organisational reactions to isomorphic pressures "... clearly fall along a continuum from relatively passive conformity to relatively active manipulation" (cited in Suchman 1995, p. 567).

Also, Bigelow and Middleton (1995, p. 191), examined the application of institutional theory to downsizing pressures in the United Kingdom's public health sector. They concluded that the analysis provided empirical evidence in support of Oliver's conceptual argument (incorporating the five potential responses to institutional pressures) that organisations will show a range of responses to institutional pressures.

Entrepreneurs typically re-allocate existing resources to new uses when they start new businesses and, in doing so, challenge the status quo. Entrepreneurs need to convince others that the actions required of their new venture are desirable, proper and/or appropriate – they need to gain legitimacy. Institutional theory holds that new ventures have to conform to institutional pressures in order to gain such legitimacy, considered essential for new ventures' chances of survival. Thus, an unresolved paradox between the findings of entrepreneurship research is that new ventures tend to break established patterns.

Yet, institutional theory focuses on the need for conformity to rules and legitimacy (Karlsson et al. 2005, pp. 165-66). Legitimacy is investigated in terms of social acceptance, peer acknowledgement and positive evaluations from the firm's environment: "Organisations that ... lack acceptable legitimated accounts of their activities ... are more vulnerable to claims that they are negligent, irrational or unnecessary" (Meyer & Rowan 1977, p. 350).

Bigelow and Middleton (1995, p. 183) indicated, in earlier theory relating to institutional responses, that there is an implicit assumption of organisational passivity and conformity in the face of institutional pressures. Bigelow quoted Oliver's response to this observation which suggested that five possible responses to institutional pressures can occur (see Table 2.8), arguing that this analysis provides empirical evidence supporting Oliver's thesis (cited in Bigelow & Middleton 1995, p. 191), that entrepreneurial reaction to start-up opportunities can range from acquiescent/compliant to very aggressive strategic responses (Oliver 1991, p. 152).

One related study conducted a single industry analysis (the UK steel industry), based on Oliver's thesis. The purpose of the study was to evaluate Oliver's model in a single industry, rather than across a wide range of business types, which had been the case in other evaluations. Also, the application to a single industry allows for control of common external influences, while more precisely defining the relevant institutional antecedents and their relationships to strategic responses. The results of the study support much of Oliver's conceptual model of institutional influence on organisational behaviour (cited in Clemens & Douglas 2005, p. 1210).

To resist or reject institutional pressures is often hypothesised as having a reverse relationship to efficiency and financial performance, that is, to dismiss institutional pressures leads to negative consequences for the firm's performance in terms of profitability or change in value. The reality may be that different strategies are appropriate in different circumstances. Institutional theorists have been predominantly interested in examining whether there are any effects of corporate decisions that conform to institutional pressures, but few studies indicate an attempt to try to understand the outcomes of different institutional strategies (Karlsson 2005, p. 41).

#### **2.6.4.5 Institutional theory and this study**

As observed by Davidson, Hunter and Klofsten (2006, p. 126), "... there can be little doubt that adherence to institutional forces will make emerging ventures less different from existing ventures and from their peers - that is, less innovative". The 2006 study confirms several hypotheses derived from institutional theory and, in so doing, serves as a useful tool for the design and presentation of this study.

Karlsson's model (Figure 2.2) offers the opportunity to conduct a structured study, using institutional theory. His thesis examines sources of external isomorphic pressures in the business incubator industry, leading to organisational outcomes, analysis incorporating the essential contributions of other academic contributors including Oliver (1991) and Davidson (2006).

In a recent commentary, which examined the importance of the European Union funding 'pot' for incubator development, Gstraunthaler (2010, p. 415) theorised that current development of European incubators exhibits the presence of "... more and stronger arguments in favour of a mimicking process and institutional behaviour".

Aldrich and Fiol's (1994, p. 659) analysis moved the theory towards a consideration of the impact of institutional factors in business start-ups, concluding, that institutional theory has a major role to play in business analysis. Baum and Oliver (1996) completed an analysis of British childcare centres, utilising institutional theory as the theoretical technique. Their study examines 'for-profit' and 'not-for-profit' childcare centres. This British research project has parallels with this planned incubator sector study, where the issue of 'not-for-profit' and government ongoing subsidy support is an issue of interest. The authors concluded that non-profit sector organisations appear to receive greater benefit from 'institutional embeddedness' than 'for-profit' centres (Baum & Oliver 1996, p. 1419). A parallel scenario was considered for application in the Australian business incubator environment as part of the design of this study.

#### **2.6.4.6 Definition of the term 'environment' in the context of the study**

Throughout the thesis there are frequent references to the Australian incubator 'environment', a term which requires further explanation. Also, in utilising institutional analysis as a theoretical component of the study then the presence of a diverse range of potential background influences which may impact upon the incubator sector requires further analysis.

A definition of the nature of the incubator business environment is relevant in any consideration of institutional theory whereby the 'environment' may exert isomorphic pressures on business incubators. This aspect of institutional theory provides a pivotal theme throughout this thesis.

In considering the influence of the 'environment' on businesses, such as incubators, Castrogiovanni called for multi-level assessment of the impact of higher level environmental forces upon business development (Castrogiovanni 1996, p. 811). Earlier

analysis in this research project, as depicted in Figure 2.1, has provided an appropriate response to this point of view whereby primary stakeholders comprising the incubator's board, managers and tenants, have been identified as having a need to acknowledge and understand the impact of secondary stakeholders who include all levels of government, local communities, educational institutions and financiers.

This 'secondary' group were described in a recent study as the 'operating environment' of an incubator. Additionally, in the same analysis, that section of the incubator environment in which the incubator organisation's operating environment must function but have little or no influence over its components, was described as the 'broad environment' including society, technology, economy and political/legal forces (Freeman 2010 et al. p. 105).

#### **2.6.4.7 Stakeholder and institutional theories**

Freeman's original strategic management model begins with an evaluation of the nature and role of stakeholders and continues by identifying a set of 'tools' for management of stakeholders in their pursuit of organisational objectives. The analysis concludes by measuring stakeholder satisfaction with organisational outcomes (Freeman et al. 2010, p. 104). Freeman had argued that the term 'stakeholder' provides an indication to managers and theorists that these stakeholder groups have a 'stake' in the business, and thus, the term denotes legitimacy. The term is especially applicable to the business strategies of managers in allowing for the legitimacy of these groups and their ability to affect the direction of the firm (Freeman 1984, p. 46).

The observation is also relevant to institutional theory whereby institutional legitimacy is an inherent component of theoretical analysis, the argument suggesting that firms adapt their internal characteristics to conform with the expectations of key stakeholders in their environment (Ashworth, Boyne & Delbridge 2005, p. 2; Gstraunthaler 2010, p. 414). One question is especially relevant here. 'Do business incubator stakeholder activities cause such adaptation to take place'? Doh and Guy (2006, p. 55) suggest that stakeholder theory provides important insights into the ways in which firms and their managers interact with stakeholders. Specifically, they conclude that the ability of non-government organisations



to gain legitimacy depends upon the “... institutional environment and legacy of the region or polity in which they are active”. This finding is relevant to this study with respect to analysis of non-government sector business incubator stakeholder issues.

#### **2.6.4.8 Entrepreneurship and institutional theory**

Researchers are increasingly perceiving entrepreneurial development processes as situations in which original business ideas are quite different in nature to the subsequent business venture.

Previous literature that acknowledges change in the venture idea, due to the adoption of input from external parties, assumed that adaptation makes the venture more viable, successful or capable of achieving underlying original stakeholder goals (Klofsten 2005, p.107). This process is similar to what DiMaggio and Powell (1983, p. 150) called competitive isomorphism suggesting that firms may have a tendency, as a result of competitive pressures, to become more ‘alike’.

A recent study considered the theoretical relationship between institutional theory and entrepreneurship, identifying this area of entrepreneurship research as one which had been overlooked. The study concludes that the development of venture ideas, in many cases, may be subject to a process of institutional isomorphism (Davidson, Hunter & Klofsten 2006, p. 125).

Contrary to Davidson, Hunter and Klofsten’s (2006) assertion, Shane (2003, p. 145) contended that entrepreneurship researchers have long been interested in the institutional environment because the institutional context appears to influence entrepreneurial activity, being amenable to the policy levers that government officials can use to influence the amount and form of entrepreneurial activity. This point is especially relevant considering the significant historical levels of government funding supporting Australian business incubators.

Another phrase used by academics, while discussing the relationship between entrepreneurship and institutional theory, is that relating to the ‘institutional entrepreneur’.

This concept is used to describe those entrepreneurs “... who see an opportunity to realise an interest that they value highly” (DiMaggio 1988, p.14) and are able “... to disembody themselves from existing institutional arrangements, in order to create new institutions or change existing ones” (Leca & Naccache 2006, p. 628).

The issue of attitudes and obstacles to new firm formation has also been a topical research subject that has identified differences between various institutional contexts, as has the question of cost and time required to create a new enterprise in variable institutional contexts (Veciana & Urbano 2008, p. 375).

In theory, institutions provide a framework that guides activity, removes uncertainty and makes the actions of others predictable. However, they also influence the behaviour of all individuals. And the same individuals with the same motivations will tend to act very differently under different sets of institutions (Minniti & Levesque 2008b, p. 9). This situation has implications for any understanding of the processes of economic change, especially in efforts to generate economic growth, which explain the interest in entrepreneurship. As such, the institutional environment will direct entrepreneurial activity towards those activities with the highest payoff. Unfortunately, these activities, in the Schumpeterian tradition, can be productive, unproductive or destructive but overall, the expected results, especially relating to activity designed to encourage entrepreneurial small firm development, are expected to balance out in expansion in business activity.

What happens to entrepreneurial performance in economies with ‘weak’ institutions? A contemporary analysis of European ‘transition’ economies argues that the weakness of institutions in these economies is detrimental to entrepreneurial activity and, even though networks are important, they are not entirely able to offset these deficiencies.

Aidis, Estran and Mickiewicz (2008, p. 15) initially suggested that research in this area is needed to delineate the relationship between institutional development and levels of entrepreneurial activity. This research could examine how additional factors, such as the presence and strength of informal networks, may act as substitutes for dysfunctional institutions. Recent analysis by Estran and Mickiewicz (2011, p. 399) highlights the significant role of property rights and the rule of law in underpinning entrepreneurial

activity suggesting that a weak rule of law exacerbates enterprise transaction costs and risk levels.

Dickson and Weaver (2008) have made a contribution to the literature by suggesting that choice of small to medium-size entrepreneurial enterprises to take a more risky, innovative and pro-active posture is, to some extent, a response to the regulative, normative and cognitive aspects of the institutional environment.

The study views an entrepreneurial orientation as one response to institutional forces, a situation in which firms will be more likely to adopt an entrepreneurial ‘stance’ when they see it as a legitimate strategic response which is aligned with the normative, regulative and cognitive aspects of the institutions that help compose the environment of the firm (Dickson & Weaver 2008, p. 481).

## **2.7 Theoretical framework**

This chapter has focused on a review of the literature about business incubators, a ‘start-up’ business development concept that has received considerable public attention worldwide, having been embraced and adopted by many public policy planners and incubator stakeholders.

The study’s review process has concentrated on issues concerning identification of stakeholder goals, definitions and consideration of relevant research. The purpose has been to devise a theoretical framework for the thesis.

The review of literature indicates that theoretical and empirical research on the topic of business incubation suffers multiple limitations. For example, the issue of development of a concise and universally accepted definition of business incubation is yet to be resolved.

Contemporary entrepreneurship policies set out to create an entrepreneurial climate that encourages business start-ups that lead to innovative ventures. It is evident that this development embodies recommendations which acknowledge ongoing political support for the creation of policies aimed at advancement of entrepreneurship, as evidenced in Europe over the past decade.

Key elements of ‘entrepreneurship policy’, in the European context, seek to provide a holistic policy which makes the continent more ‘enterprise friendly’ (Aernoudt 2004, p. 130; Audretsch & Beckmann 2007, p. 41).

The literature review highlights the important roles played by all stakeholders, and their networks, in the incubator development processes. Freeman’s (1984, p. 53) development of the stakeholder ‘construct’ promotes the viewpoint that sees stakeholders as those groups who “... make a difference”. The importance of stakeholders is emphasised by Freeman when he has consistently asserted that “... organisations which ignore their stakeholders are in for big trouble, sooner or later” (Freeman, 1984, p. 165).

Current research employs an institutional perspective to compare the evolution of various entrepreneurial development phenomena, suggesting that institutional theory is relevant for future research that examines the effects of local, regional and national influences in the incubator, and for associated incubatees.

Oliver (1991) was one of the first analysts to consider that organisations try to gain as much independence as practicable from their surrounding environment, using different strategies. While institutional pressures generally cause firms to develop similar traits, Oliver implicitly introduced dynamism into the model “... by adding influence via various organisations’ competitive environments” (cited in Ang and Cummings 1997, p. 251).

Using descriptive terminology, they “... employed institutional theory as the theoretical lens ...”, the process, using institutional theory, argues that various forms of external pressures may make new or emerging ventures adapt in systematic and predictable ways, institutional pressures tending to make the emerging, (or new) venture, similar to other business ventures (Davidson, Hunter & Klofsten 2006, p. 116).

This study’s conceptual framework, as detailed in Chapter 3, investigates the institutionalisation process, by showing how institutionalised factors have influenced Australian incubators, how they have been dealt with and the results of such responses. The process offers an opportunity to provide an examination of the interactions between

external isomorphic pressures and subsequent organisational action, especially concerning the goals of incubator stakeholders.

Business incubation is a new and emerging organisational form. This study links various intellectual fields of inquiry and builds on the existing research base for business incubators.

The literature review findings indicate a lack of consensus concerning how to measure incubator performance. This study utilises two elements of what Vanderstraeten and Matthyssens (2010, p. 18) described as the ‘effectiveness approach’, incorporating ‘goal’ and ‘stakeholder approaches’. The former approach assesses the degree of realisation of an organisation’s objectives, while the latter approach considers the extent to which the organisation’s ‘strategic constituencies’ have been satisfied. The closer an organisation is to meeting its goals, while satisfying stakeholders, “... the more effective it [the organisation] is”.

This literature review has examined the range of existing literature considered to be of relevance to this study. In particular, patterns, themes and issues pertaining to business incubator stakeholders and goal achievement were identified (Seuring & Mueller 2008, p. 1670).

## **2.8 Conclusions**

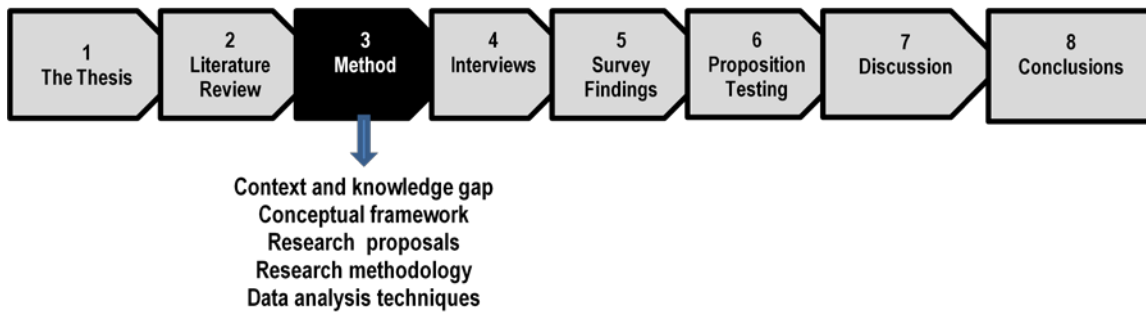
Chapter 2 presents a history of business incubation in terms of its development since the late 1980s in Australia and internationally. The chapter also considers how the term ‘business incubation’ has been defined while examining the range of theoretical comment concerning business incubator goals. In particular, the areas of stakeholder and institutional theory have been identified as having relevance in the study of business incubator goal achievement outcomes.

Chapter 2 has presented a series of conceptual ‘toolboxes’ for bringing insights to bear on incubator goal achievement (Vidovich 1998, p.77), especially concerning the construct of a theoretical basis for further development of the conceptual framework in Chapter 3. The

next chapter details the nature and logic of the conceptual framework of this study while justifying the rationale and methodology of the research project to allow a series of research propositions to be tested.

## CHAPTER 3

### PROPOSITIONS AND METHODOLOGY



#### 3.1 Introduction

This study is located within the general domain of small business research, the approach adopted for the research programme being one of interweaving methodology and theory.

The literature review in the previous chapter focuses on issues concerning the nature of the Australian business incubator industry and the goals of incubator stakeholders with an appraisal of relevant analyses about stakeholder and institutional theories. From this appraisal it is possible to draw a number of observations that suggest:

- business incubation is a multifaceted concept;
- there are many business incubator stakeholders;
- the goals of incubator stakeholders appear to be highly variable;
- business incubation relates particularly to business ‘start-ups’;
- international business incubation experience offers a range of lessons about best practice development of the concept;
- there is an international body of theoretical analysis of potential value to the Australian business incubation researcher; and
- business incubation, as a field of study, exhibits a number of research ‘gaps’.

The central ideas of the research paradigm have been defined by a group of questions embodying a broad range of ontological, epistemological and methodological issues. The ontological question is described as providing an indication of the form and nature of reality. This thesis, in the search for initial answers to the ontological questions, employed the qualitative method. Resultant interviews with incubator managers and other practitioners provided an enhanced awareness of the attitudes of the members of the Australian incubator movement so that an initial understanding of key issues was developed.

The central evaluative component of the study involves the testing of a range of propositions using the quantitative method, the process focussing on the attitudes of the various incubator stakeholders and the perceptions they attach to various aspects of their professional activities (Guba & Lincoln 1994, p. 108). This aspect of the project is designed to test a series of propositions considered to provide the means of assessing the degree to which the stakeholders of Australian incubators are achieving their goals.

Epistemology questions the nature of the relationship between the researcher and what can be found concerning the issues which are considered to be relevant for this research analysis which is entitled *Stakeholder Goal Achievement in Australian Business Incubators*. The conduct of the literature review, as documented in Chapter 2, has provided the conceptual foundations required to move on to Chapter 3 wherein an outline of the methodological techniques used to collect and analyse data are detailed. The empirical findings, as presented in Chapters 7 and 8 of the analysis are intended to provide a springboard for further theory building in this area of small business research in which there is a generally acknowledged research 'gap'.

The methodology, incorporating the conceptual framework is set out in Section 3.2 while Section 3.3 includes discussion concerning the research propositions. In Section 3.4 the research methodology is detailed and Section 3.5 concludes the chapter.



### **3.1.1 Identified knowledge gap**

International business incubator research has typically considered an incubator to be ‘successful’ if it supports significant employment creation, and/or large numbers of new firms are created as part of broader economic development strategies. The literature shows that very little evaluation of the full range of business incubator stakeholder goals has taken place. And there has not been any detailed investigation of stakeholder perceptions of the impact of their involvement in business incubators.

## **3.2 The research study**

### **3.2.1 The research questions**

Empirical evidence suggests that the underlying goal of business incubator participation typically seeks to support enterprise creation as part of a broad-based economic development and employment creation strategy (Wynarczyk & Raine 2005, p. 210). The primary stakeholders in the business incubation industry include the members of incubator boards of management, the managers of incubators and the incubatees who operate the various businesses which are serviced by the incubator organisation. The issue of incubator stakeholder goal definition and satisfaction is a complicated area of analysis, representing a potential research ‘gap’ in the Australian academic environment.

This study seeks to identify the goals of business incubator primary stakeholders and to assess, through a detailed consideration of the responses to questions raised, whether those goals are being met.

The key research question, the dependent variable, proposed for the study can be stated as:

- Are Australian incubator stakeholders achieving their goals?

So that this question can be tested in detail a range of additional research questions have been raised, each of these independent variables providing important elements of the conceptual framework’s testing processes where they are re-phrased as a series of propositions. These additional research questions can be stated as follows:

- Does an awareness of stakeholder needs, by incubator decision makers, enhance stakeholder goal achievement?
- Do Australian incubator management processes reveal patterns of institutional conformity?
- Does the presence of the so-called ‘benefits’ of incubation assist incubator stakeholders in achieving their goals?
- Which are the most important goal achievement issues which contribute to, or detract from, the attainment of Australian incubator stakeholder goal satisfaction?

### **3.2.2 Elements of the conceptual framework**

A central component of effective research involves the need to provide a theoretical underpinning for a practical application (McNair & Watts 2006, p. 10). With this issue in mind the researcher developed the conceptual framework for this study addressing concerns expressed by Zimmerman and Zeitz (2002, pp. 428-9), which seek to provide a theoretical conceptualisation that supports practitioner-orientated techniques.

On a parallel theme, McNair and Watts (2006, p. 11) have identified the need for a researcher to provide an analytical base that creates meaning and significance. In this context the researcher sought to develop and test relevant theory, relating content to observed practice in Australian business incubation. The business incubator sector appears to be both extremely competitive and highly institutionalised, offering an opportunity (or possibly, a requirement) to juxtapose theories that emphasise the outcomes of various influences on organisational actions.

The origin of business incubation funding frequently has the potential “... to determine the incubators’ strategic focus ...” (Chandra 2007, p. 20) so that stakeholders exhibit multiple goals which change over time (Haapasalo & Ekholm 2004, p. 268; Hansen et al. 2000, p. 82). Australian business incubators have been established, using public and private

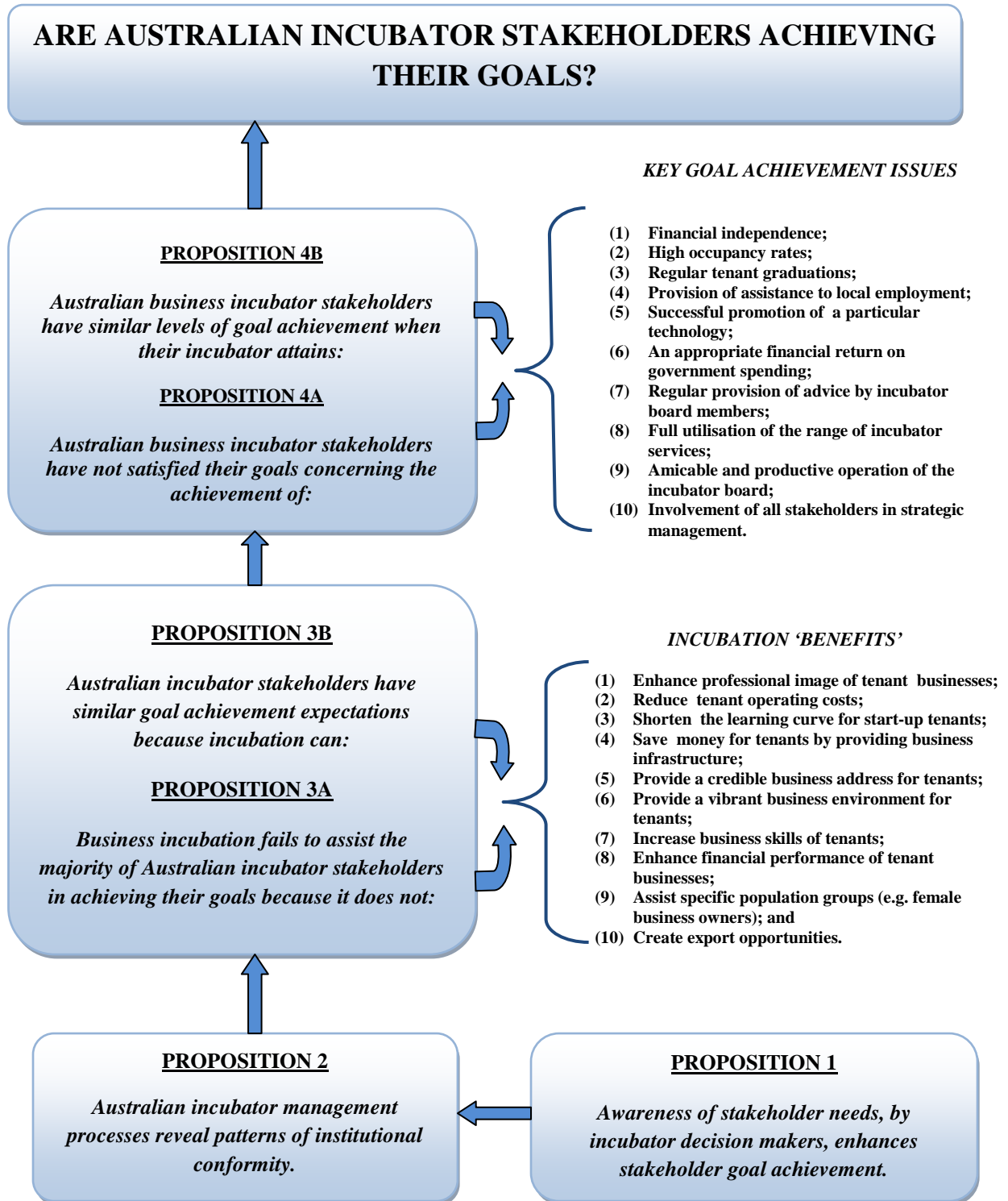
stakeholder resources, to facilitate business start-ups with very little theoretical content to justify these activities (Bhabra-Remedios & Cornelius 2003, p. 1; Schaper & Lewer 2009, p. 43). Figure 3.1 details the conceptual framework upon which this study is based, describing the theorised linkages impacting the dependent variable, namely incubator stakeholder goal achievement. The literature review led to the conclusion that stakeholder and institutional theories could serve as appropriate theoretical bases for the study. Subsequently, a group of propositions were developed which deal with implications of stakeholder (Proposition 1) and institutional (Proposition 2) theories in achieving goals while also considering the implications of a diverse range of perceived 'benefits of incubation' purportedly justifying stakeholder incubator participation (Propositions 3A and 3B).

Propositions 4A and 4B embody the fundamental range of goal achievement issues. This section of the study surveys the implications of stakeholder perceptions of their degree of success in achieving those goals which might justify their participation in business incubation. The conceptual framework illustrates the processes concerning the key research question, which considers whether incubator stakeholders are achieving their goals in participating in the Australian business incubation industry.

In formulating a conceptual framework two related areas of analysis emerge as displaying a range of relevant bases that might be utilised in developing the thesis: stakeholder and institutional theories. Subsequently, they provide the theoretical underpinning for this study.

Questions were incorporated within the survey as direct applications of specific theoretical issues to test whether theoretical influences can be identified in this way, as perceived by participants in the Australian business incubator industry.

Figure 3.1 Conceptual framework



### **3.3 Propositions and the conceptual framework**

#### **3.3.1 Propositions**

The study's conceptual framework has been designed to answer the major research question. A number of specific propositions were developed to assess this conceptualisation.

The conceptual framework highlights the premise that the business incubator 'field' has many participating stakeholders including board members, incubator managers and incubator business tenants.

Each stakeholder group, according to Lalkala (2001, p. 5), exhibits specific predilections in explaining their participation in business incubation, to the extent that these differences may significantly influence the goals of each stakeholder. One of the purposes of this study was to establish whether significant differences exist among survey respondents (Sekaran 2000, p. 127). Or, do all stakeholders exhibit similar attitudes toward goal achievement?

Proposition 1 examines the relevance of stakeholder theory in influencing the processes associated with goal achievement. Survey questions are designed to examine whether various parties involved in the operation of business incubators have felt that, as stakeholders, their roles are receiving an appropriate level of attention and recognition and whether their perceptions of personal goal achievement have been subsequently influenced.

Stakeholder theory helps to understand the environment and the different constituents incubator managers need to satisfy to effectively manage their organisations. This area of theory especially considers the levels to which stakeholders possess one or more attributes; their power to influence the firm, the urgency of their claim on the firm and the legitimacy of their relationship with the firm (Alsos, Hytti & Ljunggren 2011, p. 608).

Mitchell, Agle and Wood's (1997, p. 854) analysis defined the group of stakeholders most directly involved in the daily operation of incubators as being the definitive group. However, this definition includes government funding agencies, a group, in the Australian context who essentially make grant funds available and then have little ongoing contact

with the incubator organisations to the extent that there is very little government funding being provided at present to Australian incubators (refer to Section 4.2.4). In this study the stakeholder group of so-called ‘definitive’ stakeholders include incubator board members, incubator managers and incubatees, the group being identified in the literature as ‘primary’ stakeholders (referring to Figure 2.1, page 40 of the literature review), the group with the “... power to influence the organisation” (Ingenbleek & Immink 2010, p. 55).

Also, the stakeholder theory approach, as outlined in the literature review, provides the researcher with the capability of recognising that what matters to one group of incubator primary stakeholders may not be significant to others.

Subsequently, the design of this study, using stakeholder theory, expressed Proposition 1 in a format which allowed the researcher to design a range of survey questions which examine each ‘primary’ member of the cohort’s perceptions of their incubator goal achievement experience.

Also, to enable further exploration of the data, a selection of relevant issues were included within the survey which included questions relating to incubator operational status, tenant selection processes, level of stakeholder educational attainment, gender and period of stakeholder involvement in incubation.

A copy of the e-mail questionnaire is appended (see Appendix 8.1).

Proposition 1 states that:

**Awareness of stakeholder needs, by incubator decision makers, enhances stakeholder goal achievement.**

Proposition 2 has been designed to test whether institutional theory has a role to play in the explanation of Australian incubator stakeholder goal achievement. Institutional theory seeks to provide the researcher with the methodology to take a more critical view on how institutions emerge, how they are influenced by their environment and how they influence the environment in which they operate (Gstraunthaler 2009, p. 397).

Institutional outcomes reflect the effect of the institutional process, the frequently discussed outcomes in institutional theory being legitimacy and efficiency. The stakeholders of new incubators potentially suffer from both liabilities of newness as a result of their age and size. To survive, the literature suggests that it is important that new incubators conform to institutional pressures (Baum & Oliver 1996; Karlsson 2005, p. 40).

Institutional sources, according to Karlsson (2005), exert isomorphic pressures leading to different strategic responses being available to the organisation and so creating certain outcomes. Students of institutional theory have advanced these observations by developing variations in organisational responses in the face of institutional pressures (Ang & Cummings 1997; Bigelow & Middleton 1995; Oliver 1991) providing a measurement tool which has been incorporated into this study in testing Proposition 2.

As observed by Davidson, Hunter and Klofsten (2006, p. 126), "... there can be little doubt that adherence to institutional forces will make emerging ventures less different from existing ventures and from their peers - that is, less innovative". The study confirms several hypotheses derived from institutional theory and, in so doing, serves as a useful tool for the design and presentation of this study. Karlsson's model which examines the effects on incubators of external isomorphic pressures, as outlined in the literature review (Figure 2.2), provides the means, using carefully phrased questions in the questionnaire, to conduct a structured study, using institutional theory.

The analysis in this study also incorporates the academic contributions of other researchers including Oliver (1991) and Davidson (2006).

Aldrich and Fiol's (1994, p. 659) analysis moved the theory towards a consideration of the impact of institutional factors on business start-ups, concluding, that institutional theory plays a central play in business analysis. Also, elements of the literature analysis support the theoretical position that institutional influences can serve as an "invisible force that shapes venture ideas" (Davidson, Hunter & Klofsten 2006, p. 115), possibly influencing goal achievement among Australian incubator stakeholders.

Accordingly, Proposition 2 was formulated to test whether this conceptualisation has relevance in the Australian incubator sector.

Hence, Proposition 2 argues that:

**Australian incubator management processes reveal patterns of institutional conformity.**

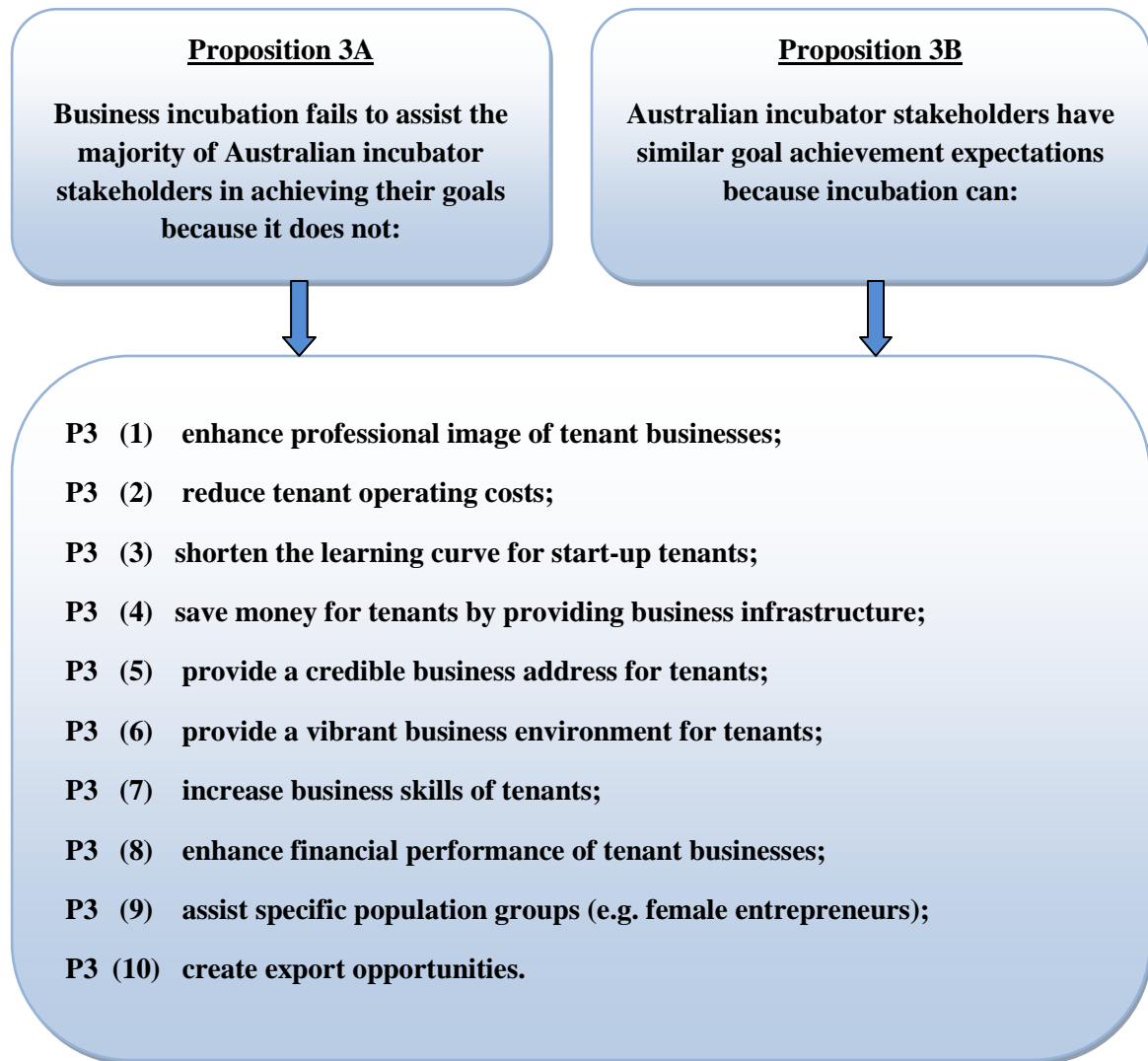
Specific questions were incorporated within the study questionnaire to test this proposition. These questions included discussion concerning stakeholder rationale for involvement in incubation, past and present purposes of participating in incubators, incubator stage of development, rating of management issues, stakeholder responses to various forms of regulatory changes and responses dealing with perceived funding issues and potential institutional influences.

Survey responses were analysed and findings are detailed in Chapters 5 and 6. The literature review indicates multiple perceived benefits (and problems) that are considered to accrue from involvement in business incubators.

Propositions 3A and 3B contend that the range of identified benefits plays a central role in support of stakeholder goal achievement (refer to Figure 3.2 (below)). The results of the tests of the validity of responses to survey questions concerned with these propositions are detailed in Chapter 6.

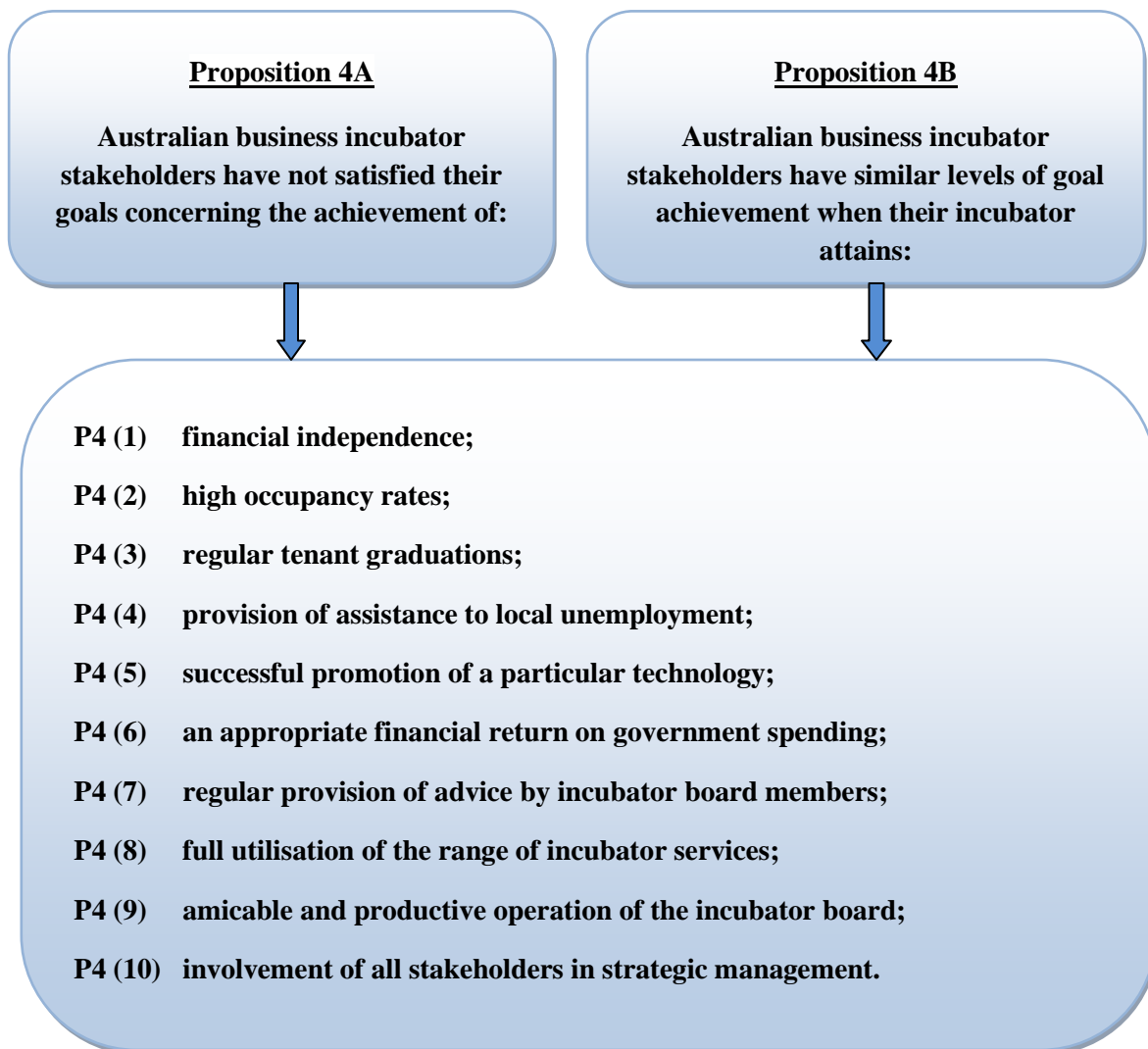


**Figure 3.2 Propositions – benefits**



This study was designed to assess whether stakeholders are satisfied that they have achieved their goals by considering a series of potential outcomes relating to their incubation experience. Figure 3.3 (below) details Propositions 4A and 4B which itemise goal achievement issues. Survey responses to these goal achievement issues are further analysed in Chapter 6.

**Figure 3.3 Propositions – goals**



### **3.4 Methodology**

#### **3.4.1 The research process – introduction**

This study uses a series of interviews and an e-mail survey as the major research tools to examine whether the goals of business incubator stakeholders are being satisfied.

The major research instrument utilised in this study is an e-mail questionnaire, circulated to incubator stakeholders located throughout Australia. The key issue in the study involves

incubator stakeholder goal achievement, thus the questionnaire is designed to seek responses from incubator stakeholders about whether they believe they are achieving their goals.

As indicated in the conceptual framework (Figure 3.1), a selection of key issues concerning survey respondents' levels of satisfaction ('Satisfied' or 'Not satisfied') in achieving a range of goals was considered. All of the remaining issues in the survey related, in varying degrees, to elements of business incubation activity which impinge upon incubator stakeholder goal achievement. Responses to each issue were analysed using appropriate statistical analysis techniques so that the central goal achievement issue could be evaluated and findings presented.

### **3.4.2 Integration of mixed method research methodology**

In discussing the application of an integrated research methodology, Yin (2006, p. 41) emphasised the importance of integration as being critical in mixed methods research. Yin sees this emphasis as the means of creating a study which produces converging evidence that is "... more compelling than might have been produced by any single method alone". deVaus suggested that the 'data grid' required for survey research can utilise a variety of data collection methods, arguing that survey research is inherently quantitative and positivistic and is contrasted to qualitative methods that involve participant observation and unstructured interviewing (deVaus 2002, p. 5).

In this study, qualitative interview analysis was utilised initially as an information gathering and personal contact tool that provided a means of contact between the researcher and potential incubator survey participants. The technique also provided the means to gather empirical content for the subsequent design and implementation of the study's major quantitative research instrument, the e-mail survey.

The experience of the researcher, in talking with most of Australia's business incubator managers, matched Moriset's (2003, p. 2167) experience when he noted that the qualitative dialogical method used, through direct talks with business executives, creates a friendly

atmosphere which “... leads the respondents to reveal significant, and sometimes sensitive, information they surely would not have released through a purely quantitative approach”.

### **3.4.3 Introduction to survey method**

The American Association for Public Opinion Research (AAPOR) 1997 publication incorporated a series of recommendations for best practice for national and state survey research. Specific maxims, as embodied within the design and administration of this research exercise and drawing from the American model, include the need for emphasising specific survey goals. The American study also recommends that surveys should be pre-tested, that appropriate statistical analysis methods be utilised, and that respondent confidentiality is honoured, each issue being crucial in the maintenance of best practice standards (cited in Harkness 1999, p. 127).

Achievement of best practice survey content is a complex process, requiring additional effort during all stages, beginning with study conceptualisation of propositions and proceeding to research instrument development with conclusions presenting the results of survey analysis. Design procedures for this project have consistently incorporated this range of best practice techniques into the methodology and development of the study.

### **3.4.4 Survey anonymity**

Participant anonymity is preserved in the study, in accordance with best practice administration of an e-mail survey (deVaus 2002, p. 124). There are approximately 50 active business incubators in Australia, these enterprises being dispersed throughout six states. Potential survey respondents were assured that their answers to the various questions would be treated anonymously. The survey letter of invitation, ‘reminder’ e-mails and the questionnaire, assure potential participants that e-mail technology (using a data-base called Survey Monkey) ensures that identification of respondents would not be possible and would not be reflected in the study’s written analyses. Strenuous efforts were made in the design of the questionnaire to ensure that surveys received could not be identified by the researcher.

### **3.4.5 Non-response bias**

Response-bias analysis (a technique that compares characteristics of considered variables between respondents and non-respondents), could not be performed in this study. An alternative method of analysis was therefore used. As indicated earlier, each of the responding incubator stakeholders was assured that the study processes would protect their identity. As a result, by design, stakeholders who did not respond to the survey could not be identified (Dillman & Bowker 2001, p. 2).

The first invitation to participate in the e-mail survey was despatched via e-mail to all Australian incubator managers on 15 August 2009. The computer software used in the survey also allowed for the inclusion of a hyperlink for direct contact between survey respondents and the Survey Monkey data-base.

After four weeks, 28 useable e-mail responses had been received in Survey Monkey. An e-mail reminder (circulated on 15 September 2009) to all incubator managers elicited another 26 responses. A second e-mail reminder was distributed to all incubator managers in mid October with another 17 useable surveys received by the nominated closing date (30 November 2009). In the following assessment 17 respondents were regarded as 'latecomers' in relation to 54 responses received earlier.

In 1977 Armstrong and Overton proposed a method for estimating survey non-response bias. Their thesis theorises that a comparison of early input with late responses could produce a prediction for non-response, arguing that late respondents have similar characteristics to non-respondents.

The theory argues that 'early' (the first 54 survey respondents) responses should be compared with returns from 'late' (the final 17 respondents who replied after the second reminder) responses, involving selected questions in the survey.

If differences in the two sets of responses were found to be insignificant, the issue of non-response bias in the data would not be considered to be a problem (Armstrong & Overton

1977, p. 401). Using the two independent samples t-test method, analysis was completed for six variables, using responses from the questionnaire (Colman & Pulford 2008, p. 62; Abduh M 2003, p. 129). Variables examined relate to the current stage of development of incubators in which respondents are involved, age of respondents, qualifications, gender, incubator location and incubator starting dates. Levene's test resulted in a probability greater than 0.05, indicating that population variances were relatively equal.

Analysis indicates that none of the mean differences was statistically significant across the six categories, at a probability level of 0.05 (see Table 3.1), suggesting that the null hypothesis should be accepted for each of the six variables (Coakes, Steed & Price 2008, p. 71). On the basis of these considerations, non-response bias was not considered to be a problem in the survey responses used in this study.

**Table 3.1 Non-response bias testing**

Variables	Respondent groups	n (71)	Mean	Levene's test for equality of variances		t	Sig
				F	Sig		
<b>Incubator stage</b>	Early response	54	3.6226	.889	.349	-1.299	0.198
	Later response	17	3.8235				
<b>Respondent age</b>	Early response	54	7.0556	.360	.550	-.675	0.502
	Later response	17	7.4706				
<b>Respondent qualifications</b>	Early response	54	3.8148	.444	.507	-.634	0.528
	Later response	17	4.0000				
<b>Respondent gender</b>	Early response	54	1.3889	.097	.756	-.166	0.869
	Later response	17	1.4118				
<b>Location</b>	Early response	54	6.0741	3.432	.068	1.082	0.283
	Later response	17	5.5294				
<b>Incubator start dates</b>	Early response	54	3.1154	1.509	.224	.956	0.343
	Later response	17	2.8750				

### **3.4.6 Additional issues – data analysis**

The on-line survey generated a total of 71 useable responses, the responses being received from 22 board members, 22 incubator managers and 27 incubator tenants. In conducting interviews with incubator managers and other stakeholders, as documented in Chapter 4, the consistent advice received from interviewees suggested that the responses should be dealt with on a confidential basis if the survey could be expected to generate sufficient response levels to carry out meaningful analysis. Consequently, the researcher was reluctant to seek out advice from incubator stakeholders which might be considered to be intrusive (Yang et al. 2011, p. 909).

The administrators of the survey (Survey Monkey) were advised that they should not provide the researcher with any record of the identities or addresses of respondents in the survey results. Also, on-line documentation indicated to participants that they were completing the survey on a confidential basis, the only ‘personal’ information sought involving their incubator status as that of board member, manager or tenant and the state in which they are located. In summary, survey response data was received and coded and whenever necessary for the purposes of analysis, the data was also aggregated. This process is a common practice in research analysis utilising stakeholder theory (Beringer, Jonas & Kock 2013, p. 8; Bornhorst, Ritchie & Sheehan 2010, p. 583; Sheehan & Ritchie 2005, p. 724; Waligo, Clarke & Hawkins 2013, p. 346; Marshall et al. 2010, p. 409).

Appendix 3.1 summarises the range of descriptive statistics and distribution assessment results for interval variables concerning features of individual stakeholders who responded to the survey. Appendix 3.2 includes summaries of analytical output describing the nature of incubators with which those stakeholders have been associated. Measures include coefficients of skewness and kurtosis, the purpose of the application of these measures to the survey data, being one of testing the normal distribution of the variables. Survey output had the capacity to collapse content, to the extent that stakeholders were categorised into three groups comprising incubator board members, managers and tenants. Results indicate that the null proposition of normality for observed data was confirmed for specific elements of the data.

Variables have an approximately normal distribution including ages of the full range of respondents, their level of educational attainment, the periods of involvement in incubators of board members and managers, location of incubators, the stage of development of incubators (excluding manager) and the age of incubators with which respondents are involved.

Skewness and kurtosis coefficients also indicate that certain variables are not normally distributed. Analysis suggests that the null proposition (n) could not be accepted for observed data pertaining to gender, age of tenants, period of involvement of tenants in business incubators, location of incubators, business incubator structures, public funding issues, the ‘for-profit’ question and the size (in terms of numbers of tenant firms) of incubators.

### **3.4.7 Stages of the research study**

The study exercise embodies a number of stages. Table 3.2 provides a summary of the research exercise and subsequent discussion offers a detailed explanation of key stages.

