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An examination of growth stages and factors affecting the performance of business incubators: the case of Australia

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**AN EXAMINATION OF GROWTH STAGES AND FACTORS
AFFECTING THE PERFORMANCE OF BUSINESS
INCUBATORS: THE CASE OF AUSTRALIA**

A thesis submitted in fulfillment of the requirements for the award of the degree

Doctor of Philosophy

from

UNIVERSITY OF WOLLONGONG

by

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School of Accounting, Economics and Finance
2014

Certification

I, Rekha Kaur Bhabra, declare that this thesis, submitted in fulfillment of the requirements for the award of Doctor of Philosophy, in the School of Accounting, Economics and Finance, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

Rekha Kaur Bhabra
19 November 2014

Table of Contents

List of Figures	vii
List of Tables	viii
List of Abbreviations	x
Abstract	xi
Acknowledgments	xiii
Chapter 1: Introduction	1
1.1 Statement of the Problem.....	1
1.2 Research Objectives.....	3
1.3 Justification for the Study and Contributions to Research.....	4
1.4 Research Methodology	6
1.5 Organisation of the Research	8
Chapter 2: Background of the Study.....	11
2.1 Introduction.....	11
2.2 What are Business Incubators?	13
2.3 Types of Business Incubators	14
2.3.1 Government.....	15
2.3.2 University-affiliated.....	16
2.3.3 Technology	16
2.3.4 Niche or Specialised	17
2.3.5 Mixed-use	17
2.3.6 Empowerment.....	18
2.4 Historical Review and Driving Forces of Business Incubation.....	19
2.4.1 Incubators in the United States	19
2.4.2 Incubators in Europe.....	24
2.4.3 Australia.....	26
2.5 The Importance of Performance Measurement.....	30
2.6 Performance Measurement Conducted by Incubator Associations and Governments.....	35
2.6.1 Performance Measurements by the NBIA	35
2.6.2 The European Commission.....	39
2.7 What Measuring Incubation Performance Involves from the Viewpoint of Academics.....	41
2.8 Summary.....	43

Chapter 3: Literature Review.....	45
3.1 Introduction.....	45
3.2 The Small -business Incubator and Business Incubation.....	46
3.3 Classifying Different Types of Incubators.....	50
3.4 Incubator Performance Measures: A Review of Past Incubator Research	53
3.5 How Businesses Grow in Business Incubators.....	64
3.6 The Complexities of Incubator Performance Measurement	65
3.7 Developing an Incubator Performance-evaluation System.....	67
3.8 Current Performance Measurement of Business Incubators.....	69
3.9 Performance-measurement Theories	72
3.9.1 Stages-of-growth Life-cycle Theory.....	74
3.9.2 Entrepreneurship Theory - Entrepreneurial Attributes Affecting Business Growth	91
3.9.3 The Resource-based View (RBV) - Identifying Business-incubator Services Used by Entrepreneurs	95
3.9.4 Institutional Theory – An Understanding of Reporting Practices in Business Incubators	100
3.10 Summary	109
Chapter 4: Research Design and Data	111
4.1 Introduction.....	111
4.2 Research Framework	111
4.3 Research Methodology	113
4.4 Theoretical Perspectives	116
4.5 Research Questions.....	116
4.5.1 Research Question 1:	117
4.5.2 Research Question 2	121
4.5.3 Research Question 3:	124
4.5.4 Research Question 4:	127
4.6 Data	130
4.6.1 Data Collection	130
4.6.2 Selection of Interviews	131
4.6.3 Discussion of the Sample.....	133
Chapter 5: Analysis and Results	139
5.1 Introduction.....	139
5.2 Stages of Growth of Businesses Located in Incubators.....	139
5.2.1 Developing a List of Activities	139
5.2.2 Constructing the Stages.....	142
5.2.3 Stages Discussion.....	144

5.2.4 Activities Common to All Stages	148
5.2.5 Validating the Stage Model	149
5.3 Business growth and its relationship with entrepreneurs' personal attributes	153
5.3.1 Measuring Business Growth	155
5.3.2 Entrepreneurs' Personal Characteristics and Attributes	158
5.3.3 The Effects of Personal Characteristics or Attributes on Business Performance	160
5.3.4 Results and Discussion	161
5.4 The Use and Accessibility of Services	188
5.4.1 Data-base Information Services	192
5.4.2 Patenting, Trademarks, Licenses and Permit Services	193
5.4.3 Intellectual-property management	195
5.4.4 Accounting and Business Activity Statement Submissions	196
5.4.5 Legal Counseling	197
5.4.6 Networking Activities	198
5.4.7 Free Media Exposure	199
5.4.8 Presentation Skills	200
5.4.9 Marketing Intelligence/Research Services	201
5.4.10 Financial Management Services	201
5.4.11 Risk-management or Insurance Advice	202
5.4.12 Access to Government Grants	203
5.4.13 Access to Start-Up Capital and Revolving Loans	204
5.4.14 Access to Commercial Loans or Venture-capital Services	205
5.4.15 Technology Infrastructure	206
5.4.16 Connections with Suppliers and Buyers	207
5.4.17 Business Plan Development Assistance	208
5.4.18 Providing Advice on Hiring Staff and Employee Relations advice	209
5.4.19 Health and Superannuation Advice	210
5.4.20 Prototype Development and Testing Services	210
5.4.21 Marketing Assistance	211
5.4.22 Regulatory Compliance	212
5.4.23 Government Contract Procurement	213
5.4.24 Advice on Building Management Team	214
5.4.25 Investor or Strategic-partner Linkage	215
5.4.26 Advice on Overseas Trade Linkage	215
5.5 Reporting Practices in Business Incubators	217
5.5.1 Incubator Reports	219

5.5.2 Common Reporting Practices Between Incubators and Tenants	227
5.6 Summary of the Chapter	229
Chapter 6: Conclusions	233
6.1 Introduction.....	233
6.2 Summary of Findings.....	235
6.2.1 Stages-of-growth Model	235
6.2.2 Business Growth and Its Relationship with Entrepreneurs' personal attributes.....	237
6.2.3 The Use and Accessibility of Services.....	241
6.2.4 Reporting Practices in Business Incubators	243
6.3. Recommendations.....	244
6.4 Significance of This Study.....	248
6.5 Limitations	249
6.6 Future Research Directions.....	250
REFERENCES	253
APPENDICES.....	273
Appendix 1: Incubator managers questionnaire	275
Appendix 2: Incubator company questionnaire	286
Appendix 3: Descriptive data.....	296
Appendix 4: Stages of growth.....	306
Appendix 5A: Business assistance service and service providers.....	310
Appendix 5B: Cross check of service offerings	311
Appendix 5 C: Service provision in business incubators.....	320
Appendix 5 D: Business assistance services and incubators	328

List of Figures

Figure 1.1	Business Incubator Performance Evaluation Framework.....	6
Figure 3.1	Institutional Pressure in an Incubator	67
Figure 4.1	Business incubator performance framework	112
Figure 4.2	A Framework for exposing venture growth in an incubator	113
Figure 5.1	Stages of Growth Model	149
Figure 5.2	Comparison of Activities by stage	150
Figure 5.3	Stage 1 and 2 Validation	151
Figure 5.4	Stage 2 Validation	152
Figure 5.5	Stage 3 Validation	153
Figure 5.6	Distribution of growth indicators index	157
Figure 5.7	Providers of database information services	193
Figure 5.8	Providers of Patenting, trademarks, licenses and permits services	194
Figure 5.9	Providers of Intellectual Property Management service	196
Figure 5.10	Providers of Accounting/Business Activity Statements Submissions	197
Figure 5.11	Providers of Legal Counseling	198
Figure 5.12	Providers of Networking Activities	199
Figure 5.13	Providers of Free Media Exposure Service	200
Figure 5.14	Providers of Presentation Skills	200
Figure 5.15	Providers of Marketing Intelligence/Research Service	201
Figure 5.16	Providers of Financial Management Service	202
Figure 5.17	Providers of risk management of insurance advice	203
Figure 5.18	Providers of access to Government Grants	204
Figure 5.19	Providers of access to start up capital and revolving loans	205
Figure 5.20	Providers of Access to Commerce Loan or Venture Capital Services	206
Figure 5.21	Providers of Technology Infrastructure	207
Figure 5.22	Providers of connections with suppliers and buyers	208
Figure 5.23	Providers of Business Plan Development Assistance	209
Figure 5.24	Providers of Hiring Staff and employee relations advice	209
Figure 5.25	Providers of Health and superannuation advice	210
Figure 5.26	Prototype development and testing service	211
Figure 5.27	Providers of Marketing Assistance	212
Figure 5.28	Providers of Regulatory compliance	213
Figure 5.29	Providers of Government Contract Procurement	213
Figure 5.30	Providers of building management team advice	214
Figure 5.31	Providers of Investor or Strategic Partner Linkage	215
Figure 5.32	Providers of Overseas Trade Linkage	216
Figure 6.1	Stage of growth model	245