**Table 3.2 Stages of methodology**

<b>Stage of development</b>	<b>Key stages</b>
<b>1</b>	<b>Complete university PhD approval procedures.</b>
<b>2</b>	<b>Design for structured interviews.</b>
<b>3</b>	<b>Development of literature review.</b>
<b>4</b>	<b>Research and develop incubator contact list and conduct interviews.</b>
<b>5</b>	<b>Analyse interview results.</b>
<b>6</b>	<b>Develop and pre-test survey draft.</b>
<b>7</b>	<b>Finalisation of design and distribution of questionnaire.</b>
<b>8</b>	<b>Implement survey response rate maximisation strategies.</b>
<b>9</b>	<b>Collate and cleanse survey returns.</b>
<b>10</b>	<b>Analyse questionnaire responses and test propositions.</b>
<b>11</b>	<b>Application of study findings to development of conclusions, recommendations and finalisation and submission of thesis.</b>



#### **3.4.7.1 Victoria University approvals**

Victoria University's Faculty Research Committee must approve a research topic before a student can commence work on a PhD thesis. The research proposal for this project was approved by the research committee in September 2008 and student enrolment was undertaken on a part-time basis. The procedure for the project includes contact with individuals from the various sections of Australia's business incubator sector. Whenever a Victoria University research student conducts a study involving human participants the contact processes must be detailed by the student, supported by his/her supervisors, and formally authorised by the Human Research Ethics Committee (HREC). Formal approval to proceed with this project was received in March, 2009.

#### **3.4.7.2 Planning interview content**

An initial series of interviews with participants was completed to help in developing the study questionnaire. These interviews focused on issues to be included in the questionnaire, with discussion designed to assess participant responses to issues raised therein. Interviews sought to assess the validity of questions planned for inclusion in the survey, interviews serving as a form of research pre-test. The literature review was a primary reference source for the interviews planned for this study in relation to content and duration, especially in identifying material from American and European business incubator sector studies (Bears 1993; Knopp 2007; Tornatzky, Sherman & Adkins 2003). A copy of the interview format is appended (see Appendix 3.4).

#### **3.4.7.3 Literature review**

The literature review (see Chapter 2) identifies areas of theoretical analysis which appear to have relevance to this study of Australian business incubator issues. In the literature review institutional and stakeholder theory emerged as relevant fields of research analysis. Theoretical output from the literature review was incorporated by combining findings from the results of the survey to determine their value in developing a credible perception of the degree of success or failure of stakeholders in achieving their goals. So that discussion is current the literature review process continued throughout the study.

#### **3.4.7.4            Development of an incubator stakeholder contact list**

Contact details of incubator boards of management and tenant personnel are not publicly available. The researcher made an initial decision to personally interview incubator managers and other personnel in an endeavour to establish a reliable e-mail contact list of incubator stakeholders located throughout Australia. An initial set of six interviews was conducted with a local government representative, a business incubator director, three incubator managers (this group included the immediate past chairman of the National Incubator Association of Australia) and an incubator mentor. The interviews showed that effective distribution of e-mail questionnaires could only occur if incubator managers were prepared to become involved and forward the document by e-mail to other potential respondents. This finding from the initial interviews verified the relevance of direct involvement by incubator managers as the conduits through which e-mail survey documentation could be advanced anonymously to potential board members and tenant respondents. This method also saved time because the researcher did not need to personally visit each incubator.

In this context the initial interviews played an important role, in that they offered the opportunity to raise a number of relevant issues with well-informed and experienced incubator stakeholders, before the final questionnaire was formulated (deVaus 2002, pp. 96-9). Interviewees signed a consent form (see Appendix 3.3) collected by the interviewer at interview. Interviewees were also given documentation that detailed administrative features (including details of the project, Victoria University contact information and complaint procedures) of the study. With the permission of participants, interviews were recorded. Interview recordings were transcribed and the content was verified by participants. A copy of the structured interview questions is appended (see Appendix 3.4). The researcher's original intention was one of completing interviews with incubator stakeholders located throughout Australia. However, the interview process, with an initial group of six Victorian incubator stakeholders, led to the conclusion that the most effective means of developing contacts with incubator stakeholders should be through a series of telephone contacts. A revised research strategy was thus developed and put into place.

Lists of Australian incubators are publicly available through various online sources, including websites of BIIA (Business Innovation & Incubation Australia 2009a), the Australian Government's Department of Industry, Tourism and Resources (AusIndustry 2007) and SPICA (Science Park & Innovation Centre Association 2008). Although some of the incubators listed have either closed (such as the Northern Territory Indigenous Business Incubator) or are no longer involved in business incubation as part of their small business support activities (such as Penrith Small Business Centre), the lists provide detailed addresses and contact details of current operators in Australia's business incubator sector. Telephone contact with either administrative staff and/or chief executive officers of the listed Australian business incubators took place during August and September 2009. Of the 50 incubators contacted, four managers refused to accept the researcher's calls, while another subsequently replied by e-mail, indicating that her incubator's board of management had decided not to participate in the study, resulting in contact with 45 Australian incubators. Of this group of 45 incubators, 29 were located in regional communities and 16 in capital cities. Information sourced from interviews, coupled with web-site information, resulted in the development of a detailed listing of Australian incubators, including manager contacts and/or names, e-mail addresses and postal addresses.

#### **3.4.7.5 Analysis of interview results**

Data analysis in qualitative research is defined as the process of systematically searching and arranging interview transcripts, observation notes, or other non-textual materials that the researcher accumulates, to increase the researcher's level of understanding, in this case, analysis of business incubator (Wong 2008, p. 14). The NVivo 8 data analysis programme was used to process interview data. NVivo is a data base management system that has been developed to " ... provide a logical way of structuring and enumerating qualitative data" (Dean & Sharp 2006, p. 11). The use of such software is perceived to add rigour to qualitative research due to the capacity of NVivo to efficiently organise and interrogate interview data (Welsh 2002, p. 7). According to Richards (2002, p. 210), NVivo's unique features "... encourage its use in a joint quantitative environment" as has been the case with

this study. Also, NVivo output provided material for development of survey questions. Bazeley (2007) lists the principal ways in which NVivo assists a researcher when analysing qualitative data, arguing that the software supports the researcher in managing data with management of ideas. It also acts as a tool for querying data while providing capacity for graphical modelling. Finally, the software provides the means for the researcher to report from the data (Bazeley 2007, pp. 2-3).

#### **3.4.7.6 Development and testing of the survey draft**

The AAPOR (1997), in its ‘recommendations for best practices for national and inter-state survey research’, emphasises the need, in designing a survey, for emphasis upon specific statements of survey goals (cited in Harkness 1999, p. 127). Achievement of best practice survey content is a complex process, requiring additional effort at all stages, beginning with study conceptualisation of the proposition, to research instrument development and to survey analysis. Project design incorporates this range of best practice techniques into the methodology. Methodology for analysis of a final questionnaire typically uses a pilot survey, the process confirming questionnaire validity. Pilot surveys are essential because they provide the means of testing wording, sequencing, layout, completion time and analysis procedures (Veal et al. 2005, p. 160).

A selection of six incubator stakeholders comprising tenants, managers, board members and community members pre-tested a printed, hard-copy version of the survey. Minor amendments were suggested by three participants and were incorporated within the final survey and remaining participants indicated that changes were not necessary. Four of these stakeholders had previously participated in the aforementioned interviews. Interviewees unanimously suggested that a printed questionnaire would experience a lower response rate and would be a costly method of survey distribution. They suggested that an e-mail survey would be more ‘user-friendly’, with the alternative of distribution of printed copies at the request of potential respondents who did not have access to the internet to use Survey Monkey. The electronic survey has the advantage of receiving data in digital format, which is available for immediate analysis, using appropriate software. This type of survey also simplifies the questionnaire completion process when ‘filtered’ issues are involved. The

disadvantage is that the electronic survey is only available to those with internet access. It was decided, at this point in the study, to use an e-mail survey.

#### **3.4.7.7 Finalisation of design and distribution of questionnaire**

The major research instrument was the self-administered e-mail questionnaire.

Questionnaire surveys of this type are an ideal means of providing quantitative research information, allowing for a 'transparent' set of research procedures with quantified information often being relatively complex but presented in a succinct, easily understood form (Veal et al. 2005, pp. 143-44).

The items included within Table 3.3 provide a summary overview of the theoretical considerations involved in e-mail questionnaire design and how they have been addressed in the questionnaire used in this survey.

Questions were designed to cover a diverse range of incubator stakeholder goal achievement issues, respondents being able to 'jump' any questions which they may consider irrelevant to their circumstances. An additional 'quality assurance' device, in the form of a matrix, was developed. This device was designed to provide a visual indication of the interactions between the range of survey questions being considered while examining the group of propositions which make up key evaluative procedures in the study (see Appendix 3.5).

The e-mail questionnaire was originally forwarded to business incubator managers in August 2009. A copy of the actual e-mail questionnaire, as it appears on the computer screens of potential respondents, is appended (see Appendix 8.1).

**Table 3.3 E-mail survey design**

Recommended e-mail survey design principles	Application to this study
Welcome screen – needs to be motivational, easy to respond, instructs respondent on procedure to the next page. States purpose of survey, time to complete, statement regarding anonymity and confidentiality, survey title.	The welcome screen is designed to raise respondent interest in participation in this study while thanking the respondent for participating. The screen also reiterates the respondent anonymity and confidentiality.
First issue – avoid abandonment by respondents – issue to be short, simple – best to use close-ended items.	Issue 1 seeks identification of the respondent's reason for involvement in incubation with a close-ended issue.
Use conventional format – so that respondents are familiar with this type of methodology – left justify text.	Format uses a range of established presentation methods including sub-titles and explanations for each section.
Colour can be added to online surveys and enhance appearance of the survey while assisting with navigation. Use appropriate colour combinations to improve readability.	This survey utilises a combination of matching light and dark blue while using a burgundy and light green background combination, matching the blue and black VU logo.
Use software that is compatible with the survey software.	Windows XP, using a 1024 x 768 pixels monitor setting.
Instructions for completion of the survey should always be included, avoid jargon and abbreviations. Directions should be precise but comprehensive. Instructions needed relate to whether all issues need to be answered, how to move on.	Respondents have been advised that the questionnaire allows for issues to be jumped and that they can leave the survey and return later for completion. They have also been advised that completion takes 15-20 minutes.
Formats for response options – radio buttons, check boxes, rank-order matrices, open-ended text boxes – whatever the format use consistency in font type, size and colour.	Each issue identifies the concept being considered and then precise instructions are provided concerning the format of the expected answer.
Requiring answers – research suggests that it is best not to require respondents to provide an answer to each issue before being allowed to answer the next issue – this threatens the ethical norm of 'voluntary participation'.	The point regarding 'jumping issues' is mentioned in two areas of the survey document so that respondents will not feel that answers are being forced from them
Navigation guides – provide clear directions and guideposts for respondents to assist completion – also show methods of moving forward and backward or to exit the survey.	Use of a percentage progress bar at the end of each clearly marked group of issues. Each page also provided directions on how to move within the survey.

Sources: (Cobanoglu, Woarde & Moreo 2001; Sue & Ritter 2007; Veal et al. 2005)

The items included within Table 3.3 provide a summary overview of the theoretical considerations involved in e-mail questionnaire design and how they have been addressed in the questionnaire used in this survey.

Questions were designed to cover a diverse range of incubator stakeholder goal achievement issues, respondents being able to ‘jump’ any questions which they may consider irrelevant to their circumstances. An additional ‘quality assurance’ device, in the form of a matrix, was developed. This device was designed to provide a visual indication of the interactions between the range of survey questions being considered while examining the group of propositions which make up key evaluative procedures in the study (see Appendix 3.5). The e-mail questionnaire was originally forwarded to business incubator managers in August 2009. A copy of the actual e-mail questionnaire, as it appears on the computer screens of potential respondents, is appended (see Appendix 8.1).

#### **3.4.7.8 Response rate maximisation strategies**

Another issue of administration relevance involves maximising response rates. A consistent recommendation in the literature is to make multiple contacts so that every effort is made to maintain participant interest in survey completion (Millar, O'Neill & Dillman 2009, p. 24), in this case through regular contact with incubator managers.

As previously mentioned the researcher made personal telephone contact with the managers of 45 Australian business incubators. This process involved multiple calls and, after three unsuccessful attempts an e-mail note was sent to the manager about the study, requesting a return call. Once formal contact was established the manager was invited to circulate the questionnaire to other incubator stakeholders, using each organisation's confidential internal internet contact system. Only one manager asked for printed surveys for circulation to incubator tenants who did not have e-mail. None of these hard copies were returned. Typically, managers indicated that they expect tenants to have an internet and e-mail connection as essential tools in the operation of their businesses.

Use of a hyperlink in the initial letter of invitation allowed recipients, such as the incubator managers, to complete the survey and forward the letter of invitation to other stakeholders. The hyperlink was removed from the internet on the survey's published closing date.

This process of including a hyperlink to Survey Monkey to complete the questionnaire served as an interactive approach. Respondents were able to read the survey before completing it, they could partially complete the document for re-consideration at a later time and, having answered the survey to their satisfaction were able to forward the output to Survey Monkey with the press of one computer key. The letter was also personalised but responses were anonymous (Sue & Ritter 2007, p. 89).

As recommended by web-survey technique researchers (Millar, O'Neill & Dillman 2009, p. 24; Sue & Ritter 2007, p. 94), response rates may be enhanced by the provision of regular reminders to potential respondents. Having made initial telephone contact with incubator managers, 'reminders' were then circulated (see Appendix 3.7) until the data-base was closed to participants in November 2009.

The problem of a potential low response rate was of concern, hence the researcher's interest in having the co-operation of incubator industry leaders in publicising and supporting participation of stakeholders.

For the purposes of data analysis, survey questions provided for numerical answers or options capable of conversion into numerical form, through data coding and/or item scaling (Bearse 1993, p. 98). Closed-ended questions "... typically make up the bulk of most online questionnaires because they are easy to answer, are familiar to most respondents, and provide reliable measurement" (Sue & Ritter 2007, p. 47). Survey questions, in this instance, included a full range of issues with exhaustive and mutually exclusive selection of items. Questions designed for the survey were either dichotomous, multiple choice or used rating scales with occasional opportunities for respondents to fill in a 'comment' box.

E-mailing protocols for the survey avoided the 'spamming' problems associated with circulation of unsolicited e-mails (deVaus 2002, p. 77) by circulating invitations via the managerial network to all incubator managers, who, in turn forwarded the invitation to



other incubator stakeholders. A total of 48.8% of incubator managers responded to the survey. Board member and tenant stakeholders are representative of random sampling, through an open population, since their numbers are unknown, with each incubator having various board representation and tenant business numbers (Sue & Ritter 2007, p. 28).

In the letter of invitation, potential respondents were assured that their e-mail contact details would not be recorded with the survey response. Computer software has the capacity, as part of the data collection process, to eliminate these details (SurveyMonkey.com 2009, p. 32). And so this feature was installed as part of the survey computer programming procedure. As a result, the only indication of identity was when respondents stated their professional involvement (for example, board member, tenant, or incubator manager) and disclosed the state in which their incubator was located.

#### **3.4.7.9 Collation of survey responses**

Having utilised an e-mail questionnaire the next major decision concerned the choice of web-based survey software. Detailed scrutiny of available web survey material (deVaus 2002, p. 124; Sue & Ritter 2007, pp. 152-66) resulted in the choice of 'Survey Monkey' software for implementation of the questionnaire. Survey Monkey offers an attractive software package for the development and administration of research surveys, with assured confidentiality and security of content, combined with a 24/7 'help' desk ([www.surveymonkey.com](http://www.surveymonkey.com)). Also, Survey Monkey provides a wide range of tools required for the design and development of an effective research questionnaire.

Various researchers have identified a set of design principles for the creation of web-based questionnaires, arguing that availability of web-based self-administered survey technology has created a new set of design issues for the researcher (Dillman & Bowker 2001, p. 15). Table 3.3 summarises various theoretical concepts relating to e-mail survey design, as proposed by various contributors to this field (Dillman & Bowker 2001, p. 12; Millar, O'Neill & Dillman 2009, p. 100; Sue & Ritter 2007, pp. 59-87). As presented in the table, this research exercise, where appropriate, incorporated the aforementioned methodologies in the design of this e-mail survey. Analysts involved in the evaluation of various types of

survey methods have found that self-administered surveys are the least costly of the choices available, produce responses faster and they have the advantage of producing output in digital format, being ready for transfer to computerised statistical analysis packages (Cobanoglu, Woarde & Moreo 2001, p. 447).

The project involved minimal data cleansing. A total of 77 survey responses were received, of which 71 were useable. Rejection of six responses was the result of minimal respondent input including virtually no responses after the first page of the document.

Certain sets of responses required that data should be amended so analysis could take place. The typical circumstance related to respondents being asked if they were satisfied or dissatisfied with their goal achievement outcomes. Respondents had been given the opportunity to grade their responses from 'very satisfied' to 'very dissatisfied'. Responses to this type of question were usually amended so that 'two by two' contingency tables, indicating respondent 'satisfaction' or 'dissatisfaction' could be created and analysed.

#### **3.4.7.10 Data analysis and testing of propositions**

The data gathered from the questionnaires required the application of descriptive, univariate, bivariate and multivariate analyses as the means of considering the relevance of key issues embodied within survey responses. Data generated from the aforementioned questionnaire was processed using SPSS for Windows computer software. SPSS is the most widely used software package for the descriptive, bivariate and multivariate data analysis used in this study (Bryman, Alan & Bell 2007, p. 376).

#### **Descriptive and univariate statistical analysis**

Descriptive statistics showing frequencies and measures of central tendency and dispersion (such as mean, median, range, variance and standard deviation) were analysed to provide an initial view of the data collected prior to additional testing (Sekaran 2000, pp. 394-400). Data analysed in this section was tested for levels of skewness, measures being designed to evaluate the level of symmetry of the data provided. Also, an associated calculation was utilised to determine the measure of kurtosis of the data, a normal distribution in this

context being represented by a kurtosis score within the range of -1 to +1, indicating the level of flatness or clustering of the distribution, as compared with a normal distribution score of zero (deVaus 2002, p. 227).

Tests were conducted on the basis that data which failed a normality test, in relation to the dependent variable, was not linear (Tabachnick & Fidell 2007, p. 79). A series of descriptive data sets, including personal features of the survey respondents (age, gender, education and period of involvement in incubators), along with descriptive material relating to the incubators with which respondents were involved (location, legal structures, funding sources, profit issues, stage of development, age of incubator and number of tenants), were analysed.

Initial analysis of survey responses indicated a series of violations of ‘distribution’ assumptions necessitating the use of non-parametric techniques for subsequent analysis of survey output. Although assumption testing for non-parametric techniques is not as critical as for parametric methods, certain generic assumptions relate to analysis of survey data.

These assumptions pertain firstly, to the considerations that all samples should be of a random nature and independence of data from different subjects must be assured (Bryman & Cramer 1990, pp. 117-9; Pallant 2007, p. 211).

A second assumption in using non-parametric methodology involves the issue pertaining to independence of observations. When using non-parametric techniques survey respondents should only be able to submit one response. Also, respondents should not appear in more than one category or group so data from one subject cannot influence data from another. Survey Monkey software takes account of this potential issue by asking the researcher if he/she will allow more than one response to be generated from a particular computer (SurveyMonkey.com 2009, p. 35). In this instance the researcher indicated that only one response should come from any individual computer, thereby satisfying assumption two.

## Bivariate analysis

Exploration of differences between categorical variables, as identified from survey output, used Fisher's test for independence. Propositions under review relate to a number of proposals about satisfaction of Australian business incubator stakeholder goals. In this study stakeholders are mostly described as 'management' and 'tenants'.

Testing of various bivariate issues used Fisher's calculation, a well-known test of statistical significance. A statistic was calculated by comparing the observed frequencies in each cell of each table with those that would occur if there were no relationship between the two variables, that is, those that would occur by chance alone (expected frequencies) (Bryman, 2001, p. 235; Bryman & Cramer 1990, p. 171).

A key assumption in using Fisher's test relates to the size of cells. Chi<sup>2</sup> analysis assumes that the minimum expected cell frequency will be five or greater. When using chi<sup>2</sup> analysis there is a tendency to underestimate the probability of observed cell counts, thereby increasing the risk of Type 1 errors (false positive findings). If all cell frequencies exceed five the researcher has not violated the 'frequency' assumption.

If frequency levels include five, or less than five entries, then the Fisher Exact Test of significance can be used. The test can also be utilised where cells exceed five entries (Pallant 2007, p. 217). This procedure is utilised throughout the analysis. Fisher's test directly computes 'p', examining the probability of getting a table as strong as the observed table or stronger, and is usually used with 2x2 contingency tables (Garson 2008, pp. 1-2). The 'power' of the statistical tests utilised in sections of the study have been influenced by sample size, wherein a number of tables report small sample sizes. In such instances the alpha level has been adjusted using the traditional 0.05 level (Pallant 2007, p. 105). Among researchers there is a general consensus that the significance test is a practical tool for widespread use in which *P-values* up to 5% are identified as being 'statistically significant' (Royall 1986, p. 313).

Proposition 3A uses percentage response rates to examine specific questions dealing with the perceived advantages of incubation. Stakeholder responses have been analysed to

determine whether the issues being considered have actually occurred, as posited in the study. Analysis of the percentage responses is based upon the majority principle, assuming that average response rates exceeding 50% are indicative of participant acceptance of the validity of a particular issue. Data for Proposition 3A is presented as dichotomous variables and so the binomial test, which is expressed as a null (default) hypothesis, is the appropriate test for the analysis (de Vaus 2002, p. 230; Siegel 2011, p. 274).

Proposition 3B utilises Fisher's bivariate statistical analysis to test whether stakeholder groups who have responded to the range of specific survey questions have significantly different opinions about the accuracy of the listed benefits of participation in business incubation, as examined in the study (see Figure 3.2).

Propositions 3A and 4A were tested using the binomial test procedure. Each proposition embodies a range of underlying negative statements which suggest that business incubation does not provide the range of advantages resulting from participation in the process (Proposition 3A). Also, similarly, Proposition 4A argues that incubator stakeholders have not achieved their goals due to a range of hypothesised outcomes resulting from participation in the process. Data for Proposition 4A provides percentage response rate information, measuring respondents who are 'satisfied' or 'not satisfied' with specific variables in their dealings with incubators. The responses have been analysed to determine whether the issues being considered match stakeholder goal achievement perceptions.

With reference to each proposition, a choice of 10 'yes' or 'no' responses was presented to each survey respondent. The dichotomous nature of the survey output was well suited to the application of the binomial testing process. This procedure tested whether survey responses show differences between categories (de Vaus 2002, p. 230; Kohler 1988, p. 197) under two headings comprising 'management' and 'tenants'.

Proposition 4B utilises Fisher's statistical analysis to determine whether stakeholder groups who responded to the range of specific survey questions exhibit significantly varied opinions about the array of goal achievement issues examined in the study.

Data was processed using the SPSS analysis package. SPSS software assumes that the variable which specifies the category in the testing process is numeric and that data is dichotomous. In the sample data set, respondents answered ‘yes’ or ‘no’ to each of the 10 identified issues. ‘Yes’ responses were collated as ‘1’ and ‘no’ responses as ‘2’. ‘Yes’ responses, for the purposes of binomial analysis, were regarded as the ‘success’ factor, while the test proportion (involving a 50/50 response rate to either success or failure) was 0.5 (SPSS. 2009, p. 213).

Binomial theory specifies the variable to be tested. In this case, each variable is concerned with stakeholder perceptions of the advantages of business incubation (the null Proposition 3A) in testing survey responses, arguing that the majority of incubator stakeholders do not believe that the perceived benefits of business incubation apply to their experience in the Australian incubator industry. In this instance the process tests the level of probability that the majority (over 50% of survey respondents) have a negative view concerning the supposed benefits of business incubation.

The binomial technique allows for a process whereby the proportion of ‘successes’ (‘yes’ responses) and ‘failures’ (‘no’ responses) are evaluated, as indicated by a *P* value (based on a 0.05 significance level), suggesting support or rejection of the basic null proposition. The null proposition argues that the data will be distributed as indicated. A binomial test result, for example,  $P = 0.229$  suggests there is no statistically significant difference in the result, whereby the majority of respondents in the group being tested do not significantly differ in their opinions. Such an outcome would suggest that the proposition cannot be rejected. A similar procedure, using binomial theory has also been considered in testing Proposition 4A. Also, where respondents from the two stakeholders groups appear to be in agreement, an aggregated binomial calculation representing the entire sample has been prepared and evaluated.

### **Multivariate analysis**

Correspondence analysis can only be used as an exploratory method and is not a confirmatory technique, having been incorporated into the concluding stages of Chapter 6 of this study. Application of multivariate analysis occurred with the use of a

correspondence analysis of responses to the central ‘goal satisfaction’ question from the survey. This analytical concept allows for exploration of connections among two or more variables, providing graphical display of contingency tables and multivariate categorical data. In particular, correspondence analysis methodology is well suited to this study because it graphically represents the rows and columns of a categorical data matrix. Graphical representation allows for plotting of the variables under review, permitting the researcher to reveal the structure and patterns inherent in the data (Hoffman & Franke 1986, p. 213).

The multivariate nature of correspondence analysis provides a capacity to display relationships that have evaded detection in pair-wise comparisons which have been the basis of earlier bivariate analysis. “The correspondence analysis technique can be applied to any contingency table and portrays a perceptual map relating the categories of each non-metric variable in a single perceptual map...” (Hair et al. 2007, p. 663), serving as a useful multivariate statistical tool. The technique has the added advantage that it is available as a component of the SPSS statistical package (Thompson 1995, p. 310).

Correspondence analysis can only be used as an exploratory method and is not a confirmatory technique.

Statistical significance tests are not a component of the results of correspondence analysis: the primary purpose of the technique is to produce a representation of the information presented in a large frequency table while highlighting potential multivariate relationships (StatSoft Inc. 2010, p. 8). The technique is utilised as a means of interpreting the findings of the study (especially the range of significant findings embodied within  $\chi^2$  analyses) in a visual environment, so that concluding arguments can guide the researcher through key findings toward further relevant study. The goal of the technique is to develop a global view of the data for interpretation.

#### **3.4.7.11 Findings, discussion and conclusions**

Chapters 4, 5 and 6 will each embody the findings of the study, and Chapter 7 provides detailed discussion on the implications of the findings. Chapter 8 incorporates a range of

conclusions and recommendations of relevance in ensuring that this study makes a worthwhile contribution to Australia's incubation literature.

### **3.4.8 Board members and managers as 'management'**

Business incubators are typically operated as 'non-profit' organisations - as indicated in this and other studies (Business Innovation & Incubation Australia 2009b, p. 1; Knopp 2007, p. 5). A non-profit organisation in Australia is considered to be one which:

“... is not operating for the profit or gain of its individual members, whether these gains would have been direct or indirect. A non-profit organisation can still make a profit, but this profit must be used to carry out its purposes and must not be distributed to owners, members or other private people”

Source: (Government of New South Wales 2010, p. 1).

In recent years there has been an increased level of interest in this 'non-profit' operational environment, especially in relation to the decision-making processes of non-profit governing boards and managers who have been appointed by those boards.

One definition in relation to corporate governance asserts that the board of a non-profit organisation “... exists to be accountable that its organisation works” (Carver & Carver 2001, p. 32). In this governance scenario a board, even though it has overall authority over its organisation, is invariably forced to rely on others to carry out that work by delegating most of the authority to a manager.

For a manager to succeed, and to continue to be successfully engaged in the operation of an incubator, his/her opinions, relating to the operation of an incubator organisation, usually need to be similar to those of board members. Hence, the responses of board members and managers, where indicated in this study, are consolidated under the identifier of 'management'. As an illustration of the high level of uniformity of responses, Table 3.4 indicates that respondents agree with two issues identified as advantageous to participation in business incubation.



**Table 3.4 Uniformity of responses**

Incubator operational issues *	Board members Agree?		Managers Agree?	
	YES	NO	YES	NO
1. Professional image enhanced	20 (90.9%)	2 (9.1%)	22 (100%)	0 (0%)
2. Reduced operating costs for tenants	18 (81.8%)	4 (18.2%)	22 (100%)	0 (0%)

**\*Results of survey responses to one of the survey questions are provided to illustrate the high level of uniformity between board and manager responses.**

These identified benefits in the above table form the basis of Proposition 3 and they are analysed in more detail in Chapter 6 (section 6.4). The example is used in various sections of the thesis to illustrate elements which support the researcher's decision to consolidate 'board member' and 'manager' responses.

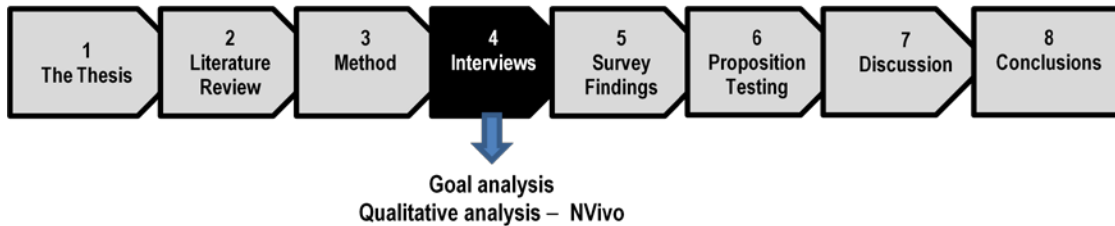
### **3.5 Conclusion**

This chapter has explained the study's conceptual framework and methodology. The bases of the study's propositions have been discussed, while an explanation of the nature of the study's developmental processes has been documented.

Chapter 4 details the study's initial data gathering processes involving the conduct of structured and unstructured interviews. These data gathering processes will be supported by a web search of Australian business incubator internet sites.

## CHAPTER 4

### INTERVIEWS



#### 4.1 Introduction

This chapter details the conduct and analysis of interviews and desktop research with a sample of Australian business incubators. The aim of this chapter is to present an overview of information sourced through these interviews, with the resultant data output being utilised in the development of the major study questionnaire.

##### 4.1.1 Interview process – procedures

A core element of the study related to the need to gain access to incubator stakeholder contact details. Although the names of board of management members and incubator tenants are publicly accessible, their e-mail and private postal addresses are not readily available. Access to this information was a crucial factor in developing a contact list for administration of the questionnaire.

As part of the process of developing the questionnaire, a series of semi-structured and informal telephone interviews with incubator sector stakeholders (mainly managers) throughout Australia, were completed and documented.

The initial interviews had been designed with a variety of issues in mind, including facilitation of the development of influential business incubator contacts. Interviews were intended to create the opportunity, through their semi-structured format (and any

associated, unstructured input from participants), to highlight a range of relevant business incubator propositions for consideration in the study questionnaire. Finally, interviews provided the opportunity for the researcher to seek support from interviewees to participate in subsequent questionnaire pre-testing.

#### **4.1.2 Australia – wide contacts**

The interview process provided clear guidance for collection of data from a wide range of Australian business incubator stakeholders. Table 4.1 provides a summary of the locations of 45 incubator managers who were involved in the informal interviews, with regional locations representing the larger number of Australian incubators. Incubator managers in Tasmania (1) and the Australian Capital Territory (1) were not available for interview.

**Table 4.1 Location/type of incubators**

Incubators contacted	Locations		General purpose	Specific purpose
Regional	29 (64.4%)		26 (74.3%)	3 (30.0%)
Metropolitan	16 (35.6%)		9 (25.7%)	7 (70.0%)
Total	45 (100%)		35 (100%)	10 (100%)

The geographic spread comprised:

- Victoria (13)
- New South Wales (12)
- Western Australia (9)
- South Australia (3)
- Queensland (8)

A trend in Australia that has occurred during the past decade involves the creation of industry specific business incubators in metropolitan centres. These developments related

initially to creation of incubators specifically designed for support of information communications and technology business start-ups, especially in the early 2000s. These 'ICT' start-ups were often associated with universities and were established in most Australian states (DCITA 2005, pp. 5-6). Recent developments relate to purpose-built incubators for the arts and fashion sectors, in addition to specific scientific sector developments, such as those supporting bio-technology. The pattern in regional centres, as indicated in Table 4.1, has been one of a continued dependence upon general purpose incubators.

## **4.2 Findings from interviews**

The set of interviews discussed in this chapter provided an opportunity, in the Australian context, to consider a range of issues about the question of incubator stakeholder goal satisfaction so that the study survey could be prepared.

### **4.2.1 Business incubator goals**

Earlier in the literature review (see Chapter 2, section 2.4) discussion highlighted, in the US and European contexts, the diverse nature of the incubator concept, suggesting that motivations supporting the development of incubators have been highly varied.

The result, as summarised in the literature review, is a research environment which suggests that the goals of incubator stakeholders have changed over time while also varying according to the nature of incubator stakeholders. The question arises as to whether this observation is also accurate for the Australian sector?

Further, do board members, managers and tenants believe that their goals are being achieved?

Interviewee 1 was very forthright concerning his view of Australian incubator development, describing his incubator's management structure as being 'mean, lean and passionate about job creation' (see Appendix 4.3 for the full interview). His opinions involving a specific incubator emphasise that:

“The incubator’s purpose is one of assisting people to start-up a small business, to provide accommodation then personal support (such as an accountant or a business advisor) with the sole goal of creating jobs. Success is considered to have occurred if a graduate leaves as a viable business, this process of creating a job for oneself being one of the hardest of tasks.”

Continued emphasis upon the goal of job creation through the process of nurturing the development and growth of small businesses was also evident in the responses of interviewee 3 (an incubator manager) in listing the purpose of an incubator as:

“...assisting small firms in being successful, by providing whatever means of assistance they need to advance ... success of these firms being measured in their ability to eventually move out and to pay market rent or to set up their own purpose-built premises.”

The importance of providing an element of underlying support during the difficult start-up phase of business development was consistently identified as a central goal of various Australian business incubators, according to some of the stakeholders interviewed.

Interviewee 4, another incubator manager, suggested that the international economic crisis of 2009 might cause incubation to emerge as a policy tool encouraging expansion of self-employment. He stated:

“... It may emerge as a means of overcoming a market failure where you cannot get appropriate space or capacity in buildings available at the right price or in the right area. The deficiency may be seen as a market failure because what the private sector offers is extended leases (three to five years) and a square metre price which is not flexible and offers no support to the developing business”.

The largest group of manager respondents were employed by ‘traditional’ general purpose incubators, these organisations offering incubation opportunities to a wide variety of business types. This type of incubator typically provides office accommodation and/or light industrial accommodation. Specific purpose incubators, as a separate group, are orientated towards the development of specific technologies, research commercialisation and the arts (VonZedwitz 2003, p. 176). Specific purpose incubator managers emphasised provision of support to nurture innovative technologies (especially in the sciences and information technologies), or assist in industries considered to be in need of incubation facilities, such as the ‘arts’ or ‘fashion’ sectors.

A group of incubators, especially those with a high level of involvement with local government, indicated a strong motivation to relocate home-based family micro businesses into an incubator environment with the intention of nurturing them as viable businesses while addressing a local government planning issue. In the Australian business environment, "... all of the home-based business policies are generated by Local rather than State or Federal government, and often focus on what the businesses must not do" (Redmond and Walker 2009, p.150). Adoption of this support role by a wide range of self appointed local government councils may produce a policy environment in which SME policies are somewhat variable over location and time. If this capricious local government support structure is already operational then it may explain the results of a recent study of the place of family businesses in Australian business incubators. The findings of that study suggest that this type of firm often take up incubator tenancy "... to avoid isolation and to seek out different types of business networks, support and personal friendships" (Burnett & McMurray 2008, p. 72).

The most common general purpose incubator goal related to creation of, or support for, sustainable local or regional employment expansion through assistance to start-ups or to develop micro and/or small businesses with the long-term goal of encouraging job creation. Incubation in this context was usually viewed as an effective regional economic development tool.

#### **4.2.2 Incubator services provided**

Typically, business incubators act as safe havens for firms in their early stages of growth, providing a mix of tangible and intangible services (Brandt 1991, p. 53). A view expressed in the incubation literature argues that incubators are emphasising softer, intangible services such as networking (Hansen et al. 2000, p. 84). A recent American National Business Incubation Association (NBIA) survey of incubator managers (Knopp 2007, p. 26) listed 33 categories of incubator service. Analysis in the American study considered the range of incubator services which are, to varying degrees, provided, in addition to incubator accommodation, as "... incubator performance drivers such as the operating framework and role of the management team" (Centre For Strategy Evaluation 2002, p. 5.2).

The provision of office support services and equipment to start-up tenants appears to be a simple arrangement. Information, as detailed in Appendix 4.4, was sourced from the interviews and desktop research processes relating to provision of quality service incubator accommodation in Australian incubators. The listing comprises physical items mentioned variously by the group of incubator managers and stakeholder interviewees and indicates a diverse ‘offering’ of business support in the Australian incubator sector.

The interview process provided the opportunity to compare rankings of incubator manager priorities for provision of Australian business incubator services with those being provided in studies carried out in the US (Knopp 2007, p. 26) and Europe (Centre For Strategy Evaluation 2002, p. 5.2). Rankings for Australian incubators were drawn from the interviews with managers who were asked to list their three major services provided, in order of importance.

As mentioned in earlier discussion (see section 2.5), incubator structures in various countries have been the subject of major variations in design and definition. However, they do have a common feature, sharing an intention to provide “... a support environment for start-up and fledgling companies” (Bergek & Norrman 2008, p. 22). Certain types of business incubator services in the US, Europe and Australia, have consistently received a high ranking in this rating of the range of ‘in-house services’. As indicated in Table 4.2, these include:

- help with business basics including business planning;
- networking programmes among incubator tenants in the three areas;
- high-speed internet access; and
- help with accounting or financial management.

The analysis shows that business planning and networking services are perceived, in each of the three geographical areas, as essential, high priority business incubator services.

Provision of high-speed internet access received a low ranking in Australia while provision of assistance with accounting and financial management for tenant businesses received a low priority in the European analysis.

However, the analysis produced disparate results about the provision of some other services in the three regions, suggesting that American, European and Australian incubator stakeholders have diverse viewpoints concerning particular incubator services needed.

Continuing with the US service rankings first, followed by European and Australian rankings, the following results are shown to be quite varied across different locations including:

- marketing assistance;
- help accessing bank loans;
- mentoring services; and
- assistance with new product development.

**Table 4.2 Manager service choices**

Types of incubator service provision	USA study (preferences)	European study (preferences)	Australian study (preferences)
Assistance with training in business basics, especially business planning.	1	4	1
Provision of networking programmes among tenants.	2	3	2
Provision of marketing assistance.	3	10	8
Provision of high-speed internet access.	4	6	7
Assistance with accounting or financial management.	5	8	5
Assistance in accessing bank loans.	7	1	10
Provision of business mentoring services.	15	7	3
Assistance with new product development.	28	5	6



In the American study incubator managers placed a high level of reliance on provision of marketing assistance. European and Australian managers, on the other hand, indicated a low ranking for this 'marketing' service, while choosing to place a much higher reliance upon mentoring services. European managers placed their highest incubator service provision priority upon assistance in seeking out bank loans, to a markedly higher degree than that of incubator operators in Australia or the USA.

Alternatively, while Americans appeared to disdain advice on new product development, both European and Australian incubator managers indicated that they place a high value upon provision of this service in their incubator environments.

These mixed attitudes (in an international context), toward the value of various incubator services suggested that an extended analysis of Australian incubator service choices might offer a useful guide to stakeholder goal satisfaction in Australian incubators as an important element of the content of the survey.

#### **4.2.3 Incubator graduation/exit issues in goal achievement**

Aernoudt (2004, p. 128) argues that "... a business incubator's main goal is to produce successful firms that will leave the incubator financially viable and freestanding within a reasonable delay". The issue of application of graduation or exit procedures is one that has divided various scholars and managers in the field of business incubation, especially regarding the issue of a pre-determined tenancy time limit.

The European Union funded benchmarking study suggests that the appropriate length of tenancy for a business incubator client, as an example of 'best practice', should be three years (Centre For Strategy Evaluation 2002, p. 23). The European benchmark parallels American practice whereby 90% of US incubation programmes have set graduation triggers such as company size (outgrown available space), the achievement of certain mutually agreed milestones (for example, staff size) or, more frequently, the company has spent the maximum time allowable in the particular incubator programme (Knopp 2007, p. 31). A recent study suggests that the graduation period for European incubators is three to five years (Bergek & Norrman 2008, p. 23) while one researcher, discussing French experience,

noted that the policy in that country typically “... encourages business exit after four years by raising the rent to approximate commercial rates although no formal time limit is imposed” (Goddard & Chouk 2006, p. 5). In the USA the NBIA (1998, p. 2) has been consistent in its expression of the need for exit criteria to be adopted so as to guarantee an efficient turnover of enterprises through the nation’s business incubators.

Considering the breadth of international support of the maintenance of formal incubator exit policies, what did this set of research interviews reveal about Australian strategies?

The diversity of opinion in Australian incubator exit policies was illustrated by referring to the following interviewees:

- I support a three-year graduation but, if a tenant can justify an extension, then an additional year’s tenancy may be made available at the discretion of the Board, at market rates (Interview 3);
- “... tenants enjoy a term of up to three years and sub-market rental on a low risk monthly basis (Interview 4);
- “... a three-year graduation term to bring businesses to a commercial state where they are ready to move on to alternative accommodation in a commercial space. The incubator board does not strictly enforce the three year limit because some firms require a longer period for initial development ... graduation timing must be appropriate to meet the needs of each business” (Interview 5).

To these interviewees the three-year incubator graduation period represented a reasonable approximation of their perception that their goals were being achieved in seeing incubator tenants moving into the surrounding business environment.

To other incubator stakeholders the issue of a three-year graduation period was perceived to be highly variable, ranging from a specific, no exceptions two-year term of tenancy to one in which timed graduation of tenants was not seen to be an enforceable or relevant issue.

Policies describing variability in graduation policies included:

- no formal graduation programme (in multiple telephone interviews);
- “... the incubator does have an exit policy with the expectation that tenants will move on over a three to five year period of tenancy” (Interview 4);
- “... this Centre has a 100% level of occupancy and a waiting list for its purpose-built office style accommodation with a strictly enforced two year graduation policy. The Centre also enforces a minimum term of three months occupancy” (telephone interview).

This set of policy options, ranging from incubators without formal graduation programmes to an opposing point of view with two year, strictly enforced graduations, suggests that stakeholder goal attainment may be influenced in an environment with such variation. As observed by interviewee 2, “... there needs to be an indicated finite tenancy time frame so that tenants can move on and experience the financial realities of business operation”.

Indications of a divided manager opinion, on the issue of incubator tenant graduation, suggested that the issue needed to be incorporated into the survey questionnaire to provide a measurable indication of the relevance of the issue in Australian business incubator stakeholder goal achievement outcomes.

#### **4.2.4 Institutional perceptions in business incubation**

The conceptual framework (see Figure 3.1) embodies a proposal that there will be a positive association between the level of various institutional influences in business incubators and the achievement of stakeholder goals. The institutional structure and maturity of institutions has the potential, according to institutional theory, to shape the environment for incubation (Chandra 2007, p. 17). Institutional theorists have been predominantly interested in whether there are any effects in conforming to institutional pressures but few studies appear to have set out to understand the outcomes of different institutional strategies (Karlsson 2005, p. 41).

To resist or reject institutional pressures is often hypothesised as having a negative influence on business efficiency and financial performance (Karlsson 2005, p. 41). If an incubator board or manager chose to disregard institutional pressures from, for instance, a government funding source, then this decision may lead to negative consequences for the firm's performance, due to penalty cut-backs in funding or government assistance programmes. If such observations are accurate then there is a potential for incubation outcomes to be forced, through mimetic pressure, to make management decisions that relate specifically toward institutional satisfaction of government business development policy prescriptions.

In America, as has been the case in Australia, government involvement is manifested through funding from federal, state and local levels, where governments "... provide initial funds to incubators as a social investment but many have yet to be persuaded that this is a proper use of public funds" (Lalkaka 2001, p. 31). The downside of this approach can result in a high level of dependence on government, which is a hallmark of incubators across countries (Chandra 2007, p. 35). Australian incubators, almost all of which are 'not-for-profit' organisations (Business Innovation & Incubation Australia 2009b, p. 6), have closely followed this pattern of dependence upon government.

In interviews completed as part of this study, participants were asked if they had any concerns about institutional impacts upon their respective organisations, resulting from their dealings with various levels of government in Australia. Responses suggest that none of the interviewees believe that their organisation is currently subject to institutional pressures, because government involvement in their organisations is minimal.

However, all interviewees expressed a concern that there is no recognised source of governmental funding for capital or recurrent expenditures in the Australian business incubator sector, arguing that their capacity to undertake necessary capital works maintenance and development is non-existent.

Australian business incubators initially developed through the availability of funding grants, especially through national government employment creation programmes during

the 1990s and early 2000s. But as indicated in the interviews, availability of this form of government assistance has ceased.

Statements from interviews indicated a concern that incubation, as a business support programme, is currently ‘out of favour’ with federal government business development policies:

- “A government funded incubator programme is needed if new urban and regional communities are to be allowed to set up, such incubators must be based on sustainable models (Interview 1);
- “In the early 1990s the Commonwealth Government was running a range of labour market programmes which included incubator funding. This was a very effective programme in which some of the intending tenants, through skill transfer initiatives, built their own incubator accommodation using Commonwealth funding” (Interview 2);
- “With the federal government no longer providing capital funding for incubators where do we go for such assistance? We need to re-furbish the remaining one-third of this incubator’s available space and have tenants waiting to move in but cannot fund the development” (Interview 5).

This group of incubator stakeholders appear to favour the principle of direct involvement of the federal government in supporting business incubation, the issue having potential relevance to future stakeholder goal achievement in the Australian business incubator sector.

Interviewees indicated that local government has continued to play a supportive role in the business incubator sector. However, the level of resources available, (as indicated below) would not appear to be accessible at levels provided in the past by various Australian federal governments.

- “The local city council is the major investor; they collect rent from all of the incubator factories but fully refund all of the rental revenue. This gives the city a fully maintained small business support asset and the incubator receives an essential cash flow” (Interview 1);
- “City council, as the major investor in the incubator, has 50% of the seats on the board of management “ (Interview 4).

One government related issue that appears to have impacted business incubators in Victoria is the issue of the election of the Kennett Government in 1992, in particular, the decision to re-structure various state and local government departments. The major impact on business incubators located in the State of Victoria involved the decision to reduce the size of ‘government’ in the state, especially to reduce the number of local government councils and state schools. This decision caused the vacation of a number of council offices, works depots, government owned buildings and land parcels, some of which have subsequently, at minimal cost, been re-developed and rented out as business incubators. The policy in Victoria and to a lesser degree in other states, was to reduce the size of the government sector, therefore having the unexpected effect of making more ‘one-off’ government resources available (fortuitously, and in the short term), causing the level of government support of business incubation to increase temporarily.

#### **4.2.5 Incubator financial issues**

Throughout the interviews there was a constant expression of concern from incubator stakeholders in relation to the perceived ‘delicate’ financial position of the Australian business incubator sector. Interviewees expressed a range of concerns about their incubators’ financial status and the dilemma facing incubators whereby they are expected to offer sub-market level rentals and free business support, even though rental payments are usually their only source of income.

Interviewees indicated that financial constraints represent a common feature of incubator management in Australia. The search for answers to the financial stresses facing Australian incubators includes a wide range of board and manager initiated ‘solutions’. Interview responses suggested that the solutions include:

- use of anchor tenants – larger established businesses (sometimes incubator ‘graduates’) who have been invited to continue incubator occupancy at long-term commercial rentals;
- use of government departments as tenants – long-term ‘departmental’ tenants offer the multiple attractions of extended tenancies, capacity to undertake their own capital works projects and ability to pay commercial rentals;
- operation of dual ‘incubation’ and ‘commercial’ rental regimes based on variability in space allocations according to the level of demand in either sector, with a guarantee of a fixed minimum percentage of space for the business incubation section of the incubator;
- tendering out management of the incubator as a means of reducing recurrent expenditures. This arrangement circumvents the need to purchase capital items, such as computers, office equipment and motor vehicles;
- to seek out agency arrangements, within the incubator, for delivery of the New Enterprise Incentive Scheme (NEIS) and/or Business Enterprise Agency (BEA), so that cash flow can be enhanced and small business development linkages encouraged; and
- by conducting regular workshops and seminars for small business owners, managers, and staff. A small number of incubators involved in the interviews also offer nationally accredited Certificate IV training courses in the Small Business Management field. Incubators operating these types of business support facility are attempting to establish their business as the community’s ‘one-stop-shop’ for small business support, while generating alternative income designed as a means of support of incubator operations.

Findings from the interviews suggest that business incubation in Australia has major problems in funding day-to-day operation with little opportunity for expansion of existing structures or development of new facilities on ‘green-field’ sites. Phrases like “Australian governments do not know how to reward the successful” (Interview 1) and a defiant “We

are a proud, not-for-profit, community service provider of small business support services” (from the web-site of the Macarthur Business Development Centre, p. 1) suggested the existence of an air of determination rather than resignation about the status of Australia’s incubator sector.

Achievement of business incubator stakeholder goals represents a difficult strategic target in a fiscally stressed operational environment. Incubator boards and managers have found that they serve several masters, with the balance of responsibility and operational demands appearing to shift as incubators mature and move through their life cycles. There is a need to keep all stakeholders happy and importantly “... the patience and understanding of the stakeholders plays an important role in whether or not an incubator can survive long enough to become mature and function effectively” (Barrow 2001, p. 19).

As already mentioned, the essential purpose of the interview process was to establish personal contact with incubator managers. The researcher documented the conversations intended for inclusion in this chapter of the study. Managers usually indicated that they were willing to complete the survey and to forward the e-mail survey file to their incubator stakeholders with a recommendation that the survey be completed and forwarded electronically (and anonymously) through the survey’s internet link.

In a limited number of instances the incubator manager was not available but asked administrative staff to inform the researcher that a letter of explanation concerning the survey was required for subsequent consideration by the board of management, before recommending participation in the survey. There were three such refusals and they were not included within the aforementioned group of 45 contacts.

With each positive incubator contact an introductory e-mail letter was forwarded from the researcher to the incubator manager or a nominated incubator administrative staff member (see Appendix 4.1). Incubator managers indicated a high level of interest in the survey, usually asking that they be placed on a mailing list so that they might receive a copy of the results of the study.



Appendix 4.2 provides a copy of the e-mail invitation despatched from the researcher to potential incubator manager survey respondents. This e-mail letter required formal approval from Victoria University's Human Resource Ethics Committee (HREC) as did questions about the conduct of structured interviews. HREC approvals were received prior to any contact with members of the Australian business incubator sector. A sample of a recorded interview appears as Appendix 4.3.

The researcher completed 45 non-structured telephone interviews with the incubators managers, or in five instances, their deputies, of incubators from across Australia. Almost all members of this group promised to complete the e-mail survey themselves and to forward the researcher's invitation on to their board members and tenants. However, only 22 managers forwarded a completed questionnaire for analysis, a figure much lower than expected. However, the response rate still represents almost half of the manager group for the Australian incubator sector.

In summary, this study seeks to identify the goals of Australian business incubator stakeholders and to assess whether those goals are being satisfied. Issues raised in this initial series of interviews, were supported by a variety of web-based information sources, highlighting the point that the issue of incubator stakeholder goal definition and satisfaction is a complicated area of analysis.

### **4.3 Conclusions**

By communicating with the majority of Australia's business incubator managers, the researcher has delineated additional information and opinions to enhance the content and relevance of the major survey designed for e-mail application. The interview process described in this chapter began as a strategy to create effective contacts with Australian incubator managers, and through these relationships seeking to further develop a capacity to efficiently collate incubator stakeholder e-mail addresses. However, the contact process also produced a rich 'vein' of information relating to Australian business incubators because the interviews identified a range of issues of relevance to future goal achievement outcomes for stakeholders of Australian business incubators.

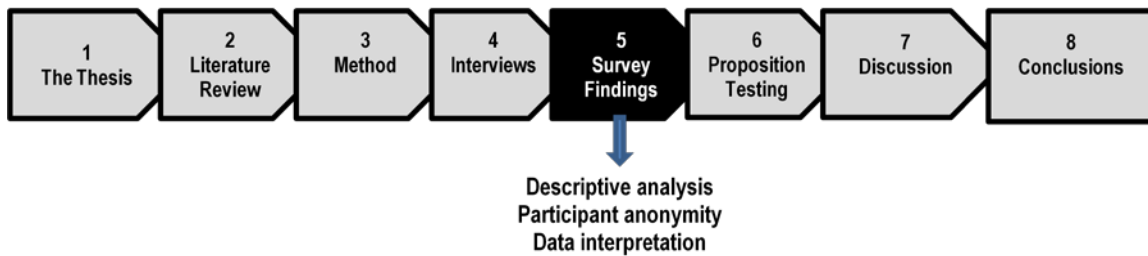
Information derived from interviews provided relevant research material about incubator goals, incubator services (currently provided and desired), incubator entry and exit procedures, institutional perceptions of business incubation, incubator financial status and the policies of various boards of management and associated incubator stakeholders.

Chapter 4 provides advice supporting the development of relevant questions in the major survey associated with this study.

Chapter 5 presents a description of the results of responses to the e-mail questionnaire.

## CHAPTER 5

### SURVEY FINDINGS



#### 5.1 Introduction

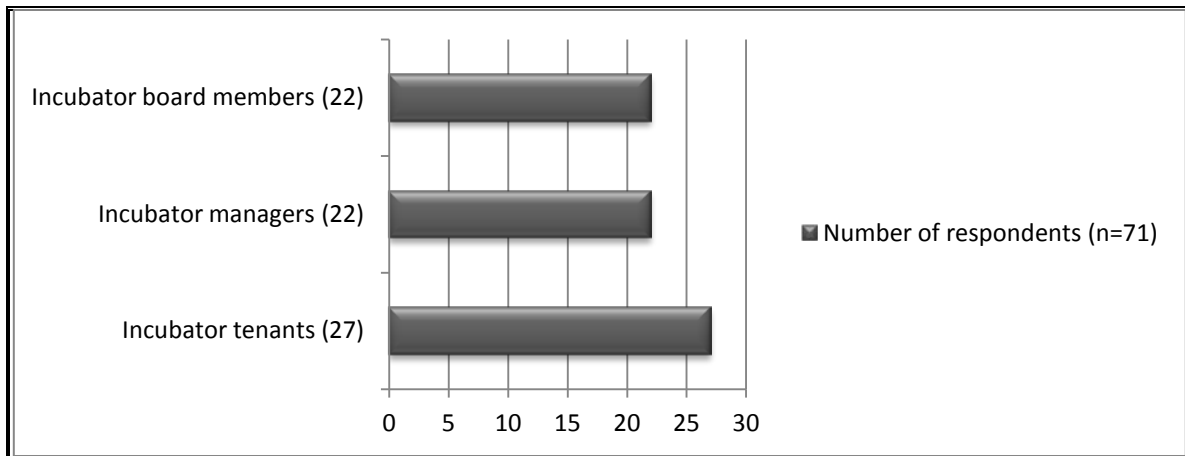
This chapter begins by analysing survey data from Australian business incubator stakeholders. This data focuses on the central research question relating to incubator stakeholders and whether they are achieving their business goals.

Section 5.2 examines survey responses from the various categories of incubator stakeholders and organisations. Section 5.3 interprets a range of survey responses dealing with incubation management issues. Section 5.4 examines incubator service provision while incubator funding is examined in Section 5.5. The ‘not-for-profit’ survey responses constitute the core of Section 5.6 and Section 5.7 concludes the chapter.

#### 5.2 Survey responses

Of the 77 e-mail survey responses received through the Survey Monkey web-link collector, 71 were considered useable. Each of the six rejected responses had many questions that were unanswered. The responses submitted had been prepared by tenants, managers and various board members of Australian business incubators (see Figure 5.1).

**Figure 5.1 Respondent numbers**



The target for this study sought a minimum response rate of 30% of Australian incubators. The final response level exceeded this expectation so that the sample response was representative of the targeted population. During the interview stage (see Chapter 4) it was estimated that approximately 50 active business incubators were operating in Australia in November, 2009.

This estimate was based on listings circulated by governmental and representative incubator agencies including Business Innovation and Incubation Australia (2009a), the Department of Industry, Tourism and Resources (AusIndustry 2007) and SPICA (Science Park & Innovation Centre Association 2008). Of the 45 respondents who participated in interviews (see Chapter 4) 22 responded to the e-mail survey. This level of response exceeded the anticipated response rate.

### **5.2.1 Partial completion of surveys**

In a small number of survey returns respondents skipped certain questions. However, the level of response to the remaining questions justified inclusion of partially completed surveys. The highest level of 'skipped' questions came from incubator tenants. Certain questions related to issues of little interest to tenants, especially relating to historical matters and management features.

## 5.2.2 Survey responses – personal characteristics of respondents

Earlier studies of the Australian business incubator sector identified a gender ratio of approximately 75% male (Abduh 2003, p. 140; Gardner & Kenyon 1994, p. 3). Initial analysis of the 71 responses to this study suggested that the ratio of female to male managers and incubator tenants has increased over the last decade.

### 5.2.2.1 Gender of survey participants

In the original interview stage with the managers or administrators, (see Chapter 4) 22 managers were female (48.8%). In the subsequent distribution of the survey 22 managers responded to the e-mail survey with 12 (54.5%) being female.

**Table 5.1 Gender of respondents**

<b>Gender</b>	<b>Board members</b>	<b>Incubator managers</b>	<b>Incubator tenants</b>	<b>Total</b>
<b>Male</b>	18 (81.8%)	10 (45.5%)	15 (55.5%)	<b>43</b> <b>(60.6%)</b>
<b>Female</b>	4 (18.2%)	12 (54.5%)	12 (44.5%)	<b>28</b> <b>(39.4%)</b>
<b>Totals</b>	<b>22</b> <b>(100%)</b>	<b>22</b> <b>(100%)</b>	<b>27</b> <b>(100%)</b>	<b>n=71</b> <b>(100%)</b>

Further dissection of survey responses (see Table 5.1) indicates that female involvement in this study is higher than the earlier studies, especially relating to numbers involved in tenant businesses, and, as managers. However, the role of female board members in this study is minimal with only 18.2% of the cohort being female.

### 5.2.2.2 Age of survey respondents

All survey participants indicated their age. The survey question relating to age identified ten year age brackets (see Table 5.2). To analyse age data the midway point was used for

each respondent. The mean value for incubator tenant at 40.27 years is consistent with results of earlier studies (Gardner & Kenyon 1994, p. 4).

The higher mean levels at 51.81 years for incubator managers and 53.86 years for board members would be the expected outcome, considering the need for incubators to draw upon the skill and experience of various individuals.

**Table 5.2 Age of respondents**

Age group	Board members	Incubator managers	Incubator tenants	Consolidated age levels
Approximate mean age	53.86 years	51.81 years	40.27 years	
< 20 years	0	0	0	0
20 – 29 years	0	1 (4.6%)	1 (3.7%)	2 (2.8%)
30 – 39 years	1 (4.6%)	1 (4.6%)	12 (44.4%)	14 (19.7%)
40 - 49 years	7 (31.8%)	6 (27.3%)	11 (40.8%)	24 (33.8%)
50 – 59 years	7 (31.8%)	9 (40.8%)	2 (7.4%)	18 (25.4%)
60 – 69 years	7 (31.8%)	5 (22.7%)	1 (3.7%)	13 (18.3%)
Totals	n = 22 (100%)	n = 22 (100%)	n = 27 (100%)	n = 71 (100%)

The group result reflects the observation that the age structure for the board member group is much more dispersed than the tenant and manager groups who exhibited highly clustered age structures.

### 5.2.2.3 Educational attainment of survey respondents

Respondents indicated their highest level of educational attainment and it is summarised in Table 5.3.

All 71 survey participants responded to this question. These participants exhibited a high level of technical or professional qualification with 50% of manager respondents holding a university post-graduate qualification and 63.4% of all respondents holding a university qualification.

**Table 5.3 Respondent education levels**

Highest educational standard achieved by respondents	Board members	Incubator managers	Incubator tenants	Total
1. Did not complete secondary education	0	0	2 (7.4%)	2 (2.8%)
2. Completed secondary education	2 (9.1%)	1 (4.6%)	1 (3.7%)	4 (5.6%)
3. Vocational/technical qualification	6 (27.3%)	5 (22.7%)	9 (33.3%)	20 (28.2%)
4. University first degree	7 (31.8%)	5 (22.7%)	9 (33.3%)	21 (29.6%)
5. University postgraduate qualification	7 (31.8%)	11 (50%)	6 (22.3%)	24 (33.8%)
Total	22 (100%)	22 (100%)	27 (100%)	n = 71 (100%)

### 5.2.2.4 Involvement in business incubators

Responses from managers exhibited an expected pattern where they were involved for longer terms than tenants. Board members demonstrate a longer commitment.

**Table 5.4 Period of involvement**

Year of commencement in incubation	Board members	Incubator managers	Incubator tenants	Totals
1985 – 1989	1 (4.5%)	0	0	1 (1.4%)
1990 – 1994	3 (13.6)	2 (9.1%)	0	5 (7.0%)
1995 – 1999	5 (22.7%)	2 (9.1%)	2 (7.4%)	9 (12.7%)
2000 – 2004	5 (22.7%)	11 (50%)	7 (25.9%)	23 (32.4%)
2005 – 2009	8 (36.4%)	7 (31.8)	18 (66.7%)	33 (46.5%)
Totals	22 (100%)	22 (100%)	27 (100%)	n=71 (100%)

The survey results in the above table suggest that many incubator tenants have stayed on beyond the expected maximum of five years, although two-thirds of the group have only been involved since 2005, signifying that a graduation process, of sorts, is operational in Australian business incubators.

### **5.2.3 Incubator features**

Australia's first business incubators were set up during the late 1980s with the support of state government funding in New South Wales and Queensland. Funding of incubators on a national level became a feature of federal government business development programmes in the early 1990s (Office of Local Government 1992, p. 1). Incubator location is one of the features considered in this survey along with incubator legal structures, size, age, purpose, and stage of development.



### 5.2.3.1 Location of respondents' incubators

Responses from managers exhibited an expected pattern. States in which incubation has been operating since the late 1980s being over represented (New South Wales and Queensland and South Australia) with Victoria and Western Australia being underrepresented. Respondents indicated the location of the head office of their incubator because a number of incubators have multiple sites, hence the need to report one administrative centre for each organisation. Incubator tenant and board member responses to the study do not match the geographical spread of the manager group. Statistical analysis of responses to the survey question concerning incubator sample location would suggest that responses relating to incubator tenants and board members are not representative of the population with both distributions of data being skewed.

**Table 5.5 Locations of respondents**

Location	Managers	Distribution of incubators
1. New South Wales	5 (22.7%)	13 (26.0%)
2. Queensland	6 (27.3%)	8 (16.0%)
3. South Australia	3 (13.6%)	3 (6.0%)
4. Victoria	4 (18.2%)	13 (26.0%)
5. Western Australia	4 (18.2%)	11 (22.0%)
6. ACT	0	1 (2.0%)
7. Tasmania	0	1 (2.0%)
Totals	22 (100%)	50 (100%)

Survey analysis, in considering the influence of location impacting on incubator managers (the independent variable), was the basis of further consideration regarding stakeholder goal achievement (the dependent variable) in the subsequent examination of respondent data.

Initial records showed that there are 50 incubators operating throughout Australia – in the interviews described in Chapter 4 five of the managers (or their staff) indicated that they would not participate in the study leaving a potential group of 45 manager respondents. Surveys were distributed to all of these managers and a total of 22 responded. Column 2 shows the level of manager response to the survey, representing almost half of the incubator managers in Australia. This response level provides a response ‘spread’ which approximately equates that of the number of incubators (Table 5, column 3), the lowest level of responses being received from managers based in Western Australia.

#### **5.2.3.2 Incubator organisational structures**

A 2009 survey of Australian business incubator managers, which elicited 20 responses, asked how their incubators were structured. The results indicated that 65% were structured as ‘not-for-profit’ associations (Business Innovation & Incubation Australia 2009b, p. 1). The nature of the structure of a business incubator is a research topic that has been under constant review, due to the importance of ‘structure’ having the potential to influence the achievement of goals. This study sought to determine the organisational status of the sample of incubators with the results (see Table 5.6) being consistent with the abovementioned BIIA study results. Most tenants were aware of arrangements concerning the operational structure of their incubator, although five respondents used the ‘Do Not Know’ in the survey to answer this question. In Table 5.6 the two classifications of ‘incorporated associations’ and ‘companies limited by guarantee’ make up 83% of the organisational structures of survey respondents, this figure providing an indicator of the predominance of ‘not-for-profit’ incubators in the survey cohort.

The organisational structure of business incubators varies according to their mandate, in terms of the 'for-profit' or 'not-for-profit' issues (Scaramuzzi 2002, p. 4). In an environment where "... the pre-dilections of the leading sponsors influence incubator goals ..." (Lalkala 2001, p. 5) it would be reasonable to anticipate that 'not-for-profit' incubators might lean toward an enhancement of economic development and/or unemployment reduction in the region surrounding the incubator. Alternatively, 'for-profit' incubators, in their present day Australian format, appear to prefer to be involved in the (hopefully) profitable business of stimulating firms involved in emerging technologies or in the commercialisation of research, usually operating as university science parks (Bergek 2008, p.22).

A temporary growth in the numbers of 'for-profit' incubator models occurred during the dot.com bubble over the period 1998-2003. At that time "... dot.com boom incubators were portrayed as programmes designed to hatch successful businesses quickly and to bring big pay-offs to investors and other profit entities" (Knopp 2007, p1). The dot.com 'bubble', in the USA and Australia, created an "explosion of private 'for-profit' incubators followed ... [after it burst] ... by a period of equally exaggerated distrust" (Albert 2002 p. 12). Consequentially, interest in dot.com investments has steadily declined over the past decade to the extent that 'not-for-profit' economic development incubator models, which emphasise goals concerned with job creation and a fostering of the community's entrepreneurial spirit, have regained their status as the major form of Australian incubator.

Also, the design of the survey instrument for this study encompasses a strategy whereby invitations to participate in the survey were not forwarded to science park managers thereby omitting any concern that this type of business development structure might be confused with the study of traditional business incubators. The literature suggests that there is a strong focus in science park development upon the capitalisation of university research, usually utilising funds from a venture capital funding source, the parks being operated on a 'for-profit' basis (Callegati 2005, p. 10; Colombo & Delmanstro 2002, p. 1116). A group of science parks has been developed throughout Australia, the economic development motivations and business support methodology of these organisations being quite different

to that of traditional economic development incubators which make up the cohort of this study.

This study therefore has accounted for the varying goal expectations and operational methodology of ‘for-profit’ and ‘not-for-profit’ businesses by effectively omitting the science park ‘for-profit’ organisations from the sample.

**Table 5.6 Organisational structures**

Survey responses	Board members	Incubator managers	Incubator tenants	Total
‘Not-for-profit’ incorporated associations	14 (73.7%)	12 (57.1%)	17 (89.6%)	43 (72.9%)
Limited by guarantee*	2 (10.5%)	3 (14.3%)	1 (5.2%)	6 (10.2%)
Incorporated company	3 (15.8%)	6 (28.6%)	1 (5.2%)	10 (16.9%)
Total	19 (100%)	21 (100%)	19 (100%)	n = 59 (100%)

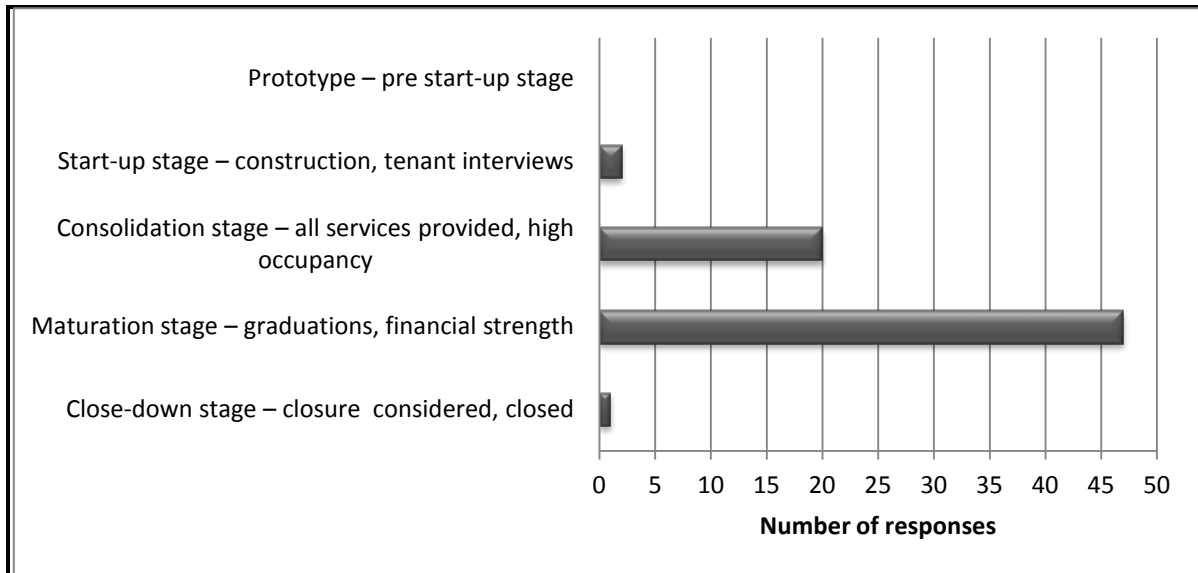
\* A Company limited by guarantee is a type of company that does not have a share capital or shareholders and is usually formed to manage a ‘not-for-profit’ organisation.

### **5.2.3.3 Incubator life cycle issues**

According to one incubator director “... the board is the strength of the incubator” (Chapter 4, interview 1, 16 June 2009). Members of such groups represent the broad range of regional businesses and organisations including local councils.

Incubator management serve several ‘masters’ and the balance of responsibility to each shifts as the incubator matures and moves through its life cycle (Hannon 2003, p. 452). Stakeholders indicated their incubator’s stage of development, ranging from the prototype pre start-up stage through to the close-down stage.

**Figure 5.2 Incubator stages**

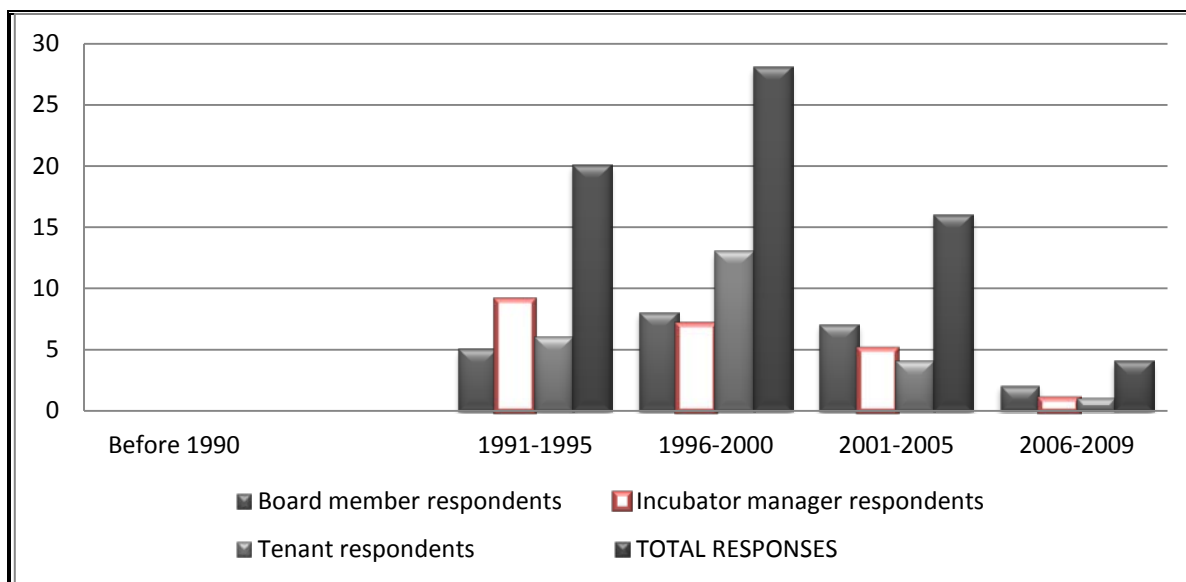


The responses above indicate that the largest group in the study sample are mature incubators. Responses are highly clustered, indicating domination by mature stage facilities in the Australian business incubation industry.

#### **5.2.3.4 Age of incubators**

Participants indicated the period in which their incubator was established. Rather than seek a precise year (which would have created problems and a resultant low response rate) in which the various incubators were established, respondents were provided with a choice of five year periods (see Figure 5.3). The pattern of development indicates a strong period during the late 1990s in which incubators were established, tapering off to minimal new incubator development in 2006 – 2009, this trend coinciding with initial expansion, followed by a reduction in provision of grant funding to the present time.

**Figure 5.3 Age of incubators**



Results from aggregated analysis of the data provided by respondents suggest variable levels of business incubator development in Australia, with a period of decline in recent years. The observation is also accurate if responses from incubator managers are considered in isolation (see the clear columns in Figure 5.3) as a method to avoid double counting in this case.

### 5.2.3.5 Incubator tenant numbers

A 2007 NBIA study lists 25 tenants as the median number for American business incubators, this figure having increased from 20 tenants in an earlier study (NBIA 1998; cited in Knopp 2007, p. 41). Goddard and Chouk (2006, p. 3) found that the majority (74%) of European business incubators were supporting up to 30 tenant firms.

Strenuous efforts were made to preserve participant's anonymity in this study (see section 3.4.4) As a result, responses relating to numbers of incubator tenants, as an indicator of incubator size, could have duplicated input where tenants, board members and/or managers reported on the same incubator. Such duplication of data would be misleading. However, responses from incubator managers – assuming that each incubator has one manager –

provide the means to accurately measure incubator size according to tenant numbers. This study identified 85.7% of respondent managers as being responsible for incubators with less than 30 tenants (see Figure 5.4), while a recent Australian study cited 80% as managing incubators with up to 35 tenants (Business Innovation & Incubation Australia 2009b, p. 3).

**Figure 5.4 Incubator tenant numbers**

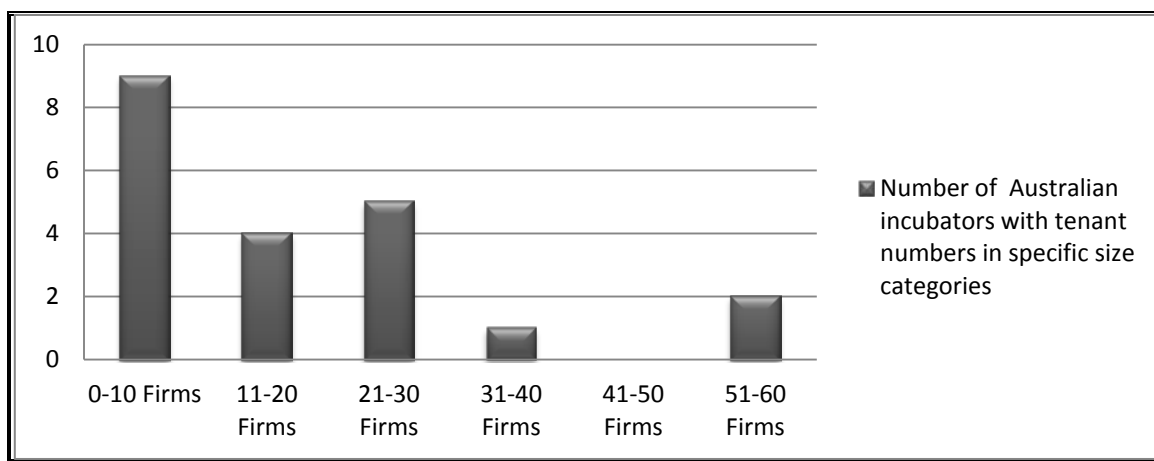


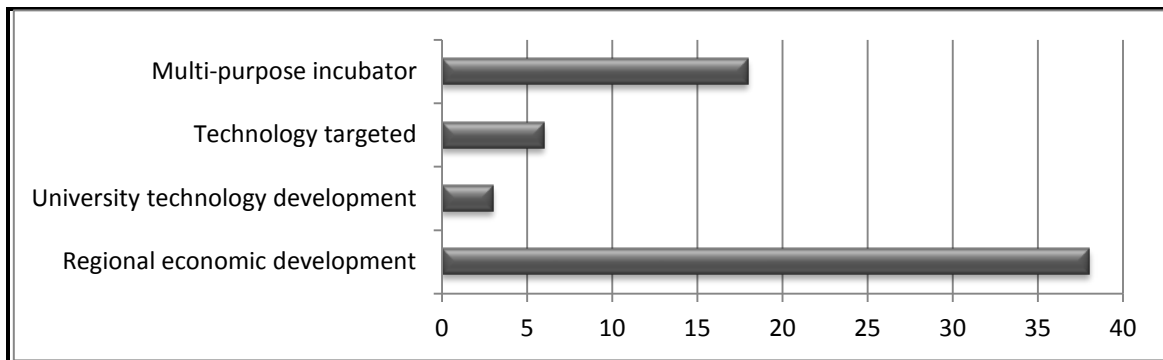
Figure 5.4 reports on the size of Australian business incubators, as reported by managers who responded to the survey. The dominant features of survey responses were that, of the 22 incubators for which data was available, nine (41%) had less than 10 tenants and only three (13.6%) had more than 50 tenants. Studies have identified the average number of tenant firms in the incubator sector in America (25) (Knopp 2007, p. 41) and Europe (27) (Centre For Strategy Evaluation 2002, p. 23). A comparison with the international data would suggest that Australian business incubators tend to be smaller.

#### **5.2.3.6 Purpose of Incubators**

In total, 66% of respondents indicated that the predominant purpose of their incubators was related to regional economic development. The second largest group were described as ‘multi-purpose incubators. Combined, these two types constituted 84.9% of incubator responses. A multi-purpose incubator, as a ‘type’ of facility, is intended to be an all-

encompassing description including elements of many types of incubator and tenant. Survey responses to various incubator purposes are summarised below in Figure 5.5.

**Figure 5.5 Incubator purposes**



Respondents also indicated whether or not their organisation had changed its purpose since they had been involved in the incubator. A total of 89.4% of respondents recorded ‘no change’ while 7.6% had become multi-purpose incubators. This question had been designed to test whether Australian incubators are moving toward areas of activity which parallel international experience. The literature review suggested that two ‘growth’ areas stand out in relation to international business incubator sectors. These relate to an increased emphasis on the development of technology targeted incubators and provision of ‘virtual’ incubation. A ‘virtual’ incubator provides a range of business support services but most of their service packages are delivered “... independent of the location of the service provider and/or the users of these services” (Triodos Facet 2012, p. 22). None of the survey responses indicated a change toward these forms of activity in the Australian incubators involved in this study.

#### **5.2.3.7 Mentoring/counselling service provision**

Almost all of the incubators surveyed (92.5%) advised that counselling is available, under varying arrangements, within their incubators. The survey results show that 7.5% of respondents indicated that their incubator did not provide any form of counselling service



to tenants. Four respondents added that their incubators vary the provision of counselling or mentoring services according to levels of resources available or provide a mixed service comprising mentoring variations (ranging from ‘on demand’ mentoring where tenants seek mentors as their needs change to compulsory mentoring programmes for all tenants).

### **5.3 Incubator management issues**

#### **5.3.1 Management issues and goal achievement**

During the interview phase of this research project (see Chapter 4) interviewees mentioned a number of incubator management issues which had the potential to prevent them from attaining their goals. Questions involving relevant internal management issues were included. The subsequent analysis only included input from incubator board members and managers as they were the stakeholder groups with an understanding of the issues. A selection of survey questions were included in the survey which considered whether incubator stakeholder goal achievement might be influenced by the application of various types of internal management strategies used by boards of management and incubator managers. In the literature review variations in incubator policy implementation, including tenant selection, range of service provision, sources of funding and general internal management strategies, varied to such a degree that arguably these factors may well influence incubation outcomes.

#### **5.3.2 Management issues – board of management and manager responses**

Respondents to the survey rated the significance of a range of management issues currently facing their incubators. The rating process allowed for responses to be analysed as ‘important’ or ‘not important’. The data provided the basis of a series of 2x2 tables for analysis of responses from board members and managers. Items mentioned by interview participants and evident in the literature review, suggest a number of management issues confronting incubator board members and managers which may affect their goal achievement outcomes. The survey sought responses concerning eight incubator management issues to assess whether all, or any, of these issues represented a major

factor in the administration of Australian business incubators.

**Table 5.7 Management issues**

Management issues	Board		Managers		Valid cases (n)
	Important	Not important	Important	Not important	
1. Finding appropriate start-up candidates for the incubator	16 80.0%	4 20.0%	17 77.3%	5 22.7%	42
2. Obtaining funding for incubator development	15 68.2%	7 31.8%	14 77.8%	4 22.2%	40
3. Obtaining funds for incubator operation	10 45.5%	12 54.5%	11 55.0%	9 45.0%	42
4. Tenancy candidates have inadequate start-up capital financing	11 55.0%	9 45.0%	8 40.0%	12 60.0%	40
5. Insufficient business skills in the local community	8 42.1%	11 57.9%	6 33.3%	12 66.7%	37
6. Too much government regulation or paperwork	5 25.0%	15 75.0%	3 15.0%	17 85.0%	40
7. The 2009 international economic crisis	4 19.0%	17 81.0%	5 25.0%	15 75.0%	41
8. Concerns relating to future government funding for incubators	11 57.9%	8 42.1%	14 66.7%	7 33.3%	40

Interviewees (see Chapter 4) had mentioned that the process of finding appropriate candidates for their business incubator was a high priority in the management of their organisation. Table 5.7 reports a total of 80.0% of board members and 77.3% of manager respondents indicated that finding appropriate start-up candidates was an important factor, the percentage suggesting that both board members and managers are actively involved in the search for incubator tenants.

Both groups of respondents rated the issue of obtaining capital funding for incubator development as being critical with the majority of both stakeholder groups supporting this point of view.

Board members and manager recorded lower rating levels (45% and 55% respectively) in considering problems in obtaining recurrent funding for their incubators. The low percentage response levels for both groups may suggest that some incubators have resolved the issue of provision of recurrent funding.

Respondents indicated that the existence of adequate start-up finance is not a major candidacy issue in applications for incubator tenancy. A small majority of board members (55%) see the issue as important while 40% of managers rate it as being an important matter in the choice of tenants for their incubators. This apparent disparity in board member and manager attitudes may reflect the personal experience of board members in developing their own businesses whereby inadequate start-up finance may have been a more urgent issue than has been the case in the personal experience of incubator managers.

Both groups of stakeholders view an insufficiency of business skills in the local community as an issue of lesser importance.

A frequent observation, in the business incubator and small business development literature (Acs & Szerb 2006, p. 109; Oliver 1992, p. 584; Parker 2004, p. 60) relates to the suggestion that goal achievement may have been hindered by the existence of excessive government regulation and paperwork. Respondents were unanimous in their agreement that excessive regulation is not an issue facing business incubators, with only 25% of board members and 15% of managers who rated the issue as important.

During the months preceding the circulation of the survey the Australian economy experienced a period of severe economic disruption. The Australian media had identified the economic downturn as a possible cause of business disruption. Thus respondents were

asked to indicate whether their incubators had recently experienced economic difficulties. The international economic crisis of 2009 was rated by both parties to be a matter of lesser importance.

Interviews reported in Chapter 4 consistently indicated concerns relating to future government incubator funding programmes. As a result, a question was included in the survey to determine whether this was important to incubator board members or managers and to discern whether their opinions differed on the issue. A total of 58% of board member and 57% of managers identified the issue as important.

Survey responses were tested to assess whether board members and/or managers were at odds with the importance of management issues raised in the survey. If their responses varied significantly this might have the potential to disrupt management decision-making processes and, thereby, to inhibit stakeholder goal achievement outcomes. Actual response levels, as reported in Table 5.7 were tested using the Fisher's two-tailed test. The results of the tests indicate that the association between each set of board and manager responses was not statistically significant.

## **5.4 Incubator service provision – the issue**

Services provided by incubators represent the most obvious manifestation of the relationship between incubator management and tenants. The survey questions were designed to develop an overview of the range of services provided by Australia's business incubators. More specifically, services that stakeholders would like their incubator to provide. In addition, stakeholders were asked to evaluate the importance of existing services.

### **5.4.1 Incubator services – being supplied or sought**

The list of incubator services in the survey was not exhaustive. In the US, and in Europe, the range of services available is expanding. For example, the 2005 NBIA study identified

33 categories of American incubator business services (Knopp 2007, p. 26). During the interview phase of this study the range of incubator services provided by Australian facilities was frequently discussed. The range of services currently supplied by Australian incubators involved in the study's interview process is appended (see Appendix 4.4 which lists this information). In addition, website material relating to Australian business incubation places heavy marketing emphasis upon the range of services provided by those organisations.

**Figure 5.6 Services supplied and sought**

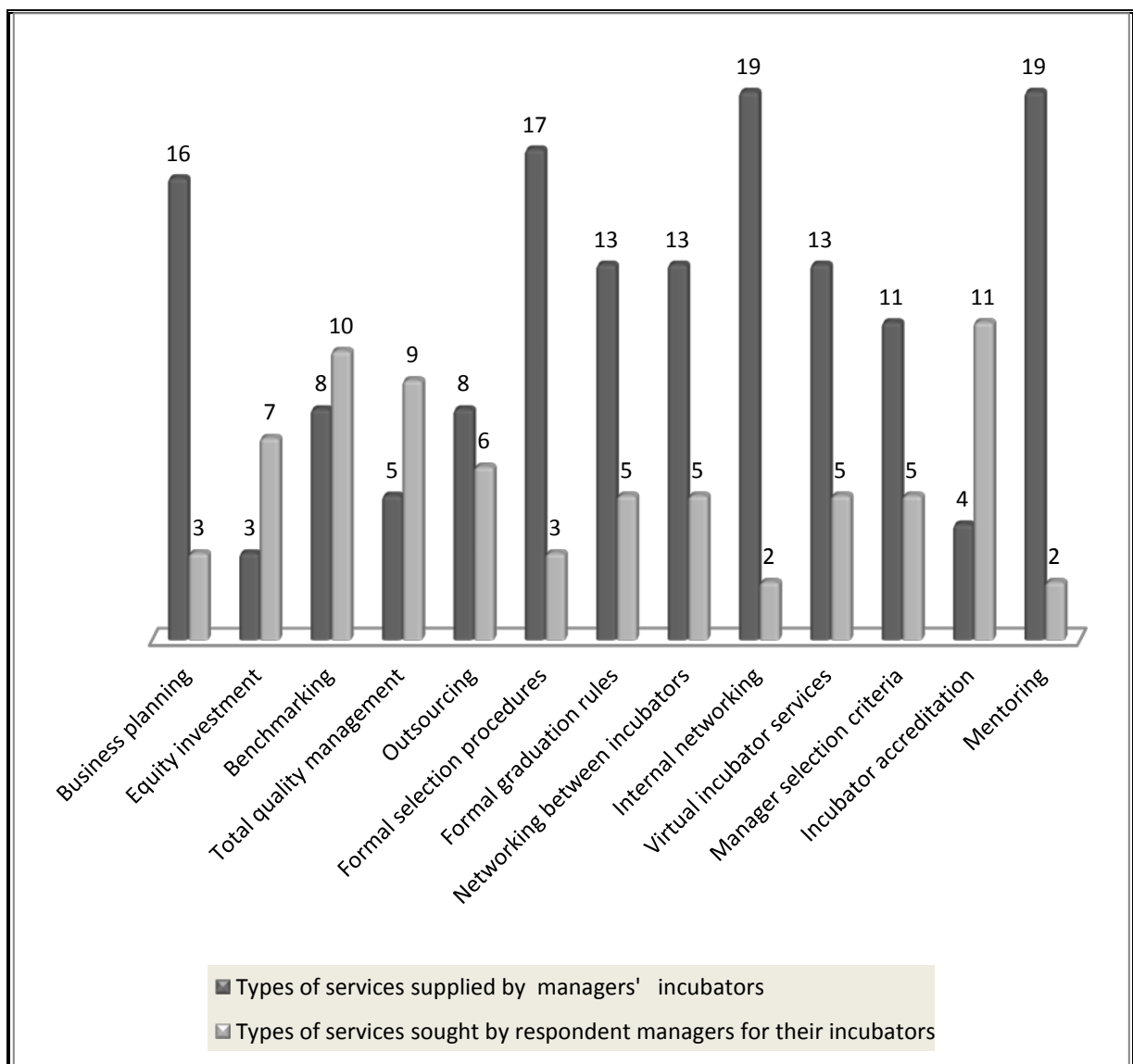


Figure 5.6 provides a visual overview of results from part of the survey only including the responses from incubator managers. The decision to portray only manager responses here related to a concern that data might be duplicated, if presented as answers to this question from all stakeholder groups. One group of responses identifies those services already provided by incubators involved in the study. Services such as assistance with business planning, formal selection procedures, internal networking availability and mentoring are available in over 80% of the incubators involved in the study. The high level of incubator provision of this specific group of items approximately equates to the service offerings described in a range of international studies (Chandra, 2007; Centre for Strategy Evaluation, 2002; Szabo, 1999; Knopp 2007). Other services such as formal graduation procedures, external networking, virtual incubation services and specific manager selection criteria were identified by manager respondents as being provided in approximately 52% to 62% of respondent Australian incubators.

#### **5.4.2 Management and tenant responses – incubator service needs**

Further analysis was conducted among all responses to the survey from management (board and managers) and tenant groups. Responses from these groups relating to business planning, benchmarking, total quality management, outsourcing of services, graduation rules, external and internal networking, equity investment by incubators in tenants firms, incubator accreditation, virtual incubation and mentoring assistance were similar, to the extent that Fisher's tests of significance of responses resulted in readings in excess of the 0.05 level for all sets of data. The results suggested that there is no significant difference between the opinions of management and tenants concerning these elements of incubator service supply. However, two concepts mentioned in this range of services require further explanation.

Survey questions asked respondents to examine the issue of availability of incubator equity investment in tenant start-up businesses. Of the 17 (of 44) management respondents who answered this question in the survey 71% indicated they would like to see the concept introduced into their incubator and 100% of tenant respondents (12 of a possible 27

answered the question) favoured introduction of the concept.

Another component of incubator service provision considered the concept of introducing Australian incubator accreditation. Tenants (91%) strongly supported the introduction of incubator accreditation as a best practice concept but only 62% of management respondents were supportive. Considering that ‘management’ comprises an aggregation of board of management and incubator manager responses, the issue was further considered by collapsing the responses to determine if one element of the management group favours the idea of incubator accreditation more than the other. When these responses to the accreditation question were adjusted, 75% of managers indicated a level of support for accreditation to be introduced while 45% of board members sought its implementation.

Accreditation typically demands that incubator management can only access funding if they have adhered to operational best practice standards administered by the funding agency. Australian incubation does not have formal business incubator accreditation or certification scheme although 11 of the management respondents indicated that a system is in place in their incubators. These survey responses suggest that participants may have misinterpreted the meaning of the term ‘accreditation’. The question was included in the survey because there is a trend in international policy areas for business incubators receiving public funding to be allowed to do so only on a conditional basis, as is the case in various states of the US and in the UK (Inspire 2011, p. 4; Washington State Legislature 2008, p. 1).

Should the public sector renew its involvement in business incubation in Australia in the future then accreditation and/or certification pressures may become an important element of funding arrangements (Ashworth, Boyne & Delbridge 2005, p. 4). The issue could be the subject of further academic attention, especially considering the international trend toward government support of incubation and the resultant financial pressures that such a development has the potential to create (Casile & Davis-Blake 2002, p. 180; Jorge-Costa 2005, p. 57).

Responses and subsequent analysis regarding the remaining service identified in the study, as presented in Table 5.8, suggests that stakeholder opinions may be significantly varied in

relation to the issue of the implementation of minimum selection procedures for manager selection. Respondents were asked to comment on the use of minimum selection procedures in the appointment of incubator managers. Statistical analysis of responses indicated the existence of a significant ( $n = 39$ ,  $P = 0.014$ ) difference between management and tenant views on this issue. 80% of management respondents indicated that this type of arrangement was already in place, while only 33% of tenants agreed with this observation.

**Table 5.8 Manager selection processes**

Stakeholder Responses – Preferences	Management		Tenants		Valid cases (n)	Significance Level (P)
	Available	Sought	Available	Sought		
Manager selection	24 (80.0%)	6 (20.0%)	3 (33.3%)	6 (66.7%)	39	*0.014

\* Item statistically significant at the 0.05 level (using Fisher’s two-tailed test).

### 5.4.3 Australian incubator services – level of importance

Having provided responses concerning the range of services available and sought in their incubators, respondents were asked to rank particular services in order of importance, while also indicating whether a particular service was provided by their incubator.

This question was included in the survey on the basis that successful provision of a highly ranked incubator service has the potential to assist in achieving stakeholder goals. Survey responses were collapsed to indicate whether a particular service was ‘important’ or ‘of lesser importance’ so that this set of non-parametric data could be evaluated using Fisher’s test methodology.

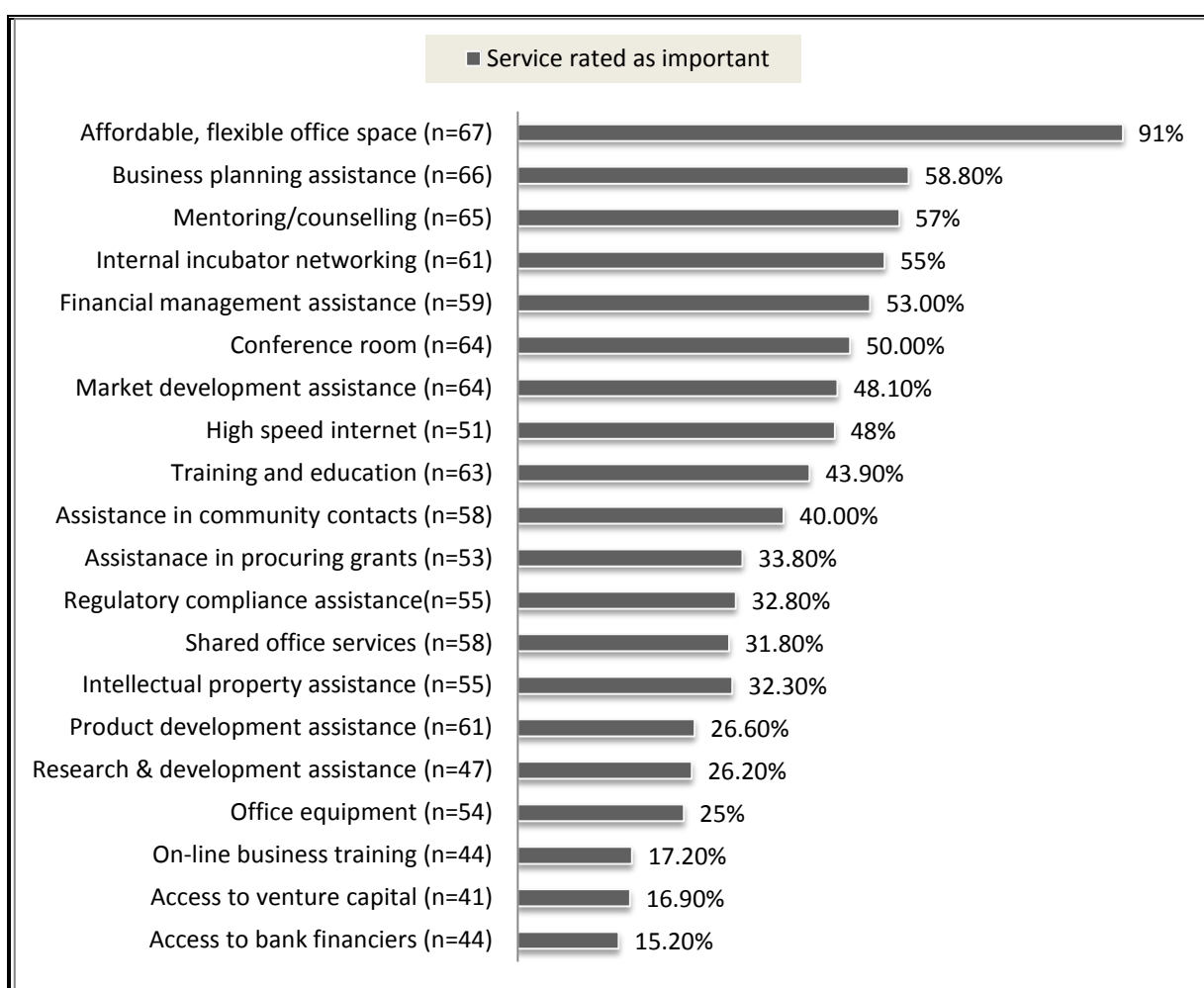
Figure 5.7 documents ‘important’ ratings from respondents about provision of particular services. Even though 20 incubator services were listed only six were regarded as being important by over 50% of respondents.



These were:

- availability of affordable, flexible office and/or factory space;
- business planning assistance;
- mentoring/counseling support;
- internal incubator networking;
- financial management assistance; and
- shared conference room facilities.

**Figure 5.7 Incubator service ratings**



#### 5.4.4 Rating of importance of incubator services provided

Further examination of the responses evaluated input from each of the stakeholder groups. Initial re-coding of data was designed so that the ‘important’ and ‘of lesser importance’ categories for management and tenants could be examined.

Ratings by management and tenants showed similar patterns for almost all of these incubator services with Fisher’s test cross-tabulation results indicating values exceeding 0.05 levels, suggesting that responses from these two stakeholder groups, in relation to 18 services were not significantly different.