List of Tables

Table 2.1	Definition of Best Practice Issues	32
Table 2.2	Key Partners in Setting up Business Incubators	33
Table 2.3	Summary of Information Collected through SOI Surveys	36
Table 2.4	Summary of Key Incubator Performance Statistics and Suggested Benchmarks	40
Table 3.1	Stages of Growth Models	86
Table 4.1	List of 26 Business Activities—Kazanjian (1988)	119
Table 4.2	Final List of Activities	120
Table 4.3	A List of Business Assistance Services provided	126
Table 4.4	Incubator Location, Incubator Type and Tenant Participation Levels	134
Table 4.5	Incubator Type	136
Table 4.6	Years Prior to Entry	136
Table 4.7	Years in Incubator	136
Table 4.8	Type of Entity	137
Table 5.1	Kazanjian (1988) List of 26 business activities	140
Table 5.2	Excluded Activities	144
Table 5.3	Growth factors contributing to success	156
Table 5.4	Results of the performance of business incubators in the sample	157
Table 5.5	Personal Attributes	159
Table 5.6	The relationship between gender and business performance	162
Table 5.7	The relationship between gender and business performance by item	162
Table 5.8	Age analysis of the respondents	164
Table 5.9	The relationship between age and business performance	164
Table 5.10	The relationship between age and business performance by item	165
Table 5.11	Educational level of incubatees	166
Table 5.12	The relationship between level of education and business performance	167
Table 5.13	The relationship between level of education and business performance by item	168
Table 5.14	How Incubatee Learn to Manage Business Affairs	169
Table 5.15	Work experience of Incubatees	170
Table 5.16	The relationship between level of experience and business performance	171
Table 5.17	The relationship between work experience and performance by item	172
Table 5.18	The relationship between previous business ownership and performance	173
Table 5.19	The relationship between previous business ownership and performance by item	174
Table 5.20	The relationship between parental background and business performance	175
Table 5.21	The relationship between parental background and business performance by item	176
Table 5.22	The relationship between awareness of financial position and business performance	177
Table 5.23	The relationship between awareness of financial position and business performance by item	178
Table 5.24	The relationship between outgoing nature and business performance	179
Table 5.25	The relationship between outgoing nature and business performance by item	179
Table 5.26	The relationship between determination and business performance	180
Table 5.27	The relationship between determination and business performance by item	181
Table 5.28	Dissatisfaction with the previous job and business performance	182
Table 5.29	Dissatisfaction with the previous job and business performance by item	183
Table 5.30	The relationship between focus and business performance	184
Table 5.31	The relationship between focus and business performance	184
Table 5.32	The relationship between risk takers and business performance	185
Table 5.33	The relationship between risk takers and business performance	186

Table 5.34	The relationship between creativity and business performance	187
Table 5.35	The relationship between creativity and business performance by item	187
Table 5.36	Main services provided by each service provider	191
Table 5.37	Reporting practices of business incubators	219
Table 5.38	Frequency Incubator Manager Met Board	220
Table 5.39	Frequency Incubator Met Board and Sponsor Scrutiny by Incubator Type	221
Table 5.40	Incubator Reporting Practices according to Incubator Type Budgets	222
Table 5.41	Incubator Reporting Practices according to Incubator Type Financial Statements	223
Table 5.42	Incubator Reporting Practices according to Incubator Type Tenant Performance	223
Table 5.43	Incubator Reporting Practices according to Incubator Type Incubator Business Plans	224
Table 5.44	Incubator Reporting Practices according to Incubator Type Incubator Issues	224
Table 5.45	Incubator Reporting Practices according to Incubator Type Service Quality	225
Table 5.46	Incubator performance indicators	225
Table 5.47	Tenant reports that are viewed by incubator managers	228
Table 5.48	Tenant Management Reporting	229

List of Abbreviations

ACG	Allen Consulting Group
AusIndustry	Australian Government Department of Industry
ANZABI	Australian and New Zealand Association of Business Incubators
BATBIP	Benchmarking Analysis of Technology Business Incubator Performances and Practices
BEC	Business Enterprise Centre
BI	Business Incubator
BIC	Business Innovation Centres
BITS	Building on Information Technology Strengths
CDC	Control Data Corporation
CSES	Centre for Strategic and Evaluation Services
DCITA	Department of Communications, Information Technology and the Arts
DEWRSB	Department of Employment, Workplace Relations and Small Business
DIISRTE	Department of Industry, Innovation, Science, Research and Tertiary Education
DIICCSRTE	Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education
DEETYA	Department of Education, Employment, Training and Youth Affairs
EU	European Union
ICT	Information and Communication Technology
NADSME	National Agency for the Development of Small and Medium Enterprises
NBIA	National Business Incubation Association (USA)
NTBF	New Technology-Based Firms
OECD	Organisation for Economic Cooperation and Development
PM	Performance Measures
PMS	Performance Measurement Systems
RBV	Resource-Based View
ROI	Return on Investment
RPI	Rensselaer Polytechnic Institute
R&D	Research and Development
SBIP	Small Business Incubator Program
SME	Small and Medium Enterprises
SOI	State of the Business Incubation Industry
SSC	Sutherland Shire Council
SSHED	Sutherland Shire Hub for Economic Development
UTBI	University Technology Business Incubators
US	United States
UK	United Kingdom

Abstract

There has been an increased interest in examining the effectiveness of business-incubator programs due to heavy investment from public and private sectors. Given the complexities surrounding evaluating the effectiveness of incubator programs, there have been calls for an incubator-specific performance-evaluation framework. Although numerous researchers have attempted to address the issue of incubator performance, the incubation industry is still without an evaluation system. Practitioners and researchers have not reached a consensus with regard to the definition of “performance” and how it should be evaluated. There is also no consensus as to whether the focus of performance measurement should be the incubator or the individual businesses located in these incubators. Instead, incubator practitioners and researchers have focused on measuring performance based on tenants’ satisfaction with the services they receive, incubator occupancy levels, graduation and failure rates and number of jobs produced. These measures do not clarify tenant business development, which is fundamentally what an incubator’s role is. This research proposes a complete performance-evaluation framework that is based on the essence of the incubation, which is accelerating the successful development of a start-up business. This research proposes an evaluation system consisting of four monitoring components.

The first component is identifying the stages of growth. This component examines the nature of business development in the business incubator with the view of identifying the tenants’ activities and stages of growth. First, a list of 26 activities from Kazanjian 1988 stages of growth model were provided to 6 entrepreneurs from two separate incubators during a pilot study. The pilot study entrepreneurs confirmed the 26 activities and added 22 more that they had performed during their stay in the incubator. These 48 activities were then included in the surveys administered to the remaining 51 firms. The analysis of the results found that businesses located in incubators grow in a well-defined pattern. Tenants accomplish a set of activities in one stage before moving to the next. This finding therefore, will aid practitioners as well as entrepreneurs in assessing whether they accomplish the important business activities in each developmental stage.

The second component examines key personal attributes an entrepreneur needs to apply to support business development as the venture progresses from start up through its early stages of growth and towards maturity. Numerous scholars have highlighted the importance of taking entrepreneurial characteristics into account to more fully understand business decisions and their impact on firm development. Therefore this study tested the effects of entrepreneurs’ characteristics on business growth. It examined some personal characteristics of entrepreneurs - gender, age, education, previous employment experience, previous business ownership and parental background - that have been identified in entrepreneurship research as having

an impact on business performance. The analysis of the results shows that certain attributes, such as having previous business experience, having a tertiary education, being a risk-taker and being creative, can result in better business performance in an incubator. However, gender and age did not affect incubator firm performance. Therefore, by gaining an understanding of entrepreneurs' attributes, the incubator manager can better predict and manage the tools required for an entrepreneur to progress through the stages of growth in a business incubator.

The third component examines how services are delivered in a business incubator. Although this research found well-defined stages of business development, there is no distinct pattern for services needed for the corresponding stage of development. However, there is a distinction in the way services are delivered in the four types of incubators. The inputs from respondents through interviews and survey results found that the ad-hoc advice provided by incubator managers with an open-door policy – that is, allowing tenants to “come in” anytime to discuss issues as well as internal programs run by the business incubator - are extremely valuable for firm growth.

Finally, based on the premises of institutional theory, the institutional pressures of adopting reporting practices are examined at the incubator and tenant levels. The survey results did not indicate any relationship between the type of incubator and the reporting practices of individual incubatees. This research found that technology incubators had tighter performance controls than other types of incubators. They had frequent board meetings, and fostered a close relationship among all three parties: the incubator managers, their individual sponsors and their tenants. Incubator managers at technology incubators met their tenants more frequently than those in any other incubator type. Managers met regularly with sponsors and tenants regularly met with their sponsors and discussed performance. This close-knit relationship resulted in better reporting and exchange of ideas.

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Chapter 1: Introduction

1.1 Statement of the Problem

Business incubators have been gaining popularity as an important economic-development tool around the world. Despite their increasing popularity, there is still uncertainty about whether incubators are achieving their goals, and exactly what their impact is on the businesses that they house. Over the past few years, evaluating and benchmarking the performance of business incubators has emerged as the next phase in business-incubation research. Assessing the performance of business incubators emerged in the 1980s as governments began to consider them an essential tool new-business development and, ultimately the growth of local economies (Vanderstraeten & Matthyssens, 2010; Cheng & Schaeffer, 2011). As more capital was injected into business-incubator programs, governments commissioned management-consultancy firms to evaluate their performance. Early scholarly assessment efforts generally took a descriptive approach (e.g., Allen & Levine, 1986; Hisrich & Smilor, 1988; Temali & Campbell, 1984), and were subsequently criticised for lacking a rigorous conceptual and methodological foundation (Phan, Siegel & Wright 2005; Vanderstraeten & Matthyssens, 2010; Allen & McCluskey, 1990; Mian, 1997). One of the most-cited benchmarking reports is the 2002 performance evaluation of European business incubators by the European Commission (Enterprise Directorate-General). However, this report assessed incubators based on the number of jobs each incubator created. This criterion for performance evaluation is problematic when businesses at the start-up phase have limited resources to hire employees. New ventures will often try to reduce their fixed costs as they operate in conditions of uncertainty. Venture-capital investors are acutely aware of the need to control

investee firms' spending, which in practice often means delaying recruitment of full-time employees as long as possible, instead outsourcing jobs.

Benchmarking incubators against one another has been shown to be problematic, as different incubators house different types of businesses, have different focuses and are geographically scattered around the world in developed, developing or underdeveloped countries. Researchers, policy-makers, business-incubation practitioners and stakeholders have lacked a systematic approach for monitoring and evaluating the performance of business incubators across industrial sectors and geographic regions. Despite growing attention by both academics and practitioners to evaluate the performance and impact of business incubators, the existing literature continues to suffer from methodological, theoretical and empirical limitations (Lewis, 2001; Bhabra-Remedios & Cornelius, 2003).