However, two of the tests produced a result suggesting the presence of significant differences in the data about the ‘importance’ of particular services. These related to availability of shared high-speed internet facilities and availability of internal networking with other incubator tenants.

Table 5.9 indicates the Fisher’s test results for these services.

**Table 5.9 Importance of services**

Stakeholder responses – rating of level of importance	Management		Tenants		Valid cases (n)	Significance level (P)
	Very Important	Lesser importance	Very important	Lesser importance		
High-speed internet	26 (72.2%)	10 (27.8%)	5 (33.3%)	10 (66.7%)	51	* 0.013
Availability of internal networks	29 (72.5%)	11 (27.5%)	8 (38.1%)	13 (61.9%)	61	* 0.013

**\*Item statistically significant at the 0.05 level (using Fisher’s two-tailed test).**

In considering the relevance of these two areas of service provision, the following matters are pertinent to the study:

- *Shared high-speed internet availability*

In the literature review, availability of shared high-speed internet access is interpreted as a major element in the promotion of start-up businesses. In the American incubator sector,

provision of high-speed internet connection is viewed as one of the key services being provided (Arrowhead Center 2008, p. 2; Knopp 2007, p. 33). The facility has been described by one European researcher as the ‘knowledge intensity’ factor in the post dot.com ‘new economy’ incubators (Jorge-Costa 2005, p. 43).

Analysis of survey responses suggests that incubator tenant respondents do not agree with these assessments, even though incubator management see connection of a quality internet facility as being very important. Data analysis using the Fisher’s test calculation ( $n = 51$ ,  $P = 0.013$ ) thus indicates a statistically significant difference of opinion between the two groups on the internet issue.

- ***Internal networking in an incubator***

Finally, another incubator ‘service’ viewed as a key part of contemporary incubator service delivery involves tenant interaction with other incubator tenants (internal networking). The literature review identified a high level of support for the level of importance of the networking concept as an incubator service, suggesting that tenants receive major business development benefits through social experience within an incubator environment.

A recent NBIA survey of incubator managers rated internal networking programmes as being provided by 96% of the respondents (Knopp 2007, p. 26). Bollingtoft and Ulhoi (2005, pp. 273-4) identified internal networking as an addition to purely economics driven contractual associations, suggesting that strong social ties based on personal relationships play important economic and social roles during entrepreneurial agency, especially regarding the value of being in a “community of peers”. Analysis of survey responses ( $n = 61$ ,  $P = 0.013$ ) suggests that tenants have significant reservations concerning the value of internal networking in the development of their start-up enterprises, while management see the concept as being a ‘very important’ element in their service portfolios.

The results of the analysis need to be interpreted with the reservation that they may embody an element of bias. The sample may, as a result of factors which are beyond the control of

the researcher, include respondents who, due to a variety of issues (such as their type of business), are not interested in using high speed internet or they do not want to become involved in networking activities.

#### 5.4.4.1 Service provision – board member and tenant responses

Design of the survey allowed for further analysis regarding potentially significant service supply issues. This analysis provided an indication that board of management members (not including managers) and tenants may have differing perceptions of the value of availability and usefulness of high-speed internet connections and internal incubator networking services.

**Table 5.10 Analysis – specific services**

	Very important	Lesser importance	Very important	Lesser importance	Valid cases (n)	Significance level (P)
Board & tenant responses	Board		Tenants			
High-speed internet	16 (84.2%)	3 (15.8%)	5 (33.3%)	10 (67.7%)	34	* 0.004
Internal networking	14 (73.7%)	5 (26.3%)	8 (38.1%)	13 (61.9%)	40	* 0.031
Manager & tenant responses	Managers		Tenants			
High-speed internet	10 (58.8%)	7 (41.2%)	5 (33.3%)	10 (67.7%)	32	0.178
Internal networking	15 (71.4%)	6 (28.6%)	8 (38.1%)	13 (61.9%)	42	0.062

\* Item statistically significant at the 0.05 level (using Fisher's two-tailed test).

The analysis set out in the table above indicates statistically significant differences between responses from board members and tenants about attitudes toward provision of high-speed internet and availability of incubator internal networks.

These differentiations, as indicated by Fisher's test, have relevance to the strategic planning processes of incubator boards, especially the observation that board members perceive high-speed internet provision to be a very important service while incubator tenants have not supported this point of view. Analysis involving provision of high-speed internet in incubators indicated a *P* value of 0.004, suggesting that opinions of board members and tenants differ to a statistically significant degree. In conducting a similar test using incubator manager responses in rating the importance of these two services, the Fisher's test suggests that tenants and managers exhibit opinions that are not significantly varied. It would appear that management (board members and managers) exhibit varied opinions in relation to the need to supply high-speed internet and internal networking capability in their incubators.

Referring to Table 5.10 for tenants in relation to provision of both services, they have indicated these services to be of lesser importance, lacking majority support for either service.

Although the majority of managers regard high-speed internet provision as being very important, they appear to be less supportive of the idea than board members. Also, managers have indicated a marginally lower level of appreciation of the importance of internal networking capability than board members (as indicated in Table 5.10), both groups perceiving availability of this service to be a very important issue.

Another issue which might influence these survey results could be due to a bias in the type of businesses surveyed to the extent that tenant representatives from a specific industry sector (such as a group of respondents from the metal fabrication trades) might not be representative of all different types of incubator tenants.

## **5.5 Incubator funding and goal attainment – the issue**

The main focus of this study relates to the question of incubator stakeholder goal achievement. In this research environment, issues dealing with financial matters may, theoretically, play a role in the satisfaction of those goals. Australian business incubators,

like many of their international peers, exhibit a financially precarious, usually ‘not-for-profit’ financial status.

Financial difficulties matched by a unique set of cash flow environments mean that the basic justification for incubator involvement is constantly challenged. This is evidenced in interviews (see Chapter 4) where respondents give reasons for the ‘delicate’ financial condition of many business incubator operations.

Australian government support of incubation is ‘intermittent’ in nature, lacking a formal incubator industry support program from any level of government. In this funding scenario incubators face a basic dichotomy whereby they are expected to offer sub-market level rentals and free business support, even though rental payments are usually their only source of income.

#### **5.5.1 Business incubator funding**

In a recent study, the authors noted that in Europe, there are “... multiple levels of government involved in policies aimed at fostering a supportive environmental climate ...” (Goddard & Chouk 2006, p. 9) for support of start-up businesses.

Experience would suggest that this pattern also exists here, wherein all levels of government (national, state and municipal) have been involved, at various times, in provision of start-up capital (or in-kind resources in the form of land and/or buildings) or in programmes associated with ongoing support of recurrent funding provision for incubators (Australian Government 2007, p. 2; Nolan 2003, p. 22).

Chandra (2007) argues that this approach creates a “... high level of dependence upon government, which is a hallmark of incubators across countries” (p. 35). This suggestion raises the question as to whether incubators can survive in an environment in which public funding programmes are capricious because governments typically adapt their business support policies to meet varying political demands and economic circumstances.

In a European Union funded best practice study (2002), the final report recommended that public subsidies should comprise 25% of the revenue for establishment and operation of business incubators (Centre For Strategy Evaluation 2002, p. 23).

Public resources have been the traditional source of funding support for incubators that often worldwide, operate in 'not-for-profit' environments (Goddard & Chouk 2006, p. 4). Utilisation of government funding for business incubators has often been cited as an appropriate use of public funds (Lewis 2001, p. 16) whereby cost-effective creation of jobs is interpreted as an efficient economic development tool (Lalkaka 2001, p. 10).

More recently the US government and semi-government economic development organisations indicated an expanded role as primary sponsors of incubators, providing 52% of support in 2005 as compared with 31% in 2002 (Knopp 2007, p. 5).

Discussions with managers and other stakeholders from Australia's business incubator industry (see Chapter 4), suggest there is a high level of confidence in the incubator concept as a business development strategy. However, interviewees were pessimistic, suggesting that the concept has a limited future in Australia without assured government funding programmes to support long-term incubator development (Webb 2006, p. 1; Schaper & Lewer 2009, p. 43).

Subsequently, the questionnaire examines a range of issues regarding incubator funding sources, seeking to determine where stakeholder goal achievement outcomes stand with regard to Australian business incubator funding.

### **5.5.2 Incubation and government funding**

Survey questions posed in this study assess the degree of involvement, in Australian incubators, of government sector funding, for establishment and recurrent expenditures. Analysis also considers the issue of longevity of government financial support for incubators. In this survey, incubator stakeholders addressed (see Table 5.11) government funding issues. They were asked if government funds should be targeted for business

incubator development, with the choice of one of six options as possible responses. Sample responses suggest that there is a high level of support in respondent stakeholder groups for government funding involvement to extend beyond an initial three-year period, allowing a longer period for recipient incubators to achieve a state of fiscal independence.

**Table 5.11 Public funding options**

Funding choices	Management	Tenants	Total
1 – 3 years	10 (22.7%)	4 (14.8%)	14 (19.7%)
4 – 5 years	7 (15.9%)	8 (29.6%)	15 (21.2%)
6 – 10 years	9 (20.5%)	3 (11.1%)	12 (16.9%)
11 – 15 years	3 (6.8%)	0 (0%)	3 (4.2%)
Permanent public funding	15 (34.1%)	11 (40.8%)	26 (36.6%) Permanent public
No public funding	0 (0.0%)	1 (3.7%)	1 (1.4%) No public funding
TOTAL	44 (100%)	27 (100%)	71 (100%)

A total of 98.6% of survey responses suggested that there should be an element of government funding for business incubators. These survey responses, as indicated in Table 5.11, suggest that there is a diversity of opinion within the respondent sample about the nature of government funding provision. Responses indicate a strong preference (36.6%) supporting the installation of a permanent government funding arrangement. Considering the consistent problems experienced by business incubators, in satisfying their capital development and recurrent needs, a high proportion of survey responses in support of permanent government funding was to be expected.

International analysis suggests that a short term (one to three years) incubator funding



period by governments does not allow the recipient incubator to reach financial maturity, arguing that a longer period of support may be advisable. In the early incubator developmental phase, government funding is vital because it can often take a number of years before the organisation can attract private sector funding, and/or generate sufficient income from other sources to cover operating costs (Centre For Strategy Evaluation 2002, p. 23).

### **5.5.3 Establishment funding – sources**

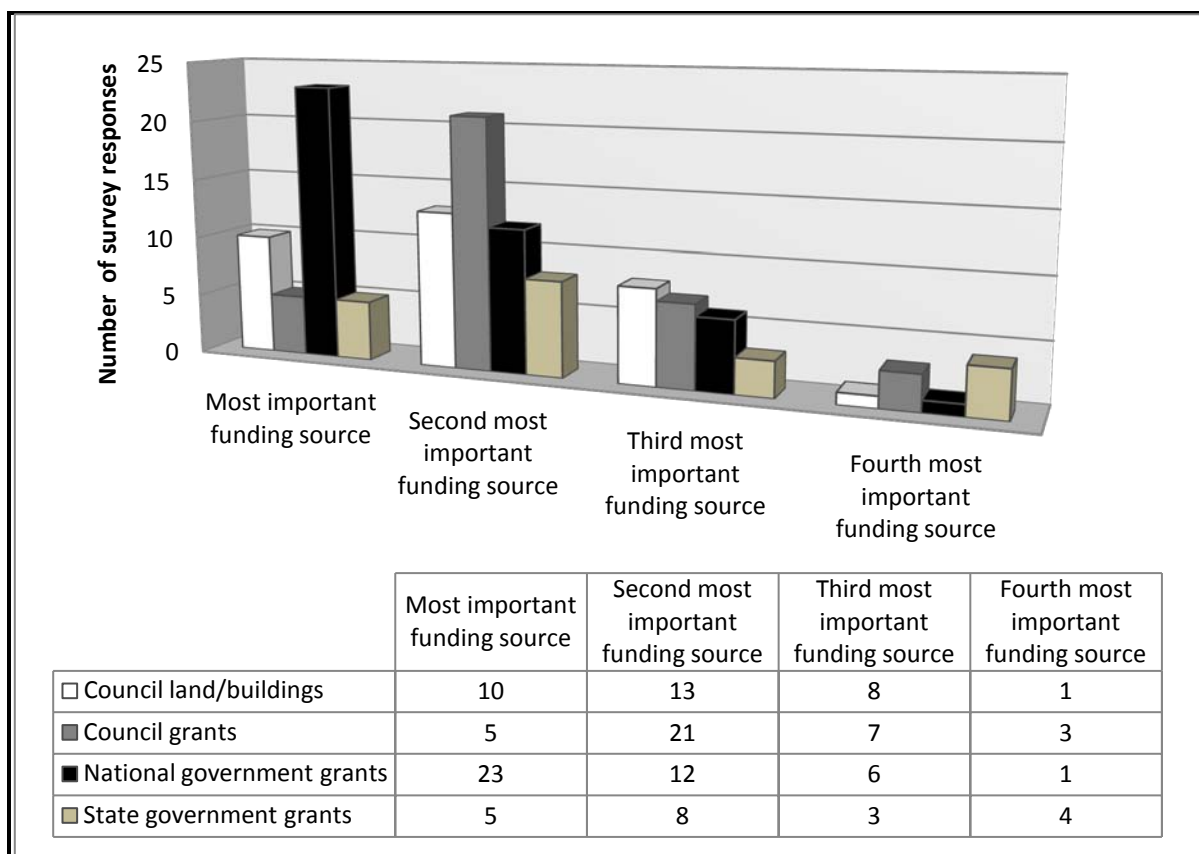
The basic range of funding choices offered to survey respondents question whether public funding provision should be for a fixed term or permanent. Data was analysed using Fisher's test in which various combinations of management and tenant survey responses were evaluated using two variables, namely government funding for a fixed term or permanent funding.

Each test indicated a significance level exceeding 0.05, suggesting these stakeholder groups have similar views regarding longevity of government funding.

In examining other elements of incubator funding in Australia the research instrument included two additional sets of questions relating to capital funding and recurrent funding. Responses identify four sources of start-up finance (or resources) for their incubators from a list of 12 possible funding options. The list comprises choices describing provision of grant funding from each of the three levels of government in Australia along with an associated set of choices about the provision of land and/or buildings from each public sector source. Remaining choices relate to associated funding sources including educational institutions, venture capital providers, private investors, philanthropists, banks and overseas investors.

As indicated in Figure 5.8, four areas of survey responses dominate the analysis with grants from three levels of government being the most important source, with the supplementary benefit of the provision of land and/or buildings from municipal councils as the fourth source.

**Figure 5.8 Establishment funding source**



Survey responses indicate a rating pattern in which national government grants dominated the ‘most important’ category of capital funding provision with municipal council provisions playing a slightly less important role and state government receiving a distant third rating.

None of the remaining options about private funding provision for incubator establishment generated more than one or two registrations for any category.

The consistently important ‘arm’ of governmental support for Australian incubators, as indicated in responses to the survey, was that of local or municipal government. The local government sector has provided both grants and ‘in-kind’ support (land, buildings, and/or services) for capital expenditure programmes in Australian incubators.

Analysis was designed to seek out significant variation in stakeholder perceptions of ratings for various funding providers. Using Fisher's test, none of the sets of data for management responses produced a result that would suggest that ratings differed significantly. All *P* values calculated exceeded 0.05.

The major finding from survey responses suggests that the federal government has played a key role in the establishment of Australian incubators with local government playing a consistent, associated role, and state governments and the private sector playing markedly lesser roles.

#### **5.5.4 Sources of recurrent funding**

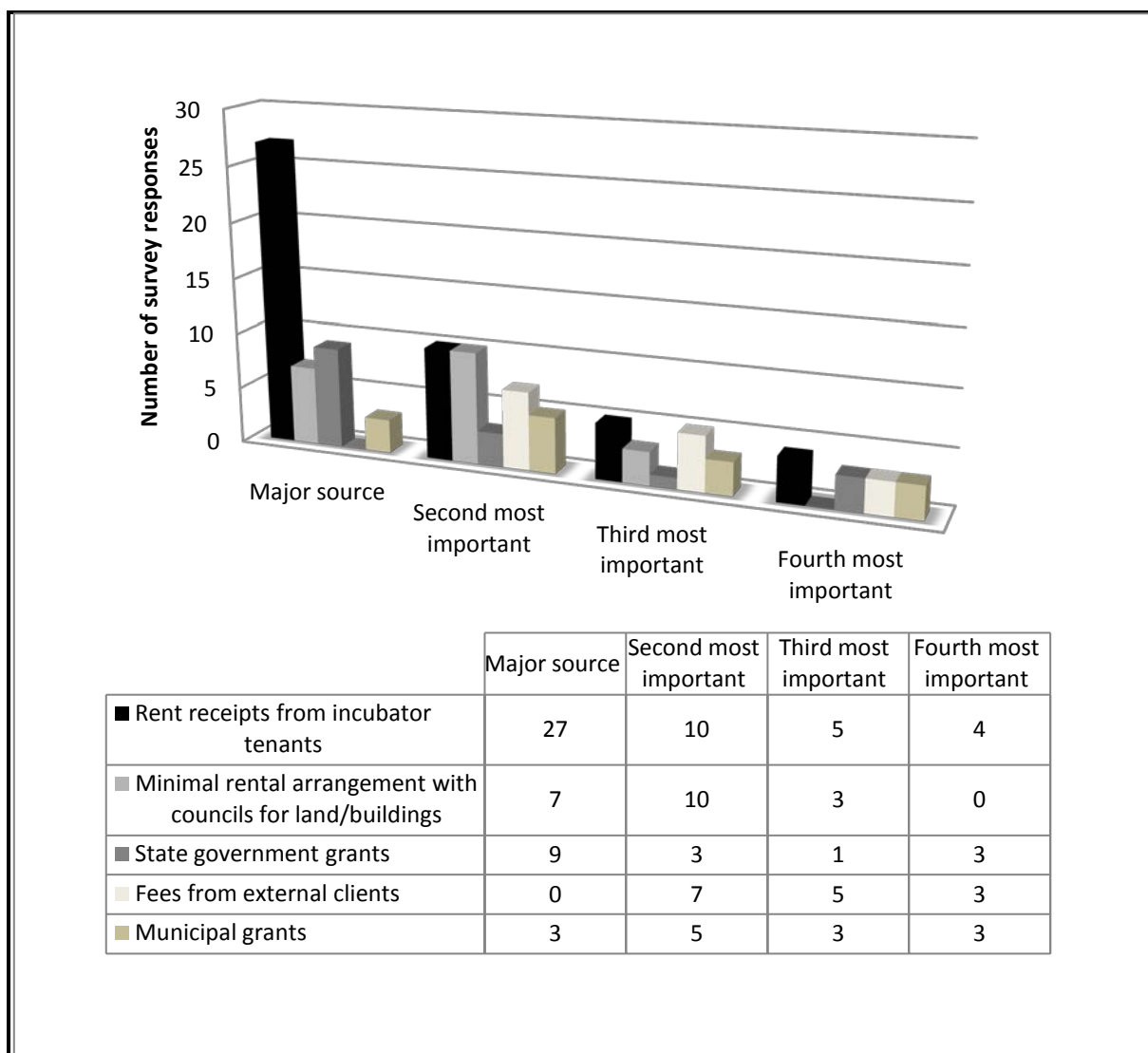
Figure 5.9 portrays the range of survey responses detailing incubator recurrent funding sources, suggesting that rentals are the dominant source of incubator recurrent revenue.

As the table which is incorporated within Figure 5.9 indicates, rental receipts from tenants comprise 58.7% of management responses as their incubators' major funding source. In some of the incubators (15.2%) respondents have identified the provision of minimal rental arrangements from local councils for land and/or buildings being used by incubators, as their major recurrent funding source.

These favourable rental arrangements with local councils provide a strong supporting factor in incubator provision of sub-market rental provision for tenants.

These provisions, as indicated in survey analysis, are key elements in the sourcing of recurrent funding for Australian incubators.

**Figure 5.9 Recurrent funding sources**



Survey respondents also identified State government grants (19.6%) as the major source recurrent funding in their incubators. The grants usually apply to specific project funding arrangements in specific purpose incubators, such as those relating to information technology, micro-biology and/or fashion.

Such grants have little to do with any broad-based government support programmes for incubator recurrent funding. These grants also have the potential to be based upon a specific time-span and, as a result, only offer a short-term recurrent funding source.

## **5.6 Business incubation and ‘not-for-profit’ concerns**

### **5.6.1 The ‘not-for-profit’ issue**

Incubator managers contacted in the interview stage of the study revealed that their incubators are usually ‘not-for-profit’ business units operated by a board of management. This observation was also consistent with results from the BIIA study (2009) in which a high proportion of incubator managers denote their organisations as ‘not-for-profit’ (Business Innovation & Incubation Australia 2009b, p. 1). The issue of ‘not-for-profit’, and ongoing government support for business incubators is an area of international interest exerting significant pressure on incubator stakeholders (Bergek & Norrman 2008, p. 23). Australia’s business incubator industry has traditionally developed with an emphasis on a ‘not-for-profit’ business model.

In Europe, incubators have developed in a ‘not-for-profit’ culture with their “... major aim being to contribute to regional or local development” (Aernoudt 2004, p. 133), the largest number of graduate businesses coming from ‘not-for-profit’ incubators (Peters, Rice & Sundarajan 2004, p. 85). Lalkaka (2001, p. 10) reported that 75% of all incubators in the US were ‘not-for-profit’, leaving the remaining 25%, by implication, as ‘for profit’ incubators. However, there have been major changes in that country during the past decade. The most recent NBIA study (2012) reports that the ‘dot-com bust’ of the early 2000s caused the number of ‘for-profit’ American incubators to fall considerably, to the extent that in 2012 “... only 7% [of American incubators] were ‘for profit’” (Knopp 2012, p. 6).

### **5.6.2 Survey responses and ‘for-profit’ structures**

This survey posed a specific question, seeking respondents’ views on whether business incubators should be managed on a ‘for-profit’ basis, with the responses, as detailed in Table 5.12. A total of 53 (74.6%) indicated that they do not favour the ‘for-profit’ model for their incubator. Of the 18 respondents (25.4%) who indicated support for the ‘for-profit’ model the largest group were board members. Of 22 respondents in this group, 10 (45.5%

of the subgroup) indicated they favoured a ‘for-profit’ model.

**Table 5.12 ‘For-profit’ incubation**

Choice	Board members	Incubator managers	Incubator tenants	Total respondents
Yes – ‘for-profit’	10 (45.5%)	6 (27.2%)	2 (7.4%)	18 (25.3%)
No – ‘not for-profit’	12 (54.5%)	16 (72.8%)	25 (92.6%)	53 (74.7%)
Total	22 (100%)	22 (100%)	27 (100%)	n = 71 (100%)

Incubator tenants indicated a 7.4% preference for the ‘for profit’ model. The tenant group preferred the status quo, involving the ‘not-for-profit’ model, possibly because they see themselves as the major contributors to the necessary funding input required to generate a profitable outcome from their business incubators, hence their negative interpretation. All initial interviewees (see Chapter 4) were involved in ‘not-for-profit’ incubator organisations. Responses to this question drew a response which suggests there are several Australian board members and managers who prefer the ‘for-profit’ model. This finding suggests that incubator management may be actively considering major change in the management structures of their respective organisations.

**Table 5.13 ‘For-profit’ support/gender**

Gender	Board members		Incubator managers		Incubator tenants		Total respondents (n)
	Support ‘for-profit’	Not support	Support ‘for-profit’	Not support	Support ‘for-profit’	Not support	
Male	9 (50.0%)	9 (50.0%)	5 (50.0%)	5 (50.0%)	0 (0%)	15 (100%)	43
Female	1 (25.0%)	3 (75.0%)	1 (9.1%)	11 (90.9%)	2 (16.7%)	10 (83.3%)	28
Total	10	12	6	16	2	25	n = 71
	P = 0.594		P = 0.056		P = 0.188		

By analysing according to the variable ‘gender’, as indicated in the above table, the study tested whether there are different attitudes among respondent groups toward the ‘for profit’ issue. Fisher’s test was used to examine all stakeholder responses for and against the ‘for profit’ concept being introduced into Australian incubators, according to gender, within each stakeholder group (boards, managers and tenants). Analysis does not identify any significant differences. However, statistical analysis of responses from managers ( $P = 0.056$ ) suggests that the association between the two sets of data responses from males and females is considered to be not quite statistically significant, suggesting that a further breakdown of the data might be justified.

Survey responses from tenants were removed from further analysis of this issue on the basis that tenants may have misconceptions of the legal nature of the ‘for-profit’ issue and its implications in future operation of business incubators. The resultant analysis, as provided in Table 5.14, relates only to responses from board members and managers.

The statistical analysis (see Table 5.14) indicates the presence of a significant difference within the data.

**Table 5.14 ‘For-profit’ and management**

All respondents gender	Support ‘for profit’ structure?		Total respondents (n)	Significance level ( <i>P</i> )
	Yes	No		
Male	14 (87.5%)	14 (50.0%)	28 (62.0%)	* $P = 0.021$
Female	2 (12.5%)	14 (50.0%)	16 (38.0%)	
Totals	16 (100%)	28 (100%)	n = 44 (100%)	

\* Item statistically significant at the 0.05 level (using Fisher’s two-tailed test).

The finding offers specific interpretation with reference to future strategic planning in incubators. In this table the responses from both management groups (board and managers) have been combined.

The result gives an indication ( $P = 0.0214$ ) that there is a significant difference in attitude between male and female management respondents concerning the application of a 'for-profit' model for Australian incubation.

Based upon these survey responses, females involved in Australian incubator management groups appear to favour the current 'not-for-profit' arrangement. Over past decades the number of females involved as business incubation managers has increased (Gardner & Kenyon 1994, p. 3). If incubator groups seek to introduce a 'for-profit' management structure into Australian incubators then the steady advance of female involvement in incubator management may impact upon any move to introduce such a change in legal structures, considering the findings of this study.

## **5.7 Conclusions**

This chapter has incorporated an initial analysis of sections of the survey responses. Results of the survey distribution have examined a range of personal characteristics of respondents (gender, age, level of educational attainment and level of involvement in incubation) and features of incubators (location, organisational structure, stage of life cycle, incubator age, size and purpose).

Further analysis examined the relevance of specific incubator management issues, considering their influence upon stakeholder goal achievement.

Also, the study details the current range of services being provided in Australian incubators while evaluating the various levels of importance of each service. Analysis has also considered the relevance of a range of new services, such as incubator benchmarking and accreditation, which may be required for the development of Australian incubators.

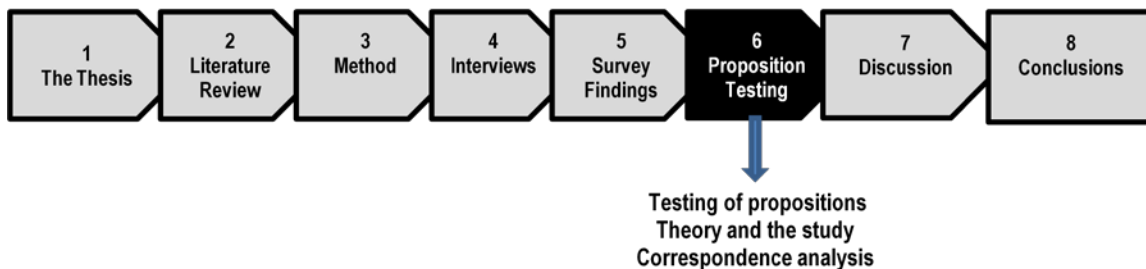


Finally, the question of funding provision has been examined in a stringent funding environment, especially considering the relevance of this issue for stakeholder goal achievement outcomes.

Chapter 6 tests the group of propositions which form the basis of the study's conceptual framework, as previously illustrated in Figure 3.1 of the study.

## CHAPTER 6

### DATA ANALYSIS AND TESTING OF PROPOSITIONS



#### 6.1 Introduction

Chapter 5 has provided a detailed overview of the findings from survey responses indicating specific observations which may impact upon future development in the Australian business incubator industry.

In this chapter Fisher's Exact Test is used to test for potential differences between sets of two categorical variables from the survey. Each statistical test makes a comparison between the observed frequencies occurring in each of the categories and the values expected if there were no association between the two variables. The process uses cross-tabulation tables in the examination of a wide variety of 'goal satisfaction' issues of various stakeholders in the operation of their incubators.

This chapter explains four propositions which, based on the literature review, play potential roles in the processes whereby incubator stakeholders seek to satisfy their goals. The aforementioned conceptual framework (see Figure 3.1) indicates the potential pattern of involvement of various incubator stakeholders and the relevance of each proposition in the

analytical processes presented in this chapter. Detailed testing of each proposition identified in the study's conceptual framework is presented from sections 6.2 to 6.10. Sections 6.2 and 6.3 test the accuracy of Propositions 1 and 2 by examining the roles of stakeholder and institutional theory in incubator goal achievement.

In sections 6.4, 6.5 and 6.6 'proposition testing' is carried out for Propositions 3 and 4 which consider survey responses to two major sets of questions about stakeholder goal achievement. Sections 6.7, 6.8 and 6.9 include elements of multivariate correspondence analysis while section 6.10 concludes the chapter.

## **6.2 The Propositions**

### **6.2.1. Evaluating the validity of the propositions**

The following four sections are concerned with an evaluation of the aforementioned propositions that underpin the conceptual framework developed for this study.

1. **Proposition 1** – relates to the relevance of stakeholder theory by considering responses to two sets of survey questions using Fisher's test to assess whether the data from the two sets of variables indicates the presence of statistically significant differences.
2. **Proposition 2** – an examination of the relevance of institutional theory in Australian incubation goal achievement, using Fisher's analysis.
3. **Propositions 3A and 3B** – a consideration, using binomial analysis, of percentage responses to survey questions on the supposed 'benefits of incubation' along with an evaluation to determine whether statistically significant differences of opinion are present in the data, as relating to elements of goal achievement.
4. **Propositions 4A and 4B** – an examination of responses to the survey's key stakeholder goal achievement questions, using binomial analysis and Fisher's testing technique along with correspondence analysis to complete the study.

## 6.3 Proposition 1

### 6.3.1 Recognition of the importance of all incubator stakeholders

Proposition 1 relates to the issue of stakeholder theory and its relevance in assessing incubator stakeholder goal achievement. Stakeholder theory explains and predicts how an organisation functions with respect to the connections and influences that exist in an incubator environment (Tate, Ellram & Brown 2009, p. 59). Although stakeholder theory “... is not a universalised notion” (Vinten 2000, p. 381), with divergent views as to its precise nature and academic contribution (Freeman 1999a, pp.233-6; 1999b, pp. 237-41; Friedman & Miles 2002, pp. 1-21; Jones & Wicks 1999, p. 213; Trevino & Weaver 1999, p. 222), it is relevant to this study.

The influence of stakeholder goals, motivations and values in corporate decision-making processes has received increased attention in recent ‘incubator’ literature (Choi & Shepherd 2004, p. 382; deLeeuw & Krozer 2004, p. 166; Dentchev & Heene 2004, p. 131). Also, Choi and Shepherd (2004, p. 384) contend that entrepreneurs’ decisions to exploit opportunities are positively associated with perceived stakeholder support, suggesting that stakeholder support is recognised as a central element in nascent incubator creation and development.

Key issues, in the results of this section of the study, are those of determining whether Australian business incubator stakeholders are operating in a manner in which their managers and clients already consider the full ‘spread’ of stakeholder needs in the decision-making processes. To explore this issue a range of questions were framed to assess whether Australian stakeholders, either consciously or fortuitously in their decision making processes, parallel the theoretical constructs as outlined in the literature review.

Thus, Proposition 1 contends that:

**Awareness of stakeholder needs, by incubator decision makers, enhances stakeholder goal achievement.**

### 6.3.1.1 Consideration of Proposition 1

Based on the literature review, a group of six elements are included within one of the survey questions. The question was designed to evaluate attitudes toward a range of issues of relevance in the application of stakeholder theory to incubator management. Discussion concerning the nature of stakeholder theory is presented in Chapter 2 (Section 2.6.3).

The issues set out in Table 6.1 essentially relate to the key concept that the role of all stakeholders in the incubator environment should be recognised, thus policies should be adjusted accordingly, as a matter of ongoing business operation.

**Table 6.1 Stakeholder opinions – issues**

Stakeholder issues	Board agree?		Managers agree?		Tenants agree?	
	YES	NO	YES	NO	YES	NO
1. All incubator stakeholders should be treated equally	17 (77.3%)	5 (22.7%)	15 (75.0%)	5 (25.0%)	14 (66.7%)	7 (33.3%)
2. Incubator tenants are the most important stakeholders	16 (76.2%)	5 (23.8%)	16 (76.2%)	5 (23.8%)	13 (65.0%)	7 (45.0%)
3. The stakeholder representing the major source of incubator grant finance is the most important stakeholder	6 (31.6%)	13 (68.4%)	8 (42.1%)	11 (57.9%)	2 (10.5%)	17 (89.5%)
4. A stakeholder audit should regularly review the full range of incubator stakeholder issues	16 (76.2%)	5 (23.8%)	15 (78.9%)	4 (21.1%)	16 (80.0%)	4 (20.0%)
5. The board of directors are the key incubator stakeholder group	14 (66.7%)	7 (33.3%)	13 (61.9%)	8 (38.1%)	8 (40.0%)	12 (60.0%)
6. Stakeholders who own equity in the incubator are the most important stakeholders	3 (17.7%)	14 (82.3%)	8 (57.1%)	6 (42.9%)	5 (29.4%)	12 (70.6%)

Freeman's theoretical explanations of stakeholder theory consistently emphasise the relevance of a practitioner-oriented set of theoretical tools which embody a set of six management issues (Freeman, Harrison & Wicks 2007, pp. 103-32). These issues provided the researcher with the analytical foundations to question whether incubator stakeholders share common attitudes toward management issues. The survey defines incubator stakeholders as "any group of individuals who can affect or are affected by the achievement of the incubator's objectives". Respondents were asked to consider their attitudes ('agree' or 'not agree') to statements which represent elements of this definition of stakeholders. If analysis of responses were to indicate statistically significant differences in stakeholder attitudes toward these issues then it could be assumed that incubator goal satisfaction outcomes may be constrained.

Although Table 6.1 presents three sets of responses (from board, manager and tenant respondents) to the six questions, each comprising 'yes/no' answers, the study could not utilise  $\chi^2$  analysis because there were cells within the statistical output which had less than five responses within the data. In this circumstance the appropriate form of bivariate analysis involves the use of Fisher's Exact Test in which 2x2 tables are tested.

In the first instance responses from board members and managers were tested using Fisher's test to determine whether there are significant differences in attitude between these two stakeholder groups concerning each of the six issues being assessed. The second stage of the process concerning answers to each question was completed by aggregating board and manager responses under the heading 'management' for analysis with tenant responses using the Fisher's test technique in 2x2 tables.

The first statement is:

- *All stakeholders should be treated equally*

This statement is predicated on the concept (Freeman 1984, pp. 35-41) that all stakeholders are important in the operation of a business, in this case, business incubators. The Fisher tests of statistical significance (firstly board with manager responses and secondly

management with tenants) suggest that there is little difference in the sets of stakeholder responses, indicating that a significant difference in opinion has not been identified amongst the various respondents concerning this issue.

- *Incubator tenants are the most important stakeholders*

As indicated in Table 6.1, board members, managers and tenants showed agreement that this is an accurate statement, with approximately two-thirds of respondents in each group agreeing that tenants are the most important stakeholders. This finding was consistent for both tests of the groupings as indicated in the previous paragraph.

- *The stakeholder representing the major source of incubator grant finance is the most important stakeholder*

The suggestion that the most important stakeholder represents the source of the incubator's original grant finance formed the basis of the next element of the survey question. In total, 64% of management disagreed while 90% of tenants disagreed, both stakeholder groups disagreeing with this concept. Fisher's test was utilised to test the response levels using the techniques described above to create 2x2 tables and the analysis indicated significance levels which suggest that the three stakeholder groups share opinions on this issue which are not significantly varied.

- *A stakeholder audit should regularly review the full range of incubator stakeholder issues*

Another suggestion by Freeman (2007), as part of developing a strategic plan, involves the process of undertaking regular audits of stakeholder opinions (p. 45). Each of the three stakeholder groups responded positively to this suggestion (board members 76.2%, managers 78.9% and tenants 80.0%). This result suggests that the three stakeholder groups share the same opinion on this issue.

- *The board of directors are the key incubator stakeholder group*

Respondents were asked to respond to the suggestion that the board of directors are the key management group. A total of 62.8 % of management (board 66.7% and managers 61.9%) support this concept while 60% of tenants disagree. Fisher's Exact Test of survey responses (using each of the aforementioned sets of data) indicate that, although tenant opinions in the sample differed on the issue of the importance of boards of directors, the difference was not statistically significant at the 5% level.

- *Stakeholders who own equity in the incubator are the most important stakeholders*

The final component of this survey question suggests that stakeholders who hold equity in the incubator are the most important stakeholders. The idea received a negative response from both groups of respondents (65.6% of management and 70.6% of tenant respondents disagreed), indicating, in analysing this compilation of the data (management and tenant responses), that both populations share the same view.

As indicated in Table 6.1, by examining board and manager responses to the issue of whether those stakeholders who hold equity in the incubator are the most important stakeholders Fisher's analysis indicated a  $P$  value of .031, suggesting the presence of a statistically different opinion between the two groups on this issue. Manager responses indicated a marginal (57.1%) level of support for the concept while board members indicated a low level of support for this concept (17.7%).

The question concerning the importance of owners of equity in Australian business incubators as being the most important stakeholders, was included due to its relevance in the international incubator environment (Knopp 2006, pp. 23-25) and the expressions of interest in the concept being utilised in Australia in 'dot.com' tenants under the Federal Government's B.I.T.S. programme. The presence of a statistically significant difference of opinion within responses from the two management groups suggests that while managers indicate marginal support for the concept, board members indicated strong opposition to the



concept. However, the lack of interest in the ‘equity’ issue in Australian incubation at the present time suggests that the finding lacks relevance in the contemporary Australian context.

#### **6.3.1.2 Incubator stakeholder ‘importance’**

Four of the survey questions discussed above asked – ‘who are the most important business incubator stakeholders’? Responses indicate that, although there is division of opinion on the relative assessment of incubator stakeholder groups, the degree of difference in each instance is not significant. Fisher’s test was utilised to analyse responses. Of the group of questions included in the survey, the suggestion that ‘the board of directors are the key incubator stakeholder group’ shows an identifiable level of variation of opinion between respondents but the difference is not statistically significant.

Both stakeholder groups indicated they do not perceive representatives of incubator funding sources (89.5% tenants and 64.1% management) as the most important stakeholders.

This section of the analysis has considered the accuracy of the proposition that an awareness of stakeholder needs, by incubator decision makers, enhances stakeholder goal achievement.

Stakeholder theory suggests that the roles of all stakeholders should be recognised in business management policies (Freeman et al. 2010, p. 113). In the context of Australian business incubation, as reflected in the study, this concept has been supported by the analysis. Examination of the responses (see Table 6.1) to this specific group of questions indicates that incubator decision makers involved in the study are aware of stakeholder needs. This awareness is reflected in the general level of agreement between board of management, managers and tenants concerning key management issues, such as the application of equal treatment to all incubator stakeholders and recognition that tenants are the most important stakeholders.

This section of the analysis suggests that incubator stakeholders, (boards, managers and/or tenants) have a matching awareness of stakeholder needs, this circumstance exhibiting the

potential to enhance stakeholder goal expectations. The results of the analysis support the concepts expressed in Proposition 1.

### **6.3.2 Stakeholder opinions of tenant selection**

The premise of stakeholder theory is that to remain competitive, the organisation must attend to the relevant stakeholders' legitimate interests. Tenants have been described as the 'key' stakeholders in an incubator, to the extent that their continuing successful participation is critical to the survival of the incubator (Tate, Ellram & Brown 2009, p. 56). Tenant selection processes represent a challenge for board members and managers to select correctly so that the full range of primary and secondary incubator stakeholders perceive that their organisation is achieving its goals, the selection process requiring "... a sophisticated understanding of the market and the processes of new venture formation ..."

(Hacket & Dilts 2004, p. 61).

Considering the espoused values of incubator tenancy it is important to acknowledge the principle that tenant selection policy needs to reflect incubator purposes and goals (Hannon & Chaplin 2003, p. 874) while assuring that any 'selection' effects have positive influences on the survival and success of both the tenants and their host incubators (Peters, Rice & Sundarajan 2004, p. 83). This study hypothesises that tenant selection is an important task for incubator management, being the basis of effective incubator resource allocation given that any application of stakeholder theory to a study of business incubation "... needs to consider the specific incubator selection processes required to determine how individual businesses fit with the notion of an incubation project ..." (Atherton & Hannon 2006, p. 52).

#### **6.3.2.1 Tenant selection issues**

Proposition 1, in asserting that stakeholders have similar goals, rests on a 'foundation' that assumes the existence of selection procedures which support goal expectations of management and tenant stakeholders. Failures in tenant screening processes may threaten incubator success with variability potentially leading to inclusion of weak tenants, thereby

comprising a threat to both tenants and incubator goal achievement (Aerts, Matthyssens & Vandenbempt 2007, p. 4).

The literature highlights the importance of the use of a demanding incubator selection process as “... one way of minimising the number of tenant failures” (Aerts, Matthyssens & Vandenbempt 2007, p. 3). Interviews (see section 4.2.3.1) with incubator managers indicate the absence of a standard Australian business incubator entry selection strategy.

The most frequently utilised entry criteria for interviewees embodies the expectation that applicants for incubator tenancy should provide a credible business plan at point of entry, the process being endorsed by the literature (Honig & Karlsson 2004, p. 28) and providing evidence of a commitment to planning (Breen 2010, p. 129). Respondents to the survey question which dealt with the tenant selection issue were asked to comment on the importance of each of a set of six statements about selection criteria used by Australian business incubator stakeholders in evaluating applicants for incubator tenancy.

Response data was collapsed into two categories (‘Very important’ and of ‘Lesser importance’) and analysed using the Fisher’s Exact Test.

A small number of responses to this question were received from tenants but these were omitted from the analysis because tenant selection decisions are made by board members and managers, therefore tenant responses are irrelevant.

### **6.3.2.2 Analysis of responses regarding incubation selection**

Responses from board members and managers were separated so that statistical analysis from these two stakeholder groups could be undertaken. Responses to six issues relating to tenant selection are presented in Table 6.2. The group of questions were based upon material identified in the literature review which suggests that these six issues are, to varying degrees, key elements in the processes of incubator tenant selection (Goddard & Chouk 2006, p. 5).

**Table 6.2 Tenant selection issues**

Stakeholder issues	Board		Managers		Valid cases (n)	Significance level (P)
	Very important	Lesser importance	Very important	Lesser importance		
1. Availability of applicant financing	8 (36.4%)	14 (63.6%)	8 (44.4%)	10 (55.6%)	40	0.748
2. A sound management team	12 (54.5%)	10 (45.5%)	11 (50.0%)	11 (50.0%)	44	1.000
3. A good business plan	16 (72.8%)	6 (27.2%)	7 (31.8%)	15 (68.2%)	44	* 0.015
4. A technology development and/or commercialisation opportunity	6 (27.3%)	16 (72.7%)	5 (26.3%)	14 (73.4%)	41	1.000
5. A collaborative research opportunity	3 (13.6%)	19 (86.4%)	0 (0.0%)	18 (100.0%)	40	0.239
6. Availability of a working prototype.	2 (9.1%)	20 (90.9%)	1 (5.3%)	18 (94.7%)	41	1.000

\* Item statistically significant at the 0.05 level (using Fisher's two-tailed test).

Five of the results suggest that board members and managers have similar expectations (issues 1, 2, 4, 5 and 6 in Table 6.2) in assessing the importance of these issues as criteria in tenant selection processes. Analysis of these five issues suggests that attitudes are similar in rejecting a need for any of these elements to be a part of tenant selection procedures.

The third 'selection' issue concerns the existence of a 'good business plan' as a pre-requisite in the application process for incubator tenancy. A total of 73% of board members agreed that the existence of a good business plan is a very important factor when seeking

incubator tenancy while 32% of managers also expressed this view (see Table 6.2). Statistical analysis of these responses ( $P = 0.015$ ) suggests that the views of board members and managers are significantly different in relation to this issue.

### **6.3.3            Testing Proposition 1 – conclusions**

Sections 6.3.1 and 6.3.2 tested the relevance of elements of specific theoretical components in considering whether an ‘awareness of stakeholder needs, by incubator decision makers, enhances stakeholder goal achievement, being expressed as Proposition 1.

The first section of the analysis sought responses aimed at assessing whether survey respondents comprising management and tenants were in agreement with reference to a range of issues grouped around two central questions seeking attitudes toward all stakeholders being treated equally as espoused in stakeholder theory. None of the statistical tests indicated the presence of a significant difference of opinion between respondent groups suggesting that the management group is cognisant of the importance of stakeholder needs in making policy decisions and tenants are supportive of these decision making processes. These findings suggest that this section of the analysis was supportive of the assertion expressed in Proposition 1, that awareness of stakeholder needs enhances stakeholder goal achievement.

Analysis expressed in Section 6.3.2 represents a logical extension of the content of section 6.3.1 in that it conducts a detailed review of the processes involved in making one of the major business incubator management decisions, namely, the matter of tenant selection. This section of the study is based upon the supposition that the presence of an effective tenant selection procedure is a very important feature of the operation of an incubator whereby failure or division amongst stakeholders in this area has the potential to inhibit goal achievement outcomes.

While the international environment suggests that business planning “... is considered to be one of the most widely regarded aspects of pre-startup planning ...” (Honig & Karlsson

2004, p. 29), the two management groups in this study appear to exhibit significantly diverse opinions on the importance of this business development concept.

Should this diversity of opinion translate into a breakdown of incubator tenant screening procedures then the issue has the potential to divide board/manager relationships. Such a significant difference may challenge the processes involved in achieving incubator stakeholder goal satisfaction. This result requires serious re-consideration by incubator boards and managers as to which criteria should form the basis of incubator tenant screening processes. In the context of the importance of business planning to tenant selection, survey results do not support Proposition 1.

## **6.4 Proposition 2**

### **6.4.1 Institutional theory**

Proposition 2, as outlined in the study's conceptual framework (see Figure 3.1), contends that:

**Australian incubator management processes reveal patterns of institutional conformity.**

Specific questions were incorporated within the study questionnaire so this proposition could be tested. Chapter 2 (Section 2.6.4) provides an explanation of the range and depth of institutional theory in assessing its relevance to the development of business incubators.

### **6.4.2 Institutional factors**

Institutional outcomes reflect the institutional process, the commonly discussed outcomes in institutional theory being 'legitimacy' and 'efficiency'. Doh and Guay (2006) described institutional theory as being concerned with "... how organisations seek legitimacy within a given environment and attempt to become isomorphic within these environments" (p. 49). The authors also assert that, within any institutional setting, organisations form to advance collective interests, often with the objective of having these interests codified as informal practices, formal rules, or both (Doh & Guay 2006, p. 49). New ventures are perceived to

lack legitimacy, a situation which threatens their survival. To survive, new ventures conform to institutional pressures (Baum & Oliver 1996; Karlsson 2005a, p. 40). Analysts (DiMaggio & Powell 1983; Meyer & Rowan 1977; Oliver 1991; Zucker 1987) have developed institutional theory to the extent that the concept has now become a legitimate vehicle for the study of business phenomena (Davidson, Hunter & Klofsten 2006, p. 118; McNair & Watts 2006, p. 3).

Clemens and Douglas (2005, p. 1205) completed a study which evaluated and subsequently supports much of Oliver's conceptual model relating to institutional influences on organisational behaviour. The results of their study support much of Oliver's conceptual model in identifying a "... heavy preference of regulation to enforce society's wishes with respect to issues" (Clemens & Douglas 2005, p. 1210). And, further, this study develops Oliver's model indicating the range of strategic responses to institutional pressures. Five types of response represent the potential range of strategic responses to institutional pressures including:

1. **Acquiescence** – a decision to adhere to the 'letter and the rule' of institutional requirements by following 'taken for granted' norms, mimicking institutional models and complying with rules.
2. **Compromise** – to negotiate openly with institutional stakeholders to obtain a mutually agreeable solution by placation strategies.
3. **Avoidance** – to appear to comply but intentionally avoid and conceal certain aspects of their responses to institutional requirements.
4. **Defiance** – to ignore the requirements and continue doing business as usual while ignoring the regulators, assuming that institutional regulators do not have the political might to enforce their requirements.
5. **Manipulation** – to attempt to form an alliance with the regulators and to influence the letter of the regulations (Clemens & Douglas 2005, p. 1206).

This study utilises a similar model to that proposed by Clemens and Douglas.

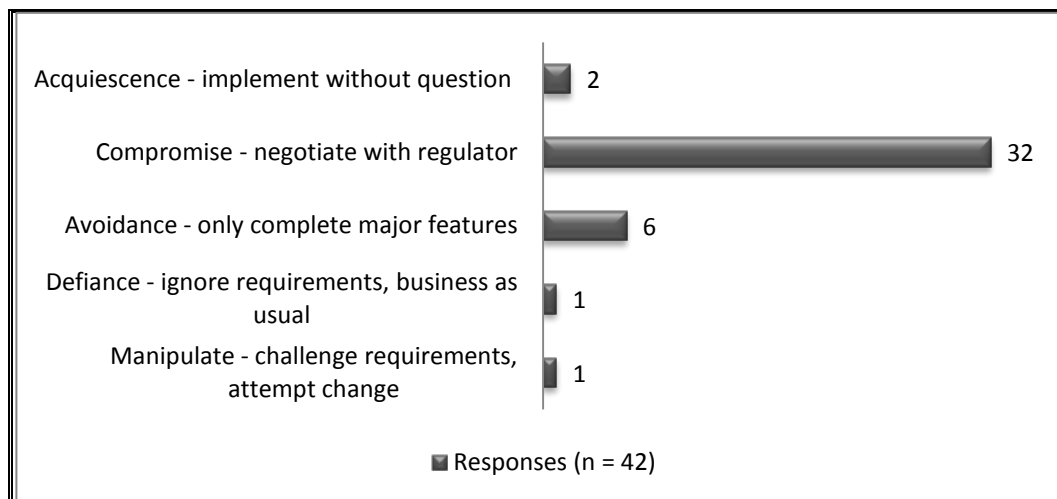
### 6.4.3 ‘Institutional’ survey responses and stakeholder features

In one of the survey questions, respondents were invited to ‘assume that a regulator decides to introduce new techniques in your incubator’ and to provide an indication of their ‘appropriate’ response to this circumstance from a selection of choices.

In the Clemens and Douglas model, survey stakeholder choices ranged from ‘acquiescence’ through to policies aimed at ‘manipulation’, in an effort to advantageously amend the regulator’s new strategy. Figure 6.1 provides the frequencies indicated by management to the question.

Responses from tenants have been removed from this part of the analysis. The survey question was designed to test stakeholder reaction to a regulatory change. Only board members and managers are involved in any reaction in management policy to changes in incubator circumstances. One manager and one board member did not answer this question. A total of 42 responses (21 from each group) were received from board members and managers.

**Figure 6.1 Regulatory change**





A total of 4.8% of management (board and managers) indicated that the appropriate answer to institutional ‘action’ by a regulator involves an acquiescent response involving imposition of the policy change, without question. The remaining 95.2% indicated that the group would implement some form of active response, the most common involving compromise (76.2%). In terms of Oliver (1991) and Clemens and Douglas’ (2005) definitions, this type of ‘compromise’ involves development of placatory policies as amended policy implementation in response to isomorphic pressure.

Respondents may have chosen not to acquiesce in their attitude toward the ‘institutionalisation’ question, but, in choosing the ‘compromise’ option in large numbers, they have indicated that they may still be participating in an isomorphic response pattern. It would appear that these initial responses (the ‘acquiescence’ and ‘compromise’ responses) are each indicative of the presence of an element of isomorphic pressure. Thus, for the purpose of further analysis, they are grouped together to represent isomorphic responses to the circumstances described in the survey question. So that data could be analysed using Fisher’s test, using 2x2 contingency tables, the responses are collapsed as follows:

- ‘Compromise’ responses involving aggregation of acquiescence and compromise responses (34 responses); and
- ‘Aggressive’ responses (the researcher’s terminology) comprising aggregation of avoidance, defiance and manipulation (8 responses).

Those indicative of an ‘active’ stakeholder response to the imposition of some form of institutional change are included in this part of the analysis. Fisher’s test (see Table 6.3) of statistical significance ( $P = 0.696$ ) suggests that there is little difference in the two sets of stakeholder responses.

These results suggest that a statistically significant difference of opinion on this issue among stakeholder respondents has not been identified.

**Table 6.3 Responses – Institutionalisation**

Group	Compliant response	Aggressive response	Valid cases (n)	Significance level (P)
Board members	16 (47.1%)	5 (62.5%)	21 (50.0%)	$P = 0.696$
Managers	18 (52.9%)	3 (37.5%)	21 (50.0%)	
Total	34 (100%)	8 (100%)	42 (100%)	

To extend the analysis, an additional group of variables were considered to examine whether this trend was indicative of significant diversity of opinion. These issues relate to gender, period of involvement in incubation and level of educational attainment.

#### 6.4.3.1 Institutionalisation and gender of respondents

In earlier analysis, certain variables explained various aspects of the data including gender of respondents. The responses were cross-tabulated using Fisher's analysis to determine significant results in survey output. The results (see Table 6.4) relating to 'compliant' or 'aggressive' management indicate that male and female views on this 'institutionalisation' issue do not vary significantly.

**Table 6.4 Institutional responses/gender**

Group	Compliant response	Aggressive response	Valid cases (n)	Significance level (P)
Male management	18 (52.9%)	3 (37.5%)	21 (50.0%)	$P = 0.696$
Female management	16 (47.1%)	5 (62.5%)	21 (50.0%)	
Total	34 (100%)	8 (100%)	42 (100%)	

The key feature of Table 6.4 is that male and female management respondents strongly support a ‘compliant’ response. Irrespective of gender, management thus prefer to exhibit compliant behaviour involving compromise with regulatory authorities rather than opting for some form of ‘aggressive’ (avoidance, defiance or manipulation) behaviour. Results, using Fisher’s test (see Table 6.4 where  $P = 0.696$ ) suggest that there is little difference in the two sets of stakeholder responses based on gender. This statistical analysis suggests that Australian business incubator management processes reveal patterns of institutional conformity.

#### 6.4.3.2 Institutional responses and period of involvement in incubation

Another factor identified in the literature review as having the potential to influence attitudes toward institutionalisation involves the period of involvement in business incubation. For the purposes of this study, 2000 is chosen as a ‘watershed’ year, since it represents the end of a period of extensive public financial support for Australia’s business incubator sector. Those involved in incubation post 2000 may have had little experience with direct institutional pressures relating to public funding of incubators. Table 6.5 indicates there is little difference in the two sets of stakeholder responses according to their period of involvement in incubation. The data indicates that both groups do not show a significant difference toward institutional influences, during their involvement in business incubation.

**Table 6.5 Period of involvement**

Period of involvement in incubation	Compliant response	Aggressive response	Valid cases (n)	Significance level (P)
Pre 2000	10 (31.25%)	3 (37.5%)	13 (32.5%)	$P = 1.000$
Post 2000	22 (68.75%)	5 (62.5%)	27 (67.5%)	
Total	32 (100%)	8 (100%)	40 (100%)	

Fisher's test ( $P = 1.000$ ) suggests that a significant difference of opinion among stakeholder has not been identified. Survey responses support Proposition 2, in that stakeholder period of involvement in business incubation does not appear to influence attitudes toward potentially institutionalised decision-making processes.

#### 6.4.3.3 Respondent educational attainment

Survey responses relating to educational attainment were also analysed using Fisher's methodology regarding the 'institutional' question. Responses were collapsed into two management groups based on either secondary/vocational level schooling or university education.

This section of the study analyses whether educational backgrounds of the management group influence their attitudes toward how best to deal with institutional pressures in the operation of their business incubators.

All respondents (as indicated in Table 6.6) who adopted more aggressive policies hold a university qualification. This result suggests a significant difference of opinion, based upon the level of educational attainment of stakeholders. In this instance survey responses do not appear to support Proposition 2, suggesting that incubator management decisions may be influenced by the level of educational attainment of board members and/or managers.

**Table 6.6 Institutional input/education**

Level of educational attainment	Compliant response	Aggressive response	Valid cases (n)	Significance level (P)
Secondary/vocational	14 (41.2%)	0 (0%)	14 (33.3%)	* $P = 0.037$
University	20 (58.8%)	8 (100%)	28 (66.7%)	
Total	34 (100%)	8 (100%)	42 (100%)	

\* Item statistically significant at the 0.05 level (using Fisher's two-tailed test).

#### **6.4.4 Survey findings – testing Proposition 2**

During the interview stage (detailed in Chapter 4) interviewees indicated that they did not feel that their respective organisations were the target of institutional pressures.

Gstraunthaler (2010, p. 415), in describing the contemporary European business environment, claims that public funding agencies are practitioners of institutional behaviour. When incubators using public funds are established, governments “... leave them alone and [publicly funded incubators are] vulnerable to sudden changes in the political landscape”. This observation provides an accurate picture of the incubator public funding processes in the business environment, where all incubators involved in the survey have received public funding, to varying degrees, but only on a project by project basis.

When this survey was completed in October 2009, government involvement was minimal. Public funding had decreased to the extent that the Commonwealth’s 2008/2009 budget did not include a specific allocation for business incubator development and/or operation.

Survey results consistently support the application of compromise strategies (see Figure 6.1) in dealings with institutional regulators, such policies suggesting that incubator management stakeholders believe that their organisations should adopt placatory (acquiescence or compromise) strategies. Although only two respondents indicated that the appropriate policy stance for an incubator involved in a relationship with an institutional regulator should be one of acquiescence, the majority chose the compromise option. Analysis using Fisher’s test techniques identifies one element of divergence (that is, level of educational attainment).

#### **6.4.5 Stakeholder and institutional theories and the conceptual framework**

Freeman (1984) argued that the term ‘stakeholder’ gives an indication that these groups have a ‘stake’ in the business and therefore denotes legitimacy. The term is especially applicable to the business development strategies of managers in allowing for the legitimacy of these groups and their impact upon the strategic direction of the firm (Freeman 1984, p. 46).

The observation also has relevance to institutional theory whereby institutional ‘legitimacy’ is an inherent component of theoretical analysis, the argument suggesting that firms adapt their internal characteristic in order to conform with the expectations of key stakeholders (Ashworth, Boyne & Delbridge 2005, p. 2). The question therefore needs to be asked. Do business incubator stakeholder activities cause such adaptation to take place?

Doh and Guay (2006, p. 55) found that stakeholder theory provides important insights into the ways in which firms and their managers interact with stakeholders. Specifically, they conclude that the ability of organisations to gain legitimacy depends upon the “... institutional environment and legacy of the region or polity in which they are active”. This result appears to be relevant to the findings of this study.

A link has thus been identified between institutional and stakeholder theory. This analysis observes that firms face varying levels of institutional pressures through their various stakeholders (Delmas & Toffel 2004, p. 231). The conduct of the literature review for this study suggests that this area of research, in Australia, has received minimal attention. In a recent analysis, Dickson and Weaver (2008, p. 481) argue persuasively that institutional forces affect the strategic choices made by firms, reasoning that firms may choose actions from a defined set of legitimate options determined by institutional forces within an industry or country.

The consistently ‘acquiescent’ and ‘collaborative’ responses of stakeholders to the strategy choices in this study would suggest that Dickson and Weaver’s argument has relevance in the Australian incubation sector.

## **6.5 Propositions 3A and 3B**

### **6.5.1 Perceived benefits of incubator tenancy in stakeholder goal attainment**

This survey question was developed using observations emerging from the literature review. This question identifies 10 perceived benefits which are considered to accrue from tenancy in business incubators.

Proposition 3A (being stated as a null hypothesis) contends that incubator tenancy does not positively influence stakeholder goal achievement. Proposition 3A was tested by examining percentage response levels for each set of survey responses from management and tenant stakeholders using the binomial statistical test.

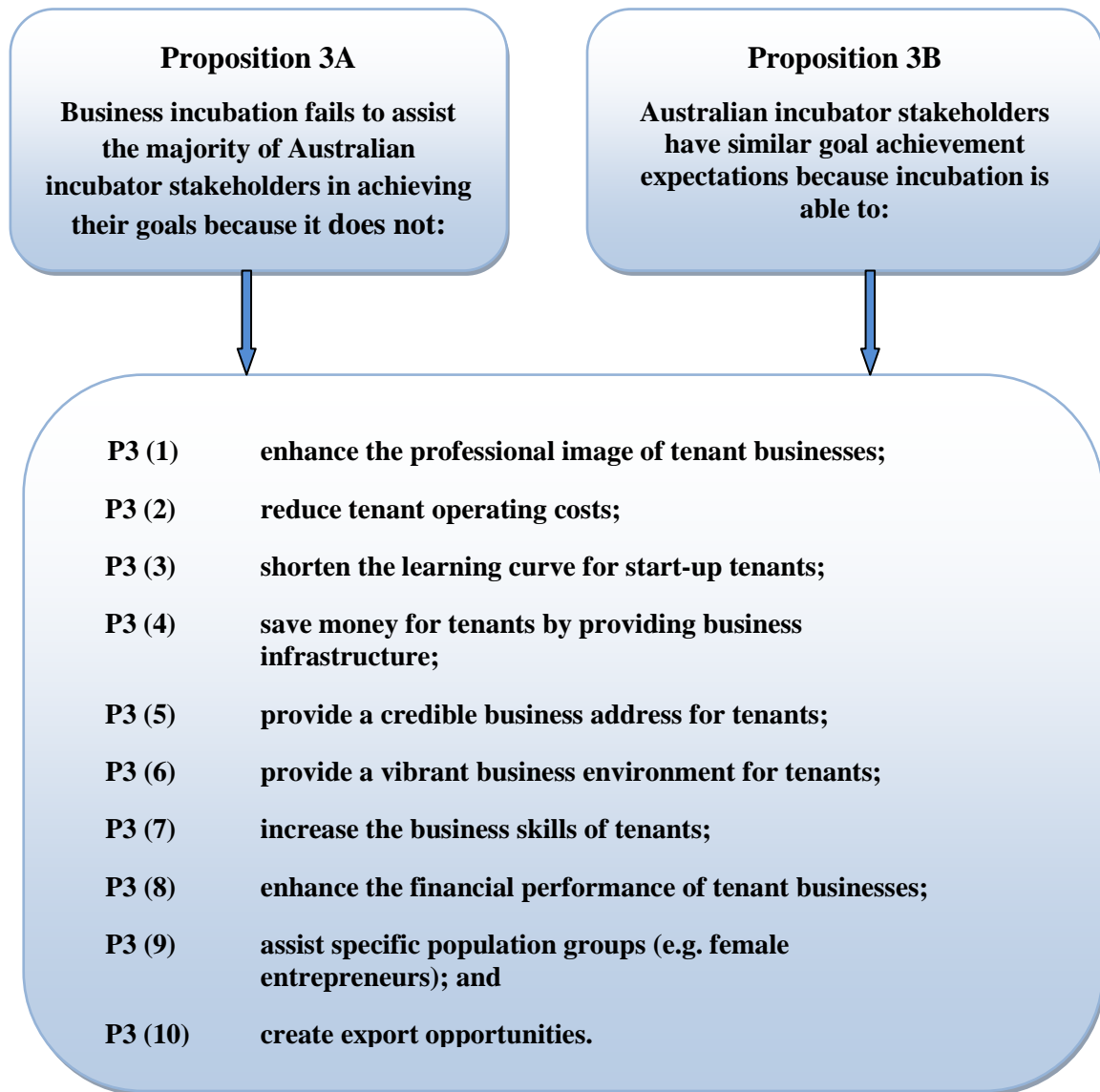
Proposition 3B examines the same set of survey response data. However, this element of the study seeks to determine, using Fisher's analysis, whether management and tenants share similar views about the abovementioned perceived benefits. If the survey findings indicate that they do not share similar views, does a statistically significant result have relevance to the outcomes of this study with respect to incubator stakeholder goal achievement?

Researchers have identified the range of potential benefits created when nascent entrepreneurs join a business incubator (Abetti 2004, p. 19; Bergek & Norrman 2008, p. 21; Callegati, Grandi & Napier 2005, p. 9; Campbell, Kendrick & Samuelson 1985, p. 45; Chan & Lau 2005, p. 1227; Haapasalo & Ekholm 2004, p. 259; Lalkaka 2001, pp. 7-8; Szabo 1999, p. 6).

This study incorporates 10 statements identifying possible beneficial results of business incubator participation.

In completing the survey, respondents indicated whether they agreed or disagreed with the statements listed below.

**Figure 6.2 Propositions – benefits**





## **6.5.2 Proposition testing and survey analysis**

### **6.5.2.1. Data analysis – Proposition 3A**

In responding to the e-mail survey participants were asked to indicate whether they agreed or disagreed whether incubation provides benefits for tenants. To enable percentage levels to be tested, using the binomial test, Proposition 3A was expressed in the conceptual framework as a null hypothesis. The null hypothesis argues that stakeholders do not receive benefits as a result of involvement in incubation.

As indicated in Table 6.7, management response levels for the first eight hypothesised benefits give statistically significant results that incubation does provide benefits to participants. Reference to the percentage values for responses from management to this series of questions indicates (based upon  $P$  value calculations using binomial analysis) significant values concerning issues one to eight.

These results suggest that management might disagree with the sentiments of the null hypothesis and perceive that incubation brings real benefits.

Tenant responses suggest that tenants are not as supportive of the listed ‘benefits of incubation’ as is the case with the abovementioned management responses.

Binomial testing of tenant responses give statistically significant results values below the 5%  $P$  level in relation to the issues of enhanced professional image, infrastructure support and the provision of a credible address for tenants. And so, in relation to these three benefits each set of management and tenant data responses, using binomial analysis, suggest that both groups are strong supporters of the value of these three benefits as currently provided by incubators, suggesting a rejection of the null hypothesis.

Binomial analysis of the responses to reduced tenant operating costs, shortened tenant learning curves, provision of a vibrant business environment, broadening of tenant business skills and enhancement of tenant financial performance showed  $P$  values which exceed the

**Table 6.7 Benefits – Proposition 3A**

Operational benefits	Management agree		<i>P</i> value	Tenants agree		<i>P</i> value	Total responses of stakeholders Agree		Aggregate <i>P</i> value	Valid cases (n)
	YES	NO		YES	NO		YES	NO		
1. It enhances the professional image of tenants	42 (95.5%)	2 (4.5%)	*0.0001	19 (73.1%)	7 (25.9%)	*0.029	61 (87.1%)	9 (12.9%)	*0.0001	70
2. It has reduced tenant operating costs	40 (90.9%)	4 (9.1%)	*0.0001	19 (70.4%)	8 (29.6%)	0.0522	59 (83.1%)	12 (16.9%)	*0.0001	71
3. It has shortened the learning curve for start-up tenants	38 (85.4%)	6 (13.5%)	*0.0001	14 (53.8%)	12 (45.2%)	0.8450	52 (74.3%)	18 (25.7%)	*0.0001	70
4. It has saved money for tenants by providing business infrastructure	44 (100%)	0 (0%)	*0.0001	21 (77.7%)	6 (22.3%)	*0.0059	65 (91.5%)	6 (8.5%)	*0.0001	71
5. It has provided a credible business address for tenants	44 (100%)	0 (0%)	*0.0001	25 (92.6%)	2 (7.4%)	*0.0001	69 (97.2%)	2 (2.8%)	*0.0001	71
6. It provides a vibrant business environment for tenants	38 (86.4%)	6 (13.6%)	*0.0001	18 (66.7%)	9 (33.3%)	0.1221	56 (78.9%)	15 (21.1%)	*0.0001	71
7. It has increased the business skills of tenants	36 (81.8%)	8 (18.2%)	*0.0001	18 (66.7%)	9 (33.3%)	0.1221	54 (76.1%)	17 (23.9%)	*0.0001	71
8. It has enhanced the financial performance of tenant businesses	34 (77.3%)	10 (22.7%)	*0.0004	15 (55.6%)	12 (44.4%)	0.7011	49 (69.0%)	22 (31.0%)	*0.0018	71
9. It has assisted specific population groups (e.g. female business owners)	18 (42.9%)	24 (57.1%)	0.4408	9 (34.6%)	17 (65.4%)	0.1686	27 (39.7%)	41 (60.3%)	0.1143	68
10. It has created export opportunities	15 (34.9%)	28 (65.1%)	0.0660	9 (33.3%)	18 (66.7%)	0.1221	24 (34.3%)	46 (65.7%)	*0.0115	70

\* Item significant at the 0.05 level using Fisher's two-tailed test.

0.05 significance level, suggesting that the null hypothesis should not be rejected. Tenant stakeholders appear to express reservations concerning the five abovementioned benefits of involvement in the incubation process.

Aggregation of the responses for the eight identified incubator benefits gives statistically significant results using the binomial test. This would suggest that the null hypothesis should be rejected at the 5% level. However, these results appear to relate to an over-emphasis of management response numbers, as compared with tenant numbers, for aggregated results. These aggregated results are therefore perceived as being of little value to the study.

Binomial testing of percentage results for items 9 and 10 in the table 6.7 indicate that the aggregated majority disagree with the suggestions that incubation assists specific population groups and encourages export opportunities. In total, 60.3% of all respondents disagreed with the supposed benefit relating to incubation assisting specific population groups (such as female business entrepreneurs) with 57.1% of management and 65.4% of tenants disagreeing.

The literature also indicates that business development occurs when incubators provide targeted services, for example, to female entrepreneurs and minority owned business start-ups. Academic analysis, especially in the US, identifies the use of incubation as an effective method in the promotion of business activity in specific groups within society (Campbell, Kendrick & Samuelson 1985, p. 46; Knopp 2007, p. 20).

Binomial testing suggests that the experience of both management and tenants in relation to benefits for specific groups has been uniform. Neither management nor tenants could identify assistance to specific sectors as an active feature of Australian business incubation. Binomial analysis for both management and tenants through perusal of *P values* indicates that the results did not differ significantly from the sentiments expressed in the null hypothesis and the null hypothesis appears to be supported by the data.

A similar result occurred regarding the possible benefits of export opportunities. Responses from the entire respondent group indicate that 65.7% of respondents (65.1% management and 66.7% of tenants) believe that Australian business incubators do not create export opportunities. This result is contrary to a range of international academic findings which suggest that incubation has a key role to play in creating exports for start-up incubatees (Lalkaka 2001, p. 8; Scaramuzzi 2002, p. 5). In the literature (Bridge, O'Neill & Cromie 1998, p. 239; Clark 2008, p. 2) provisions in incubator tenancy application rules often indicate that only those applicants promoting start-up business opportunities with export potential will be considered for tenancy. In this study this would suggest that the expectations of incubator stakeholders are not as prescriptive as those of their European and American counterparts. Once again, using binomial analysis of responses the resultant  $P$  value, indicate that results have not differed significantly from the sentiments expressed in the null hypothesis which appears to be supported by the data.

In sum, Proposition 3A asserts that business incubation does not assist the majority of Australian incubator stakeholders in achieving their goals. Analysis of survey responses has suggested that three of the identified benefits of incubation have been strongly supported in the responses from both groups while tenants have lesser support for the value of supposed benefits in relation to another five of the benefit criteria. Both respondent groups have indicated significant disagreement with two of the hypothesised benefits. Management expressed opinions which suggest that the null hypothesis is not an accurate statement as measured by binomial analysis, and that incubation provides identifiable benefits to incubation participants.

However, the study embodies results which suggest that tenants do not support many of the sentiments concerning these benefits, as expressed by management. Thus the appropriate observation would be to suggest that Proposition 3A has been partially supported by the binomial tests.

### 6.5.2.2 Data Analysis - Proposition 3B

Table 6.8 details survey responses from management and tenant groups to the ‘incubator benefits’ question, while also providing the results of the application of the appropriate non-parametric tests of significance from the set of contingency tables. Certain results suggest that significant differences exist between the two respondent groups. The survey analysis, using Fisher’s Exact Test, produced significance levels of less than 0.05, suggesting that management and tenants exhibit significantly different opinions in relation to benefits 1, 2, 3 and 4 listed in the table and explored in more detail below.

**Table 6.8 Benefits – Proposition 3B**

Operational benefits	Management Agree?		Tenants Agree?		Valid cases (n)	Significance level (P)
	YES	NO	YES	NO		
1. It enhances tenant professional image	42	2	19	7	70	*0.011
2. It has reduced tenant operating costs	40	4	19	8	71	*0.047
3. It has shortened the learning curve for start-up tenants	38	6	14	12	70	* 0.004
4. It has saved money for tenants by providing business infrastructure	44	0	21	6	71	* 0.002
5. It has provided a credible business address for tenants	44	0	25	2	71	0.141
6. It provides a vibrant business environment for tenants	38	6	18	9	71	0.072
7. It has increased the business skills of tenants	36	8	18	9	71	0.163
8. It has enhanced the financial performance of tenant businesses	34	10	15	12	71	0.068
9. It has assisted specific population groups (e.g. female business owners)	18	24	9	17	68	0.612
10. It has created export opportunities	15	28	9	18	70	1.000.

Items statistically significant at the 0.05 (\*) level using Fisher’s two-tailed test.

Tenants are the major clients of business incubators whereas incubator management are the group involved in providing the best possible level of service to tenants. On the basis of the results of this study, the significant difference in attitudes of management and tenants can be perceived (on the basis of Fisher's test results) to have relevance in an investigation of goal achievement outcomes of incubator stakeholders.

#### **6.5.2.3. Analysis - agreement between respondents**

Based upon the findings of the Fisher analysis of survey responses, discussed above, benefits 5, 6, 7 and 8 support the basic elements of Proposition 3B. Findings suggest that the respondents to this survey agree that business incubation, in relation to these four identified benefits, assists Australian incubator stakeholders in achieving their goals. Considering each 'benefit' of incubation, as presented in the survey:

##### **P3B (5) It has provided a credible business address for tenants**

Section (5) of the 'incubation benefits' question asked whether respondents agree that tenancy provides the tenant with a credible business address. Management and tenants indicated strong support. Application of Fisher's test resulted in a probability value of 0.141, the result being above the 0.05 level, indicating that the analysis does not identify the presence of a statistically significant difference between responses concerning a credible business address.

##### **P3B (6) It provides a vibrant business environment for tenants**

Supporters of the business incubation concept claim that the incubator environment in which an aspiring entrepreneur operates a start-up business is usually vibrant in nature. The argument suggests that incubation provides a location in which tenants have similar problems and aspirations regarding growth, especially at the start-up stage. Survey responses from management indicate that 85.3% identify the vibrant nature of incubators as a strong reason for their development. However, only 55.7% of tenants expressed the viewpoint that they have benefited from the existence of a networked start-up environment.

This ‘networking’ aspect of participation in business incubation has been a consistently identified issue in the recent literature (Bollingtoft & Ulhoi 2005; Kauffman & Schwartz 2008; Watson 2007), serving as a major potential benefit of incubator tenancy.

Although the percentage results for both groups indicate a wide difference in their level of support for the ‘networking’ concept, Fisher’s test shows a significance level of  $P = 0.072$ , suggesting that the difference of opinion between the two groups would only be viewed as being significantly different at the 0.1 (10%)  $P$  level. Utilisation of the 0.1 measure does not offer an adequate level of confidence that the identified difference is real, and so the measure has not been used in this instance.

### **P3B (7)      Tenancy has increased the business skills of tenants**

Both respondent groups indicated support for the concept that incubator tenancy enhances tenant business skills (82% of management agree and 57% of tenants agree). Cross-tabulation of results using Fisher’s test ( $P = 0.163$ ) resulted in a significance level which suggests that the two stakeholder groups share similar views and the responses are not statistically significant.

### **P3B (8)      Incubator tenancy enhances financial performance**

Another assertion involves the suggestion that incubator tenancy enhances financial performance. Management and tenants indicate support of this proposition, albeit at a lower level than that applicable for other sections of the overall ‘benefits of incubation’ question. Management (77% positive response) could be said to have favoured the idea more so than tenants (55.5% positive response) indicating that respondents believe that incubation enhances financial performance of start-ups. Application of Fisher’s test resulted in  $P = 0.068$ , leading to the conclusion (even though a marginal one) that the analysis has not identified the presence of a significant difference in the attitudes of management and tenant groups.

#### **6.5.2.4 Analysis of both stakeholder groups indicating negative responses**

Analysis of survey responses for Propositions 3B (9) and (10) did not indicate that these groups have different opinions concerning incubators in helping specific groups or in encouraging exports. However, findings would suggest that the proposition was not supported. For each question (9 and 10) and for both groups the majority were negative.

##### **P3B (9) It has assisted specific business start-up groups**

Both groups indicated that they do not agree that incubators help specific population groups (management 57.1% and tenants 65.4%). Application of Fisher's test resulted in a value of  $P = 0.612$ , indicating agreement whereby both parties failed to support identification of this factor as a benefit of incubation.

##### **P3B (10) It has created export opportunities**

Both management and tenants rejected the assertion that incubators create exports. A total of 65.1% (management) and 66.7% (tenants) did not agree with this supposed 'advantage' of incubator tenancy (Fisher's test value  $P = 1.000$ ) thus this part of Proposition 3B was not confirmed. The findings concluded that the majority of Australian incubator management and tenants believe that incubators have not assisted in creation of opportunities for export development.

#### **6.5.2.5 Analysis of significant results**

Fisher's test produced results which suggest that significant differences were identified in certain survey responses. Table 6.8 details survey responses to the question dealing with the advantages of incubator tenancy, while also providing the results of the application of the Fisher test of significance. Significant results relate to Proposition 3B, sections (1), (2), (3) and (4), in the following contexts.



**P3B (1)      It has enhanced the professional image of tenant businesses**

Proponents of the business incubator concept consistently argue that tenancy enhances the professional image of start-up businesses (Aernoudt 2004, p. 132; Chan & Lau 2005, p. 1217; Lalkaka 2001, p. 5). Respondents' views differed as to whether this is the case in the Australian environment (95.5% of management agreed and 73.1% of tenants agreed that the concept is an accurate one). Statistical evaluation of the data (Fisher's test result,  $P = 0.011$ ) suggests that the two respondent groups exhibited a significantly different interpretation, ranging from a strong level of management support to a less enthusiastic expression of tenant support. Proposition 3B (Part 1) was therefore not supported with the two groups exhibiting significant differences.

**P3B (2)      It has reduced tenant operating costs**

Analysis of survey responses to whether or not business incubation helps tenants to reduce their operating costs was completed. Once again, incubator management strongly agreed that this is the case (90.9% agreement) but tenants were less enthusiastic (70.4%). Application of Fisher's test ( $P = 0.047$ ) suggests that responses from the two groups are significantly different.

**P3B (3)      It has shortened the learning curve for start-up tenants**

Another key argument supporting investment in business incubation involves expression that incubator tenants experience a shorter learning curve as they acquire the skills required for establishment and operation of a business.

These benefits are the direct result of tenancy in an incubator. Management again indicated strong support (86.4%) with respondents expressing confidence in the acuity of the concept. However, the high level of confidence was not apparent in tenant responses, where 46.2% indicated that they did not support the proposition that their learning curve shortened due to experience as incubator tenants. Analysis of responses ( $P = 0.003$ ) indicates a significant difference between the attitudes of the two groups of stakeholders.

**P3B (4)            It has saved money for tenants by providing business infrastructure**

Responses to this question indicated 100 % of management and 77.7% of tenants agreed that incubators save money through the provision of business infrastructure. Application of the appropriate Fisher's test ( $P = 0.002$ ) suggests that there is a statistically significant difference of opinion between respondents.

**6.5.2.6            Analysis of Proposition 3B**

Proposition 3B has been tested by examining data responses to the survey question dealing with the benefits of business incubation. This section of the testing process once more involved the application of Fisher's statistical analysis, seeking to identify the existence of differences in the attitudes of management and tenants toward the set of 10 suggested benefits.

Proposition 3B, based on the aforementioned observations, is partially supported by the data. Certain survey responses indicate significant support for the proposition (5, 6, 7 and 8) while others (9 and 10) reject the proposition outright.

Statistically significant differences in survey responses (involving sub-sections 1, 2, 3 and 4) indicate that specific survey results did not support Proposition 3B.

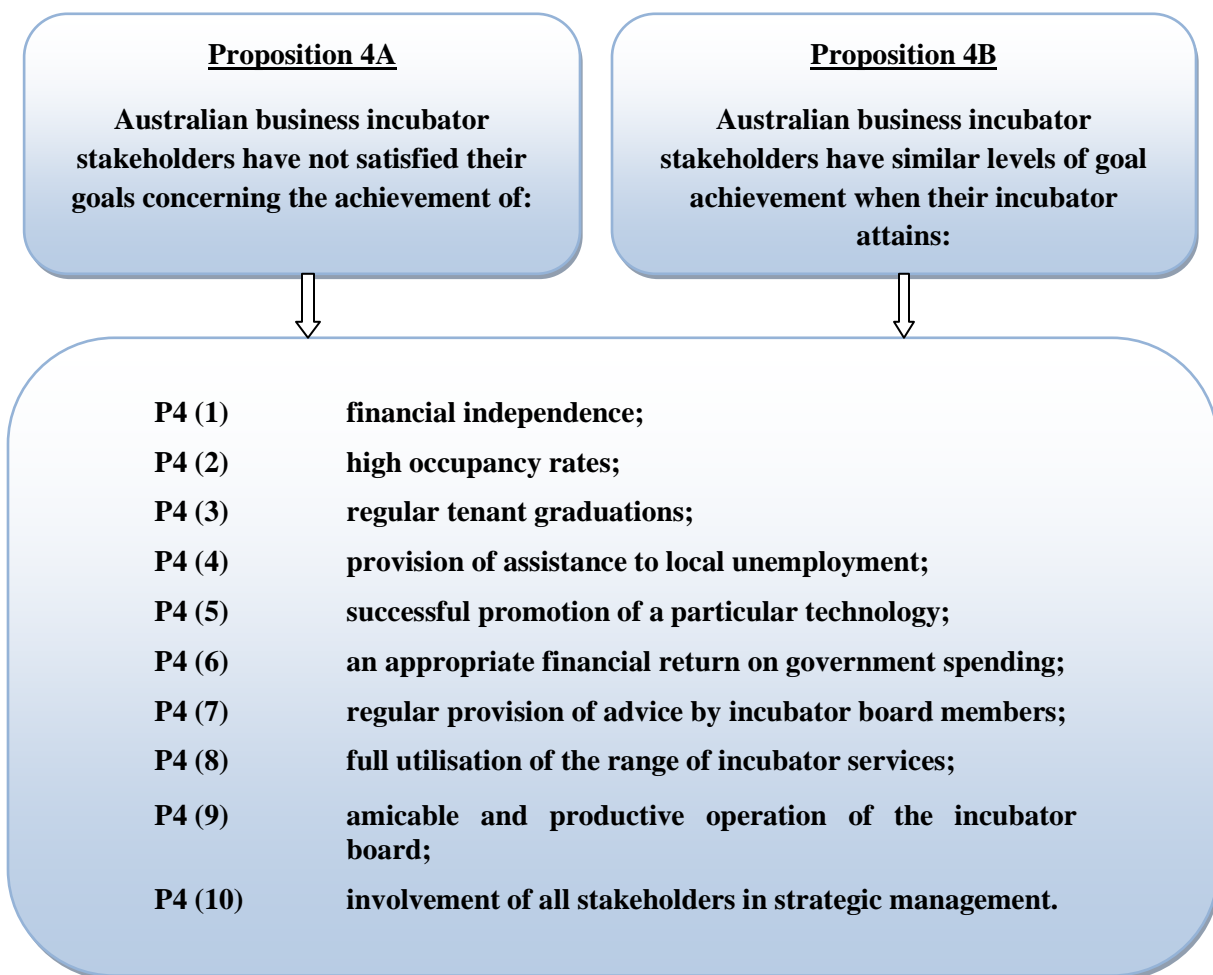
The issues viewed as significant, in describing various interpretations of the proposed benefits of incubation, involve enhancement of the professional image of tenants, reduced tenant operating costs, shorter learning curve for start-up tenants and the suggestion that incubation tenancy saved money for tenants by providing business infrastructure.

## 6.6 Propositions 4A and 4B

### 6.6.1 Stakeholder goal achievement in Australian incubators

The central question in this study relates to 10 goal achievement issues. Respondents indicated their views on a range of issues dealing with personal goal satisfaction in their incubator. The question specifically asked ‘While involved as an incubator stakeholder have your goals been achieved?’ Respondents were assessed as being ‘satisfied’ or ‘not satisfied’ with their involvement in business incubation. The process of evaluating goal achievement issues is based upon the assumptions embodied within Propositions 4A and 4B as presented in Figure 6.3.

**Figure 6.3 Propositions – achieving goals**



Analysis of goal issues in the literature illustrates that the diversity of stakeholders who have been associated with incubator development has hindered formulation of clearly stated 'generic' goals. Allen and McCluskey (1990, p. 64) identified goals relating to incubator occupancy, jobs and graduations. Phillips (2002, p. 314) added tenant revenues, number of patents per firm and levels of discontinued businesses. Goals relating to employment creation, stimulation of economic activity through business creation, profit, technology commercialisation, revitalisation of disadvantaged or rejuvenated zones, diversification of the industrial profile and promotion of certain population groups were also identified (Albert, Bernasconi & Gaynor 2002, p. 17). Mian (1996, 1997) also suggested that studies typically ignore outcome criteria, with the exception of analyses, where he adds management policies as well as services, and their value is added to the discussion.

In the interview stage of this study, managers and a small number of incubator board members identified their goals. The most consistent incubator goal relates to creation of, or support for, sustainable local or regional employment expansion. In the literature, business incubation is frequently identified as an effective regional economic development tool (see Section 4.2.1). Mian (1996, p. 194) changed the paradigm by arguing that incubators identify objectives differently, depending upon stakeholder interests. This point of view parallels Albert, Bernasconi and Gaynor's (2002, p. 16) contention that stakeholder goals are the most important issue in incubator development and outcomes. This study incorporates Mian's thesis as being a relevant depiction of the business incubator sector's goal achievement status.

### **6.6.2 Analysis of the key goal achievement question**

The key survey question encompasses 10 components, each one being designed to take in the broad range of goal achievement strategy issues, resultant data being capable of further cross-tabulated subdivision. The process of grouping board members and managers is continued, unless otherwise indicated, with tenants being the other group involved in the cross-tabulation. Survey responses and results of binomial analysis are listed in Table 6.9.

**Table 6.9 Analysis – Proposition 4A**

Stakeholder goals	Management		<i>P</i> value	Tenants		<i>P</i> value	Total responses of stakeholders		Aggregate <i>P</i> value	Valid cases (n)
	Satisfied? YES	NO		Satisfied? YES	NO		Satisfied? YES	NO		
1. My incubator becomes financially independent	33 (76.7%)	10 (23.3%)	*0.0006	12 (50.0%)	12 (50.0%)	1.161	45 (67.2%)	22 (32.8%)	*0.0067	67
2. Occupancy rates are high	40 (90.9%)	4 (9.1%)	*0.0001	15 (71.4%)	6 (28.6%)	0.0784	55 (84.6%)	10 (15.4%)	*0.0001	65
3. Tenants regularly graduate	31 (73.8%)	11 (26.2%)	*0.0029	11 (47.8%)	12 (52.2%)	1.000	42 (64.6%)	23 (35.4%)	*0.0248	65
4. My incubator assists local employment	38 (88.4%)	5 (11.6%)	*0.0001	21 (77.8%)	6 (22.2%)	*0.0059	59 (84.3%)	11 (15.7%)	*0.0001	70
5. My incubator successfully promotes a particular technology	16 (37.2%)	27 (62.8%)	0.1263	5 (20.8%)	19 (79.2%)	0.0636	21 (31.3%)	46 (68.7%)	*0.0031	67
6. My incubator has generated an appropriate financial return on government spending	38 (88.4%)	5 (11.6%)	*0.0001	5 (20.8%)	19 (79.2%)	0.0636	43 (64.2%)	24 (35.2%)	*0.0271	67
7. My advice as an incubator board member is sought	25 (69.4%)	11 (30.6%)	*0.0288	+	+		25 (69.4%)	11 (30.6%)	+	36
8. The range of incubation services provided is fully utilised	30 (68.2%)	14 (31.8%)	*0.0226	13 (50.0%)	13 (50.0%)	1.155	43 (61.4%)	27 (38.6%)	0.0722	70
9. The Board of management operates amicably and productively	37 (86.0%)	6 (14.0%)	*0.0001	14 (56.0%)	11 (44.0%)	0.6900	51 (75.0%)	17 (25.0%)	*0.0001	68
10. Incubator strategic management involves all stakeholders.	32 (74.4%)	11 (25.6%)	*0.0019	9 (36.0%)	16 (64.0%)	0.2295	41 (60.3%)	27 (39.7%)	0.1143	68

\* Item statistically significant at the 0.05 level using a two-tailed test. + Responses only applicable to management.

### **6.6.2.1 Survey Analysis – Proposition 4A**

Proposition 4A contends that Australian business incubator stakeholders have not achieved their goals in specific areas. Ten goals have been identified in the analysis and incorporated within this set of questions in the survey. One of 10 goal achievement issues was concerned with board members being asked if their advice was regularly sought. Responses from tenants on this matter were inappropriate and so responses from both groups to this question were set aside, leaving nine goal achievement issues to be tested.

Proposition 4A, incorporating a null hypothesis evaluation, has been tested by comparing percentage responses to the e-mail survey using the binomial test (see Table 6.9). Specific issues considered in this central question about goal achievement commenced with an analysis of responses to the argument that incubators may become financially independent.

The need for financial independence concerns the observation that incubators rarely have access to ongoing recurrent funding while capital funding provision has been cut back over the past decade. A total of 67.2% of aggregated survey responses indicate satisfaction with financial independence. However, in examining the components of this figure it becomes clear that management (with 76.7% satisfied) is much more supportive than tenants (50% satisfied). The lack of tenant majority support for financial independence could possibly relate to a concern that financial independence may only be achieved through increased tenancy fees, the major source of incubator revenue.

Binomial testing of responses indicates that financial independence is a significant issue ( $P$  value .0006) among management, concluding that the null hypotheses may be rejected. The result of the binomial analysis ( $P$  value of 1.161) suggests that the null hypothesis appears to provide an accurate description of the attitude of tenants to this question. Binomial testing of tenant responses revealed that the proportion of negative responses to the question has not, at the .05 significance level, shown a significant difference from the hypothesised value of 50%.

An identical testing procedure was utilised in testing responses to the remaining eight

‘goal’ issues with the following results. As indicated in Table 6.9, management responses indicate that eight of the stakeholder goal issues (including the afore-mentioned financial independence analysis) report management percentages showing positive levels of satisfaction that were statistically significant ( $P$  values below .05). These significant results were concerned with goal satisfaction involving incubator becoming financially independent, high incubator occupancy rates, regular graduation of tenants, incubators assisting local employment creation, provision of a financial return on government spending, full utilisation of incubator services, incubator boards operating on an amicable basis and involvement of all stakeholders in incubator strategic management processes.

Eight sets of management responses, after being subjected to binomial testing, exhibited statistically significant results. These results indicate that the management cohort’s opinions differ significantly from those expressed in the null hypothesis, signifying that management can be perceived to be satisfying incubation goals. The implication concerning this set of management responses is that the null hypothesis can be rejected at the 5% significance level.

Responses from incubator tenants suggested a different attitude toward goal achievement.

Binomial testing of seven sets of tenant responses (see Table 6.9) – incubator financial independence, incubator occupancy rates, tenant graduations, promotion of a particular technology, financial return on government spending, utilisation of incubator services, amicable operation of incubator boards and involvement in strategic management processes - resulted in findings which indicated that there is no statistically significant difference in responses concerning these issues from the tenant cohort.

As a result, the null hypothesis concerning these findings cannot be rejected, indicating that tenants are generally dissatisfied with these particular incubation goal achievement outcomes. A significant result occurred ( $P$  value of .0059) when tenant respondents were asked whether their incubators were assisting local employment, signifying that the null hypothesis is not an accurate statement concerning this issue.

Survey respondents were also asked whether their incubator was involved in the successful promotion of a particular technology. Responses ( $P$  value for management of .1263, tenants .0636), resulted in both groups not believing that incubators place a significant emphasis upon technology and therefore this activity is not considered to represent a factor in Australian goal achievement outcomes.

The application of binomial tests to the survey responses from management and tenants has provided a means of assessing percentage values of stakeholder perceptions of a wide range of measures regarding goal achievement in Australian incubators. Respondents have, to varying degrees, indicated their strong support for the concept that incubation contributes to local employment. This is one measure that both management and tenants are in general agreement.

The only other measure which indicates an element of unanimity is agreement by both groups that the promotion of a particular technology is not a common theme in their incubation experience in Australia. Binomial tests resulted in findings which suggest that there is no significant difference in either stakeholder result, suggesting that the null hypothesis should not be rejected in this instance.

In relation to the remaining identified goal achievement issues the results of the binomial tests of statistical significance suggest that the null hypothesis might be questioned for management, the group appearing to be supportive of almost all goal achievement criteria.

Alternatively, the tenant group have registered significance levels which suggest that only one of nine measures analysed provided an indication that the null hypothesis might be rejected. This suggests that tenant respondents, when asked to comment on their experience concerning a group of goals (as presented in the study) are generally dissatisfied with their goal achievement experience in Australian business incubation.



### 6.6.2.2 Analysis – Proposition 4B

This section of the study utilises Fisher’s Exact Test to assess the key goal achievement question, with the results of the analysis being presented in Table 6.10.

**Table 6.10 Goals – Proposition 4B**

Stakeholder goals	Management		Tenants		Total responses of stakeholders		Valid cases (n)	Significance level (P)
	Satisfied? Yes	Satisfied? No	Satisfied? Yes	Satisfied? No	Satisfied? Yes	Satisfied? No		
1. My incubator becomes financially independent	33	10	12	12	45	22	67	* 0.033
2. Occupancy rates are high	40	4	15	6	55	10	65	0.065
3. Tenants regularly graduate	31	11	11	12	42	23	65	0.057
4. My incubator assists local employment	38	5	21	6	59	11	70	0.315
5. My incubator successfully promotes a particular technology	16	27	5	19	21	46	67	0.185
6. My incubator has generated an appropriate financial return on government spending	38	5	5	19	43	24	67	*0.0001
7. My advice as an incubator board member is sought	25	11	+	+	25	11	36	+
8. The range of incubation services provided is fully utilised	30	14	13	13	43	27	70	0.131
9. The board of management operates amicably and productively	37	6	14	11	51	17	68	*0.008
10. Incubator strategic management involves all stakeholders.	32	11	9	16	41	27	68	*0.002

\* Significant at the 0.05 levels using Fisher’s two-tailed test. + Responses applicable to management.

Proposition 4B suggests that business incubator stakeholders have similar goal achievement attitudes. The proposition has been tested by evaluating responses to the aforementioned group of 10 goal achievement questions. The underlying intention is to assess whether the two groups exhibit different attitudes toward ‘goal achievement issues’. If the sub-groups have significantly different responses then there are implications concerning stakeholder goal achievement. Results of analysis of the goal achievement question follow.

***1. My incubator becomes financially independent***

Survey responses suggested the presence of a statistically significant difference ( $P = 0.033$ ) between attitudes of management and tenants toward the goal of achieving a financially independent status for business incubators.

***2. Occupancy rates are high***

Respondents were asked to comment on the achievement of high occupancy rates in their respective incubators. The result, using Fisher’s analysis, of  $P = 0.065$  indicates that management and tenant opinions did not differ to a statistically significant degree at the 0.05  $P$  level.

***3. Tenants regularly graduate***

As discussed in Section 4.2.3, the use of the term ‘graduate’ suggests that an incubator operates a formal ‘graduation’ programme for tenants. Analysis provided an indication ( $P = 0.057$ ) that attitudes of management and tenants are not significantly diverse. This result leads to the suggestion that Proposition 4B may be supported by the data concerning this issue.

***4. My incubator assists local employment***

Both groups indicate a belief in the concept of using their incubator to support local employment but tenants indicated stronger support. Application of Fisher’s test resulted in a  $P$  level exceeding 0.05 ( $P = 0.197$ ) suggesting that Proposition 4B is supported by both groups.

**5. *My incubator successfully promotes a particular technology***

Responses to this question indicate that both respondent groups are dissatisfied with the above goal. Analysis of responses using Fisher's Exact Test resulted in a value of  $P = 0.166$  suggesting there is no significant distinction between data responses from either group.

Survey responses indicate that both management and tenants disagree with the suggestion that incubators successfully promote particular technologies. Thus both parties are in agreement that Proposition 4B may not be supported by the data.

**6. *My incubator has generated an appropriate financial return on government spending***

Recognition of the creation of a financial return to government (usually the major investor) in the operation of an incubator provided a result (using Fisher's two-tailed test) indicating the presence of a significant difference of attitude ( $P = 0.0001$ ) between the two groups. The result leads to the finding that there is a significant difference to the extent that Proposition 4B is not supported.

**7. *My advice as an incubator Board member is sought***

Management response levels in support of the idea that a Board member's advice is sought are not high (69.4%). Managers have been included in the analysis because board membership and participation is common practice. The question does not apply to tenants and so cross-correlation could not be undertaken.

**8. *The range of incubation services provided is fully utilised***

Analysis of survey responses, using Fisher's test, resulted in a  $P$  level of 0.131, indicating that there does not appear to be a significant difference in opinion between management and tenants on whether the range of incubation services is fully utilised. On the basis of this result it would appear that Proposition 4B is supported by the data.