The survival or success rates of incubated firms have been widely used to measure and compare the effectiveness of their business incubators (e.g., Allen & McCluskey, 1990; University of Michigan et al., 1997). Business incubators' overall impacts on job creation have been the most popular performance measure (e.g., Chrisman 2003; Lewis, 2002; Markley & McNamara, 1995; RESI, 2001; Sherman & Chappell, 1998). Unfortunately, no analysis has yet successfully answered the question of whether incubator assistance makes a significant difference to a firm's performance. Business incubators in different geographic locations also suffer inherent biases; for example, whether countries might provide bigger budgets to incubator programs than might poorer nations. One of the great challenges of reviewing the performance of incubators is the difficulty in comparing the many types of incubators around the world. Campbell and Temali identified four types according

to their sponsorship or ownership structure: non-profit, university-related, privately sponsored and publicly sponsored (Campbell & Temali 1990, p109).

The American National Business Incubator Association's (NBIA) attempted to develop a benchmarking framework for technology incubators, asserting that "there is inadequate information to guide those who oversee and operate technology incubators" (NBIA 2003, p.iv). Various yearly NBIA performance reports included the surveys used to collect information to develop a benchmarking system. The project surveyed for the types of services that were provided in the incubator. However, how these services were provided to the incubatees was not clearly investigated. Incubators are keen to know if services are provided by the managers themselves, incubator boards, mentors, internal courses or various other means. The method of incubator service provision is an important parameter in incubator performance evaluation and has not been addressed to date.

Pena (2004) found that there is not much empirical work examining the effects of human characteristics on business growth in business incubators. He recommended future research into the influence of human capital on business growth the using better growth measures. This current study extends previous incubator research (Pena, 2004; Rice, 2002; Mian, 1996) by focusing on the impact of a greater number of entrepreneurial traits on business growth.

1.2 Research Objectives

Given the above background, the main objectives of this research are:

- 1) To build a stage-of-growth framework for incubatees through an analysis of activities they undertake.
- 2) To identify growth factors that can be used to assess incubatees' performance and to examine the impact of various entrepreneurial attributes such as management skill, determination and creativity on such factors,

with a view to understanding the influence of entrepreneurial attributes and traits on business development.

- 3) To gain an understanding of services businesses require to grow, and to investigate how businesses obtain these services.
- 4) To gain an understanding about incubators' business monitoring, as well as their knowledge of how their tenants monitors their own performance, through an examination of incubator managers' and individual businesses' reporting habits..

These four objectives will lead the way in building a total performance evaluation model to meet the needs of an emerging, more sustainable business-incubator model.

1.3 Justification for the Study and Contributions to Research

This research was funded by the Sutherland Shire Hub for Economic Development (SSHED) Incubator, which needed a performance-evaluation framework for their business-incubator program. In addition to the incubator practitioners at the SSHED, business-incubator researchers and practitioners worldwide have called for a performance-evaluation framework that lets incubators to measure the business growth of their tenants. However, it has been argued that many studies lack a solid theoretical foundation or use poorly defined concepts and measures (Hackett & Dilts, 2004). This study aims to provide a better understanding of the stages of growth of businesses located in business incubators and what activities are undertaken at each growth stage. The results will provide a standard tool that will help incubator managers, investors and entrepreneurs monitor the performance of businesses during every stage of development. An incubator stages-of-growth framework will provide a visual perspective of where entrepreneurs are in their growth process, and help them achieve their growth targets during their stay in

the business incubator. This model will allow incubator managers to track the performance of their tenants and provide services suitable for their entrepreneur tenants at their particular stage of growth. Investors will be also able to get a visual snapshot of businesses' growth stage, and hence manage expectations and capital injections accordingly.

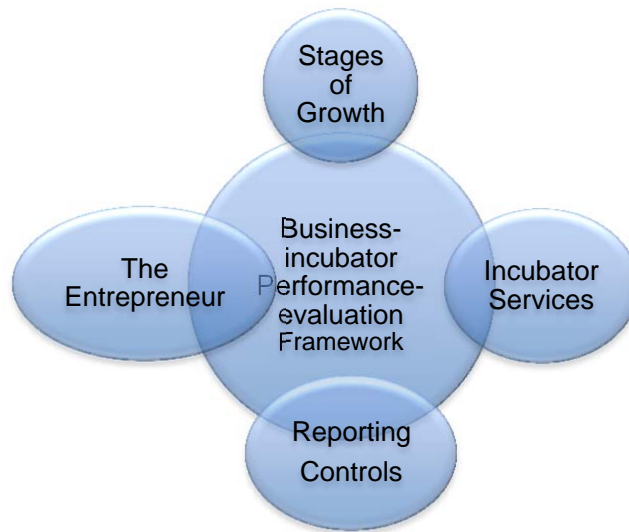
As ventures progress from start-up through the early stages of growth and towards maturity, entrepreneurs engage their human capital, also known as skills and personal attributes, in the planning and development of the business (Bhabra-Remedios & Cornelius, 2003) . The second motive of this study provides deeper insights into the skills and attributes that affect business performance. Numerous scholars have highlighted the importance of taking entrepreneurial characteristics into account to more fully understand business decisions in young, developing firms (Seghers et. al., 2012; LeCornu et al., 1996; McMahon et al., 1993). Therefore, the second question addressed in this study involves testing the effects of entrepreneurs' characteristics on business growth.

This study also seeks to provide deeper insights into the reality of incubators' service offerings using direct inputs provided by the managers and tenants. The third section of this dynamic model is to identify the services needed at each stage of development, and to understand how these services are provided. Through the data gathered from the questionnaires as well as interviews with individual entrepreneurs, it was found that a business needs various types of assistance at the start-up level, and that these services are customarily sourced from within the incubator as well as from external sources.

Finally, in completing the performance evaluation framework (Figure 1.1), this study attempts to provide a better understanding of the current reporting practices

of incubators and their tenants. Given that there is limited academic research on evaluating the performance of business incubators or determining the challenges facing incubator managers in Australia in measuring the impact of their services on tenants, this study has real potential to contribute to incubation research from a national as well as international perspective with respect to future incubator performance development worldwide.

Figure 1.1: Business Incubator-incubator Performance-evaluation Framework



1.4 Research Methodology

The first two years of this research consisted of conducting the literature review, narrowing the research focus and conducting the pilot research phase, in which six incubator tenants from two incubators were interviewed. The pilot incubators were a mixed-used incubator and a technology incubator, allowing this research to reflect the two main types of incubators found in Australia. The development of the survey instruments was driven by the literature reviews and pilot studies on the two incubator sites were conducted in Sydney. Finally, two sets of questionnaires were developed to collect the data required to meet the goals of the

study: For the entrepreneurs and the incubator managers. These surveys were then distributed to the selected incubators and their tenants.

The development of the survey instruments was guided by various entrepreneurial and business-development theories. The theoretical perspectives were established to allow for the development of the questions and the interpretation of the results. The theoretical framework that used to interpret business-control habits and venture creation came from entrepreneurship and business-life-cycle theories, resource-based views and institutional theory. The method of analysis was based on grounded-theory principles, where new theory is formulated based on the interview data and other gathered information (Charmaz, 2006; Strauss & Corbin, 1990; Lewis, Saunders & Thornhill, 2004).

The study was organised as follows:

1. Reviewing the literature and classifying incubator models and stage-of-growth indicators
2. Organising and conducting interviews with pilot incubator tenants (based on convergent interviewing) for pre-testing Kazanjian's activities in his stage-of-growth model as it applies in the development of businesses in the incubator
3. Designing the structured interview questionnaires
4. Conducting regular interviews with the managers of three incubators in Melbourne and three in Sydney over two years
5. Organising and analysing data
6. Transcribing interviews, and entering and analysing data and findings
7. Discussing findings and revisiting the literature
8. Writing thesis and conclusion.

1.5 Organisation of the Research

The thesis is organised as follows.

Chapter 2 presents the background of the research and identifies the main issues of this study: the understanding of the definition of business incubation, a historical review of business incubation, the various types of business incubators, the current benchmarking practices that are not serving the incubation industry and the lack of understanding of how businesses develop in the incubator environment. This chapter demonstrates that this study attempts to fill a gap of in academic knowledge and endeavors to address the current problems faced by practitioners.

Chapter 3 reviews business-incubator performance-evaluation literature and identifies the gaps in existing performance measures. This research proposes an evaluation system that consists of four monitoring components: identifying the stages of growth; examining the key attributes an entrepreneur needs to engage to support business development; examining how services are delivered in a business incubator; and, based on the premises of institutional theory, studying control process through reporting behaviour. This chapter establishes the theoretical perspective from which to construct the framework of a performance-evaluation system. It reviews life cycle theories, entrepreneurship theories, resource-based views and institutional theory.

Chapter 4 describes the research methodology. This chapter discusses the research instrument that is used to collect information and data, establishes the research questions, outlines the process for data collection and discusses the sample. To select a representative sample of incubators for this study, a list of incubators was obtained from AusIndustry (Australian Funded Incubators Version 6.2, April 2005).

Chapter 5 presents the statistical analysis and the findings of the study. The findings are organised based on the order of the research questions. First, the stages of growth of businesses located in incubators are identified. Second, the effects of

entrepreneurs' characteristics (management skill, determination, locus of control, risk taking propensity, creativity, ability to interact with people, number of jobs held, previous job satisfaction, previous businesses owned, entrepreneurial parents, age, gender, parental background and educational background) on business growth are determined. Third, services used by entrepreneurs are identified and the findings about how these services are accessed are presented. Fourth, the reporting practices in business incubators are described.

Chapter 6 concludes the findings with a series of recommendations to researchers and practitioners.

Chapter 2: Background of the Study

2.1 Introduction

Small businesses make a major contribution to the Australian economy, accounting for almost 46 percent of private-sector industry employment and contributing approximately one-third of private-sector industry value added in 2010-11 (Department of Industry, Innovation, Science, Research and Tertiary Education (DIISRTE), 2012). There were 2,132,412 actively trading small businesses in Australia as at June 2011. The Australian government has categorised small businesses into three groups: non-employing, employing micro (1-4 employees) and the remaining small businesses (5-19 employees). Non-employing businesses were the most prevalent, accounting for 61.2 percent of total businesses, followed by employing micro businesses, which accounted for 23.9 percent; the remaining small businesses accounted for 10.8 percent. The remaining 4.1 percent of businesses are classified as medium and large businesses (DIISRTE, 2012).

Start-up companies constitute an important dimension in the evolution of new businesses. It is at this stage where fresh unique ideas or business concepts are born; however, assistance is required to establish their commercial potential and growth path. Encouraging the establishment and growth of innovative companies is one of the priorities in economic policies for many governments. In Australia, grants and other funding programs are available from the Australian, state and territory governments, and in some cases from local councils. Since the early 1980s, the federal government, industry and universities have developed partnerships to build incubators to assist start-up companies that can provide a boost to local economies and assist in the research and development of new ideas to the commercialisation stage (ANZABI, 2004; AusIndustry, 2005). Business incubators have become an important tool for

reducing the failure rate of start-up businesses and make them economically viable: they nurture the development of start-up businesses, helping them survive and grow during their early stages, when they are most vulnerable. The National Business Incubator Association (NBIA) in America provides one of the most accurate descriptions of what business incubators are:-

Business incubation is a business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator management and offered both in the business incubator and through its network of contacts. A business incubator's main goal is to produce successful firms that will leave the program financially viable and freestanding. These incubator graduates have the potential to create jobs, revitalise neighborhoods, commercialise new technologies, and strengthen local and national economies (NBIA2013).

A business incubation program can be described as a dynamic process of developing emerging commercial entities. Although a great number of incubators have been set up around the world by governments and private sectors to enable the development of small-business ventures, there is little systematic information on the impact of incubators on the development of firms located within these incubators. This research focuses on measuring the effectiveness of the incubation process; specifically, the impact of incubator services on firm development rather than output indicators such as the survivability of firms in incubators or the impact of the incubator on the local economy, which have been the focus of previous incubator research. This study will develop a method of allowing incubators to view each tenant as a unit of analysis and to monitor its progress from the moment it enters the business incubator until it graduates.

While the American-based NBIA and the European Commission have taken important strides in developing performance-evaluation guidelines, the impact of incubator services on the performance of incubatees (incubator tenants) is yet to be measured. Incubator associations and governments are yet to recognise how a business develops in a business incubator therefore falling short of identifying key services that incubatees might require.

2.2 What are Business Incubators?

Business incubators are now recognised as centres designed to help start-up businesses survive and grow by providing them with a comprehensive and integrated range of services such as management and administrative assistance, business planning, mentoring, flexible leases, financial assistance and professional services such as legal and marketing. These support services are provided to young developing businesses to help them survive and grow during periods of uncertainty, especially during the start-up phase. This allows start-ups to concentrate on their business plan and raises the success rate (Aerts, Matthyssens & Vandenbempt, 2007). Business incubators are an enterprise-development strategy aimed at accelerating the formation, development and survivability of new enterprises in a community (Abduh et al 2007). In most incubators, businesses are limited to a tenancy period of between three and five years when they are assumed to be ready to graduate. The main aim of a business incubator is to produce graduated businesses that are financially viable. The benchmark study of the European Commission (2002) revealed that the survival rate of incubator tenants was significantly higher (80 to 90 percent still existed after five years) than the business success rate amongst the wider small and medium enterprise (SMEs). In a wider range, business incubators are accepted by organisations such as governments, business associations and universities, as a tool

for developing entrepreneurship, promoting economic self-sufficiency and industrial diversification, fostering commercialisation of university technologies and creating jobs at the SME level (DEWRSB, 2001; NBIA, 2006).

The first incubator was privately owned and established in 1959 in Batavia, New York (Brown, Harrell & Regner 2000). Since then, particularly in conjunction with the technology boom of the 1980s and 1990s, business incubators have spanned the world including countries such as China, Turkey, Nigeria and Brazil. There are approximately 1,250 business incubators in the United States and approximately 7,000 business incubators worldwide (NBIA, 2012). In the US, business incubators house about 49,000 resident client companies, which employ approximately 200,000 workers (NBIA, 2012).

2.3 Types of Business Incubators

Business incubators are mostly distinguished by their sponsors and their industry focus (Al-Mubarak & Busler, 2010; Allen & McCluskey, 1990; Bhabra-Remedios & Cornelius, 2003; Rice & Matthews, 1995). Incubator sponsors can be government not-for-profit organizations, academic institutions, private companies and, in some instances, even individuals who typically provide financial support to the incubator to generate profits for its shareholders.

Incubators can also be identified by the types of businesses that they house: technology incubators, empowerment incubators (empowering a disadvantaged group), or incubators in specialised niches such as fashion, healthcare and tourism. Mixed-use incubators house businesses of a variety of types.

According to the NBIA, business incubators come in many shapes and sizes and serve a variety of communities and markets:

- 93 percent are non-profit organisations focused on economic development. About 7 percent of North American incubators are for-profit entities, usually set up to obtain returns on shareholders investments.
- 54 percent are “mixed-use,” assisting a range of early-stage companies.
- 37 percent focus on technology businesses.
- 6 percent focus on service businesses, serve niche markets or assist other types of businesses.
- 3 percent serve manufacturing firms.
- About 47 percent of business incubators operate in urban areas, 28 percent operate in rural areas and about 25 percent operate in suburban areas.

(NBIA, 2012)

2.3.1 Government

Most incubators around the world are nonprofit or government owned. In North America, 94 percent are nonprofit organisations focused on economic development, whilst the remaining 6 percent incubators are for-profit entities set up to obtain returns on shareholders investments (NBIA 2006). Government incubators also make up most of the incubators in Australia. The development of incubators in Australia has been supported by both federal and state governments for the same reason as they have been supported elsewhere. Incubators were evident in almost all Australian states as far back as 1989, when there were 17 in operation (Small Business Council, 1989). The term “incubators” is used interchangeably with business enterprise centres (BEC), which provide business-support services around the country. Most have direct or indirect connections with academic institutions, such as the Sutherland Shire incubator’s connections with the University of Wollongong and Darebin Enterprise Center’s with the Royal Melbourne Institute of Technology. By

2012 there were more than 100 publicly funded Australian incubators (business.gov.au, 2013; AusIndustry 2012)

2.3.2 University-affiliated

The university business incubator became a catalyst for commercialising ideas from the laboratory (Smilor & Gill, 1986). The National Science Foundation, the United States federal agency for promoting research in science, was instrumental in developing university business incubators. This joint government-university corporation provided the model for future incubators internationally (Allen & Weinberg, 1988). The emphasis in Australia on the commercialisation of academic research has led to a trend for situating incubators either in technology parks or adjacent to the campuses of major academic institutions.

2.3.3 Technology

Over the past 20 years technology incubators have been growing in importance as a means of enhancing technological development. Technology incubators have attracted funding from both the private and public sectors. The advent of private technology incubators with an internet focus, which started in 1999, sparked an increase in government funding assistance globally. This increased focus was derived from the recognition of the importance of new technology firms and their contributions to employment, technological innovation and to diffusion of new technological knowledge in the economy (Gans & Stern 2003; Licht & Nerlinger 1998). One result of this increased focus has been the proliferation of a variety of funding grants and government-supported skills-development and business-incubation programs supported by government. It is recognised that countries that invest in research and development are more likely to secure strong economic futures; for this reason the Australian government has committed itself to investing in innovative Australian businesses through business incubators (AusIndustry, 2008).

In Australia the technology-incubator program is supported by the Federal Government through the Department of Communications, Information Technology and the Arts (DCITA) under the Building on Information Technology Strengths (BITS) Incubator Program which provides seed funding to tenants located in 10 BITS incubators in states across Australia (DCITA, 1999, 2002). Most of the BITS incubators were initially set up by venture-capital firms (ACG, 2003). Although these venture capital firms provided cash, and received equity in the incubatee firms, the incubators' primary source of funding is still the government. Public-private partnerships are critical to the survival of the business incubator as the incubator can take a number of years to be self-sustaining (European Commission Enterprise Directorate-General, 2002).

2.3.4 Niche or Specialised

Niche or specialised incubators are those where there is a focus on a specific type of business, such as agriculture, food technology or arts and crafts. In Melbourne, Australia, a famous fashion incubator supports emerging Australian designers and provides them with specialised resources to establish and sustain their own fashion businesses. Apart from technology incubators, there are only a small number of niche incubators around the world, as setting up an incubator with a niche focus requires specific management expertise and a sustainable demand from local niche businesses (Al-Mubarak & Busler, 2010).

2.3.5 Mixed-use

Mixed-use or general-purpose business incubators house a variety of start-up businesses from different industry sectors. They provide businesses with a range of administrative, consulting and networking services. These services are mostly sourced externally from economic development agencies, local governments or colleges and universities. Mixed-use incubators provide low-cost space, shared equipment and a

place for fellow entrepreneurs to share experiences and knowledge. Up to 90 percent of incubators in Australia are mixed use and publicly funded.

The Australian government through the AusIndustry business-incubator program, provided funding to the Sutherland Shire Council (SSC) as the site of a small-business incubator in 2002. It was during the planning phase of the Sutherland Shire Hub for Economic Development (SSHED) incubator programs where the incubator managers' search for a performance-evaluation system began. Some of the more established incubators and incubator associations were approached without any satisfactory result. The University of Wollongong was then approached, and this research was jointly funded to progress the objectives of SSHED to develop an incubator performance-evaluation model that would monitor and support the development of small businesses in incubators.

The SSHED incubator hosts a mix of start-up businesses that require business-development support to help them grow faster. The tenant mix in SSHED mirrors that seen in most incubators in Australia that have received funding from the government. Although this research focuses on the types of incubators most commonly found in Australia (mainly mixed-use and technology incubators), an empowerment and specialize incubator did appear in its sample; this is not surprising, as these incubators are gaining in popularity around the world.

2.3.6 Empowerment

"Targeted" or "empowerment" incubators, which support minority- or women-owned start-ups, benefit the owners and strengthen the economy by shoring up its less powerful constituents. The Women's Business Centre or Business Matrix targets "contemporary, fast-track women business owners and career professionals" and bills itself as the nation's first incubator to teach entrepreneurship to women. Many of the women who have developed businesses through the Centre attest to the fact that

opening up a business has meant more than just increasing their income; it has also played a significant role in several dimensions in their lives- personal, family and community. Empowerment incubators provide a nurturing environment where like-minded people can support each other in the pursuit of growing a small business (Dahlstrand & Politis, 2013).