### ***9. The board of management operates amicably and productively***

Respondents were asked to rate their level of satisfaction with the view that their board operates in an amicable and productive manner. Earlier analysis of percentage results for survey responses from stakeholder groups indicates that tenants are less satisfied with this concept. Analysis, using Fisher's Exact Test, indicates a significant ( $P = 0.006$ ) difference between the two respondent groups in dealing with this issue, thus analysis suggests that Proposition 4B has not been supported.

### ***10. Incubator strategic management involves all stakeholders***

Once again, survey responses suggest that management and tenant opinions are highly varied regarding strategic management involving all stakeholders. Management, particularly board members, indicated in their responses (see Table 6.10) that they are satisfied that incubator strategic management process involve all stakeholders while tenants disagreed with this assertion. The data was analysed using Fisher's test and the result indicates that there may be a significant ( $P = 0.002$ ) difference between the management and tenant groups.

#### **6.6.3 Board member goal achievement**

Almost all of the 45 Australian business incubator managers contacted by the researcher as part of the interview process (refer Chapter 4) were employed in organisations with a legal structure involving a board of management, usually with direct 'hands-on' assistance from a professional manager.

This thesis contends that the 'representative' and 'private' board member stakeholder groups have been ignored in earlier studies examining goal achievement outcomes in business incubators. Further analysis of the data being considered as part of the discussion concerning Proposition 4 will allow for further exploration of this contention. In this study the e-mail survey questioned whether the goals of both groups of incubator stakeholders (representative and private board members) are appreciably different, and whether those

goals are being attained. Responses were received from 22 board members (11 of which were ‘private’ board members, that is, individuals who provide unpaid support to their incubators). The remaining 11 ‘representative’ board members represented local councils, state governments and tertiary educational institutions. The final number of survey responses did not always allow for the creation of sets of data with high response rates and so the Pearson  $\chi^2$  analysis was not applicable. All responses are analysed using Fisher’s Exact Test, which is suited to the use of 2x2 contingency tables with smaller frequency levels.

**Table 6.11 Goal attainment – board**

Stakeholder goals	Representative		Private		Valid cases (n)	Significance level (P)
	Satisfied? Yes	Satisfied? No	Satisfied? Yes	Satisfied? No		
1. My incubator becomes financially independent	9 (81.8%)	2 (18.2%)	9 (81.8%)	2 (18.2%)	22	1.000
2. Occupancy rates are high	10 (90.9%)	1 (9.1%)	11 (100%)	0 (0%)	22	1.000
3. Tenants regularly graduate	5 (45.55%)	6 (54.5%)	10 (90.9%)	1 (9.1%)	22	0.064
4. My incubator assists local employment	9 (81.8%)	2 (18.2%)	11 (100.0%)	0 (0%)	22	0.476
5. My incubator successfully promotes a particular technology	6 (54.5%)	5 (45.5%)	4 (36.4%)	7 (63.6%)	22	0.669
6. My incubator has generated an appropriate financial return on government spending	9 (81.8%)	2 (18.2%)	9 (81.8%)	2 (18.2%)	22	1.000
7. My advice as an incubator board member is sought	8 (72.7%)	3 (27.3%)	8 (72.7%)	3 (27.3%)	22	1.000
8. The range of incubation services provided is fully utilised	8 (72.7%)	3 (27.3%)	8 (72.7%)	3 (27.3%)	22	.1.000
9. The board of management operates amicably and productively	8 (72.7%)	3 (27.3%)	9 (81.8%)	2 (18.2%)	22	1.000
10. Incubator strategic management involves all stakeholders	11 (100%)	0 (0%)	6 (54.5%)	5 (45.5%)	22	*0.035

\* Item statistically significant at the 0.05 level (using Fisher’s two-tailed test).

Analysis of percentage responses to goal achievement questions from the representative and private groups indicates (see Table 6.11) that, relating to most of the goal achievement issues (1), (2), (4), (6), (7), (8) and (9), both categories of board members are satisfying their business incubator goals, each group indicating support for goal attainment.

Concerning the issue ‘tenants regularly graduate’, a minority of respondents from the ‘representative’ group supported such a policy while 90.9% of private board members perceived the existence of a regular graduation programme in their incubator as satisfying goal achievement outcomes.

Also, the majority of ‘private’ board members (63.6%) indicate a lack of satisfaction when their incubator does not promote a particular technology. A majority (54.5%) of ‘representative’ board members expressed limited satisfaction regarding promotion of a particular technology. When these sets of responses are combined and subjected to Fisher’s test the result ( $P = 0.669$ ) indicates that differences between these groups are not statistically significant.

The final issue considers whether all stakeholders are involved in the incubator’s strategic planning processes. ‘Representative’ board members were unanimous (100%) in their support while only 54.5% of private board members agreed. Fisher’s test of the data results in a significance level of  $P = 0.035$  suggesting that the two board groups have significantly different attitudes regarding involvement in strategic planning. The high level of support within the ‘representative’ respondents for strategic planning involvement for all stakeholders may be the result of a higher level of awareness of strategic planning as a management activity than is the case for ‘private’ respondents who are typically small business operators.

#### **6.6.4 Gender and stakeholder goal satisfaction**

Various elements of responses to the key goal achievement question, as detailed in Table 6.10, suggest that there are statistically significant differences in attitude between stakeholder groups. The survey format offers the opportunity to further analyse the data by

collapsing specific elements of significant responses, followed by further analysis. Considering the increase in the number of female stakeholders in Australian incubators (see Chapter 5, section 5.2.2.1), this factor has the potential to impact upon opinions relating to stakeholder goal achievement. Data were collapsed, indicating responses to the survey's goal achievement questions, according to male and female respondents in each stakeholder group involved in the study, with the following results.

#### A. My incubator becomes financially independent

Earlier analysis of the 'financial independence' issue (see Table 6.10), indicated a significant  $P$  level of 0.033. Analysis, using Fisher's Exact Test, of responses for male and female management exceeded 0.05, suggesting that male and female respondents share a similar view. Tenant responses to the 'financial independence' question have also been collated, the results being presented in Table 6.12.

**Table 6.12 Goals/Tenant gender**

Stakeholder goal achievement issue	Tenant gender	Tenants satisfied?		Valid cases (n)	Significance level ( $P$ )
		Yes	No		
My incubator becomes financially independent	Male	9 (69.2%)	2 (18.2%)	11 (45.8%)	* $P = 0.019$
	Female	4 (30.8%)	9 (81.8%)	13 (54.2%)	
	Total	13 (100%)	11 (100%)	24 (100%)	

\* Item statistically significant at the 0.05 level (two-tailed test).

Analysis of male and female tenant responses resulted in a significance level of  $P = 0.019$ . Examination of data showed that responses from the two groups of tenants (male and female) are significantly different at the 0.05  $P$  level. The pattern of responses from females showed that respondents indicate statistically significant differences of opinion when their incubator sets a strategy involving incubator financial independence. This divergent result for female tenants offers partial explanation for the significant result in Table 6.12,

suggesting that incubator financial independence is an important goal to all stakeholders except for female tenants. The observation may have relevance to future management policies which relate to activities designed to create a financially independent environment in Australian incubators.

### B. Tenants regularly graduate

Earlier Fisher's tests (see Table 6.10) indicate a difference of opinion among survey respondents concerning regular tenant graduations. Examination of percentage results for Proposition 4A had shown that tenants exhibit a different opinion to that of management.

When further analysed the difference in opinions appears to be attributable to male tenant responses with a significance level (as indicated in Table 6.13) of  $P = 0.003$ , suggesting that male tenants have a significantly different attitude toward an active graduation policy than female tenants.

The latter exhibited a similar pattern of responses to those provided by male and female management. Analysis of management responses indicated a significance level which exceeded 0.05, suggesting that both sexes share similar opinions on the graduation issue.

**Table 6.13 Tenant gender/graduations**

Stakeholder goal achievement issue	Tenant gender	Tenants satisfied?		Valid cases (n)	Significance level (P)
		Yes	No		
Tenants regularly graduate	Male	3 (27.3%)	11 (91.7%)	14 (60.9%)	* $P = 0.003$
	Female	8 (72.7%)	1 (8.3%)	9 (39.1%)	
	Total	11 (100%)	12 (100%)	23 (100%)	

\* Item statistically significant at the 0.05 level (using Fisher's two-tailed test).



As indicated in Table 6.10, respondents were asked to specify whether they are satisfied when their incubator experiences regular graduation of tenants. The result suggests that there is a statistically significant variation in attitudes between male and female tenant respondents concerning incubator graduation policies.

### C. The board of management operates amicably and productively

Responses to the section about the need to operate boards of management on an amicable basis (see Table 6.10) indicate a significant result ( $P = 0.008$ ), identifying the presence of a significant difference of opinion among management and tenant respondents within the sample.

Additional analysis using Fisher's test, by including gender as a factor relating to the study of each group, produced significant results concerning one stakeholder group (tenants,  $P = 0.004$ ), indicating that the difference in the overall significance result may have originated in tenant responses to the survey goal achievement question. As indicated in Table 6.14, the pattern of responses from female tenants was very similar to that of incubator management respondents, of both sexes, but responses from male tenants were at odds with other stakeholder respondents, suggesting that this sub-group has a significantly different point of view on this issue.

**Table 6.14 Tenant gender/board operation**

Stakeholder goal achievement issue	Tenant gender	Tenants satisfied?		Valid cases (n)	Significance level (P)
		Yes	No		
The board of management operates amicably and productively	Male	4 (28.6%)	10 (90.9%)	14 (56.0%)	* $P = 0.004$
	Female	10 (71.4%)	1 (9.1%)	11 (44.0%)	
	Total	14 (100%)	11 (100%)	25 (100%)	

\* Item statistically significant at the 0.05 level using a two-tailed test.

### 6.6.5 Goal achievement and period of involvement in incubation

Another variable with the potential to influence stakeholder responses to the survey concerned the period of involvement of respondents within the incubator industry. Survey respondents indicated when they first became involved in business incubation. These results were collapsed to create two groups of respondents involved either pre or post 2000.

The major decade of provision of Australian public funding for incubator establishment was the 1990s (Nolan 2003, p. 23). This section of the analysis dealt with the issue as to whether respondent longevity (in incubation) has impacted attitudes toward specific issues which might influence goal attainment outcomes.

Results using Fisher's test regarding 'goal satisfaction' (see Table 6.10) suggest that significant results are apparent in certain sections of the data. Further analysis indicates that, with one exception, all results which included the 'period of involvement' component, indicated a significance level exceeding 0.05, suggesting that the period of involvement in incubation does not appear to be a significant factor in most stakeholder goal achievement outcomes. The single exception related to the issue of stakeholder involvement in strategic decision-making processes by board of management stakeholders. Board members are the only group whose involvement with incubators began before 2000, with 45% having been involved in their incubator since the 1990s.

The Fisher's test result of  $P = 0.049$  suggests the existence of a statistically significant difference of opinion between continuity of incubator involvement among board members, and the role being played by all stakeholders in strategic planning and management. 'Experienced' board members (those involved in incubation pre 2000) expressed the opinion that strategic management involves all incubator stakeholders while less experienced board members (involved post 2000) do not support this view.

The difference in attitude using Fisher's test of responses is statistically significant. This aspect of the results does not support the validity of Proposition 4B, suggesting that a significant group of long-term board members believe that all members of their incubators'

stakeholder groups are involved in strategic planning. But, a significant sector of short term (post 2000) board member respondents did not share this point of view. If this finding were found to be applicable to the entire Australian incubation industry then it may suggest that incubator board members have a false impression of the level of involvement of all incubator stakeholder groups in strategic planning processes. The significant result provides an opportunity for incubator boards of management to re-examine their policies about the breadth of involvement of stakeholders in their organisations' strategic planning processes.

### **6.7 Analysis and findings of the survey – testing Propositions 4A and 4B**

This section of Chapter 6 has dealt exclusively with responses to the key question of the survey instrument regarding goal achievement. Discussion has considered the relevance of responses from stakeholders who participated in the study and the data generated by the study. Appropriate statistical analysis has been utilised in testing the validity of Propositions 4A and 4B, the process providing insights into the perceptions of the three groups of stakeholders involved in the study in achieving their major goals in business incubation.

Propositions 4A and 4B are partially supported by the results. Some survey responses indicate support for the propositions, others appear to reject them. Proposition 4A was tested using binomial analysis, to review the frequency levels of responses provided by management and tenant respondents to the key goal achievement questions. Statistical interpretation relating to Proposition 4B involved the application of Fisher's test to the set of 10 questions to determine whether results are indicative of the existence of significant differences between the two groups of respondents.

### **6.8 The global goal achievement question – multivariate analysis**

This chapter has presented the survey findings and statistical testing processes. In testing the group of propositions the findings suggest that significant differences exist as they relate to the issue of Australian incubator stakeholder goal achievement.

However, the bivariate statistical techniques involved in the analysis, in using ‘pair-wise’ strategies, indicate that differences of attitude may exist but do not readily show “... which response categories are related” (Sourial et al. 2010, p. 638). Also, bivariate analysis does not provide a global picture of differences among combined variables. Thus there is a need to utilise a multivariate technique that allows for simultaneous exploration of key results that relate to stakeholder indications of satisfaction levels (‘yes’ or ‘no’) with the goal achievement question.

## **6.9 Correspondence Analysis**

Correspondence analysis is an appropriate multivariate statistical tool because it indicates how variables are related, allowing for analysis of simple two-way and multi-way tables containing some measure of correspondence between the rows and columns.

This “... multivariate technique was developed to specifically explore relationships within and between two or more categorical variables” (Sourial et al. 2010, p. 639), providing a visual investigation of any data pattern or structure in graphical format. Correspondence analysis, as a multivariate technique, has become increasingly popular for dimensional reduction and perceptual mapping, the ‘map’ being a visual representation of opposed levels of dimensions at the extreme end of axes x and y (Confortini & Favero 2009, p. 24).

According to Greenacre (2007, p. ix), correspondence analysis is especially applicable in cross-tabular data, in the form of numerical frequencies, resulting in “... an elegant but simple graphical display which permits more rapid interpretation and understanding of the data”.

Correspondence analysis is well suited to the analytical needs of this study because it offers several advantages, including:

- capacity for quick and easy data collection, suiting administration of an internet based survey;
- allowance for the use of multiple categorical variables, using cross-tabulated data;

- provision of an ‘easy-to-understand’ portrayal of both inter-category and intra-category relationships, the spatial map providing insights into similarities and differences among row and column categories; and
- availability of the technique as a component in the SPSS statistical analysis package (Yavas & Shemwell 1996, p. 15).

### **6.9.1 Development of a derived perceptual map**

The essential purpose of the thesis has been one of examining, through development and administration of an e-mail survey, whether stakeholders are achieving their goals in business incubators. Stakeholders are asked to respond to the question: ‘While involved as an incubator stakeholder have your goals been achieved?’ Respondents indicated their degree of satisfaction (or dissatisfaction) with a selection of ‘goal satisfaction’ issues, as documented in Table 6.9.

A low response rate for section 7 (of the stakeholder goals) was anticipated, in that the question relates specifically to advice from board members, which is frequently bypassed by managers and tenants.

Representation on boards of management by managers and tenants in Australian incubation is limited; therefore in the interests of relevance and accuracy of data analysis, responses to this question were removed, leaving nine components for subsequent correspondence analysis calculations.

Table 6.15 lists the number of positive responses to the key survey question, with respondents indicating whether they are ‘satisfied’. Using this data a correspondence analysis template was prepared (Appendix 6.2) providing row and column input, with the syntax incorporated into the template being prepared as an Excel file.

At this point the correspondence analysis template was transferred to the SPSS package, utilising the ANACOR correspondence analysis package.

**Table 6.15 Goal achievement responses**

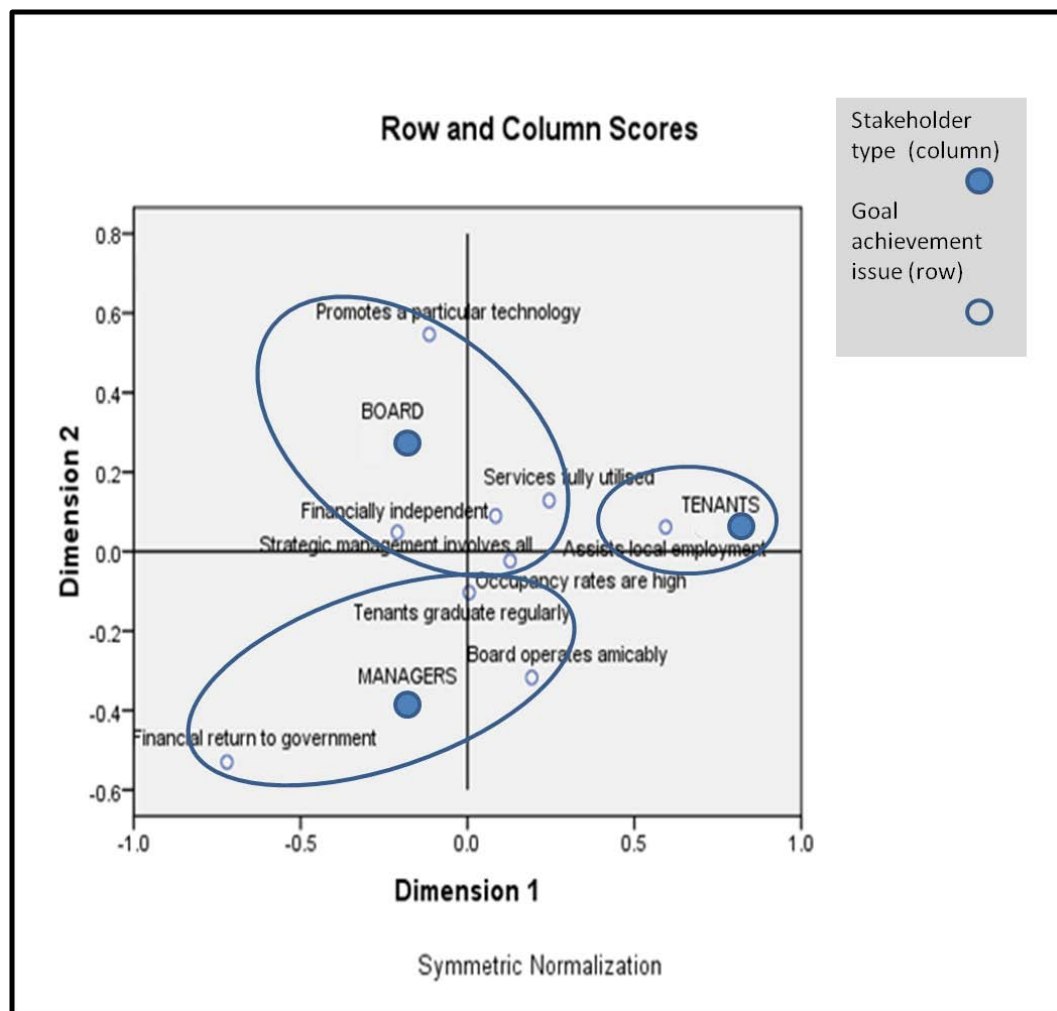
ROW	COLUMN	COLUMN	COLUMN
Goal achievement issue	Board members (satisfied)	Incubator managers (satisfied)	Incubator tenants (satisfied)
1. My incubator becomes financially independent	18	15	12
2. Occupancy rates are high	21	19	15
3. Tenants regularly graduate	15	16	11
4. My incubator assists local employment	20	18	21
5. My incubator successfully promotes a particular technology	10	6	5
6. My incubator generates an appropriate financial return on government spending	18	20	5
7. The range of incubation services provided is fully utilised	18	15	13
8. The board of management operates amicably and productively	17	19	14
9. Incubator strategic management involves all stakeholders	18	14	9

One technique used for correspondence analysis examines the ‘inertia’ of each dimension of the data. Appendix 6.2 is derived from data generated through ANACOR output of the correspondence analysis template content provided in Appendix 6.1. The column headed ‘proportion explained’, in Appendix 6.2, shows that the first dimension explains 79.6% of the total inertia by measuring the spread of points in the graph.

Analysis of the data indicates the presence of two themes in the output and that 79.6% (Dimension 1) is dominant, suggesting that a pattern of relevant issues exists in the graph but that the pattern is not precise.

By using the data within the ‘ANACOR’ software, a series of row and column scores (Appendix 6.3) have been calculated which provide the co-ordinates for the x and y axes of the ‘correspondence analysis map’ (see Figure 6.4). Using the co-ordinates listed in Appendix 6.3, the ANACOR software embodied within SPSS portrayed the data as a scatter diagram. The resultant ‘Correspondence analysis conceptual map’ (see Figure 6.4) exhibits a visual representation of opposed levels of dimensions at the extreme end of axes x and y.

**Figure 6.4 Correspondence Analysis map**



### **6.9.1.2 Interpretation of correspondence analysis results**

Interpretation of the graph (or, as various researchers describe the ANACOR output, the ‘derived perceptual map’ (Hair et al. 2007, p. 693)) is the next stage in the development of the correspondence analysis. The graphical output presented in Figure 6.4 was initially generated by the SPSS correspondence analysis software from the data shown in Table 6.15, the graph providing a ‘global view’ of trends within the data (Doey & Kurta 2011, p. 12).

In this instance the map reveals the underlying structure and positioning of responses to the survey’s key goal achievement question by board, managers and tenants (Yavas & Shemwell 1996, p. 19). One major advantage of correspondence analysis “... is that it generates two dual displays and detects structural relationships among the variable categories” (Tang et al. 2009, p. 88). In this study the perceptual map brings together the two sets of variables comprising three stakeholders and nine goal achievement issues.

In Figure 6.4 the degree of proximity of goal achievement registrations to a particular ‘stakeholder’ point provides a visual indicator of the relative frequency of satisfaction levels.

In a correspondence analysis only general statements can be made about observed trends and therefore precise conclusions cannot be drawn, the concept cannot be used as a confirmatory tool. However, because the SPSS package has standardised the data using symmetrical normalisation, rows can be compared to columns in a general fashion (Doey & Kurta 2011, p. 12). In interpreting the map, when a registration is close to the map’s mid-point, it suggests that all three stakeholder groups are experiencing similar levels of satisfaction about a specific goal satisfaction issue. Distances between points indicate relations between variable categories (Confortini & Favero 2009, p. 20).

In Figure 6.4 three circles group goal achievement points with a particular stakeholder type. Also issues relating to promotion of a particular technology, full utilisation of services, the issue of incubator financial independence and strategic management involving all



stakeholders have, in the ANACOR analysis, been placed in closest proximity to the location of the board of management marker. This visual indication communicates to the reader that the 'board' has been the pre-eminent stakeholder group (in terms of 'satisfied' responses to these goal achievement sub-questions).

The fifth sub-question of the central goal achievement question was included in response to the consistent observation in the literature review that the future of business incubation had much to do with encouragement of specific 'growth' technologies (Clark 2008, p. 2; Michaeloudes 2006, p. 1). Of the three stakeholder groups, only board member respondents indicate a high level of support. Correspondence analysis reveals that encouragement of a particular technology has only been prioritised by board members as a goal achievement issue.

The 'remote' location of the reference to incubators 'promoting a particular technology' relates to the relatively low number of positive expressions concerning goal achievement 'satisfaction' with this issue, the largest number of registrations having been provided by board of management respondents.

The 'tenant' marker on the correspondence analysis perceptual map in Figure 6.4 is located in close proximity to creation of local employment.

The literature regularly identifies assistance in creating local employment as a major factor justifying the development of the incubator industry (Abetti 2004, p. 19; Barrow 2001, p. 5; Wynarczyk & Raine 2005, p. 205). Of the total goal achievement factors identified, this stands out as the issue which maximises tenant goal satisfaction in business incubation.

Correspondence analysis suggests that both board members and managers view assistance in creation of local employment opportunities as a primary goal achievement factor, but not to the same degree as tenants. This factor provides additional support for observations embodied within earlier binomial and Fisher's tests.

Australian incubators have typically received an element of government (national, state or local government) funding, especially during their start-up phase. The question relating to

‘an appropriate financial return on government spending’ was designed to assess if stakeholder groups perceive this to be an important goal achievement issue in the operation of their incubator.

Referring to Figure 6.4, manager responses differ markedly compared with those of board members and tenants. The indication that managers believe that governments receives an appropriate financial return on their investment in business incubation suggests there may be different emphases on operational strategies when dealing with government/incubator relationships.

Figure 6.4 indicates that tenants graduating regularly and the need for boards to operate amicably were issues which managers tended to regard as being of greater importance than either board members or tenants.

### **6.9.1.3 Implications**

It is important to reinforce the point that correspondence analysis is essentially descriptive and cannot bear cause and affect inferences. Correspondence analysis offers a global picture of the data, examining relations of contingency variable categories.

Correspondence analysis, as a multi-dimensional scaling technique, allows consideration of the implications of various listings being visually ‘clustered’ (Yavas & Shemwell 1996, p. 21). Clusters in the ‘map’ provide additional information beyond the simple statement that a statistically significant circumstance may exist between stakeholder type and responses to ‘goal satisfaction’ questions.

Clusters and their proximity to stakeholders allowed the researcher to visualise how variable components relate. Figure 6.4 indicates one cluster relating to incubator financial independence, strategic management, occupancy rates, incubator service utilisation and regularity in tenant graduations. This cluster, around the ‘map’s’ origin indicates a high level of uniformity in goal achievement perceptions among all three stakeholder groups concerning these five issues. The three stakeholder groups appear to share essentially common goal achievement perceptions of these issues.

Another category of registrations involves those ‘outlying’ items which display an indication of ‘goal satisfaction’ by a specific respondent group, identifying that item as one that the group perceives to be of elevated relevance, in the satisfaction of their goals as business incubator stakeholders. Specifically, these categories suggest that managers are especially interested in the concept of incubation providing a financial return to government while board members indicate that their incubators have assisted their individual levels of goal achievement when new technologies are assisted.

The remaining variable which is located outside the ‘cluster’ group involves the suggestion that goals are maximised when the board operates amicably. The relatively remote location of this reference point in the perceptual ‘map’ suggests that, of the three respondent groups, managers have more interest in the successful achievement of this goal achievement factor than either board or tenant groups.

By completing a correspondence analysis, the researcher has been able to support earlier identification of well-established goal achievement factors involved in the operation of business incubators.

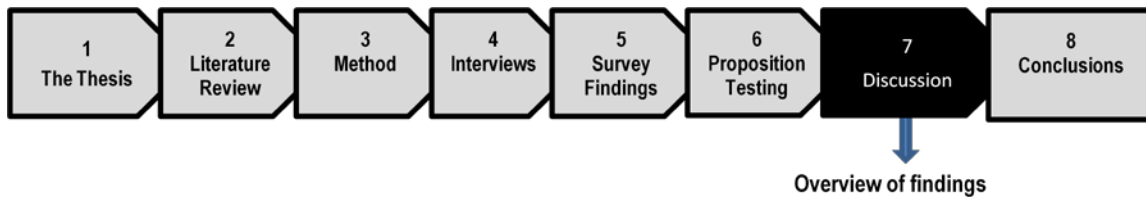
## **6.10 Conclusion**

Testable propositions, each specifying the nature of a relationship between two factors (deVaus 2002, p. 14) were developed for analysis in this chapter. The conceptual framework has (Figure 3.1) provided a picture of the processes involved in testing the propositions, drawing upon appropriate elements of stakeholder and institutional analysis, to move toward a conclusion concerning the answer to the central research question, namely, ‘are Australian incubator stakeholders satisfying their goals’?

This chapter has detailed the results of the study survey. Data received through the e-mail distribution process has been collated and analysed, using appropriate quantitative statistical analysis techniques, analysis providing the findings required to develop and round-off the discussion in Chapters 7 and 8.

## CHAPTER 7

### DISCUSSION



#### 7.1 Incubator stakeholder goal achievement as a research topic

The research study has indicated that Australian business incubator board members and managers are, in the context of the broad proportion of measures of goal achievement, attaining their goals in this sector of the economy. Conversely, tenants have expressed reservations concerning goal achievement in relation to a number of specific issues in the business incubator sector.

The literature review provided indications that the research areas known as stakeholder and institutional theory might offer potential explanations of developments in incubation. Propositions 1 and 2, while analysing the separate fields of stakeholder and institutional theory, were developed to assess the relevance of the two areas of research in contributing to the interpretation and development of this study of business incubation. Specific questions are included in the survey seeking comment on the relevance of these two ‘conceptual’ issues to respondent perceptions of incubator goal achievement.

Following the format of the conceptual framework, Propositions 3A and 3B were developed to assess whether respondents perceive that a group of hypothesised benefits impact incubator goal achievement outcomes. Proposition 3A, using binomial analysis, was designed to examine percentage data from responses to a set of questions investigating whether the theorised benefits have been apparent in their experience of incubation.

Proposition 3B examines the same set of responses using Fisher's Exact Test to determine whether there are significant differences in opinion between the two respondent groups concerning the group of incubator benefit issues.

Propositions 4A and 4B utilise the same bivariate testing processes to assess the validity of the appropriateness of an array of hypothesised goal achievement factors. These testing processes serve as the bases of the quantitative analysis which sets out, using the model as expressed in the conceptual framework, to answer the study's major research question, that is, are incubator stakeholders achieving their goals?

Chapter 6 presented an analysis which developed findings from the survey data and Chapter 7 examines the implications of these findings as they pertain to goal achievement, while arriving at a series of observations concerning the resolution of the major question - are Australian incubator stakeholders achieving their goals? This issue has been identified in the literature as a significant knowledge 'gap' in Australian business incubator research (Schaper & Lewer 2009, p. 43; Bhabra-Remedios & Cornelius 2003, pp. 13–14).

The general goal of the international business incubator movement has consistently been one of "... nurturing young businesses, especially helping them to survive and grow during the start-up period when they are most vulnerable" (Aernoudt 2004, p. 127). As business incubation has matured, it has become more and more diverse with new incubators exhibiting the various goals and expectations of their respective stakeholders, leading to the suggestion that incubation is not a generic concept.

The literature review of this study identified instances where researchers have suggested that the expanding 'goal' expectations of incubator stakeholders have not been subjected to formal analysis. The conceptual framework upon which this study is based was developed from the literature review and interview processes and led to the formulation of a series of propositions concerning the issue of stakeholder goal satisfaction in the business incubator industry. Goal satisfaction outcomes in incubation may, according to elements of the literature, be explained through an analysis of their relevance to stakeholder and institutional theories. The conceptual framework also identifies a series of hypothesised benefits, suggesting that agreement among incubation stakeholders, concerning the

relevance of these benefits, provides guidance as to the status of goal achievement outcomes in Australian business incubators.

To test the conceptual framework, stakeholders were asked to respond to a series of survey questions involving their perceptions of the importance of various incubator stakeholder goals. The accumulated findings have led to theoretical and empirical observations which form the bases for the detailed discussion set out in the following sections.

## **7.2 Implications of the findings – stakeholder theory**

Proposition 1, as expressed in the study's conceptual framework, was designed to test the relevance of stakeholder theory to the study, the proposition asserting that an 'awareness of stakeholder needs, by incubator decision makers, enhances stakeholder goal achievement'. Specific survey questions were designed to assess the relevance of stakeholder theory to the study. These questions were based upon the central elements of stakeholder theory, seeking responses concerning rankings of the perceived importance of various incubator stakeholders, issues involving treatment of various stakeholders in incubator management activities and tenant selection processes.

Stakeholder theory assumes that, to remain competitive, an organisation must actively support its stakeholders' legitimate interests (Freeman 1984, pp. 35-41). As Freeman has developed his body of stakeholder theory he has consistently emphasised the importance of involvement of a firm's stakeholders in the development of any strategic model so that the goals and direction of the business can be formulated (Freeman 1984, p. 44; Freeman, Harrison & Wicks 2007, p. 103). Elements of Freeman's programme of 'seven techniques' (Freeman, Harrison & Wicks 2007, p. 103), to better manage stakeholder relationships, were taken into consideration in designing the questionnaire.

Respondents were asked to rate their level of satisfaction (satisfied or not) with the issue the 'incubator strategic management involves all stakeholders'. There was a statistically significant difference in the level of satisfaction on this issue with management indicating a high level of satisfaction, while tenants indicated a much lower level of satisfaction. This

suggests that management feels that all stakeholders are involved in strategic management of their incubator while tenants do not. On a key stakeholder issue such as this the difference is worth noting in that the findings of the study would imply that even though management appear to support strategies that form the bases of Freeman's theoretical concepts regarding stakeholder involvement in strategic management, the reality for tenants is somewhat different.

In earlier analysis the issue of tenant selection procedures was introduced as part of the discussion concerning the testing of responses about Proposition 1. The tenant selection issue was raised on the basis that an effective tenant selection procedure is a central factor in the operation of an incubator whereby failure or division amongst stakeholders in this area has the potential to inhibit goal achievement outcomes.

The business incubation literature provides persuasive support for the concept that there should be an emphasis upon the provision of a business plan by applicants for incubator tenancy, the notion being based upon the assumption that "... there is a positive relationship between planning and business performance" (Barrow 2001, p. 179) because "... successful entrepreneurs seem to have written business plans" (Haber & Reichel 2007, p. 125). Also, the provision of a 'realistic' business plan within an application for tenancy has come to be viewed as an example of incubation best practice (Callegato, Grandi & Napier 2005, p. 10; Centre for Strategy Evaluation 2002, p. 15) in European incubators.

In this study, manager attitudes concerning the value of business plans in tenancy applications were significantly different to those of board members. Board member respondents expressed strong support for the value of a business plan while managers questioned the value of the concept. This questioning by incubator managers, of the merits of tenancy applicant business plans, goes against the 'established faith' in tenancy approval procedures in business incubators. This finding of the study appears to question the point of view which demands the preparation of a business plan as an automatic, but effective, element of becoming an incubator tenant.

This conclusion is not an isolated finding in that researchers are beginning to question the aforementioned emphasis upon the value of business plan preparation as a key element in

applications for incubator tenancy. Honig and Karlsson (2004, p. 31) argue that business planning in start-up enterprises “... is best explained as a result of isomorphism, which is created by institutional agents”. Applicants for incubator tenancy feeling, due to mimetic pressures, that they must complete a business plan to acquire tenancy rather than perceiving themselves to be preparing a formal working document which will act as an indispensable guide in the successful development of their future business.

In testing Proposition 1, the division of opinion concerning business planning represents a challenge to the validity of the proposition. Further, the issue has the potential to introduce a divisive element in board/manager relations and, in so doing, to threaten stakeholder goal achievement outcomes. This result requires re-consideration by incubator boards and managers as to which criteria should form the basis of incubator tenant screening processes. On the matter of business planning, as a tenant selection issue, the survey results do not support Proposition 1.

Although stakeholders agreed that ongoing strategic planning is a positive feature of the incubator management processes the findings indicate a significant difference of opinion concerning whether tenants actually participate in the process. Management respondents were of the opinion that tenants are involved in strategic planning and yet tenants indicate that they are not.

This issue would suggest that decisions need to be made at an incubator board level as to whether tenants should participate in strategic planning activities. Stakeholder theory indicates that the interests of all business stakeholders need to be considered in decision making processes. In a ‘closed door’ strategic planning environment, can tenant interests receive full consideration when tenant stakeholders do not appear to be active participants in long term strategic planning programmes?

An issue which, according to stakeholder theory, will influence whether all stakeholders should be treated equally, is evidenced in questions asking – ‘who are the most important members of the incubator stakeholder cohort’. One question in the study asked whether investors who own equity in the incubator are the most important stakeholders. This idea



received a markedly negative response from both management and tenant groups. This issue was investigated further by omitting the tenant respondents from the analysis so that board and manager responses to the question could be tested. The analysis has identified a statistically significant difference in stakeholder opinion on this issue. Managers indicate a significantly higher level of support, than board members, for the premise that stakeholders holding equity are an incubator's most important stakeholders.

The finding implies that decisions by incubator funding agencies seeking to appoint board representatives, as a result of their provision of equity funding, may encounter significant opposition from incumbent board members. At present, in Australian incubators, the equity issue is not a major factor but, in the event that incubators may move toward 'for profit' financial structures then the question of board representation may become a divisive issue.

This issue lacks relevance in the contemporary incubator sector because there is very little equity investment in incubation. The question was included because there is a major indication in the literature suggesting support for the introduction of equity investment in incubators involving incubator 'for-profit' corporate structures. Board members indicated a significantly lower level of support for this concept than managers, the finding having the implication that managers may perceive the stakeholder who hold the 'purse-strings', in a future 'for-profit' incubator environment, as the stakeholder who should receive a higher level of manager commitment than other stakeholders.

Another issue in the analysis of the importance of each stakeholder group concerns the suggestion that an incubator's survival is based upon the level of tenant success.

As a result the issue of tenant selection was highlighted as an area requiring detailed examination in testing Proposition 1. A series of issues identified in the literature, were included in the study as theorised factors which might influence the successful completion of the incubation tenant selection process.

In general terms, the analysis has indicated that the results of the study agree with the conclusions in the literature on stakeholder theory and that Proposition 1, with the exception of the observations concerning business planning, is supported by the findings.

### **7.3 Implications of the findings – institutional theory**

The study's conceptual framework proposes that another theoretical element is involved in incubator goal achievement outcomes. Proposition 2 contends that incubator management processes reveal patterns of institutional conformity.

Specific questions were included in the survey to test the applicability of institutional theory to the study. The questions sought input concerning management responses to a theorised 'scenario' concerning institutional pressures. Responses were cross-correlated according to respondent gender, term of involvement in incubation and level of educational attainment of respondents.

The findings for Proposition 1 gave rise to the suggestion that institutional pressures have, in the past, played an important role in the homogenisation of nascent organisations with respect, for example, to the written business plan, where applicants have traditionally been expected to provide a business plan as an element of their application for incubator tenancy. If the business plan concept is no longer perceived by incubator managers to be an essential start-up tool, can one conclude that institutional influences in the incubator sector are not as predominant as in the past? If the attitudes of managers concerning business planning are increasingly representative of all stakeholders, then change may be occurring.

Researchers involved in the study of institutional theory have pointed out that start-up businesses lack access to social networks and subsequently need to prove themselves to gain 'legitimacy'. The literature acknowledges that the nature of start-up businesses may change over time as they adopt, and adapt input from external parties in an attempt to become more viable; this process often leading to revision of stakeholder goals as the business develops (Karlsson et al. 2005, p. 2). This concept is similar to what institutional theorists call competitive isomorphism in which firms tend to become similar. This study investigates entrepreneurial goals through involvement in business incubation, which may be subject to institutional isomorphism.

Response options available to organisations confronting institutional pressures include not only conformance and resistance, but also compromise, avoidance and manipulation (Oliver 1991, p. 174). The presence of this range of choices is considered as having relevance to this study in the sense that existence of a dominant incubator financier (such as a government) may exert structuration influences upon incubator management and tenants, causing incubator projects to respond to normative, coercive and/or, mimetic pressures (Davidson, Hunter & Klofsten 2006, p. 120).

In Australia, government involvement has been evidenced through incubator funding at various levels, public funds having been provided to incubators as a form of community investment. As a result, incubators usually become dependent upon government funding. However, in the contemporary environment, the public sector, with the possible exception of a limited number of local government councils, only exhibits a minimal level of involvement in the provision of funding for the incubator sector wherein “... neither the federal nor state/territory governments have a programme to support business incubators once established” (Schaper & Lewer 2009, p. 43). The question arises – have intermittent funding streams, especially those of federal government programmes, created a form of institutional influence in the business incubation sector?

This section of the analysis only considered responses from incubator board members and managers because the issues under consideration were not relevant to tenants. Respondents were invited to ‘assume that a regulator decides to introduce new techniques in your incubator’ and to provide an indication of their ‘appropriate’ response to this circumstance, from a selection of choices involving acquiescence through to policies aimed at manipulation, in an effort to advantageously amend the regulator’s new strategy. Oliver (1991, p. 152) and Clemens and Douglas (2005, p. 1610) define this type of ‘compromise’ response involving development of placatory strategies as amended policy implementation in response to isomorphic pressure.

The question was designed to assess the legitimacy of Proposition 2 which argues that Australian business incubator management processes reveal patterns of institutional

conformity. Both respondent groups – board members and managers, indicated support for the use of compliant responses to the imposition of institutional influences in the conduct of the incubator. Responses indicate a significant preference toward compromise strategies in dealing with regulatory authorities rather than ‘aggressive’ (avoidance, defiance or manipulation) reactions.

This response pattern supports Proposition 2, the finding suggesting that attitudes amongst management respondents tend toward ‘careful’ treatment of relationships with agencies which exert potential influence over incubator stakeholders involved in the study. This question may have been interpreted as one which sought input on the best policy to be implemented in dealing with funding agencies or was viewed as requiring a general indication that the appropriate policy for both management groups in dealing with influential agencies is one of compliance rather than aggression.

Central elements of stakeholder theory suggest that incubators provide a form of institutional mediation whereby they have the potential to reconcile the various impacts of institutions on incubatees (Hacket & Dilts, 2004a, p. 43) by assisting tenants to understand and interpret the demands from institutional regulation (Bergek & Norrman 2008, p. 24). Findings from the interview stage of the study show that some incubator managers are still expected, by their boards of management to regularly prepare progress reports according to the timetable and formulae of federal government funding guidelines, as set down in the 1990s. Some of the incubator boards still send these reports to Canberra, even though any statutory requirement to complete such reports has long since lapsed.

Continuation of such reporting, coupled with the findings of the survey analysis, would suggest that incubator stakeholders are actively exhibiting institutional tendencies in their management practices. These tendencies are apparently of a normative nature as boards perceive themselves to be carrying out incubator management ‘best practice’ procedures. The result has relevance in the context of incubator management groups seeking to attain a state of institutional ‘legitimacy’. Incubator managers may gain comfort (or legitimacy) by believing that the reporting process, even if the need is no longer applicable, provides evidence that the incubator is operating by established standards. The observation serves as

an example of a mimetic policy stance in which incubator boards functioning in a 'lonely' operational environment, without any national incubation support structure, feel a need to justify their legitimacy.

Freeman argued that the term 'stakeholder' gives an indication to managers and theorists that these groups have a 'stake' in the business, denoting legitimacy. The term is especially applicable concerning the business strategies of managers in legitimising these groups and in effecting the direction of the firm (Freeman 1984, p. 46). The observation has relevance to institutional theory, whereby institutional legitimacy is a central component of theoretical analysis, which suggests that firms adapt their internal characteristics in order to conform to expectations of key stakeholders to be evaluated favourably (Ashworth, Boyne & Delbridge 2005, p. 2; Karlsson 2005, p. 40).

Proposition 2 posits that 'Australian incubator management processes reveal patterns of institutional conformity'. An analysis of survey responses suggests that the incubator sector generally operates in a manner which indicates respondent adherence to the pressures of institutional conformity.

However, the findings of the study also indicate that there are suggestions that aggressive attitudes toward isomorphic pressures are present within incubator management, particularly among university qualified stakeholders. Of the group of management respondents who indicated that they prefer to adopt aggressive (rather than compromise) responses to institutional pressures, all members of this group are university graduates.

If the educational background of incubator stakeholders should move toward an increased representation of university qualified members in the cohort, could this finding suggest that future incubator management might formulate less mimetic policies in their business decision-making processes than has been the case in the past?

With the aforementioned increase in university graduate representation in the incubator stakeholder cohort then, although the findings of the study currently support the validity of Proposition 2, any increase in university graduate representation (comprising stakeholders who appear to exhibit less acquiescent and more aggressive attitudes toward adherence to

institutional pressures), may lead to a sustained reduction in the level of isomorphic behaviour in Australian incubation.

#### **7.4 Implications of the findings – the benefits of incubation**

The third element of the study's conceptual framework involved ten theorised 'benefits of incubation' with respondents indicating their views on the accuracy of a series of assertions that the benefits promote the:

- (1) enhancement of the professional image of tenant businesses;
- (2) reduction of tenant operating costs;
- (3) shortening of the learning curve for start-up tenants;
- (4) saving of tenant expenditures on business infrastructure;
- (5) provision of a credible business address for tenants;
- (6) creation of a vibrant business environment for tenants;
- (7) increased business skills of tenants;
- (8) enhancement of the financial performance of tenant businesses;
- (9) provision of assistance for specific population groups; and
- (10) creation of export opportunities for incubatees.

The listing of incubation benefits provided above has been derived from multiple sources (Abetti 2004, p. 19; Bergek & Norrman 2008, p. 21; Callegati, Grandi & Napier 2005, p. 9; Campbell, Kendrick & Samuelson 1985, p. 45; Chan & Lau 2005, p. 1227; Haapasalo & Ekholm 2004, p. 259; Szabo 1999, p. 6) representing areas hypothesised as positive features of incubation which have received consistent emphasis in the literature.

A specific question was included in the survey which listed these ten hypothesised benefits of incubation, asking respondents to indicate whether they agree or disagree that the item represents a benefit in the operation of their incubators.

Regarding the first eight of the ten hypothesised benefits listed above the findings of the analysis of Propositions 3A and 3B produced outcomes which have the potential to influence future management strategies in Australian incubators. Analysis concerning the

final two benefits (assistance to specific groups and creation of export opportunities) indicates that both respondent groups agree that these two areas are not applicable to the contemporary incubator industry.

Proposition 3A states that ‘Business incubation fails to assist the majority of Australian incubator stakeholders in achieving their goals because it does not:’ [achieve one of the aforementioned ten ‘benefits’]. Response data for Proposition 3A is presented in a dichotomous variable format and the binomial test, expressed as a null (default) hypothesis, is the relevant analytical test (de Vaus 2002, p. 230; Siegel 2011, p. 274).

Concerning Proposition 3A, all of the findings from the first eight sets of management responses suggest that the null hypothesis should be rejected whereas only three of the eight sets of tenant responses support rejection of the proposition. In other words tenant respondents are suggesting that the only benefit, from the list offered to them, which might be considered significant in their experience of incubation are concerned with the enhancement of a professional image, a saving of money through the provision of infrastructure and the availability of a credible incubator based business address for tenants.

The list of benefits seeks to present a generic overview of incubator benefit issues. However, it is conceivable that tenants may be aware of other benefit issues which have not been identified in the literature and so have escaped scrutiny in this study.

Proposition 3B states that “Australian incubator stakeholders have similar goal achievement expectations because incubation can:” provide a range of benefits. Using Fisher’s Exact Test management and tenant responses have been tested to determine whether there is a difference in attitude between the two respondent groups concerning each ‘benefit’ issue.

The key finding from the conduct of the evaluation of Propositions 3A and 3B is that only one item was identified in the two sets of analyses to be an example of a ‘benefit’ which is supported by both respondents groups. The issue, as a perceived benefit of incubator tenancy, is concerned with the creation of a credible business address for tenants.

The findings of this section of the study suggest that incubator board members and managers can confidently advise potential tenants that their membership of an incubator provides a credible business address. The finding also suggests that incubator tenancy

offers the potential to a start-up enterprise to experience increased credibility in the eyes of the external business community. This finding adds weight to the earlier discussion concerning the relevance of institutional theory in considering the reasons why start-up business performance is enhanced by incubator tenancy.

Also, two additional elements are included in the listing of hypothesised benefits that have been identified in the contemporary literature (assistance to specific population groups and export development) as offering additional explanation for involvement in incubator tenancy (Lalkaka 2001, pp. 7-8; Albert, Bernasconi & Gaynor 2002, p. 19; Knopp 2007, p.1).

The majority of respondents from both stakeholder groups rejected the proposals regarding provision of assistance to specific populations (such as female entrepreneurs) and the concept that incubators create export opportunities. In both cases respondents from both management and tenant stakeholder groups provided a strong indication that they do not believe that these two supposed benefits are applicable to their experience of incubation.

The findings of the study suggest that the contemporary Australian business incubation sector is not following overseas trends. The abovementioned issues concerning assistance to specific groups and export development have been identified in literature concerning large incubator cohorts, especially in the USA and Europe, the concept apparently lacking relevance in the Australian environment where approximately 50 incubators are operational. The low level of interest in these programmes may also relate to the size and nature of Australia's incubator sector where incubation "... has focused on assisting the general small business community and nascent entrepreneurs ..." (Schaper & Lewer 2009, p. 42).

According to the tenets of institutional theory start-up businesses experience a need to be recognised and accepted in the broader business community, to be seen to be 'respectable'. The provision of a credible business address offers a strong indication, as suggested in the literature, that this aspect of business incubation is a worthwhile issue when a start-up enterprise considers incubation tenancy.



The tenant cohort indicates significant reservations concerning the value of almost all of the hypothesised benefits of incubation while management respondents have expressed strong support for the value of most of the identified benefits of incubation. The implication of the findings is an indication that incubator board members and managers should set out to heighten their awareness of tenant views of the benefits of incubation.