2.4 Historical Review and Driving Forces of Business Incubation

To build an understanding of what motivates the performance measures used today in the business-incubation industry, it is important to review the history and driving forces behind the development of business incubators.

This section will review the history of business incubation in America, Europe and Australia. These regions have been chosen because they have been pioneers for the different models of incubators, and demonstrate the diverse set of driving forces behind the development of incubators as a tool of business development. Incubators were set up by governments to enhance technology transfer in the changing political environment (as seen in Germany), as a response to changing economic conditions (as seen in the United Kingdom), in response to economic-development policies (as seen in the US) and as a result of other factors arising from efforts to improve local conditions (OECD, 1999). Business incubation initiatives, such as business incubators, science parks or technology centres, are at the heart of urban and regional technology and innovation policies (Schwartz, 2011). Today there are approximately 1,250 business incubators in the United States and approximately 7,000 business incubators worldwide (NBIA, 2012).

2.4.1 Incubators in the United States

The first incubator, a privately owned for-profit centre, was established in 1959 in Batavia, New York (Brown et al., 2000) by Joseph L. Mancuso in a Massey-Ferguson factory (Allen & Bazan, 1990). One of its tenants was a poultry producer,

and it is believed that this is where the name “incubator” was conceived (McKee, 1992, p41).

Although the majority of incubators in America are now state and local government initiatives, the earliest incubator models were developed in the private sector (Plosila & Allen, 1985). One of the most popular private-sector incubator organisations was the Fairchild Corporation, which operated between 1957 and 1970 and was directly or indirectly responsible for the start-up of 35 companies including Intel and National Semiconductor (National Council for Urban Economic Development, 1985, p1). Control Data Corporation (CDC), a mainframe-computer manufacturer, began establishing technology centres in the 1970s. Its founder, William Norris, saw SMEs as a vehicle for technology development in America, which was then facing severe competition from Japan. He made a business renting out facilities to start-ups and marketing CDC’s computer products and business services (Nyrop 1986). Given the success surrounding its strategy, CDC franchised its concept to communities around the US (Nyrop, 1986). The main objective of these early initiatives was the creation of growth-oriented, for-profit businesses.

In the 1970s, most incubators were established in vacant buildings donated by private corporations. Most received funding from government loans and grants (Temali & Campbell, 1984). Temali and Campbell’s (1984) study identified key services provided by incubators, including flexible leasing and management of space, centralised services to help reduce overhead costs of tenant companies and various types of business assistance. These incubators were mostly located in industrial estates and provided managed work spaces.

The incubator concept was popularised by universities to commercialise promising business ideas and technology (Smilor & Gill 1986). Among the early

university incubator initiatives are The University City Science Centre, which was founded in Philadelphia in 1964 and Rensselaer Polytechnic Institute (RPI) in 1979 (Smilor & Gill 1986). The University City Science Centre took over an old warehouse from the local council and hoped to attract Fortune 500 companies into the area (Steffens 1992). The National Science Foundation, a federal agency created by Congress in 1950 to promote the progress of science provided the platform for future university efforts in launching innovation/incubator centres beginning in 1973. This is one of the earliest models of private-public partnerships in incubator development. This model would later be seen as far away as Australia.

Another example of an incubator model is the government and community-sponsored Fulton-Carroll Center in Chicago, which was established in 1973. The incubator was developed from dilapidated buildings in a decaying part of the city. The sponsoring council saw this as an economic revitalisation project (Smilor & Gill, 1986). This incubator owes its success to the incubator director, June Levelle, who initiated this project, and who had closely watched over the tenants' progress (Smilor & Gill, 1986). June Levelle guided each of the businesses through capital-acquisition decisions, supplier issues and various day-to-day business problems. Where she saw fit, she organised for external consultants to advise her tenants at nominal rates. When she saw businesses not progressing, she would not renew their leases. Only businesses that created wealth and employment were kept on until they were strong enough to graduate (Smilor & Gill, 1986).

Through to the early 1980s, the concepts underlying the definition of what are now called business incubators were not discussed in depth in the literature, but some common principles did emerge. These common features included shared premises, pooled administration, interaction between tenants (synergies), business advice

networks and the manager as a value-adding agent (Smilor & Gill, 1984). The term “business centre” was used for smaller incubators located in office buildings, and “science parks” for those in more sprawling locations. Given its popularity as an economic-development instrument and the role of the incubator as a life-support instrument for SMEs, a number of interest groups started commissioning research on the concept. Temali and Campbell conducted the first major US survey of incubators in 1984. They provided a basic understanding of incubator structures and services.

In 1984 there were still only 26 incubators in the US (Meyer, 1987, p53), but numbers soon exploded. In the mid-1980s, the business incubator concept was adapted to "incubate" a much wider range of enterprise types, along with a broader set of objectives and desired outcomes. Government, welfare organisations and community groups had the objective of using the incubator to create jobs and enhance job opportunities for the unemployed and minorities (Smilor & Gill 1986). In 1985 Allen and Rahman were the first academics to question the usefulness of incubators and segregate the objectives of the different incubator sponsors. Private-sector sponsors were interested in property development, technology transfer and tenant investment opportunities, whereas the public sector was interested in creating jobs and revitalising local economics. University incubators were interested in commercialising research and training opportunities for its students (Allen & Rahman, 1985).

In 1985, the NBIA was formed in Alexandria, Virginia. It provided government and industry information on incubator development and provided a base where key individuals could meet (Smilor & Gill 1986, p2). In 1989 it produced its first State of the Business Incubation Industry Report, which provided statistics on the number of incubators, types, age, industry focus, types of services offered, number of

graduates, number of jobs created, average stay of clients, client and graduate revenues and other important information that allowed interest groups to monitor the state of the incubation industry. This industry-performance reporting was conducted by the NBIA through surveys of US incubators in 1987, 1989, 1991, 1998, 2002, 2006 and 2012.

In the United States, business incubators are used as a strategy for business creation, and ultimately for job creation (OECD, 1999, p149). The rapid growth of incubators was energised beginning in the 1990s by the involvement of government funding and the growing recognition that small to medium-sized enterprises were making a major wealth-creation and employment contribution to the national economy (Hakett & Dilts, 2004). Towards the mid-1990s, sector-based incubators started gaining in popularity.

The NBIA's latest survey, conducted in 2012, found 1,250 business incubators in operation, with about 49,000 resident client companies, employing approximately 200,000 workers (NBIA, 2012).

- 93 percent of US incubators are non-profit organizations focused on economic development.
- About 7 percent are for-profit entities, usually set up to obtain returns on shareholders investments.
- 54 percent are "mixed-use," assisting a range of early-stage companies.
- 37 percent focus on technology businesses.
- About 6 percent focus on service businesses, serve niche markets or assist other types of businesses.
- 3 percent serve manufacturing firms. (NBIA, 2012)

2.4.2 Incubators in Europe

In Europe, a uniformly accepted definition of business incubators does not exist (Monck et al., 1988). The small-business development process appears to take place in science parks, business-innovation centres, technology centers, research centres and various other business-nurturing centres (Monck et al., 1988; Storey & Tether, 1998). European incubators have been established through partnerships between governments, universities and private companies, applying the same model seen in the US (Colombo & Delmastro, 2002). Incubators in Europe have been used as an economic-development tool and a means of commercialising the technology developed at academic institutions (Colombo & Delmastro, 2002; OECD, 1999). As incubators were proven to be useful economic development instruments, their number grew rapidly in the 1980s and 1990s in all European countries (Storey & Tether, 1998). In this section, a few countries will be used as typical examples.

In the UK, Business Innovation Centres (BICs), incubate small businesses providing business advice, flexible workspaces and special funding schemes (OECD, 1999). The BIC concept was developed more than 20 years ago by British Steel (Industry) Ltd to create jobs in areas where the steel industry was in decline (OECD, 1999). BICs and science parks are part of the same continuum, and need to be considered jointly as both offer the same services. Almost all science parks in the UK have formal and operational links to UK academic institutions while BICs do not have such strong links (Pett, 1994; Storey & Tether, 1998). This is mainly because science parks are established specifically to transfer technology and business skills from the university to the firm, while BICs are property-based initiatives designed to encourage local economic development without a specific industry focus (Storey & Tether, 1998). Hence, BICs are not compelled to establish an academic connection. However, the terms are used interchangeably to describe the physical environment,

which is a building with a pleasant environment and close ties to a place of learning (Storey & Tether, 1998).

In Germany, the incubator model has become the most important economic-development instrument (OECD, 1999). The first incubator, Berliner Innovation-und Grundersentrum (BIG), was set up jointly in 1983 by the government and the Technical University in Berlin to commercialise technology projects (OECD, 1999). The incubator concept has spread throughout Germany, driven by city councils. German incubators are monitored by a special government program (Arbeitsgemeinschaft Deutscher Technologiezentren, or ADT), which was established as part of the unification between East and West Germany and the economic restructuring of East Germany (OECD, 1999). As at 1999, there were 103 incubators in the east and 27 incubators in the west. These figures underscore the significance of incubators as a major economic-development tool for rebuilding East Germany. Incubators are classified as handicraft-oriented, industrial parks, technology-based and research parks (OECD, 1999). They are commonly found close to universities and industrial areas, while urban and regional areas are among the least frequent incubator locations (OECD, 1999). The main goals of German incubators are to set up technology-based firms, commercialise scientific findings and further economic development (Schwartz & Hornych, 2008). These same goals were articulated for incubators in most western European nations such as Sweden, Finland, Netherlands and France (Storey & Tether, 1998).

Finland was ranked first in the Technology Development Index for its strength in innovation and networking skills between companies and research institutions (UNDP, 2001). It has successfully applied the concepts of the science park and the business incubator in turning high-tech ideas into business (Tarkianen, 2002).

Business incubators are built in science parks and collocated with universities, scientific institutions and financiers, forming regional clusters. Almost all incubators in Finland have a specific technology focus such as biotechnology, bio-medicine or telecommunications (Tarkianen, 2002).

2.4.3 Australia

During the 1980s in Australia, as in America and Europe, business incubators were developed in response to growing economic problems such as the need to create employment, stimulate regional development, increase new business formation and reduce the failure rate of young firms (Australia and New Zealand Association of Business Incubators (ANZABI) 2004). The first official report on the number of incubators identified 17 in 1988 (Small Business Council 1989). The Small Business Council also reported the opening of the first official incubator in 1973. The Australian government provides funding to 90 incubators (AusIndustry, 2005). The largest group of incubators in Australia have been classified as “embedded” incubators, in that they are part of broader organisations, such as a regional-development organisation or a local council, that run small-business-advisory-centres or business-enterprise centres (BECs) (ANZABI, 1997). These incubators receive funding from the state or local government, plus further funding from the Commonwealth government.

2.4.3.1 Business-enterprise Centres

The Commonwealth Government has historically been, and still is, the major funding provider for the establishment of small-business incubators in Australia. The most popular form of incubators is the business-enterprise centre (BEC). BECs are community-based, not-for-profit business-assistance organisations that are incorporated and supported by a local board of management. They are designed to facilitate the creation, retention and development of sustainable businesses, and to

foster local economic development. They are predominately mixed-use incubators based on those established in the 1980s by the Rotary Club of Australia. Today there are 109 BECs operating in all Australian states (business.gov.au, 2013). Each BEC receives only nominal funding from the government, and therefore depends heavily on the support of private enterprise, local councils and local communities. During 2013 and 2014, BECs will receive \$12 million of federal government funding (BEC, 2012).

2.4.3.2 AusIndustry-funded Incubators

The second government incubator program is run by AusIndustry. There are about 23 AusIndustry-funded incubators around Australia under the Building Entrepreneurship in Small Business (BESB) program (AusIndustry, 2012). The list of incubators is available at <http://www.AusIndustry.gov.au/programs/small-business/besb/Documents/BESB-SmallBusinessIncubators.pdf>. Initially, the objective of these incubators was to create jobs and revitalise local economies. However, the majority of the incubators interviewed in this research were focused on entrepreneurs succeeding in their business through mentoring, legal advice, marketing advice and other business-development services.

AusIndustry is a program-delivery division within the DIICSCRTE that delivers many business programs worth about \$2 billion each year. AusIndustry oversees the Small Business Incubator Program. This program has provided support towards the establishment of mostly “embedded” or mixed use incubators since the 1980s, when it was managed by the Department of Education, Employment, Training and Youth Affairs (DEETYA), the predecessor on the current Department of Employment. In November 2005, the Small Business Incubator Program was succeeded by the Small Business Entrepreneurship Program, which provides

“competitive merit-based grants to foster an entrepreneurial small business culture, particularly in developing business skills for young entrepreneurs and succession planning for valuable business continuity” (AusIndustry, 2005, p1). This program reflected the changing focus and the proactive nature of the Commonwealth government in enhancing entrepreneurship in the SME sector. The guidelines for applying for initial incubator funding or enhancement funds specify, more scrutiny in performance reporting. Incubators are expected to regularly submit satisfactory performance reports to indicate occupancy rates and the financial health of the incubator (Allen Consulting Group, 2003).

2.4.3.3 Technology: Building on Information Technology Strengths (BITS) Incubator Program

In the 1990s, information and communication technology (ICT) incubators began to emerge. Two federal government departments oversee two main incubator programs. One is Building on Technology Strengths (BITS), a technology-driven program established in 1999 and managed by DCITA. This program supports the formation and development of high growth businesses only in the information technology and communications industries (DCITA, 1999).

BITS, with a budget of \$158 million sourced from the partial sale of Telstra, was established to promote innovation and commercial success in the information industries by encouraging the creation and growth of new high-technology firms (DCITA, 1999). BITS established ICT incubators in all mainland states and territories. The program addressed the difficulty of early-stage ICT companies in raising seed capital and obtaining business advice during the start-up phase of their business development. BITS encouraged the establishment of a range of business models, and was initially set up as a demonstration program to help instill confidence in private capital markets in early-stage ICT firms. The program was not designed as

a permanent subsidy for ICT start-ups, but as a short-term measure to complement other Australian government initiatives encouraging innovation.

The BITS Program was originally scheduled for completion in 2003-04, and an independent evaluation was conducted during 2003 (Allen Consulting Group, 2003). This evaluation found that the incubators provided incubatees with business planning, financial advice, marketing, networking, mentoring, legal and accounting services, secretarial and other services some provided from in-house resources and some outsourced. Some incubatees reported that they were unsatisfied with their incubator, as they had had to source services themselves. There was no information on exactly which service had to be sourced from outside of the incubator. The evaluation report concluded that further funding was required to help with the long-term sustainability of the incubators and their incubatees. The full report is available from www.dcita.gov.au/ict_incubators.

In May 2004, after the evaluation of the BITS program was assessed, the Australian government announced that a further \$36 million would be provided to extend funding to the better-performing BITS incubators until 2007-08 (DCITA, 2005). Government funding into technology incubators is currently overseen by AusIndustry with funding severely limited after the BITS program came under immense pressure for being flawed in its financial management (DCITA, 2005). Tight government budgets have forced capital-intensive technology incubators to seek funding from Australian companies such as Telstra, Optus, NewsCorp and ANZ Group, as well as multinational conglomerates predominantly outside Australia such as Coca-Cola (Hurley, 2013, Hutchinson, 2012).

2.5 The Importance of Performance Measurement

The development of adequate performance measures (PM,) and performance measurement systems (PMSes) has been the subject of debate for many decades across various industries (Argyris, 1952; Drucker, 1954; Ghalayini, Noble & Crowe 1997; Tangen, 2004). Various parties depend on both PMs and PMSes. Industry executives and performance-measurement researchers have accepted that the measurement systems they have traditionally relied on, predominately financial measurements are inadequate to measure the performance of modern businesses (Neely & Najar 2006). In the 1990s, various researchers embarked on the concept of supplementing financial measures with non-financial measures for a more balanced measurement system.

Examples of non-financial performance measures are the performance pyramid (Lynch & Cross, 1991), the results-determinants framework (Fitzgerald, Johnson & Brignall, 1991), field-based performance measures (Gregory, 1993), measures for time-based competition (Azzone, Masella, & Bertèle, 1991), the performance-measurement matrix (Keegan, Eiler & Jones, 1989), Brown's (1996) inputs, processes, outputs and outcomes framework and the balanced scorecard (Kaplan & Norton 1992). Franco-Santos et al. (2007), however, indicate that performance researchers had not yet reached definitive conclusions.

Realising that there is no one performance method that best reflects the progress of small businesses, large organisations with adequate resources have built their own measurement systems or customised off-the-shelf performance-management software such as eLearning Modular Objects (ELMO, 2014). By collecting their own data and performing their own integrated performance analysis, they have the opportunity to fully understand how the organisations they manage are performing.

Recognising that there has been inadequate information to guide those who oversee and invest in incubators, organisations such as the NBIA and the European Commission started developing means of monitoring member incubators' performance. One of the most important evaluation of incubators was carried out by the UK Centre for Strategy and Evaluation Services (CSES) for the European Commission in 2002.

Governments are keen to know if jobs are being produced, and venture-capital groups take a keen interest in the development of the businesses they invest in. Another important group of people interested in measuring performance are the incubator managers, who would like to know if their services and programs are useful to the incubatee firms. Finally, the individual business owners themselves are keen to know if they are making progress in the incubator. They generally use financial measures to determine this, but this can be problematic. For example, most businesses located in incubators surveyed in this research fall into the category of non-employing businesses, and are not yet reporting sales or profits. The question is: how is performance measured in this complicated setting, where the different parties have different information requirements?

Business incubators were first positioned as an economic-development tool to revitalise local areas and help specific communities start their own businesses (Campbell, 1989; Lalkaka & Bishop, 1996). In the early 1990s, incubators began to focus on technology, accounting for 40 percent of total incubators in operation in North America at that time (NBIA, 1998). New technology-based firms were seen as tools for developing new innovation. Incubators began gaining popularity in the mid-1990s. In the late 1990s, during the Internet boom, some 400 incubators worldwide were used to develop technology companies at a fast pace to the point they where they

could become listed on a stock exchange (Lalkaka & Bishop, 2001). When technology shares started losing their value, these companies collapsed, along with many incubators in US and Europe. However, there has been a significant move to improve the monitoring of incubators' performance since these failures. Following closures in business incubators across Europe, the European Commission provided a framework for incubator best practice, given that incubators were still seen as an important tool in growing new businesses (Table 2.1).

Table 2. 1
Definition of Best-practice Issues

<i>Relevance</i>	<i>Incubator mission and strategy and relevance to enterprise and regional development priorities (qualitative)</i>	<i>Extent to which incubator tenant characteristics match definition of target market and admission criteria (quantitative).</i>
<i>Efficiency</i>	Financial inputs, operating procedures and unit cost of providing incubator facilities and services to client companies.	Cost-effectiveness of outputs (e.g. cost per successful business start-up, cost per gross/net job created).
<i>Effectiveness</i>	Extent to which incubator achieves key operational targets set out in business plan (e.g. survival and graduation rates).	Extent to which incubator achieves targets with regard to enterprise and wider regional-development impacts (e.g. job and wealth creation).
<i>Utility</i>	Occupancy rates and take-up of incubator support services.	Extent to which incubator services meet client needs and contribute to performance.
<i>Sustainability</i>	Financial sustainability of incubator (e.g. extent to which operating costs are covered by income), level of demand for incubator space and services, incubator charges compared to market rates. Diversity of sources of incubator resources, including public-sector support.	Validity of incubator business strategy, diversity and continuity of income sources. Graduation rates, retention of graduates in local area and extent to which incubators promote new start-ups in sectors of local economy with long-term job and wealth-creation potential.

Source: European Commission, 2002

One of the great challenges in conducting performance reviews of incubators is the difficulty in comparing one with another, as there are many types of incubators around the world. Campbell and Temali (1990) identified four types of incubators according to their sponsorship or ownership structure: non-profit, university-related, privately sponsored and publicly sponsored. The key partners involved in setting up

business incubators in the European Union countries are depicted in Table 2.2 (European, Commission 2002).