### **7.5 Implications of the findings – incubator stakeholder goals**

The next stage of the study involves an evaluation of two propositions which are concerned with stakeholder goal achievement. The goal achievement issues described in this question suggest that stakeholder goal achievement is concerned with:

- (1) an incubator becoming financially independent;
- (2) occupancy rates being high;
- (3) tenants regularly graduating;
- (4) the incubator assists local unemployment;
- (5) an incubator successfully promotes a particular technology;
- (6) incubators generating an appropriate financial return to government;
- (7) advice of incubator board members being sought;
- (8) the range of incubator services provided is fully utilised;
- (9) the board of management operating amicably and productively; and
- (10) incubator strategic management involving all stakeholders.

The survey question concerning stakeholder goal achievement outcomes sought an indication from respondents as to whether they are satisfied (or not) that they have achieved their goals (from the selection of ten hypothesised goals listed above) in business incubation. One of the 10 goal achievement issues was concerned with board members being asked if their advice is regularly sought. Responses from tenants on this matter are irrelevant because tenants do not appear as board members in Australia. To maintain consistency in the analysis, all reference to this question

has been set aside for the remainder of the study. This arrangement leaves nine goal achievement issues to be considered in the testing of Propositions 4A and 4B.

The first area of analysis of survey responses concerning these goal achievement issues examines Proposition 4A which is stated as a null hypothesis suggesting that ‘Australian business incubator stakeholders have not satisfied their goals concerning the achievement of:’ the aforementioned selection of ten goal achievement targets.

Binomial testing of survey responses suggests that both management and tenants have, to varying degrees, indicated their support for the concept that incubation contributes to local employment and, in so doing, has provided survey participants with one measure upon which both management and tenants are in general agreement. The other measure which indicates an element of unanimity in stakeholder responses to the survey is concerned with the agreement, among management and tenants, that the promotion of a particular technology is not a common theme in Australian incubation.

In considering the remaining seven issues identified above as goal achievement concerns, binomial analysis results imply that the null hypothesis for management responses can be rejected, the management group appearing to be strongly supportive of each of these seven goal achievement issues as representing the reality of their incubation experience.

However, the tenant group have generally registered significance levels which indicate that the null hypothesis cannot be rejected, suggesting that tenants are less satisfied than management respondents with their goal achievement experience about this particular set of issues.

The implication of these results from the testing of Proposition 4A is that the only positive outcome of the analysis is the observation that both groups (management and tenants) agree that incubators assist in the development of local employment opportunities.

The listing of goal achievement issues represents an attempt, based upon the literature review and the findings of a series of interviews with incubator stakeholders, to develop a generic listing of incubation goals. The indication in the study findings that management are generally satisfied with this identified series of goal achievement issues suggests that

the process could be management centric and, if so, may have overlooked other tenant goal achievement issues.

Proposition 4B suggests that incubator stakeholders achieve their goals in incubation and that both management and tenants experience similar goal achievement outcomes.

Interpretation of survey responses was supplemented by a series of 'Fisher's' tests to determine whether any statistically significant differences of opinion among various stakeholders have been identified. The application of this analysis to the survey responses to four issues (regarding occupancy rates, tenant graduations, employment support and service usage) each produced a *P* level exceeding 0.05, suggesting that both groups are basically in agreement concerning the importance of these four issues to goal achievement.

The issues which are statistically significant at the .05 *P* level describing differing interpretations regarding management and tenant goal satisfaction involved incubators achieving financial independence, the generation of an appropriate financial return on government spending on incubators, the board operating amicably and productively and incubator strategic management involving all stakeholders.

Incubator participation 'encouraging local employment creation' was supported by each stakeholder group as representing the area in which respondent goal satisfaction is being achieved. The implication of this finding, indicating a high level of goal satisfaction among all stakeholder groups, is that Australian incubators are succeeding in fulfilling traditional incubator roles in the contemporary environment. The role of incubation as a major factor in local employment creation programmes has been a consistent theme in the literature (Allen & Rahman 1985, p. 17; Brooks 1986, p. 24; Lalkaka 2001, p. 8; Wynarczyk & Raine 2005, p. 210).

The extended analysis highlighted the presence of negative perceptions about aspects of tenant goal achievement. Analysis indicates that specific groups, particularly male tenants, do not perceive particular hypothesised 'goal achievement' outcomes in relation to incubator financial independence, regular graduation of tenants and availability and utilisation of incubator services as being relevant to their businesses. These three issues

share a common 'self interest' theme in that each, in terms of the perceptions of male tenants, has the potential to impose a financial impost. It would appear that these areas of concern relate to changes in the 'status quo', which might increase the costs of incubation rather than to suggest that the issues may, in some way, represent inappropriate goals for Australian incubators. Management indicate high levels of goal satisfaction about these three issues.

Another group of goal satisfaction responses which indicate significant difference in attitude between management and tenants were concerned with internal management of incubators. For example, tenants expressed less interest in viewing incubator 'success' as evidence of an appropriate return on government spending. Once again, self-interest may have influenced tenant responses in that the question may have been perceived as an indication that governments may, at some future date, seek a financial return on funds provided to incubators. If implemented, this policy could impose a financial cost upon tenants, hence the negative response to this issue as a goal achievement factor.

The remaining 'goal achievement' issues were concerned with concepts espoused by supporters of stakeholder theory. These factors were concerned with the need for boards of management to act in an amicable manner and for strategic management decisions to be made by all stakeholders. Management respondents indicate strong levels of satisfaction with their goal achievement experiences in their incubators concerning these issues but, once again, tenants were either disinterested (low response numbers) or they disagreed with the proposal that the issues positively influence their personal goal achievement outcomes. These findings suggest that, should management choose to promote them as representing 'best incubator practice' (involving applications of stakeholder theory), the virtues of the application may need to be more efficiently promoted to tenant groups through example (by involving tenants in incubator strategic planning) or through specific marketing.

Further interpretation of the data has identified the presence of varied response levels indicating significant differences within specific stakeholder groups about particular goal achievement issues. The literature review has identified the presence of a goal achievement

environment which indicates that incubation is in a state of constant evolution so that goal achievement targets need to reflect the reality that not all stakeholders will have the same goals. This extended analysis has led to identification of these differences within the tenant cohort: each issue being the result of possible misinterpretation of questions or the goal has not been relevant to the specific interests of the tenant cohort.

One answer to these possible misinterpretation problems lies in the provision of targeted small business training. Recent American analysis identifies training in business basics as the most important training and service provision issue throughout the system (Knopp, 2006, p. 28). Training needs to be designed to meet the practical needs of start-up businesses while being available for participation by incubator tenants at appropriate times and locations and at reasonable cost. As indicated in the interview phase of this study and in the literature, business training is one of the sought after pre-eminent needs of incubator stakeholders in Australia, the USA and Europe. One planned solution to this problem is evidenced in the involvement of a number of Australian incubators as fully accredited providers of Certificate IV training courses in Small Business Management, courses being presented to internal incubator tenants and, in addition, to external small business starters.

## **7.6 Other incubator issues**

This chapter has considered the processes associated with the testing of the propositions presented, in accordance with the study's conceptual framework. Further analysis of interviews has provided additional findings that have implications for the outcomes of the study.

### **7.6.1 Incubator management reactions to operational pressures**

Findings from the study's interview process identified that Australian business incubation is in a 'delicate' condition, with respondents questioning whether the concept has a viable future.

Various expressions of concern regarding contemporary Australian business incubation were articulated by the interviewees. In summary, stakeholders are concerned about:

- the continued dependence of incubators upon rental receipts as their sole source of income;
- the expanding range of increasingly expensive services being anticipated by tenants as part of the incubator service offering; and
- the absence of a national government ‘incubator’ funding programme.

Incubator boards of management, to a limited extent, have responded to these pressures by encouraging anchor non-incubation tenants to pay commercial rates and by encouragement of honorary local input into incubator mentoring. Considering the financial impact of the issues listed above then incubator boards of management may need to be more capable of change than has been evidenced up to the present time.

Various international incubators have confronted cash flow issues by implementing a broad range of service provision initiatives. ‘Virtual’ incubation services to non-resident incubatees represent one international fund-raising strategy for incubators while using existing incubator staffing resources (Triodos 2012, p. 1). Australia’s incubator sector needs to consider the possible introduction of initiatives of this type as a means of enhancing financial survival.

#### **7.6.2 Service provision and incubator stakeholder goal satisfaction**

Recent literature has emphasised a sustained requirement for provision of a full range of support services additional to the provision of appropriate accommodation space.

Researchers have suggested that effective service provision has much to do with successful business incubation (Bergek & Norrman 2008, p. 24). In the conceptual framework the full utilisation of the range of incubator services was identified as one of the key goal achievement issues, being examined in the two sections of Proposition 4.

The findings of this study suggest that business incubator service delivery is complex in nature, changing as the incubator model develops and tenant requirements evolve. Survey responses have provided a review of services currently available to Australian incubators while also providing insights into how service provision may be adapted to meet changing

stakeholder needs. One of the survey questions presented respondents with a listing of thirteen services which had been identified in the literature review as being available in Australian and international incubators. Respondents were invited to indicate the range of services currently available and which, from the selection of thirteen services, they would like to see introduced in their incubators.

Analysis of survey responses indicates that, with the exception of three services, there is a similar level of satisfaction, among incubator management and tenants, concerning the nature of services being provided. For the remaining three services (high-speed internet, counselling/mentoring and internal networking) tenants do not necessarily demand these services, while management (particularly board members) perceive them to be very important. The implication of this finding is that if boards of management continue to seek to expand these expensive programmes while many tenants indicate that they do not want the services then such an apparent ‘impasse’ could have a negative influence on future goal achievement outcomes.

Mentoring services for tenants are perceived, according to the literature, as essential services within the typical offering of business incubators. Analysis of responses did not identify the presence of a statistically significant difference between management and tenants about this issue. Mentoring services are a major cost item in business incubators. If their ‘enforced’ provision by management results in a perception amongst tenants of wastage then the matter is relevant if management wish to optimise resource allocation decisions and to maximise their goal achievement outcomes.

Another service which is viewed as an important element in contemporary incubator service provision involves the provision of formal and informal networking services within and between incubators. Provision of this ‘service’ is often viewed as a ‘soft’ form of assistance (Chandra 2007, p. 30). In this study, tenant respondents indicate significantly differing interpretations of the importance of availability of internal networks as an element of stakeholder goal achievement. The findings suggest that management needs to take

account of this negative attitude within the tenant group before investing incubator resources in the creation and support of some form of internal networking programme.

Each of the services listed (high-speed internet, networking and mentoring), even though they are perceived to be ‘desirable’ additions to the range of incubator services, share a common element. Each service, to be provided effectively, requires a significant element of cost. Tenant opposition to the provision of such services would appear to exhibit an element of personal self interest, a factor which incubator management groups may find difficult to resist. To simply drop these three items from an incubator’s offering of services would represent an inappropriate response to the findings. As indicated in the literature and in the interview phase of this study, one of the priority needs of incubator tenants in Australia, the USA and Europe involves a need for the provision of appropriate business training. The afore-mentioned tenant negativity concerning high-speed internet facilities, mentoring and internal networking may be the result of a lack of awareness of the potential benefits and means of access to these incubator service areas. An appropriate answer to this service provision issue may be one of implementing an internal programme which convinces tenants of the importance and potential value of these services to their businesses.

If management are committing scarce resources into the provision of a service which tenants perceive to be of ‘lesser importance’, then the goal achievement outcomes of these groups may be somewhat varied in nature. Also, one issue which might influence these survey results could be the result of a bias in the type of businesses surveyed in the study. The cohort may reflect participation in the study by tenants from a specific industry sector whose response to a particular question may vary markedly from another tenant group. For example, a respondent from the metal fabrication sector would be expected to have a different attitude concerning availability of high speed internet than would be the case for an information technology tenant. The findings need to be interpreted with this reservation in mind.



Further analysis was conducted involving inclusion of all responses to the survey, grouped into input from management (board and managers) and tenants. Responses relating to business planning, benchmarking, total quality management, outsourcing of services, graduation rules, external and internal net-working, virtual incubation and mentoring assistance were similar. Thus tests of significance resulted in readings in excess of the 0.05 level for all data sets. The results suggest that management and tenants have similar supportive opinions concerning the value of these services.

### **7.6.3 Incubators and public funding**

The irony of ‘incubation’ is that incubators are usually set up as intervention tools to address market failure (Maital et al. 2008, p. 3), yet most operate as non-profit organisations and have difficulty meeting self-sustainability goals. Australian incubators, almost all of which are non-profit organisations, closely follow a pattern of dependence upon government. Output of the interviews suggests that participants do not feel that their organisations are being exposed to institutional pressures because government finance is currently minimal.

Government grant funding is vital in the early years of incubator operation. Often, a number of years may elapse before an incubator can generate sufficient income from other sources to cover operating costs (Centre For Strategy Evaluation 2002, p. 15). This study has assessed the importance of public sector funding in Australian incubators and the degree of longevity of public sector financial support for incubators has also been considered. As anticipated, responses pointed towards a high degree of unanimity supporting government funding of incubators.

Concerns about the financial pressures associated with management of incubators were a frequent element in reported conversations, especially regarding problems associated with a perceived lack of publicly derived capital funding resources for recent incubator development. Survey responses indicate a rating pattern in which federal government grants dominate the ‘most important’ category of initial capital funding provision, with municipal

council provisions playing a secondary role. The consistently important ‘arm’ of governmental support for Australian incubators is that of local or municipal government. Local councils have continued to provide both grants and ‘in-kind’ support (land, buildings, and/or services) for capital expenditure programmes but assistance is usually on a localised ‘one-off’ basis for application within a limited municipal boundary. Commitments to incubation are usually perceived by those Councils that have become involved as evidence of support for local economic development. Findings from the survey show that rental receipts dominate the recurrent funding stream for incubators. A supporting factor in this environment of sub-market rental provision involves provision of council owned land and buildings to incubators via favourable rentals or through direct change of ownership of real estate.

Local councils also perceive business incubation as a means of addressing a local government ‘planning’ problem, the issue being highlighted by a number of interviewees. Small businesses often (illegally in many local government planning environments) operate in residential areas, some of these firms creating parking, noise and general land-use planning problems. While councils today are more likely to be supportive of home based businesses, particular types of small business, such as food processors and some manufacturers, have been targeted by councils as firms which need to re-locate into incubators.

One implication of the presence of a sustained interest among some Australian councils in incubation involves the home-based small business sector. If a home-based business is perceived to create environmental problems in residential areas then a local council can ‘guide’ a business located in such an area toward the council’s ‘incubator’ project. The process usually allows for the business development needs of a recalcitrant business operator to be serviced on a ‘friendly’ basis. In this context it would appear that one of the motivations of local councils, in justifying their ongoing support of business incubation, has much to do with the self interest requirements of both councils and business operators.

#### **7.6.4 Respondent opinions and gender**

According to the major tenets of stakeholder theory, as identified in the literature review, the successful operation of enterprises can only be maximised if managers make strenuous efforts to understand the goals of their primary stakeholders (Choi & Shepherd, 2004, p. 377). Analysis of the results of the study provides indications that gender may be a factor in goal achievement outcomes concerning specific stakeholder issues.

Earlier studies of the Australian business incubator sector identified a gender ratio whereby approximately three quarters of the incubator population were male (Abduh 2003, p. 140; Gardner & Kenyon 1994, p. 3). Analysis of the data in this study indicates that contemporary female involvement in incubators is higher than earlier studies have indicated, especially in tenant businesses (44.5% are female), and, as managers (54.5%). However, the role of women as incubator board members in this study is one of minimal involvement, with only 18.2% of board members being female.

In completing the literature review a number of studies were documented which hypothesised that male and female start-up business-owners exhibit diverse goal achievement behavioural stereotypes. In summary, these issues suggest that females seek outcomes in which their management goals are concerned with the promotion of collaborative team environments. Male business start-up operators are perceived as exhibiting agentic behaviour, being independent and/or assertive in seeking to achieve their management goals. The literature review process also indicates that female business proprietors seek out experienced business owners as mentors more often than is the case for males (McGregor & Tweed 2002, p. 433).

In analysing relevant stakeholder responses the statistical analysis did not identify any suggestion of a difference of opinion between male and female respondents and so McGregor and Tweed's assertion, concerning a female emphasis upon counselling as a very important incubator service, is not supported by the findings of this study. Another aspect of the findings of the literature review was concerned with the hypothesis that

female incubator stakeholders tend to seek out involvement in networking programmes. This behavioural trend is considered to provide an indication of support for the concept that women use networking to develop collaborative team working business environments. (Tonga 2008, p. 485; Bollingtoft & Ulhoi 2005, p. 273). In the study, participants were invited to rate the importance of various incubator services. Response levels to the question were similar for male and female respondents. Subsequent analysis did not identify the presence of significant differences in gender groupings either in the aggregated data (made up of the three primary stakeholder groups) or in an examination of the responses of each stakeholder group in turn. As a result the study did not identify the presence of the impact of gender stereotypes concerning female interest in the provision of mentoring and/or networking incubation services.

Incubator financial independence was identified in the study as an important goal to almost all stakeholders. Analysis of male and female tenant responses using Fisher's test suggests that responses from the two groups of tenants (male and female) are significantly different concerning the financial independence issue. The pattern of male tenant responses was similar to that of management but female respondents indicate that they do not perceive financial independence as a major goal achievement issue. The implication of this finding suggests that incubator financial independence is an important goal for most, but not all, stakeholders. The observation may have relevance to future management policies which are concerned with activities designed to create a financially independent environment in Australian incubators.

Also, female tenants, along with almost all management respondents, indicated support for the need for boards to operate in an amicable manner. Male tenants have a significantly different view of the concept as one in which they do not perceive the issue as a major goal achievement factor. The finding provides partial identification of one of the abovementioned female 'stereotypes' as identified in the literature review, the finding suggesting that female business owners prefer collaborative business operation and team building environments (Moore, D, Moore, J.L and Moore, J 2011, p. 223; Stelter 2002, p. 92). However, the finding indicating a significant difference between male and female

tenant responses loses part of its relevance in realising that incubator management respondents (board and managers) did not display any significant difference of opinion on this issue.

Analysis also examined the question as to whether Australian incubators should be structured on a 'for-profit' basis. Survey responses suggest that management exhibit significantly different attitudes to tenants on this matter. Tenants almost unanimously disagree with the future introduction of this organisational concept to incubators, while management respondents indicate a higher level of support. The negative response from tenants could be the result of a perception that the only way in which a 'for-profit' regime can be generated would be through rental increases or service provision reduction.

However, an examination of the management responses according to 'gender', suggests that a statistically significant difference of respondent opinion is indicated within the data. Fisher's test assessment of responses from incubator management (boards and managers), identified a result which suggests that a significant difference exists between attitudes of male and female management to the 'for-profit' issue. Female members of the management cohort indicate a statistically significant level of opposition to the concept of their incubators being structured on a 'for-profit' basis, their male peers indicating ambivalence with half in favour and half against. The unanticipated response level indicating that 87.5% of female management respondents do not support the introduction of a 'for-profit' status for Australian incubators may indicate identification with female stereotypes as described in the literature review.

As discussed above, the 'for-profit' issue has major ramifications for all tenants in that its introduction involves a significant change from the status quo while only being capable of successful implementation if a significant source of recurrent funding can be accessed, probably through increased tenant rentals.

Embry, Padgett and Caldwell's (2008, p. 31) hypothesis identifies stereotypes which, if universally applicable, may influence female behaviour in fulfilling management leadership roles. One particular stereotype suggests that females, as managers, tend to act in a 'transformational' way so that being more friendly, less selfish and more expressive while

exhibiting a higher level of concern for others might be more apparent in female entrepreneurs than is the case for males in similar working environments. The introduction of 'for-profit' structures in Australian incubation (or to a specific incubator) would appear to be an issue with strong emotional connotations considering the high level of female opposition to the concept which has been identified in this study. In an environment in which female entrepreneurs are steadily increasing their representation in the Australian incubation cohort then a move toward a 'for-profit' structure is, on the basis of the findings of the study, a development which is unlikely to receive broad-based support in the near future. An implication of this significant finding, amongst management responses, suggests that the matter may experience animated debate at management level, should it be considered as a major structural change in the future operation of Australian incubators.

Also, findings suggest that financial pressures have forced incubator 'management' to relax strict graduation policies as they are forced to introduce arrangements which allow 'anchor' tenants to continue their occupancy and to 'graduate' at their own convenience. If strict adherence to formal graduation programmes were identified as a goal achievement in incubation, then the implication of this finding is that this goal is not being achieved.

Fisher's test analysis of tenant responses indicates the presence of a statistically significantly different attitude among male and female tenants toward incubator graduation. The implication, if universally applicable to Australian incubators, may indicate serious disagreement between male tenants and management regarding current incubator graduation policies. Once again, the process of tenant 'economic' self-interest may relate to male tenants exhibiting disagreement with the idea that their comfortable, subsidised and supportive incubator environment may be taken away in the event that a precise 'graduation day' is enforced.

One aspect of the literature review findings may have provided a partial answer for hypothesised 'self-interest' responses of male tenants to particular questions in the study (for example, male tenant opposition to installation of high speed internet capacity or enforced graduation policies in incubators). A study of Canadian small business proprietors by Zinger, Lebrasseur, Robichaud and Riverin (2007, p. 110) has identified a tendency

amongst male entrepreneurs to emphasis economic objectives in the operation of their businesses. Cost minimisation could be included within the categorisation of ‘economic’ objectives as hypothesised in the Canadian study. However, the study also highlights a need for further research to determine the degree to which gender-based entrepreneurship truly exists.

This summation of the study’s findings, when ‘gender’ has been introduced as a variable within the analysis, indicates that change may be under way as the steadily expanding female cohort utilises its numbers to expand their level of influence in the outcomes of a range of incubator management processes. Table 7.1 provides a summary of the findings of the study concerning the various goal achievement issues which have been identified.

**Table 7.1 Goal satisfaction findings**

Stakeholder goals	Goal satisfaction issues relating to findings
My incubator achieves financial independence.	<ul style="list-style-type: none"> <li>Male tenants indicated a significant level of dissatisfaction with this goal achievement issue.</li> <li>Support from board members, managers and female tenants.</li> </ul>
Occupancy levels are high.	<ul style="list-style-type: none"> <li>High levels of support as a goal achievement issue from all stakeholder groups.</li> </ul>
Tenants regularly graduate.	<ul style="list-style-type: none"> <li>Private board members were supporters of graduation policies, representative board members ambivalent and male tenants were not satisfied with this goal.</li> <li>Other stakeholders indicated support.</li> </ul>
My incubator assists local employment.	<ul style="list-style-type: none"> <li>Support as a goal achievement issue from all stakeholder groups.</li> </ul>
The incubator promotes a particular technology.	<ul style="list-style-type: none"> <li>Dissatisfaction from all three groups of stakeholders.</li> </ul>
My incubator has generated an appropriate financial return to government?	<ul style="list-style-type: none"> <li>Managers saw this issue as a high priority goal, board stakeholders less interested.</li> <li>Tenants significantly dissatisfied.</li> </ul>
The advice of board members is always sought.	<ul style="list-style-type: none"> <li>Board and manager respondents supported this concept. The issue did not apply to tenants.</li> </ul>
The range of incubation services is fully utilised.	<ul style="list-style-type: none"> <li>Board and most male managers indicated goal satisfaction but tenants were ambivalent.</li> <li>Female managers indicated dissatisfaction with this issue.</li> </ul>
The Board operates amicably and productively.	<ul style="list-style-type: none"> <li>A significant proportion of male tenants were not satisfied with this issue as a goal.</li> <li>Support from board members and managers.</li> </ul>
Incubator strategic management involves all stakeholders.	<ul style="list-style-type: none"> <li>Tenants were not satisfied that this goal had been achieved.</li> <li>A significant proportion of inexperienced (involved less than ten years) board members were not satisfied that they had achieved this goal.</li> </ul>



## **7.7 Stakeholder goal achievement**

A shortcoming of the incubation literature is that it lacks specific reference to the unique goal achievement motivations of each of the primary stakeholders involved in incubation, 'goal achievement' usually being expressed in general terms, viewing each primary stakeholder group as an entity.

One of the pioneering incubation research studies asserts that "... the universal purpose of an incubator is to increase the chance of a firm surviving its formative years" (Allen & Rahman 1985, p. 12), this concept being evidenced in the creation and development of the Australian incubation industry since the early 1980s. Australian business incubation has continued to seek to achieve this 'ideal' concerning start-up business survival to the extent that its evolution has been adapted, predominantly since 2000, to include service facilities which "... mobilise information, communications and technology based ventures, increasingly relying on intangible assets and services ..." (Callegato, Grandi & Napier 2005, p. 9; Schaper & Lewer 2009, p. 40) for an increasingly diverse range of tenants.

Initially, in the evolution of business incubators, governments became involved to promote economic development and employment policies and to meet the needs of business infrastructure community groups anticipating cultural change (Lalkaka 2001, p. 5). Mian (1996, p. 194) amended the incubator goal achievement research paradigm by arguing that incubators identify objectives differently, depending upon the interests of stakeholders, or they have different priorities within the same basic goals. As indicated in the literature, incubators have three groups of primary or definitional stakeholders including board members, incubator managers and tenants, each group exhibiting unique goals (Freeman, Harrison & Wicks 2007, p. 81).

### **7.7.1 Board member goals**

Local business incubators have usually been initiated by a municipality, regional economic development organisation, a community group or, typically, a coalition of all of these bodies. Responsibility for the operation of the incubators is customarily vested in a broad-

based management board usually being an independent voluntary body. The legal structure of these incubators generally embodies a 'not-for-profit' management arrangement, tenant fees being levied on an 'operating cost recovery' basis (Schaper and Lewer 2009, pp. 40-43). Appointments to incubator boards seek to include successful business and industry leaders, the expectation being that these appointees (described in this section of the study as 'private' board members) will bring specialised knowledge and skills and personal commitment to the incubator organisation. Board members representing another organisation were described as 'representative' members in this section of the study. This management arrangement meets the best practice standards identified in the European Union 'best practice study' recommendations (Centre for Strategy Evaluation, 2002, p. 15).

It would be anticipated that board members would be satisfied with their goal attainment experience since they make the decisions on the choice of incubator services available to tenants. Analysis of responses to the ten goal achievement questions from the representative and private groups indicates that both categories of board members indicate satisfaction with their level of incubator goal attainment.

Also, in the multivariate analysis, one of the outlying stakeholder goals is concerned with the level of interest of board members in using incubators to support new technologies. In the international incubator environment a major growth area is concerned with the creation of specific purpose incubators with accommodation often being provided exclusively to tenants involved in specific high technology growth and/or export oriented technologies (Clark 2008, p.2; Michaeloudes 2006, p.1). This finding may be an indicator of an awareness in the board cohort of an increased emphasis on this goal achievement issue in the international environment with implications in future board decision making processes, possibly supporting the development of more specialised technology oriented incubators in the local environment than is the case at present.

The findings of this section of the analysis suggest that board members are generally in agreement that their goal achievement intentions are being satisfied.

Responses from the board member cohort did not offer any additional opportunity for further analysis, especially concerning the relevance of cross-correlation analysis of

responses on the basis of gender. Only four of the 22 board respondents are female and so the dimension of the female element within the board cohort made further analysis inappropriate concerning the issue of gender within this group.

### **7.7.2 Incubator manager goals**

Manager 'goal achievement' responses are markedly different from those provided by board members and tenants in one unique respect, the issue being concerned with the generation of an appropriate financial return on government spending.

As indicated in the literature, the international pattern of incubator start-up funding provision usually involves varying degrees of government support (Abetti 2004, p. 10; Chandra 2007, p. 6; Barrow 2001, p.5). Historically, Australian incubation closely matches this arrangement with funds being provided from local, state and/or national governments on a limited basis in terms of nature and duration (Schaper & Lewer 2009, p. 42). However, business incubator government funding programmes are not available in Australia at present and yet any opportunity to access any major increase in funding would be expected to come from a public funding source.

The maintenance of an external image that an appropriate return on government spending on incubation is being generated appears to be the major goal for incubator managers involved in this study. Although government funding was provided to incubators in the past, the process of supplying regular reports to government concerning these 'investments' is still an operational reality in many incubators. In the interview stage of the study a small number of interviewees indicated that they still send annual reports to the Federal government even though the requirement to do so is no longer applicable.

This motivation could stem from an expectation that governments may re-enter the incubator funding area and that each existing incubator needs to have its 'house in order', in terms of the maintenance of an appearance that public funds have been utilised effectively. Or, interest in this 'government investment' issue may be a legacy of the era of significant government funding whereby isomorphic institutional pressures still play a role by influencing incubator management practices.

### **7.7.3 Incubator tenant goals**

A key finding of the study indicates that, for the tenant cohort, the only goal with full agreement is satisfied when a respondent's incubator succeeds in assisting local employment.

The multivariate component of the analysis provides a clear indication that, of the range of hypothesised stakeholder goal achievement motivations discussed, local employment creation stands out as one which is an identified goal of all three stakeholder groups. However, to the tenant cohort it is identified as the primary means of meeting the self interested motivations of incubator tenants, irrespective of the fact that tenant stakeholders typically represent a disparate group of enterprises with diverse goals.

Associated goals, such as full utilisation of incubator services or the achievement of high incubator occupancy rates, not unexpectedly, are of secondary interest to tenants having more to do with those stakeholders who are responsible for the management of the incubator. This aspect of the analysis, whereby tenant interest in the broader range of identified goal achievement issues is minimal, may be an indicator of the aforementioned suggestion that tenant goal issues could have been overlooked in the development of the list of issues, suggesting the presence of a management centric bias in the choice of goal achievement issues.

## **7.8 Summary**

The literature review examines a range of issues which provide an overview of the nature and the challenges confronting research in business incubation. Stakeholder and institutional theories emerged as potential explanations of developments in the contemporary incubator sector.

Four general propositions were included within the study's conceptual framework to guide a detailed study of goal achievement outcomes for Australian business incubator stakeholders.

Proposition 1 asserts that an increased awareness of stakeholder issues will enhance goal achievement. Testing of survey responses to questions considering this proposition suggest that Proposition 1 is accepted in general, that incubator stakeholders have similar goal achievement expectations supporting the proposition.

However, although the incubator environment recognises business planning as an important element in tenant selection the two management groups in this study appear to exhibit significantly diverse opinions on the importance of this business development concept. Board members participating in the study were generally supportive of the relevance of business planning by tenancy applicants but manager respondents indicated the presence of a statistically significant negative attitude toward the requirement.

Proposition 2 contends that incubator management processes, as identified in the literature, will consistently reveal patterns of institutional isomorphism. Study findings, with one exception, support this proposition, suggesting that most incubator stakeholders when confronted with institutional pressures will choose isomorphic compromise strategies as they endeavour to gain 'acceptance' as business operators. However, a significant proportion of incubator managers with university qualifications indicate a preference to adopt aggressive responses toward such isomorphic pressures.

The third set of propositions embodied an examination of a range of ten hypothesised benefits of incubation. Respondents from the management cohort generally indicated agreement that most of the identified benefits of incubation represent an accurate expression of the positive features of the involvement of start-up enterprises in incubation. However, analysis identified a lack of support among the tenant group for the relevance of specific items as benefits of incubation. This suggests that the findings of the study indicate partial support for Propositions 3A and 3B. In testing Propositions 3A and 3B only one item was identified as a 'benefit' by both management and tenant respondent groups. The issue is concerned with incubator tenancy creating a credible business address for incubatees.

The fourth proposition involved examination of a listing of hypothesised 'goal satisfaction' issues. As indicated in the study interviews and in the literature review, local employment

creation emerged in this study as the consistent theme for management and tenant stakeholders in justifying endeavours to promote business incubators.

As indicated in the interview phase of this study and in the literature, one of the priority needs of incubator tenants in Australia, the USA and Europe involves a need for the provision of business training. Tenant negativity concerning the three aforementioned services (high speed internet, mentoring and internal networking) may be the result of a lack of an awareness of the potential benefits of the three services. An appropriate answer to this service provision issue may simply be evidenced in the implementation of appropriate training programmes for incubator tenants.

Alternatively, these findings may be providing an indication of the diverse nature of the tenant cohort whereby the study sample may be biased. The tenant cohort may include an over-representation of business owners who do not believe that they need internet, networking or mentoring services and would prefer to do without (and not pay for) for them.

Further results of the study suggest that gender may be a factor in goal achievement outcomes concerning specific stakeholder issues. The findings of this study indicate that female managers strongly reject the introduction of a 'for-profit' structure into Australian incubation. According to a number of suggestions from the literature, female entrepreneurship is the fastest growing element of Australian small business, and subsequently, the incubator sector. Should this increased representation of females into incubator management structures occur then the 'for-profit' concept may encounter significant opposition to its future implementation.

This finding where gender has been introduced as a variable within the analysis indicates that change may be under way as female incubator participants expand their proportional representation in business incubation.

The study has shown that the tenant cohort includes a disparate group of business proprietors who operate a diverse range of businesses, these organisations and individuals

anticipating multiple goal expectations emanating from their involvement in business incubation.

## 7.9 Conclusion

Content of this chapter considers the implications of the findings of the study, these findings being based upon the initial qualitative stage of the study and the subsequent quantitative analysis. The consistent theme, in terms of positive stakeholder goal achievement, is evidenced in a strong belief amongst each stakeholder group that business incubation has a significant impact upon local employment creation and support.

The study has presented a range of findings which have relevance to the realms of incubator policy and practice, offering ‘food for thought’ for both primary and secondary stakeholders. The issues of interest are:

- A suggestion, based upon the tenets of stakeholder theory, that, in an endeavour to become more aware of the concerns of their tenants, incubator management should actively involve tenants in the processes of strategic planning for their incubators;
- That boards of management and managers should clarify their attitudes concerning the relevance of whether there should be requirements, at the application for tenancy stage, for the provision of a business plan from potential tenants as compared with the use of business planning throughout the tenancies of incubatees;
- A suggestion that patterns of institutional conformity exist in Australian business incubation amongst the overall cohort. However, within the university educated management group, there are indications of aggressive pressures seeking to resist the identified isomorphic trend. The observation has implications concerning future membership structures of Australian incubators and incubator policy development;
- A need for a new business starter, according to institutional theory, to be seen to be ‘legitimate’. The results of the analysis of survey responses has suggested that the only hypothesised ‘benefit’ of business incubator tenancy for all three groups of primary stakeholders is the belief incubators provide tenants with a credible

address. If ‘respectability’ is the only agreed ‘benefit’ of incubation then what of the relevance of efforts made to introduce other ‘benefits’ identified in the study;

- The consistent theme, in terms of positive stakeholder goal achievement, is evidenced in a strong belief amongst each stakeholder group that business incubation has a significant impact upon local employment creation and support;
- Local Councils have been involved in business incubation from the development of the first incubators in the 1980s. Council assistance is often provided in the provision of unused, often dilapidated, buildings and/or land. The findings of the qualitative analysis suggest that Council interest in incubation is often concerned with a desire to encourage small business start-ups and to create employment by assisting in the provision of accommodation for non-compliant home-based small businesses;
- That the introduction of the variable ‘gender’ into the analysis resulted in findings indicating that theoretical gender ‘stereotypes’ are not generally matched in terms of female responses to the survey; and
- The issue of personal ‘self interest’ may have played a major role in tenant responses to particular survey questions.

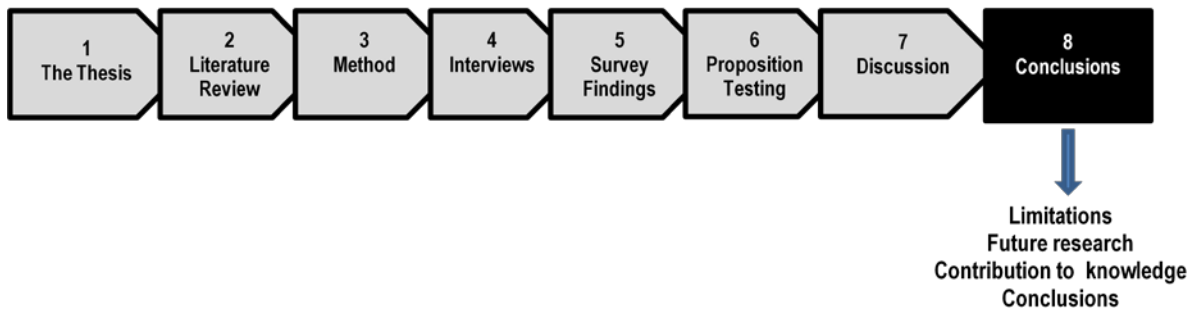
The study has provided an indication that incubator board member and manager stakeholders are generally achieving their goals. However, tenant respondents, possibly due to the differing goals and composition of the tenant cohort, indicate that their goal achievement expectations are not being realised.

Chapter 8 concludes the study.



## CHAPTER 8

### CONCLUSIONS



#### 8.1 Introduction

Chapter 8 is the final chapter of the study, providing a summary of the findings relating to incubator stakeholder goal achievement in Australia. This chapter also includes discussion on the limitations of the study and its contribution to the field of knowledge, whilst offering suggestions about future research.

This study has investigated a perceived ‘knowledge gap’ in business incubator research. As indicated, the extant literature has failed to consider the goals, benefits and costs accruing to or being borne by, the full range of incubator stakeholders. Analysis has tended to examine issues relating to incubator managers and tenants while ignoring the significant contributions to incubator development (provided on an honorary basis) of members of management boards.

Business incubators have been described as “... a fertile place to breed businesses” (VanDerWerf & Blumenstyk 2001, p. 1). Their main objective has been and remains “... to nurture entrepreneurial start-ups, that will grow rapidly, create wealth and employment and contribute to local and regional economic development” (Abetti 2004, p. 19). This statement is a typical summation of the basic functions of business incubation. However, it fails to identify an essential dichotomy relating to the goals of incubator sponsors.

Managers operate their incubators as self-sustaining businesses, and yet their sponsoring stakeholders usually see an incubator as a ‘not-for-profit’ organisation, with social objectives in which the incubator cannot operate as a typical profit-oriented business would do.

Mian (1996, p. 194) argued that incubators articulate objectives differently, depending upon their sponsor’s interests, or at least make different priorities within the same basic goals. Considering the validity of this observation, this research articulates and analyses the goal achievement ambitions of three groups of incubator stakeholders (board members, managers and tenants). The findings of the study suggest that business incubator management (board members and managers) are satisfied that they are attaining their goals. Tenants have indicated concerns about a group of factors which they consider have impinged upon full achievement of their goal achievement ambitions, these issues requiring full recognition of the diverse goals and nature of the tenant cohort.

Analysis has considered goal achievement validity across a broad range of independent variables, while determining whether stakeholder and institutional theoretical elements are relevant to the study, and whether these theoretical concepts will influence future Australian business incubator goal achievement.

## **8.2 Major elements of the study**

Chapter 1 identifies the essential arguments upon which the study is based, the research project relating to the existence of an identified business incubator industry research ‘knowledge gap’.

Considering the emphasis on goal achievement, the literature review examined the issue in the Australian and international contexts. Early analysis in Chapter 2 detailed the range of literature considered to be of relevance to this research. Goal attainment, in very broad terms, is propositioned by various observers as dependent upon the stage of development of participating incubator projects, timing of incubator establishment (1990s or later) and motivations of sponsors (private and public). The literature presents a viewpoint that the

overall aim of most business incubation projects has been one of maximising the business development potential of entrepreneurial talent.

Definition of the term ‘business incubator’ has engaged the attention of many researchers in this field, as evidenced in the literature review. Recent research has suggested that, considering the limited value of definitions which attempt to ‘say it all’ by creating multiple definitions, there is enhanced value in the application of brevity to this issue. In this study ‘business incubator’ is interpreted as a form of agency that has been set up to provide a nurturing environment for start-up and fledgling enterprises.

The research involved qualitative and quantitative methodology. In the first instance, a series of interviews were undertaken. These interviews provided the opportunity to acquire knowledge relating to the status of business incubation, while asking interviewees to circulate the proposed e-mail survey to other incubator stakeholders, particularly incubator board members. E-mail addresses for the full range of incubator stakeholders are not generally available, especially those of board members and tenants, and so development of a useful working relationship with managers was essential and effective.

Information derived from the interviews, along with internet sourced information, provided a qualitative data base of Australian incubation practice. This data was processed using NVivo 8 software, the software allowing the researcher to locate and retrieve coded packages from data sub-categories and types of concept material. Output from the qualitative analysis provided an essential source of data for development of the questionnaire.

Preparation of the key goal achievement and associated questions sought to take into account the range of factors associated with multiplicity of interpretation of the nature of the incubator ‘goal’ concept. Currently, as evidenced in European and American incubator sector research and policy, the language of ‘incubation’ incorporates demands for the implementation of ‘best practice’ goals to advance the industry. Due to varied interpretations of the business incubation concept, the development of ‘best practice’ guidelines is still something of a ‘work in progress’.

Having designed and tested the central research instrument, the e-mail questionnaire was forwarded to those incubator managers who had indicated, in earlier interviews, that they would circulate the survey to their internal stakeholders, the group comprising board members and tenants. The survey was circulated via e-mail contacts. The survey was set up for access to the Survey Monkey data base for a period of three months (September to November 2009) and two 'reminders' were e-mailed to all managers during that time. The 'reminder' notes thanked managers for their willingness to be involved, asking them to remind their group of stakeholders that the survey was still 'live' and that their input would be appreciated. Use of the 'reminder' process was productive and response rates increased after each reminder. A total of 77 responses were received, of which 71 were useable.

Interpretation of survey responses initially involved a descriptive investigation followed by a rigorous bivariate analysis of the non-parametric data. All of the propositions were tested, analysis being based upon percentage values of survey response levels (binomial analysis) or through the use of Fisher's test which was utilised to identify the potential presence of significant differences between survey responses in contingency tables. A series of statistically significant patterns were identified in the findings.

The literature review provided the necessary background which allowed the researcher to develop a conceptual framework, providing the foundation of the thesis. The conceptual framework illustrates the value, in a research environment, of linking academic theory with the subjective and objective realms of practical experience. Stakeholder and institutional theory are viewed as two aspects of the literature review considered to have the potential to provide valuable insights about the incubation concept. Various elements of stakeholder and institutional theory are considered by testing two propositions. This empirical investigation and ensuing analysis sought to confirm the propositions that were derived from stakeholder and institutional theory. The testing processes for Propositions 1 and 2 analyse whether theoretical concepts exhibit potential practical value in the development of the business incubator sector.

A series of propositions were developed so that quantitative analysis could be completed, the analysis for Propositions 3A and 3B assessing whether respondents perceive that a

group of benefits actually impact goal achievement outcomes. Propositions 4A and 4B were tested to assess the validity of the appropriateness of a bank of 'goal achievement' factors. These testing processes served as the bases of the quantitative analysis which answers the study's major research question. Are Australian incubator stakeholders achieving their goals?

Also, multivariate methodology was used to interpret the responses using a correspondence analysis. This technique, although it could not be utilised in proposition testing in a confirmatory context, allowed for effective analysis of multivariate categorical data responses through the depiction of survey goal achievement responses in the form of a perceptual map.

Another issue which is capable of introducing an element of bias into the study results is concerned with the type of businesses surveyed. If the responses of tenant representatives involved in the study have been derived from a specific industry sector (for example, human services or information technology) then results might not be representative of all different types of incubator tenants.

A number of factors are identified in the study as being important management goal achievement outcomes, and yet tenants expressed clear indications that the issues are not high priorities for their goal achievement. The need for management to recognise the aspirations of all stakeholders is apparent, considering that the goals of the tenant group must represent the essential justification for existence of the incubator movement.

### **8.3 Limitations of the research**

Australia's business incubator sector is currently facing a crisis in its quarter century gestation. Although the incubation concept is enjoying steady development internationally, the Australian sector appears to lack supporters at federal and state government levels, although isolated areas of support have emerged through local government involvement in the industry.

The findings of this study indicate that, for some issues, incubator stakeholders are satisfied that they have achieved their goals. However, for other issues there are significant differences in the level of achievement of goals between the various stakeholders, which would justify further research in this field. The lack of interest among tenant respondents concerning most of the identified goal issues suggests that the study may be management centric in the choice of goal achievement issues.

In conducting this research exercise a series of difficulties occurred which need to be identified for future researchers in this field. A central concern involves the need to gain access to a large sample of incubator stakeholders, especially board of management participants, preferably Australia wide. These board members are stakeholders whose time, due to their very active level of involvement in their communities, is in short supply, and researchers typically experience difficulty in accessing them. These administrators play an 'unheralded' role in incubator survival and development, partially because they have not been well represented in various studies of Australian business incubation.

Any future analysis of incubator stakeholder issues needs to develop a strategy which offers identifiable motivational factors to attract the interest, and essential input, of the board of management group, hopefully to the extent that they perceive participation in a nation-wide study as a worthwhile activity. The difficulty in gaining fully representative board member involvement in this study suggests that cautious judgement should be exercised in any generalisation of the results.

An additional unavoidable limitation involves the skewness of some variables. A list of variables showing mean, standard deviation and skewness is reported in Appendices 3.1 and 3.2. As indicated in the discussion, the sample size for this study was not large and thus non-parametric tests were utilised, being the most powerful available, providing the necessary level of statistical rigour needed to test the various propositions. In fact, the total population in the Australian incubation sector is not large and so sample size will usually represent an area of concern in research associated with this field of study. In this study the tenant cohort, in addition to being a relatively small group, is also subject to an element of

bias in its make-up because incubator tenants comprise a diverse group in terms of their business incubation goal achievement ambitions.

#### **8.4 Future research issues**

Australia's business incubator sector comprising approximately 50 active incubators, when compared with contemporary international programmes, is relatively small. A future exercise that researches similar issues in a limited number of international incubator sectors (such as New Zealand and Singapore) would provide a useful basis for examination and comparison of goal achievement concepts in the Pacific rim. Conduct of an equivalent research activity in geographically parallel areas, while using an identical survey instrument, offers the opportunity to test the validity of the findings of this Australian analysis.

Further research could extend this study by replicating the methodology and to investigate, especially, whether a more complete representation of incubator board members are achieving their goals in business incubation. Or, if funding and respondent numbers could be guaranteed, the most suitable methods for analysis of the issues concerning incubator board members might use a longitudinal 'before-and-after' incubation comparison and the control-group concept.

In this way, a further contribution could be made to the development of a more stakeholder specific research outcome.

Future research activity needs (assuming that the current funding environment remains unchanged) to take account of the expanding role of local government in supporting the establishment and ongoing development of Australia's business incubators. This study indicates that local council support is currently perceived to be the most important contemporary source of assistance to the Australian incubator industry.

One aspect of the development of the business incubation sector, which does not appear to have been the basis of critical academic attention, is concerned with the role of women in

the development of new businesses. Data indicates that women now represent an expanding proportion of incubator manager and tenant communities in Australia. And their goal achievement motives, as indicated in the survey data, are not necessarily similar to those of their male peers. In an environment in which over half of Australia's incubators are managed by women, there appears to be something of a conceptual change under way, and yet the matter has not been the subject of formal academic scrutiny. Paradoxically, female membership of incubator boards of management is still extremely low.

The findings of this study have lent support to a steadily expanding body of analysis which contends that business plans represent an over-emphasised area of business preparation. The results show that a statistically significant proportion of managers expressed the opinion that business plans receive very little attention once they have served their purpose at the selection stage of incubator tenancy. Provision of a business plan is an accepted element of new business preparation in many areas of business development. Findings from this study suggest that confidence in this business development activity may be misplaced. Any business planning role in support of start-up and ongoing business development is an area requiring further analysis. The issue, and its implications, extend beyond the scope of this study.

Results of the survey would suggest that the incubation 'not-for-profit' issue is of topical interest among contemporary incubator management groups. All of the initial interview respondents were part of 'not-for-profit' incubator organisations. Responses to the survey question (should an incubator be a 'for profit' organisation?) indicated that many board members and managers in Australian incubators would prefer a 'for-profit' model.

The literature has identified areas of research, including institutional and stakeholder theory, as representing previously unidentified components in contributing to a theoretical rationale for development of incubation. Many of the findings support prior research in these two areas of study. However, results suggest that the aforementioned areas of research require further empirical scrutiny to investigate the role of normative institutional pressures on incubator stakeholder goal achievement outcomes.



If stakeholders are to achieve their goals in being involved in business incubation then the precise nature of the cognitive, normative and regulative structures emanating from institutional influences need to be better understood.

## **8.5 Conclusions**

This thesis began by suggesting that Australia's incubation literature has not taken account of 'incubator goals, benefits and costs accruing to, or being borne, by various incubator stakeholders' (see Page 1). This assertion represented the starting point of a process culminating in an extensive pursuit of this study's central research question.

However, issues raised in the research process, especially by tenants, have identified factors which may influence future decision making processes for incubator board members and managers. A number of variables have been identified as being important management goal achievement outcomes, and yet tenants clearly express that these issues are not considered high priority goal achievement items for them. The need for incubator administrators to investigate and recognise the needs of all stakeholders is pre-eminent, considering that the goals of tenants must represent the essential justification for existence of the business incubator movement. It is to be hoped that the findings and approach used in this study will spur other researchers to further elaborate, perhaps through longitudinally oriented studies, research activity concerning the goal achievement aspirations of Australian business incubator board members.