Table 2.2
Key Partners in Setting up Business Incubators

<i>Partners (Board Members and other partners)</i>	<i>Number</i>	<i>Percentage</i>
1) National authorities and public agencies	68	25.3
2) Companies, banks and other private-sector organisations	56	20.8
3) Universities and other R&D organisations	44	16.4
4) EU and/or other international agencies	36	13.4
5) Community and voluntary organisations	34	11.5

Source: European Commission, 2002

In February 2002, 77 incubators in European Union member states and 71 of their tenants, were surveyed. The survey examined the macro performance of the incubator and its key performance indicators, such as turnover, increased numbers of employees, tenant failure rate and tenant graduation rate. This study is an example of many surveys that place their outcome indicators in relation to achieving their overall goals. This traditional way of looking at success and performance has been questioned, as it does not critically examine growth of the individual business (Bergek & Norman 2008; Phan, Siegel & Wright, 2005). Furthermore, the time intervals between surveys of European incubators are up to five years, which does not provide for efficient monitoring.

In Australia, DCITA commissioned a management consulting firm (Allen Consulting Group) to evaluate the BITS incubator program in 2003, four years after its launch. Incubator performance was measured based on the amount of funds its tenants received, the amount of revenue and profits incubatees made and the number of jobs created. In the survey, incubatees were asked to provide details of their revenue for the previous three financial years. A large number of Incubatees did not provide any response to parts of this question, due to having no revenue for the year in question (Allen Consulting Group 2003). Evaluation practices such as this one do

not provide enough information on the impact incubator programs are making on the progress of incubatee businesses.

Currently, in Australia, AusIndustry and DCITA require incubators that receive government funds to submit six-monthly performance reporting against agreed key performance indicators. These indicators include basic information such as the number of employees at the time the tenants entered the incubator and number of employees at graduation. Performance monitoring of incubators in Australia has currently taken on a wider perspective, including monitoring incubator business-plan targets against current performance and measuring types and service quality. However, graduate turnover rates, individual incubatee sales growth, number of tenants to total floor space and incubator profitability and number of jobs created remain key performance indicators. These indicators are tabulated in simple running counts and supplied to each incubator at yearly intervals.

The various interviews conducted during this research revealed that the incubator performance reports were of little use to the incubator managers as the impact of incubator programs on the incremental development of individual businesses in the incubators was unknown. Incubators are commonly evaluated on the basis of meeting their goals and objectives (Bearse 1998). However, given the various parties, diverse motivations and interests, investment arrangements, and goals, the question of how to measure the quality or success of an incubation program becomes complicated (O'Neal, 2005).

Start-up businesses enter incubators with the expectation that they will be able to access business-support services, thereby increasing the prospect of survival and, eventually, growth. An appreciation of incubator services and their impact on the start-up growth process from entry into the incubator to exit is fundamental to the

development of a comprehensive benchmarking system. Both the incubator and the entrepreneur need a “road map” indicating how a journey needs to be taken and the paths that are likely to lead to success or failure (Van de Ven & Pool 1995).

The incubation industry still lacks a comprehensive performance-evaluation model for incubation practitioners, their funders and the incubatees. Business-incubator performance is still measured based on number of jobs created, salaries paid, revenues earned and other economic-impact indicators.

2.6 Performance Measurement Conducted by Incubator Associations and Governments

2.6.1 Performance Measurements by the NBIA

The NBIA was formed in 1985 in the US state of Ohio, to provide information, a networking platform for incubator practitioners and training (Hackett & Dilts, 2004). The NBIA undertook surveys beginning in the mid-eighties on business incubators in America and published reports called “The State of the Business Incubation Industry” (SOI). The research was designed to track incubators’ progress and economic impact on local communities (NBIA 1998, 2003, 2006, 2012). Information such as the number of graduates, number of start-up companies being assisted and number of jobs created featured in all NBIA SOI reports. Almost all incubators were provided with business-assistance services such as financial management, legal services, networking, marketing assistance, funding services, business knowledge and other value-added services (NBIA, 1998,2003, 2006, 2012).

In an early study of business incubators, Allen (1985) found that the types of firms admitted into incubators included light manufacturing, wholesale, heavy manufacturing, government and non-profit agencies and professional services. The NBIA has classified incubators according to the type of clients they serve:

technology, empowerment, targeted, service, mixed use and manufacturing (NBIA, 1998).

Given the diversity in sponsorship structure and objectives they strive for and the various types of clients attempting to compare the performance of incubators using a set of structured indicators could pose a problem. Table 2.3 summarises the information collected from the 2002 and 1998 SOI Reports.

Table 2.3
Summary of Information Collected through SOI Surveys

1. Incubator Location
2. Year Established
3. Incubator Main Focus
4. Annual Incubator Operating Expense
5. Gross Square Footage of Incubators
6. Number of Client Companies per Incubator
7. Total Firms Served since Inception of Incubator
8. Total Firms since Inception of Incubator Still in Business
9. Total Graduates since Inception of Incubator
10. Current Employees of Incubator Client Companies
11. Employees of Incubator Graduate Companies
12. Percent of Incubators Offering Various Services
13. Equity and Royalty Agreement
14. Total Third-party Investments in Companies by Investment Type
15. Profile of Management (Age, Education, Ethnicity, Gender)
16. Total Staff of Incubators

Source: NBIA, 1998

According to the NBIA, “the major purpose of benchmarking should be to promote data collection and peer comparisons that will enhance incubator performance” (Tornatzky, Sherman & Adkins, 2002). Table 2.3 shows that the information collected does provide incubator managers with enough information to improve quality of services. Furthermore, the NBIA benchmarking effort appears to have the intention of encouraging incubators to become members of the body, which involves substantial fees. The NBIA latest survey of American incubators is called the 2012 State of Business Incubation Industry Report. This study highlighted that incubators are fulfilling their objectives as useful economic-development tools, and

are providing a wider range of services. The following are excerpts from the 2012 SOI report:

- Business incubators reduce the risk of small-business failures. NBIA member incubators report that 87 percent of all firms that graduated from their incubators are still in business. However, this is based on 2002 SOI research. There has been no recent assessment of survival rates.
- Incubators help client companies secure capital in a number of ways:
 - Managing in-house and revolving loan and microloan funds
 - Connecting companies with angel investors (high-net-worth individual investors)
 - Working with companies to perfect venture-capital presentations and connecting them to venture capitalists
 - Assisting companies in applying for loans.
- NBIA estimates that in 2011 alone, North American incubators assisted about 49,000 start-up companies that provided full-time employment for nearly 200,000 workers and generated annual revenue of almost \$15 billion.
- For every \$1 of estimated annual public operating subsidy provided to incubators, clients and graduates of NBIA member incubators generate approximately \$30 in local tax revenue alone, although this is down from \$45 in 2002. The decline in revenue was due to the impact of the global financial crisis as reported by NBIA (2012).
- NBIA members report that 84 percent of incubator graduates stay in their communities and continue to provide a return to their investors (NBIA, 2012).

Business-incubation researchers have found that studies conducted by the incubation industry lacked methodology and surveyed only a subset of incubators

(Bearse, 1998; Bergek & Norman, 2008). Such minimalist data does not provide a complete source of information for benchmarking across the various types of incubators (Bearse, 1998). The industry still lacks a complete evaluation framework for incubation practitioners to allow for benchmarking activities and outcomes. Efforts to measure incubators' performance should go beyond looking at how many jobs are being generated and how many graduates successfully complete incubation programs. These are very broad based evaluators that fail in providing a detailed picture of true performance such as the impact of programs on the performance of individual businesses. A critical drawback in current incubation literature is that there is no description on how services are provided (Bearse, 1993, Appendix J-2).

The NBIA justified its latest attempt at developing a benchmarking framework for technology incubators with the comment: "there is inadequate information to guide those who oversee and operate technology incubators" (NBIA, 2003, p.iv). The 2002 Benchmarking Analysis of Technology Business Incubator Performances and Practices (BATBIP) report included the surveys that were used in collecting information to develop a benchmarking system (Tornatzky et al., 2002). The project surveyed the types of services provided in the incubator. However, the way these services were provided to the incubatees was not clearly investigated. Incubators are keen to know whether services are provided by the managers themselves, incubator boards, mentors, internal courses or other means. The method of incubator service provision is an important scope in incubator performance evaluation, and has not been addressed as yet.

The 2002 BATBIP also surveyed for performance outcomes that client firms achieved. Client outcomes were categorised as primary- employment and sales revenues (Tornatzky, et al 2002) and secondary - amount of equity received, research

grant support, patents held and copyrights held (Tornatzky, et al 2002). The researchers tested whether there was a statistical relationship between services provided and primary and secondary outcomes, and found that there was no direct relationship between assistance provided and the primary business outcomes. On the other hand, they found a number of statistically significant relationships with secondary outcomes. Unfortunately, these secondary outcomes or business activities do not form the complete list of activities in the business development process of a technology business which makes a small subset of incubators. However, an important contribution that was made by the NBIA's BATBIP is that business-assistance services were tested on secondary outcomes or namely the selected few activities of a technology business. A major shortcoming in this research was defining the measures of outcome (Tornatzky, et al., 2002). The authors elaborated that "future benchmarking studies should incorporate more precise measures of outcomes" (Tornatzky, et al., 2002, p.34). The question remains: do incubators facilitate the entrepreneurial process and if they do, how? To answer this question it is important to determine what exactly the services are, how they are provided and how they aid entrepreneurial development and, ultimately, business growth.

2.6.2 The European Commission

In 2001 the Centre of Strategic and Evaluation Services (CSES) undertook the Benchmarking of Business Incubators project for the European Commission. Its aim was to develop an analytical framework that defines "headline" performance benchmarks for business-incubator management and promotion. Table 2.4 illustrates the benchmarks recommended by the CSES.