Finally, this research has contributed to the theory of incubator development, in particular, goal attainment by Australian business incubator stakeholders. The study indicates that board members and managers are satisfied with their goal achievement experience as management stakeholders in Australian incubators. This indication of the presence of a 'comfortable' level of goal achievement among management groups belies an acceptance that Australian business incubation faces the risk of lacking strategic relevance to meet the needs of key business 'start-up' sectors of the contemporary community (Webb 2006, p. 51).

In the study of business incubation the range of theoretical questions and approaches is impressive, being limited only by the researcher's imagination and analytical tools. Therefore, in an incubator environment where only a small proportion of primary stakeholders have received minimal research attention and the remainder, the board members, have received virtually nil, then opportunities for innovative theory development and empirical analysis are substantial.

Internationally, incubators have changed over time and so has the context. So that the concept can survive and prosper, international industry planners have supported a constant, thoroughly researched awareness of the needs of all members of broad incubator 'families'. For business incubation to have a long-term future the need for well supported research models, supported by incubator stakeholders and potential sponsoring organisations, is an urgent priority. Australia's administrators should consider the introduction of internationally proven, domestically innovative, incubator development strategies. The purpose of such a programme could be one of revitalisation of the level of public support for incubation, hence the concept can regain a high level of community relevance, as was the case in the early 1990s.

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## APPENDICES

### Appendix 3.1      Summary of descriptive statistics – personal characteristics

Variables	No.	Min.	Max.	Mean	Standard deviation	Skewness	Kurtosis	Normal distribution?
Personal characteristics								
1. Gender								
Tenants	27	1	2	1.444	0.506	0.237	-2.106	No
Board	22	1	2	1.318	0.477	0.839	-1.436	No
Managers	22	1	2	1.545	0.509	-0.196	-2.168	No
Aggregated Sample	71	1	2	1.394	0.492	0.442	-1.858	No
2. Age								
Tenants	27	22.5	62.5	40.278	8.243	0.508	1.056	No
Board	22	32.5	67.5	53.864	9.535	-0.475	-0.583	Yes
Managers	22	21.5	67.5	51.818	9.673	-0.527	0.623	Yes
Aggregated Sample	71	22.5	67.5	48.273	11.009	-0.062	-0.799	Yes
3. Education								
Tenants	27	1	5	3.593	1.118	-0.696	0.390	Yes
Board	22	2	5	3.864	0.990	-0.352	-0.900	Yes
Managers	22	2	5	4.182	0.958	-0.753	-0.670	Yes
Aggregated Sample	71	1	5	3.860	1.047	-0.635	-0.104	Yes
4. Involvement								
Tenants	27	2.5	12.5	4.537	3.180	-1.343	0.832	No
Board	22	2.5	22.5	8.205	6.013	-0.577	-0.203	Yes
Managers	22	2.5	17.5	7.273	4.493	0.961	0.722	Yes
Aggregated Sample	71	2.5	22.5	6.725	4.975	-1.126	0.675	No

### Appendix 3.2 Summary of descriptive statistics – incubator features

Variables	No.	Min.	Max.	Mean	Standard deviation	Skewness	Kurtosis	Normal distribution?
Incubator features								
1. Location								
Tenants	27	1	4	3.333	1.209	-1.411	0.144	No
Board	22	1	5	3.954	1.174	-1.652	2.367	No
Managers	22	1	5	2.818	1.622	0.175	-1.656	No
Aggregated sample	71	1	5	3.366	1.396	-0.753	-0.876	Yes
2. Structures								
Tenants	19	1	3	1.158	0.501	3.525	11.190	No
Board	19	1	3	1.421	0.768	1.525	0.723	No
Managers	21	1	3	1.714	0.902	0.635	-1.518	No
Aggregated sample	59	1	3	1.441	0.772	1.370	0.145	No
3. Public funds								
Tenants	27	1	6	3.333	1.687	0.000	-1.709	No
Board	22	1	5	3.000	1.662	0.068	-1.703	No
Managers	22	1	5	3.273	1.549	-0.164	-1.430	No
Aggregated sample	71	1	6	3.211	1.621	-0.021	-1.565	No
4. 'for-profit'								
Tenants	27	1	2	1.889	0.320	-2.623	5.165	No
Board	22	1	2	1.500	0.512	0.000	-2.211	No
Managers	22	1	2	1.727	0.456	-1.097	-0.887	No
Aggregated sample	71	1	2	1.747	0.438	-1.158	-0.680	No
5. Incubator age								
Tenants	24	2	5	3.000	0.781	0.599	0.527	Yes
Board	22	2	5	2.910	0.921	0.595	-0.633	Yes
Managers	22	2	5	3.273	0.935	0.162	-0.751	Yes
Aggregated sample	68	2	5	3.059	0.879	0.427	-0.555	Yes
6. How many?								
Managers	21	1	6	2.286	1.553	1.328	1.303	No
Aggregated sample	68	1	7	2.500	1.501	1.268	1.345	No



### Appendix 3.3 Consent form for interview participants



#### **CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH**

We would like to invite you to be a part of a study designed to examine the issue of whether or not the goals and aspirations of past and present business incubator stakeholders in your community have been satisfied as a result of their involvement in the business incubation process?

The researcher will conduct a series of interviews with Australian business incubator stakeholders, the intention being to develop contacts with key business incubator sector participants and to assess their attitudes, through semi-structured interviews, to the major issues being planned for the study. The study is entitled: ***Stakeholder Goal Achievement in Australian Business Incubators.***

You have been invited to participate in the study due to your involvement with the business incubator industry in your community.

I, \_\_\_\_\_, of \_\_\_\_\_

(please indicate name of City) certify that I am at least 18 years old and that I am voluntarily giving my consent to participate in the study being conducted at Victoria University, Melbourne, Australia, by Graeme Trewartha.

I certify that the objectives of the study, together with any risks and safeguards associated with the procedures to be carried out in the research, have been fully explained to me by Mr Graeme Trewartha and that I freely consent to participation involving the below mentioned procedures. The interview will be recorded so that an accurate record of content is created and Mr Trewartha will make a written record of the interview content which he will then forward to me for my assessment that it is an accurate record of our discussions.

I certify that I have had the opportunity to have any issues answered and that I understand that I can withdraw from this study at any time and that this withdrawal will not jeopardise me in any way. I have been informed that the information I provide will be kept confidential.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Any queries about your participation in this project may be directed to the Principal Researcher, Professor Robert Clift (Phone 61 3 99194561). If you have any queries or complaints about the way you have been treated, you may contact the Secretary, Victoria University Human Research Ethics Committee, Victoria University, PO Box 14428, Melbourne, VIC, 8001 phone (03) 9919 4781.

### Appendix 3.4 Structured interview content



#### *Incubator Stakeholder Interview Content*

##### **Introduction/Background Issues**

What is your understanding of the purpose of a business incubator and how it works?

When did you first become aware of the business incubator concept? When did you first become involved with the incubator sector?

As an incubator stakeholder what role do you play in the incubator sector?

Are you involved with a specific type of incubator?

What was the original motivation for incubator establishment?

What do you see as the major benefits of business incubators – for businesses, for stakeholders?

##### **Assistance with further research**

**Can you assist the researcher in accessing contact details for past and present business incubator stakeholders in your community (Tenants, Managers, Investors, Board Members, Community members, etc)?**

##### **Goals and Objectives**

What are the goals and objectives of your involvement with the business incubator sector?

As a stakeholder has your relationship with the business incubator sector achieved the goals expected in that involvement?

Has your perception of the goals of incubators changed over the period of your involvement with this sector?

##### **Institutionalisation**

Has the incubator sector become more institutionalised?

Should government agencies provide more than financial assistance to incubators?

What are the strengths and weaknesses of this country's business incubator programmes?

What additions or changes would you like to see introduced in future development of the nation's business incubator sector?

### **Incubator Management Issues**

How should incubators be governed?

How should Board members act as applied to operation of the Incubator?

Define an active Board member.

### **Assessment of Incubator Experience**

Should incubator stakeholders expect payment for their services?

Should incubator investors expect a financial return on investment?

What specific services do you think that incubators should provide for tenants (list of three)?

Do incubators encourage entrepreneurial development?

What are the measurable criteria relating to assessment of the achievement of the business incubator sector?

\*\*\*\*\*

### Appendix 3.5

### Survey planning matrix

#### Thesis Questionnaire Matrix – June 2009

Survey issue	Proposition	Proposition	Proposition	Proposition	Stakeholder
Number/content	1	2	3	4	Goals
Issues relating to each incubator in the study	Goal achievement and stakeholder theory	Goal achievement and institutional influences	Advantages of incubator tenancy and goals	Stakeholder perceptions of degree of goal achievement	Stakeholder goal achievement
1. Involvement – type of stakeholder.	*	*	*	*	*
2. Goal satisfaction.				*	*
3. Opinions on incubator operation.			*		*
4. Why is stakeholder involved.		*		*	*
5. Who are the most important stakeholders.	*	*			*
6. Stakeholder rating.				*	*
7. Selection criteria for new tenants.					*
8. Original purpose of the incubator.				*	*
9. Current purpose of incubator.		*		*	*
10. Incubator stage development.		*	*	*	*
11. When was incubator set up.		*		*	*
12. Issues facing incubator rating.		*			*
13. Decision making processes.	*				*

Survey issue	Proposition	Proposition	Proposition	Proposition	Stakeholder
Number/content	1	2	3	4	Goals
Issues relating to each incubator in the study	Goal achievement and stakeholder theory	Goal achievement and institutional influences	Advantages of incubator tenancy and goals	Stakeholder perceptions of degree of goal achievement	Stakeholder goal achievement
14. New ideas in incubator development					*
15. Stakeholder responses to change.	*				*
16. Incubation or service availability.					*
17. Type of services					*
18. Is mentoring available.					*
19. Sources of establishment funding.		*			*
20. Should government funding be used.		*			*
21. Number of tenants in incubator.			*	*	*
22. Incubators set up 'for-profit'.	*	*			*
23. Incubator legal status.	*				*
24. Who selects new tenants.	*				*
25. Source of recurrent funds.		*			*
26. Age of respondents.	*		*	*	*
27. Education of respondents.	*		*	*	*
28. Gender of respondents.	*		*	*	*
29. Location of respondent incubators.			*	*	*
30. Date of initial involvement.	*		*	*	*

### **Appendix 3.6 Sample first reminder note to incubator managers**



**Hello .....,**

Thank you for agreeing to support the on-line business incubator stakeholder survey. Up to now the responses have been a bit slow.

In retrospect we wonder if we did not allow enough time for incubator managers to circulate the survey through their Boards of Directors, especially those who use bi-monthly Board meetings.

In order to allow for this longer lead time we have extended the closing date to October 31st, 2009.

We also ask if you can help to remind your stakeholders of the importance of the survey if they have already been distributed.

This study provides an important opportunity for research into the opinions of Australian incubator stakeholders, including members of the Board of Management, at a crucial time in the history of incubators in Australia. I am sure that you are in agreement that this is a worthwhile research exercise.

If your stakeholders do not have e-mail contacts then we can provide printed surveys to you to be forwarded to your stakeholders, especially to members of your Board of Management and tenants.

This note is accompanied by another e-mail which provides the automated contact 'button' for completion and forwarding of the e-mail survey.

**Many thanks**

**Graeme Trewartha (Researcher)**

Phone: 03 54431603

Mobile: 0408 431603

E-mail: [gtrewartha@bigpond.com](mailto:gtrewartha@bigpond.com)

Postal Address:

22 Saunders St

Golden Square

Victoria, 3555

**Professor John Breen, PhD (Associate Investigator)**

Head, Small Business Research

Centre for Tourism and

Services Research

Victoria University, Melbourne

**Professor Bob Clift , PhD (Principal Investigator)**

School of Accounting and Finance

Faculty of Business and Law

Victoria University, Melbourne

### Appendix 3.7 Sample second reminder note to incubator managers



**Hello .....,**

Thank you supporting the on-line business incubator stakeholder survey. Although response rates have improved I have decided to extend the survey closure date until late November, 2009.

Over half of the incubator managers have responded to the survey but the response rate from incubator board members has been slower than anticipated.

Once again, could you remind your stakeholders of the importance of the survey if they have already been distributed but have not responded?

In closing could I thank you for your assistance in agreeing to be a part of this research exercise?

This note is accompanied by another e-mail which provides the automated contact 'button' for completion and forwarding of the e-mail survey.

**Graeme Trewartha (Researcher)**

Phone: 03 54431603  
Mobile: 0408 431603  
E-mail: [gtrewartha@bigpond.com](mailto:gtrewartha@bigpond.com)

Postal Address:  
22 Saunders St  
Golden Square  
Victoria, 3555

## **Appendix 4.1     Sample e-mail letter of introduction to incubator stakeholders**

**Hello .....,**

Over the past few weeks I have spoken with almost all of the business incubator managers throughout Australia. It was worth the effort because you are collectively, one very committed bunch of people! At present I am circulating an e-mail survey to the full range of incubator stakeholders. Hopefully enough respondents will fill in my survey in order to generate a range of useful data.

I believe that my study will have greater value if I can involve incubator stakeholders from all areas of Australia and have been very encouraged by the high level of interest in my study among incubator managers. My request has been to ask the managers to fill in the survey and to forward the document to as many incubator stakeholders as possible for their input. All input goes into a data base in the USA and I will only see the consolidated data. Participant confidentiality is assured through this process.

I would be most appreciative if you could forward this e-mail survey to as many of your incubator stakeholders as possible (board members, mentors, tenants - anyone who is, or has been, involved in the incubator) for their potential input.

Certain questions, especially as applied to some tenants, may be hard to answer. If someone sees a question that does not suit their circumstances then they should skip that question and move on to the next one.

The survey will take approximately 20 minutes to complete.

The survey link is provided in a separate e-mail which follows this note.

**Many thanks**

**Graeme Trewartha**

**Phone: 03 54431603**

**Mobile: 0408 431603**

**E-mail: [graeme.trewartha@live.vu.edu.au](mailto:graeme.trewartha@live.vu.edu.au)**

**Postal Address:**

**22 Saunders St**

**Golden Square**

**Victoria, 3555**



## Appendix 4.2 E-mail invitation to participate in survey



**To the business incubator stakeholder,**

As a stakeholder of a business incubator you are invited to participate in this project by completing this survey.

This survey is part of a research project which sets out to answer the question - have the goals of business incubator stakeholders been satisfied? The survey assumes that all of the individuals involved in the incubator (Board, tenants, manager, etc.) are stakeholders.

This survey is hosted by a third party service known as Survey Monkey, this facility frequently being used in academic research. Your responses are completely anonymous so that your name will not be linked to your responses in any way.

**The survey takes about 20 minutes to complete, is completely voluntary and confidential and you can skip individual questions if you choose.**

The study is being conducted as part of a PhD program at Victoria University, Faculty of Business and Law, located in Melbourne, Australia. The Principal Researcher and supervisor is Professor Robert Clift, telephone number 03 99194561, e-mail address, [bob.clift@vu.edu.au](mailto:bob.clift@vu.edu.au).

If you have any queries or complaints about the way you have been treated, you may contact the Secretary, Victoria University Human Research Ethics Committee, Victoria University, P.O. Box 14428, Melbourne, Australia, 8001.

To participate in the survey, please click on the following link:

[http://www.surveymonkey.com/s.aspx?sm=tfpY4GSy5UyWQWi7UgNjJQ\\_3d\\_3d](http://www.surveymonkey.com/s.aspx?sm=tfpY4GSy5UyWQWi7UgNjJQ_3d_3d)

If you have any questions, or need assistance, then please e-mail me at [graeme.trewartha@live.vu.edu.au](mailto:graeme.trewartha@live.vu.edu.au) or contact telephone number 03 54431603.

**Thank you in advance for your time in participating in this survey.**

**Graeme Trewartha**

## **Appendix 4.3 Sample of content from a recorded interview**

### ***Incubator stakeholder interview 3***

#### **Interview participant**

A regional incubator director

#### **Location/Date**

4.30 pm to 5.50 pm, June 16 2009

The Consent form was signed and collected and Information to Participants note provided and discussed. The researcher explained the survey and the participant indicated a willingness to review the draft survey suggesting that he would revise some of the questions – researcher arranged to send a hard copy of the survey to the participant. The researcher also explained Victoria University Ethics Committee rules and expectations.

#### **Introduction/background issues**

##### ***What is your understanding of the purpose of a business incubator and how it works?***

The incubator has seven sites, the organisation being financially viable and able to fund new factories from the existing rental revenue, no external funding being utilised. The participant noted the willingness of the Federal Government (Keating) to provided funding for small business development in 1992-93, the starting point for the incubator. Noted that the entire incubator, is financially sustainable 18 years later and one element, with its group of 20 buildings, (all of which generate rental income (without any debt)) provides the cash flow which has supported the development of another six sites (including new factory construction at one site and and major refurbishment at another).

We also discussed the importance of the role of local government in initiating this project and others throughout Australia.

The interviewee defined an incubator's purpose as one of assisting people to start-up a small business, to provide accommodation then personal support (accountant, business advisor) with the sole goal of creating jobs in regional Victoria.

Success is considered to have occurred if a graduate firm leaves as a viable business – one of the hardest roles one of creating a job for selves.

***When did you first become aware of the business incubator concept? When did you first become involved with the incubator sector?***

1990 – probably not aware that the project was an incubator as such, we just wanted to build factories to create jobs. Term ‘incubator’ gained general acceptance at that time

***As an incubator stakeholder what role do you play in the incubator sector?***

The incubator is managed by a separate contractor and governed a Board of Directors. The Board did not want to have an office or buy computers, etc. and so contracted out the management of the incubator.

The incubator sites were often constructed by original tenants. The organisation built the factories, tenanted them and helped to create, though the local Area Consultative Committee, a regional incubator set up using buildings that became available as a result of the amalgamation of councils in 1998. Originally the tendering out of management services went to another firm (cheaper quote) but was regained by the present contractor in 2000 and retained since then.

***Are you involved with a specific type of incubator?***

This is a general purpose incubator with multiple sites and no staff at any of the sites, groups of building where tenants lease out a particular area and staff move around the various sites (four professional employees). At present in rental revenue is approximately \$500,000 per annum.

***What was the original motivation for incubator establishment in your community?***

Jobs, new firms, economic viability.

***What do you see as the major benefits of business incubators – for businesses, for stakeholders?***

Bringing people together with common aims – people with a business idea who may not be quite at the point where they want to embark upon all of the risks associated with developing a business.

An incubator’s staff initially acted as a sounding board, business plan (in some form). The directors have the opportunity to give back knowledge of all of the lessons, successes and general issues that they have accumulated over a lifetime – a two way thing with great

personal rewards for directors – they see businesses start-up and then graduate and move on. There have been 124 graduations since 1998 with a basic three year graduation policy – some have been longer but on the basis of a formal proposal for an extra year (maximum).

For cash flows in some sites, there are six community organisations paying commercial rents – this arrangement helps to maintain the sustainability of the overall incubator.

The organisation focuses on job creation and incubators have been a major learning curve issue with key people contributing and major relationships being developed, such as role of the local Council of the time.

### **Assistance with further research**

*Can you assist the researcher in accessing contact details for past and present business incubator stakeholders in your community (Tenants, Managers, Investors, Board Members, Community members, etc)?*

The participant provided written contact lists detailing contact material for incubator stakeholders along with a range of current background information from the incubator (six monthly government reports, newsletters, tenant handbook, current tenant listing, board membership, etc.) About 70% of the businesses have e-mail addresses.

### **Goals and objectives**

*What are the goals and objectives of your involvement with the business incubator sector?*

*As a stakeholder has your relationship with the business incubator sector achieved the goals expected in that involvement?*

The important word is stakeholder – “the partnerships make incubators work, no one stakeholder can do it”. Partnerships with local business operators and their skills, the role of local government and not having the incubator run by a bureaucracy are key issues.- “mean and lean and passionate about job creation.”

If the dollars are put in for seed funding then a Council owned asset is created immediately in the construction of the factories and the goal should be one of keeping operating costs within the revenue flow generated by the factories. The incubator cannot grow with a debt burden.

*Has your perception of the goals of incubators changed over the period of your involvement with this sector?*

No change in attitude toward incubation, newest factory generates as much interest and satisfaction as the first factories. Sheds are basic, adaptable, fifty year life-cycle, each has an office, tearoom, back yard, lift up door, concrete floor and steel sheds.

Centres have generated usage levels above 80% occupancy.

### **Institutionalisation**

#### ***Has the incubator sector become more institutionalised?***

The incubator has been able to escape this trend. The incubator had initial funding in early 1990s and again in 1998, the only responsibility in receiving these grant funds was a need to demonstrate the incubator's viability. Government's guidelines asked for a six monthly report which is still produced even though it is not expected any more. For the board and staff this the report serves as an indicator to the Board, tenants and staff as to how the incubator measures itself.

These circumstances have allowed the incubator to get on and do what they do best in a viable environment.

Equity investment – board is very conservative and risk averse. No equity investment in tenant firms. The philosophy is one of 'grab opportunities and make the most of them' - gradual and risk free policies are the key.

Development has been accelerated when tenants have asked to put in their own money to promote refurbishment.

Greenfields facilities, due to their customised nature, have been the most effective – everyone has an office, three phase power, kitchenette tea room, electric industrial dimension lift up door, capacity to expand, back yard. The resultant visual impact is very important. Also, large vehicles are able to move into and out of the facility without difficulty. This flexibility is not possible on an old re-furbished site - as a result, development is gradual.

Not institutionalised or under such an effect – independence is vital, incubators must decide their own fate.

#### ***Should government agencies provide more than financial assistance to incubators?***

The incubator provides a six-monthly report to the relevant Commonwealth Government Department although the incubator has not received any grant funding for some time – preparation and submission of the reports are seen as a useful internal management tool while providing ongoing advice to the government.

More than financial assistance is important – such as the role of the economic development unit of the local council, referrals – no direct management role for State or Federal agencies even though they have an indirect, supportive role to play. (for example, finding market opportunities overseas through a State agency or availability of spare parts). Vital indirect support of all levels of government is important because they have access to all types of resources.

***What are the strengths and weaknesses of Australia's business incubator programmes?***

Do we have a Federal program? At least all of the nation's incubators have joined to form a national organisation and there are some success stories. Being isolated has meant that they have not been limited by a lack of entrepreneurial thinking – the board is very progressive - believe that anything can be achieved and with that mentality and their own funding source then it is unstoppable.

The Board is the strength. An incubator program is needed if new communities are to be allowed to set up. They must be based upon sustainable models.

***What additions or changes would you like to see introduced in future development of the nation's business incubator sector?***

**Incubator Management Issues**

***How should incubators be governed?***

The incubator is managed by a board comprising a wide range of members with business skills and experience, these members having been involved with the business sector across the full geographic spread of the incubator. Best model.

***How should Board members act as applied to operation of the Incubator?***

The board was described as the key success factor for the incubator due to the skills of its members, their supportive attitudes along with the general level of camaraderie of the Board in its efforts to assist small business development throughout the region.

The second key success factor related to the willingness of the incubator's management group to implement the Board's policies.

***Define an active board member.***

Make policy and management implement those policies. Must be hands on and need to know what is going on in incubators – not mentors but do visit their incubators and keep in touch. Usually visit the incubator in their geographic area and they need to make sure that

all of the normal business practices are put in place in the operation of each incubator section – no subsidies, regular, quality reporting and accountable.

### **Assessment of Incubator Experience**

#### ***Should incubator stakeholders expect payment for their services?***

No – one of the reasons for success, able to source a group of business people who want to share their skills and experiences. Are highly motivated and have not joined the Board to attract a fee, done most of what they want to achieve. Bi-monthly meetings with executive meeting on alternative month. Also start at 5.30 pm, finish at 7.30 pm and then go to dinner – a social aspect and allows for further discussion, even though they only meet six times a year – value of networking. Suits the environment in which people travel over major distances.

#### ***Should incubator investors expect a financial return on investment?***

The City is the major investor, they do collect rates from the factories but fully refund all of the rental revenue. Incubation gives the City a fully maintained asset. Not keen to see private investors – like community ownership, ‘not-for-profit’ because it brings community expertise into the management structure.

#### ***What specific services do you think that incubators should provide for tenants?***

No response

#### ***Do incubators encourage entrepreneurial development?***

No response

#### ***What are the measurable criteria relating to assessment of the achievement of the business incubator sector?***

Easy in, easy out – support at the interview stage, help with the business plan, use the services of a qualified accountant on the staff of incubator and have also added a marketing person.

Entrepreneurial development is encouraged by the incubator – the incubator is not big but is practical.

\*\*\*\*\*

#### **Appendix 4.4 Summary of Australian incubator services – interview results**

- **Office equipment and services** – facsimile machine, photo-copiers (high-speed – black and white and coloured), laminator, binding machine, folding machine, shredder, word processing capability, desktop publishing capacity, phone answering service (state-of-the-art phone system), freight-forwarding capacity, parcel acceptance capacity, 8 to 5 telephone answering service, and postal distribution
- **Conference and training rooms equipment** - electronic white-board, quality seating, folding tables, digital camera, DVD video player and data projector and air-conditioning
- **Incubator office and equipment** – preferably modular, rented furniture or a bare room, high-speed ADSL internet broadband connections, multiple phone connections, a new computer for each new tenant with current business software (MYOB, firewall, anti-virus, daily back-ups), e-mail hosting, fully carpeted and air-conditioned
- **Light industrial sheds/spaces** –including an office with basic office furniture, 3-phase electricity, kitchen and bathroom, enclosed back yard for storage, mezzanine storage, concrete shed floor (heavy duty), space for truck access and egress and industrial dimension electric lift up doors
- **General support issues** – 24 hour security and access (swipe-card entry), disabled access, on-site management, close to public transport, central business district location (especially office-style incubators), free on-site car parking for tenants and clients, central kitchen and tea/coffee-making capacity, prominent signage, web-site links for tenants, potable water, professional exhibition space (such as in art/fashion orientated incubators), shower/bathroom facilities, maybe a quiet bushland setting, all spaces being flexible and capable of low-cost adaptation.



## Appendix 5.1      Best practice principles and the study

<b>AAPOR Set of best practice recommendations</b>	<b>Concepts incorporated into this research study</b>
The need to have specific goals for the survey	Goals for this study were initially stated in the conceptual framework, Chapter 3
Consider alternatives to using a survey to collect information	The alternative of individual, nation-wide face-to-face interviews was considered but was rejected due to interviewee accessibility, time, geography and cost considerations
Select samples that will represent the population studies	Every known Australian incubator was approached seeking stakeholder participation in this survey
Carefully match question wording to the concepts being measured and the population being studied	Question content consistently utilised appropriate incubator industry concepts and terminology
Pre-test questionnaires and procedures to identify problems prior to the survey	As indicated in Chapter 4, interviews were conducted and draft surveys piloted as a pre-testing and question development process
Maximise co-operation on response rates within the limits of ethical treatment of human subjects	As indicated in Chapters 3 and 4, personal contacts were developed with almost every Australian incubator, all subsequent contacts being processed using the ethical standards procedures that are scrupulously imposed by Victoria University
Use statistical analytic and reporting techniques appropriate to the data collected	As evidenced in subsequent chapters relating to data analysis and recommendations
Carefully develop and fulfil pledges of confidentiality given to respondents	Procedures regarding confidentiality were communicated to participants and maintained throughout the research exercise
Disclose all methods of the survey to permit evaluation and replication	As evidenced in a thorough documentation of thesis purposes, procedures and outcomes

(Harkness 1999, p. 127)

## Appendix 6.1 Correspondence analysis data sheet

correspondence analysis template											
title 'Business Incubators'.											
subtitle 'Key factors'.											
data list free /row column freq.											
value labels											
row											
1	'Financially independent'										
2	'Occupancy rates are high'										
3	'Tenants graduate'										
4	'Assists local employment'										
5	'Promotes a technology'										
6	'Financial return'										
7	'Services are fully utilised'										
8	'Board operates amicably'										
	'Strategic management involves										
9	all'/										
column											
1	'BOARD'										
2	'MANAGERS'										
3	'TENANTS'.										
begin data											
1	1	18				1	2	15	1	3	12
2	1	21				2	2	19	2	3	15
3	1	15				3	2	16	3	3	11
4	1	20				4	2	18	4	3	21
5	1	10				5	2	6	5	3	5
6	1	18				6	2	20	6	3	5
7	1	18				7	2	15	7	3	13
8	1	17				8	2	19	8	3	14
9	1	18				9	2	14	9	3	9
end data.											
weight by freq.											
ANACOR table = row (1,9) by column(1,3)											
/dimension=2											
/normalization=canonical											
/print table contributions scores											
/plot joint(10) ndim(all,max).											

## Appendix 6.2      Correspondence analysis inertia – each dimension

Dimension	Singular value	Inertia	Proportion explained	Proportion cumulative
1	0.16697	0.02788	0.796	0.796
2	0.08462	0.00716	0.204	1.000
Total		0.03504	1.000	1.000

### Appendix 6.3 Scores from ANACOR analysis

Goal satisfaction issues	X axis	Y axis
1. My incubator becomes financially independent	0.084	0.089
2. Occupancy rates are high	0.128	-0.024
3. Tenants regularly graduate	0.005	-0.103
4. My incubator assists local employment	0.594	0.062
5. My incubator successfully promotes a particular technology	-0.115	0.546
6. My incubator has generated an appropriate financial return on government spending	-0.721	-0.53
7. The range of incubation services provided is fully utilised	0.245	0.128
8. The board of management operates amicably and productively	0.193	-0.317
9. Incubator strategic management involves all stakeholders.	-0.21	0.048
'BOARD'	-0.284	0.294
'MANAGERS'	-0.179	-0.375
'TENANTS'	0.702	0.056

## Appendix 8.1      Copy of study questionnaire

### A SURVEY ON AUSTRALIAN BUSINESS INCUBATOR STAKEHOLDER ISSUES

TO THE INCUBATOR STAKEHOLDER,

AS INDICATED IN MY EMAIL, RESPONSES TO THIS SURVEY WILL BE ANALYSED IN A CONFIDENTIAL MANNER AND YOUR NAME WILL NOT BE LINKED TO YOUR RESPONSES IN ANY WAY.

THROUGHOUT THE SURVEY THE PHRASE 'MY INCUBATOR' REFERS TO YOUR ROLE AS AN INCUBATOR STAKEHOLDER.

THANK YOU FOR AGREEING TO COMPLETE THIS SURVEY.

GRAEME TREWARTHA

## YOUR ROLE AS AN INCUBATOR STAKEHOLDER AND YOUR GOALS

### 1. YOUR INVOLVEMENT AS A BUSINESS INCUBATOR STAKEHOLDER IS:

(Tick only one answer)

- 
- ☐ 1. As a representative of a national government
  - ☐ 2. As a representative of a state or territorial government
  - ☐ 3. As a representative of a local (municipal) council
  - ☐ 4. As a private stakeholder providing unpaid support
  - ☐ 5. As a private investor in the business incubator
  - ☐ 6. As a representative of an educational institution
  - ☐ 7. As an incubator tenant
  - ☐ 8. As a graduate incubator tenant
  - ☐ 9. As a paid business mentor for the incubator
  - ☐ 10. As an incubator manager

## 2. WHILE INVOLVED AS AN INCUBATOR STAKEHOLDER HAVE YOUR GOALS BEEN ACHIEVED?

Please rate your level of satisfaction in achieving each of the following goals.

	VERY SATISFIED	SATISFIED	MIXED FEELINGS	DIS-SATISFIED	VERY DIS-SATISFIED	DON'T KNOW
1. My Incubator becomes financially independent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Occupancy rates are high	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Tenants regularly graduate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. My Incubator assists local employment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. My Incubator successfully promotes a particular technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. My Incubator has generated an appropriate financial return on government spending	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. My advice as an Incubator board member is sought	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. The range of incubation services provided is fully utilised	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. The Board of Management operates amicably and productively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Incubator strategic management involves all stakeholders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Other (please specify below)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**3. PLEASE COMMENT ON THE FOLLOWING ELEMENTS OF THE OPERATION OF YOUR BUSINESS INCUBATOR.**

	STRONGLY AGREE	AGREE	MIXED FEELINGS	DISAGREE	STRONGLY DISAGREE	DON'T KNOW
1. It has enhanced the professional image of tenant businesses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. It has reduced tenant operating costs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. It has shortened the learning curve for start-up tenants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. It has saved money for tenants by providing business infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. It has provided a credible business address for tenants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. It provides a vibrant business environment for tenants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. It has increased the business skills of tenants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. It has enhanced the financial performance of tenant businesses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. It has assisted specific population groups (e.g. female business owners)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. It has created export opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## YOUR DECISION TO BECOME INVOLVED IN BUSINESS INCUBATION

### 4. WHY HAVE YOU BECOME INVOLVED WITH YOUR BUSINESS INCUBATOR?

Please indicate and rate your reasons for your involvement in order of importance

	MOST IMPORTANT REASON	SECOND-MOST IMPORTANT REASON	THIRD-MOST IMPORTANT REASON
1. I have lent funds to the Incubator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I represent an Incubator funding organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I own the site of the Incubator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I want to help new start-up business in the Incubator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I am the Incubator manager	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I am a tenant of the Incubator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I have been a successful business operator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Business Incubators create jobs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I donated funds to the Incubator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

**5. WHO ARE THE MOST IMPORTANT PARTNERS OR STAKEHOLDERS WHO PARTICIPATE IN THE BOARD OF MANAGEMENT OF YOUR BUSINESS INCUBATOR?**

(Tick up to four rankings of stakeholder importance)

	MOST IMPORTANT STAKEHOLDER	SECOND RANKED STAKEHOLDER	THIRD RANKED STAKEHOLDER	FOURTH RANKED STAKEHOLDER
1. National government representation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. State government representation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Municipal council representation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. University representation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Private company (for profit) representation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Private (non-profit) representation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Lending institution representation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Incubator tenant representation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Incubator management staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Representatives of a local community lobby group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If the Incubator is not operated by a Board of Management then please briefly describe the management structure below.

**6. Incubator stakeholders have been defined as "any group or individuals who can affect or are affected by the achievement of the incubator's objectives".**

**PLEASE RATE YOUR RESPONSES TO THE STATEMENTS PROVIDED.**

**Tick one item per line.**

	STRONG AGREEMENT	AGREE	MIXED FEELINGS	DISAGREE	STRONG DISAGREEMENT	Not relevant to my Incubator
1. All incubator stakeholders should be treated equally	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Incubator tenants are the most important stakeholders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The stakeholder representing the major source of incubator grant finance is the most important stakeholder	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. A stakeholder audit should regularly review the full range of incubator stakeholder issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The Board of Directors are the key incubator stakeholder group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Stakeholders who own equity in the incubator are the most important stakeholders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**7. RATE THE IMPORTANCE OF THE CRITERIA THAT YOU UTILISE IN THE SELECTION PROCESS FOR APPLICANTS FOR TENANCIES IN YOUR BUSINESS INCUBATOR.**

**(Tick one item per line)**

	VERY IMPORTANT	OF MEDIUM IMPORTANCE	OF LOW IMPORTANCE	NOT APPLICABLE
1. Availability of financing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. A sound management team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. A good business plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. A technology development and/or commercialisation opportunity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. A collaborative research opportunity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Availability of a working prototype	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="text"/>			

**8. WHEN WAS YOUR INCUBATOR FIRST ESTABLISHED?**

Please tick the approximate time period.

- 
- ☐ Before 1990
- ☐ 1991 - 1995
- ☐ 1996 - 2000
- ☐ 2001 - 2005
- ☐ 2006 - 2009

**9. WHAT WAS THE ORIGINAL PURPOSE OF YOUR INCUBATOR WHEN YOU INITIALLY BECAME INVOLVED?**

- 
- ☐ 1. A regional economic development incubator
- ☐ 2. A university technology incubator
- ☐ 3. A 'virtual' incubator (providing services outside an incubator, 'incubators without walls')
- ☐ 4. A knowledge-based technology targeted incubator
- ☐ 5. A mixture of traditional and virtual incubation
- ☐ 6. A dot.com incubator
- ☐ 7. A real-estate development incubator
- ☐ 8. A multi-purpose incubator

Other (please specify)

**10. HAS YOUR INCUBATOR CHANGED ITS PURPOSE SINCE YOU ORIGINALLY BECAME INVOLVED? WHAT IS ITS MAJOR PURPOSE NOW?**

- ☐ 1. No change
- ☐ 2. Changed to a regional economic development Incubator
- ☐ 3. Changed to a university technology Incubator
- ☐ 4. Changed to a 'virtual' Incubator (providing services outside an Incubator, 'Incubators without walls')
- ☐ 5. Changed to a knowledge-based technology targeted Incubator
- ☐ 6. Changed to a mixture of traditional and virtual Incubation
- ☐ 7. Changed to a dot.com Incubator
- ☐ 8. Changed to a real-estate development Incubator
- ☐ 9. Changed to a multi-purpose Incubator

Other (please specify)

**11. WHAT STAGE OF DEVELOPMENT HAS YOUR INCUBATOR REACHED?**

**(Tick one answer)**

- ☐ 1. Prototype (still an Idea - pre start-up)
- ☐ 2. Start-up stage (building the facility, attracting tenants, limited services being provided)
- ☐ 3. Consolidation stage (full range of tenant services, tenancies near full)
- ☐ 4. Maturation stage (tenant graduations, limited vacancies, financially strong)
- ☐ 5. Close-down stage (considering closure of the Incubator, closed down)

**12. PLEASE RATE THE SIGNIFICANCE OF THE FOLLOWING ISSUES FACING YOUR BUSINESS INCUBATOR.**

(Choose a level of importance from each row)

	VERY IMPORTANT	IMPORTANT	OF MODERATE IMPORTANCE	OF LITTLE IMPORTANCE	UNIMPORTANT	Not applicable
1. Finding appropriate candidate clients for the Incubator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Obtaining funding for Incubator development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Obtaining funding for Incubator operation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Candidate tenants have inadequate start-up financing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. There are insufficient business skills in the local community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Government regulations or paperwork	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. The international economic crisis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Concerns relating to future government Incubator funding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)						
<div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>						

## BUSINESS INCUBATOR SERVICES

### 13. WHO DECIDES WHICH SERVICES SHOULD BE PROVIDED WITHIN YOUR INCUBATOR?

(Tick one response)

- ☐ 1. A regulator (government) informs us of required changes
- ☐ 2. The Incubator's funding source asks for changes
- ☐ 3. The Incubator board of management makes policy decisions
- ☐ 4. Incubator tenants ask for specific changes
- ☐ 5. The Incubator manager makes all decisions on service provision
- ☐ 6. Don't know

Other (please specify)

**14. ANALYSIS OF THE INTERNATIONAL BUSINESS INCUBATOR ENVIRONMENT SHOWS A RANGE OF NEW IDEAS BEING INTRODUCED.**

(In column A tick the techniques currently in use in your incubator and in column B tick those you would like to see introduced)

	A - SERVICES AVAILABLE IN YOUR INCUBATOR AT PRESENT	B - SERVICES YOU WOULD LIKE TO SEE INTRODUCED TO YOUR INCUBATOR
1. Business Planning	<input type="radio"/>	<input type="radio"/>
2. Incubator equity Investment in tenant firms	<input type="radio"/>	<input type="radio"/>
3. Benchmarking programmes	<input type="radio"/>	<input type="radio"/>
4. Total Quality Management	<input type="radio"/>	<input type="radio"/>
5. Outsourcing of services (‘buying-in’ services from outside the incubator)	<input type="radio"/>	<input type="radio"/>
6. Documented tenant selection procedures applying to selection of all new tenants	<input type="radio"/>	<input type="radio"/>
7. Formal graduation rules for tenants	<input type="radio"/>	<input type="radio"/>
8. Net-working between different incubators	<input type="radio"/>	<input type="radio"/>
9. Net-working within the incubator	<input type="radio"/>	<input type="radio"/>
10. Providing incubation services to businesses that are not residents of the incubator	<input type="radio"/>	<input type="radio"/>
11. Minimum selection criteria for appointment of incubator managers	<input type="radio"/>	<input type="radio"/>
12. Incubator certification/accreditation	<input type="radio"/>	<input type="radio"/>
13. Mentoring - business management assistance	<input type="radio"/>	<input type="radio"/>
Other techniques	<div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	



**15. ASSUME THAT A REGULATOR (A GOVERNMENT) DECIDES TO INTRODUCE NEW TECHNIQUES IN YOUR INCUBATOR.**

**Which response from the list provided below is appropriate?**

**(Tick one response)**

- 
- ☐ 1. Implement the new policy without question
  - ☐ 2. Negotiate with the regulator for a mutually agreeable solution
  - ☐ 3. Partially conform, complete what you see as the major procedures for the regulator
  - ☐ 4. Ignore the requirement, business as usual
  - ☐ 5. Challenge the requirements (e.g. in the media or courts)
  - ☐ 6. Attempt to use political influence to effect the regulator

**16. WHICH DO YOU CONSIDER TO BE THE MOST IMPORTANT, AVAILABILITY OF BUSINESS INCUBATOR EQUIPMENT OR THE INCUBATION PROCESS ITSELF?**

**(Please tick one response)**

- 
- ☐ 1. Provision of equipment (business space, shared office services, computers, etc.)
  - ☐ 2. The incubation process (mentoring, networking, supportive environment, etc.)
  - ☐ 3. Both of equal importance

Comment

**17. RATE THE VARIOUS SERVICES PROVIDED BY YOUR INCUBATOR ACCORDING TO THEIR LEVEL OF IMPORTANCE.**

(Place a tick on each line)

	VERY IMPORTANT	OF MODERATE IMPORTANCE	OF LITTLE IMPORTANCE	NOT IMPORTANT	NOT PROVIDED
1. Affordable/flexible factory/office space	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Shared office services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Office equipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. A conference room facility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Shared high speed Internet access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Counselling/mentoring by Incubator manager	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Business planning assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Financial management assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Market development assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Intellectual property assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Research & development assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Assistance with product development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Assistance in procuring government grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Access to venture capital investors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Access to bank financiers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Interaction with other Incubator tenants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Making contacts with community business experts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Training & education (e.g., seminars)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. On-line business training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Help with regulatory compliance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

## YOUR BUSINESS INCUBATOR DETAILS

This set of questions seeks input concerning the nature of the incubator with which you are involved as an active stakeholder.

### 18. DOES YOUR BUSINESS INCUBATOR PROVIDE MENTORING (COUNSELLING) ASSISTANCE FOR TENANTS?

If it does can you please indicate the usual counselling approach which dominates?  
If not then tick the answer - no counselling.

- ☐ 1. Yes - counselling is usually initiated by the business tenant seeking advice applying to a particular issue
- ☐ 2. Yes - counselling is usually initiated by incubator management on an informal basis
- ☐ 3. Yes - counselling is initiated by incubator management being a regular feature of incubator support
- ☐ 4. NO - the business incubator does not provide any form of counselling or mentoring

Other (please specify)

	▲
	▼

**19. Which were the most important sources of support for SETTING UP your business incubator?**

(Rate the four most important sources)

	MOST IMPORTANT FUNDING SOURCE	2nd MOST IMPORTANT FUNDING SOURCE	3rd MOST IMPORTANT FUNDING SOURCE	4th MOST IMPORTANT FUNDING SOURCE
1. National government financial grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. State government financial grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Municipal (Local) government financial grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Availability of national or state government owned land/buildings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Availability of local council owned land/buildings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Availability of privately owned land/buildings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Government equity Investments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Venture capital equity Investments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. University/educational Institution funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Bank loans	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Private Individual financial grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Overseas Investments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. DO NOT KNOW	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

**20. SHOULD GOVERNMENT FUNDING BE APPLIED FOR BUSINESS INCUBATOR DEVELOPMENT?**

Tick one answer

- ☐ 1. Yes, but only for the initial 1 to 3 years
- ☐ 2. Yes, but only for three to six years
- ☐ 3. Yes, for six to 10 years
- ☐ 4. Yes, for up to 15 years until fully independent
- ☐ 5. Yes, on an ongoing basis, no time limit
- ☐ 6. No, this is not an appropriate area for government funding

**21. APPROXIMATELY HOW MANY BUSINESSES ARE INVOLVED WITH YOUR INCUBATOR AT PRESENT?**

- 
- ☐ 1. 0 - 5 businesses
  - ☐ 2. 6 - 10 businesses
  - ☐ 3. 11 - 15 businesses
  - ☐ 4. 16 - 20 businesses
  - ☐ 5. 21 - 30 businesses
  - ☐ 6. 31 - 40 businesses
  - ☐ 7. 41 - 50 businesses
  - ☐ 8. 51 - 70 businesses
  - ☐ 9. 71 - 100 businesses
  - ☐ 10. Over 100 businesses

**22. SHOULD BUSINESS INCUBATORS BE MANAGED ON A 'FOR PROFIT' BASIS?**

- 
- ☐ 1. Yes
  - ☐ 2. No

**23. WHAT IS THE LEGAL STATUS OF THE INCUBATOR WITH WHICH YOU ARE INVOLVED?**

(Tick one answer)

- 
- ☐ 1. A not for profit association
  - ☐ 2. A limited by guarantee incubator
  - ☐ 3. An incorporated company
  - ☐ 4. Do not know

If none of the above please comment

**24. WHO IS INVOLVED IN YOUR INCUBATOR'S SELECTION COMMITTEE IN APPROVING NEW TENANTS?**

**(Tick the box which matches your incubator's arrangements)**

- 
- ☐ 1. The Incubator manager acting alone
- ☐ 2. Manager and delegated Board of Management members
- ☐ 3. Manager and full Board of Management
- ☐ 4. Outside consultants acting with the Manager
- ☐ 5. Outside consultants acting alone
- ☐ 6. Manager and Municipal Council representatives
- ☐ 7. Manager and Incubator financier representatives

Other (please specify)

**25. WHAT ARE THE MOST IMPORTANT SOURCES OF FUNDS IN THE DAY TO DAY OPERATION OF YOUR INCUBATOR?**

(Please rate up to four major sources of funds)

	MOST IMPORTANT FUNDING SOURCE	2nd MOST IMPORTANT FUNDING SOURCE	3rd MOST IMPORTANT FUNDING SOURCE	4th MOST IMPORTANT FUNDING SOURCE
1. National government grants/contributions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. The Incubator pays minimal rentals for the use of National Government owned land and/or buildings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. State government grants/contributions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The Incubator pays minimal rentals for the use of State Government owned land and/or buildings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Municipal or regional government grants/contributions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. The Incubator pays minimal rentals for the use of Municipal Council owned land and/or buildings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Operating funds from a parent organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. University funds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Rents from clients/tenants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Fees from external clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Funds from private companies/individuals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Provision of privately owned land/buildings at minimal rentals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Loans from financial institutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. DONT KNOW	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

## ABOUT YOU

To conclude, I need to ask you a few personal questions. Of course, all of this information will be collated and analysed on a confidential basis.

### 26. WHAT IS YOUR AGE?

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- ☐ 1. Less than 20 years
- ☐ 2. 20 - 25 years
- ☐ 3. 26 - 29 years
- ☐ 4. 30 - 35 years
- ☐ 5. 36 - 39 years
- ☐ 6. 40 - 45 years
- ☐ 7. 46 - 49 years
- ☐ 8. 50 - 55 years
- ☐ 9. 56 - 59 years
- ☐ 10. 60 - 65 years
- ☐ 11. Over 65 years

### 27. WHAT IS YOUR HIGHEST LEVEL OF EDUCATIONAL ATTAINMENT?

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- ☐ 1. Did not complete secondary education
- ☐ 2. Completed secondary education
- ☐ 3. Vocational/technical qualification
- ☐ 4. University first degree
- ☐ 5. University post-graduate qualification

### 28. WHAT IS YOUR GENDER?

- ☐ 1. Male
- ☐ 2. Female



**29. WHERE IS YOUR BUSINESS INCUBATOR BASED?**

**(Tick one answer)**

- 
- ☐ 1. Singapore
  - ☐ 2. New Zealand
  - ☐ 3. Australia - New South Wales
  - ☐ 4. Australia - Queensland
  - ☐ 5. Australia - South Australia
  - ☐ 6. Australia - Tasmania
  - ☐ 7. Australia - Victoria
  - ☐ 8. Australia - Western Australia
  - ☐ 9. Australia - Australian Capital Territory
  - ☐ 10. Australia - Northern Territory

**30. APPROXIMATELY, WHEN DID YOU FIRST BECOME INVOLVED WITH YOUR BUSINESS INCUBATOR?**

- ☐ 1. DURING THE 1980'S
- ☐ 2. 1990 - 1995
- ☐ 3. 1996 - 1999
- ☐ 4. 2000 - 2005
- ☐ 5. 2006 - 2009

### That concludes the survey.

I appreciate your feedback.

Your responses will be valuable in examining the issue of business incubator stakeholder goal satisfaction.

Once again, thank you.

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