Table 2.4
Summary of Key Incubator Performance Statistics and Suggested Benchmarks

Setting Up and Operating
1. Average capital investment cost
2. Average operating costs
3. Percent of revenue from public subsidies
4. Incubator space
5. Number of incubator tenants
Incubator Functions
6. Incubator occupancy rates
7. Length of tenancy
8. Number of management staff
9. Ratio of incubator staff: tenants
10. Percent of managers' time advising clients
Evaluating Services and Impacts
11. Survival rates of tenant firms
12. Average growth in client turnover
13. Average jobs per tenant company
14. New graduate jobs per incubator
15. Cost per job

Source: European Commission, 2002

The CSES recommended a number of good management practices that incubators should carry out, such as “defining the target market and adopting admission criteria that focus on projects where an incubator can genuinely add value” (European Commission 2002, Appendix 4.1.1). They also recommended that benchmark indicators incorporate indicators used by the NBIA.

The goals and objectives of the NBIA and the European Commission are reflected in the selection of performance indicators that incubators are using today. Specifically, job creation, survival rates and cost per job are economic development objectives that indicate the incubator stakeholder's political motivations while percent of management's time spent advising clients, number of management staff, ratio of incubator staff to tenants and incubator occupancy rates are incubator management performance measures. This highlights that the analysis needs to incorporate the performance of incubator stakeholders and incubator managers.

Although the NBIA and the European Commission have taken important strides in developing a performance-evaluation framework, the impact of incubator

services on the performance of incubatees is yet to be measured. The performance of businesses located in incubators has not been included in the framework. Hence, incubator associations and governments are yet to recognise how a business develops in a business incubator therefore falling short of identifying key services that incubatees might require.

This section has highlighted the incubator practitioners' attempts at developing a framework for evaluating the performance of incubators. Academics have also embarked on impact studies to understand how incubators function, and subsequently developed monitoring systems for incubators. The following section seeks to review relevant incubator impact and evaluation studies.

2.7 What Measuring Incubation Performance Involves from the Viewpoint of Academics

Researchers agree that the reason there is an absence of an incubator benchmarking framework or a performance evaluation framework stems from the lack of understanding of the internal incubation process. Limited research has been made towards understanding how incubatees develop within the incubator (Hackett & Dilts 2004). What constitutes an appropriate measure of performance for a business incubator still remains unclear (Phan et al. 2005) Furthermore, there is a lack of theoretical base for incubator performance evaluation (Bergek & Norman, 2008).

In fact, evaluating all aspects of incubation programs and measuring the impact of their support services on the incremental development of businesses is essential for incubators to optimise their contribution to their incubatees. Business-support services vary depending on an incubator's mission and focus, as well as on individual clients' needs. Services must be tailored to a company's stage of development; the skills, personalities and experience of its management team; access to funding; and many other factors. Determining which services clients need requires

Careful assessment during the admissions interview and ongoing assessment throughout the clients' time in the incubator.

Therefore, with an in-depth understanding of the growth process of an incubatee and the impact of the programs as businesses grow from one stage to another, a benchmark can be developed for evaluating the performance of businesses in incubators.

The literature review in the next chapter will identify that the major focus of benchmarking incubators should not be solely driven by broad goals such as job creation but involve specific goals that entrepreneurs achieve in the development of their business ventures. Limited attention has been given to how firms develop in business incubators and how this progress is meaningfully measured. Incubator associations and governments are yet to recognise how a business develops in a business incubator, therefore they fall short of identifying key services that might be required by incubatees at the different stages of growth. Although several incubator researchers have attempted to assess the effectiveness of incubator programs, the units of analysis used as gauges of effectiveness have been graduation rates, failure rates and revenue growth in non-profit, university and for-profit incubators (Allen, 1988; Mian, 1997; Pena, 2004; Peters, Rice & Sundararajan, 2004). They found their models ineffective in explaining the role of incubators in facilitating entrepreneurship (Peters et al., 2004, p83), as the models focused on only limited incubator services and on the use of hard financial-performance measures which are inappropriate for small-business startups given the dismal sales and mounting costs they generally experience at that stage. Total sales and costs do not provide for a complete evaluation of progress in small firms. This demonstrates that there is a fundamental gap in the evaluation of individual businesses located in incubators.

2.8 Summary

This chapter has described the lack of understanding of how businesses grow in business incubators. Despite the increasing number of incubators and the research conducted on their effectiveness, there is still uncertainty about whether incubators are achieving their goals and exactly what their impact is on their tenants. There is a gap in the knowledge about how an organisation develops in a business incubator. Although this chapter has identified various studies, the impact of services on business development is still unknown. The discovery of the influence of sponsoring institutions, the value added by incubator management and the impact of offerings on the emergence and growth of a start-up forms the model for a performance-evaluation framework that this study addresses.

Chapter 3: Literature Review

3.1 Introduction

The literature encompassing the evaluation of incubator performance has been recognised as being critically important to the business-incubation industry. The OECD has called for more rigorous evaluations given the large amounts of money invested in this sector. This recognition has led to wide-ranging research being conducted at a complete macro view (Allen & McCluskey, 1990; Bergek & Norman, 2008; Chan & Lau, 2005; Grimaldi & Grandi 2005). However, research at a micro level, in which the firm is analysed throughout its life in the business incubator, is lacking to date. The conflicting and inconsistent methods of evaluating business-incubator performance have left the industry without a pertinent theory that provides a thorough and complete understanding of the success of firm development.

Incubator researchers have attempted to address the issue of incubator performance; however, they have failed to provide a single evaluation framework. The reason for an absence of a framework lies in a lack of consensus with regard to the definition of performance and how it should be evaluated and compared (Bergek & Norman, 2007; Nolan, 2003; Phan, Siegel & Wright, 2005).

Section 3.2 discusses the core definition of what constitutes a business incubator and proposes that the first step in building an assessment framework for incubators lies in agreeing on a definition of the business incubator. The literature classifies the various types of incubators based on physical space, sponsors' objectives, type of sponsorship and industry focus. However, regardless of business-incubator type, the universal definition of a business incubator is a facility designed to assist new and growing businesses to become established by providing advice, services and support. This definition includes the fundamental units of analysis, which

are the *growth of the firm* and *support services*. These provide the platform for constructing the framework of a performance-evaluation system. However, the problem thus far in the assessment of incubators is rooted in the performance measures being derived from the global objectives of incubators such as number of jobs produced and business-failure rates. Section 3.3 explains that the driving force for the current use of such performance measures is rooted in the history of business incubators in America, Europe and Australia. The current benchmarking practices of incubators performed by incubator practitioners such as the NBIA and the European Commission are discussed in detail in Section 3.4. Section 3.5 reviews relevant academic research and highlights the current measurements used to assess the effectiveness of business incubation. Section 3.6 reviews the performance-evaluation models used in small-business research and establishes the framework for developing a specific incubator performance evaluation framework. This chapter concludes with a discussion of how the framework will assess all aspects of incubation, including the entrepreneur, the incubator manager and the providers of funds.

3.2 The Small -business Incubator and Business Incubation

Incubators are comprised of four components: (1) a person (staff) who provides advice/mentoring and access to a resources network; (2) shared (administrative) services to reduce overheads; (3) flexible space and no fixed term contracts; and (4) a network of business-support services (Allen & McCluskey, 1990; Chan & Lau, 2005; Hackett & Dilts, 2004). The incubator is a network of individuals and organisations that includes the incubator manager, incubator advisory board, incubatee companies and the support network which is made up of lawyers, accountants, venture capitalists, marketing specialists and volunteers (Hackett & Dilts, 2004).

Terms such as business incubator, business innovation centre, business enterprise centre, business park, technology innovation centre and enterprise development centre have been used interchangeably to describe the physical space and focus of the incubator (Chan & Lau, 2005; Hackett & Dilts, 2004; Petree, Petkov & Spiro, 1997). Business incubators can be found on acreage blocks or in multi-storey buildings, or even functioning as a virtual business incubator on the internet, with no physical presence at all.

Business incubators gained popularity rapidly in the 1980s (Allen, 1985; Temali & Campbell, 1984). According to the NBIA, there were approximately 1,250 business incubators operating in North America (NBIA, 2012). They now exist not only in developed western countries, but also in developing nations such as Uzbekistan, Nigeria and Brazil (Lalkaka & Bishop, 1996). For years business incubators have served as a tool for nurturing small businesses from inception to adolescence. Incubators are commonly linked to business-support networks and technological innovation programs to provide small businesses with a better chance of survival and an opportunity to overcome the high rate of failure associated with start-ups (Plosila & Allen, 1985).

The US Small Business Administration (2003) defines incubators as:

...buildings in which a number of new or growing businesses can locate and operate at much lower costs than in conventional space where market rates prevail. Incubator facilities are characterized by access to shared, centralized services such as clerical and administrative help, receiving and shipping facilities, conference rooms, computers and word processors, and other business assistance. (US Small Business Administration, 2003).

In Australia, business incubators receive funding from the Commonwealth Government Department of Industry, Tourism and Resources (DITR). AusIndustry is

the departmental agency that has the overall responsibility for managing the incubator program. They have provided the following definition and functions of an incubator:

A small business incubator is a facility designed to assist new and growing businesses to become established and profitable by providing premises, advice, services and support. Business incubators are known to reduce the failure rate of new start-up businesses. In doing so they create jobs and assist local economic development.(AusIndustry, 2003, p.2)

In its definition, AusIndustry stipulate that the incubation period is normally from one to three years. They also state that a majority of Australian incubators are operated as non-profit legal entities (AusIndustry, 2003)

The incubator concept emerged as America moved from a manufacturing focus to a service and information-based economy (Plosila & Allen 1985). Business incubators were developed using old suburban buildings for “home-grown” economic development (Plosila & Allen 1985). They provide cheap rent, shared services, business advice and networking support (Allen, 1985; Campbell, 1989; NBIA, 2012). An incubator provides new entrepreneurs with training and support for the development of their new ventures. For many business innovators the incubator becomes a place where they overcome the loneliness of entrepreneurship (Boyd & Gumpert, 1983)

Rice and Mathews (1995), the former an incubation practitioner and the latter a veteran of the incubation industry, co-authored a book that embodied best practice in the incubation industry. They addressed the question of “just what are incubators and what do they do?”, writing that the incubator serves as a “switching” centre to other people and resources, as needed. One unique feature that embodies the classification of an incubator is that it is a place where a budding entrepreneur goes

for help with the intention of starting a new business (Grimaldi & Grandi, 2005; Lindelof & Lofsten, 2002)

Smilor & Gill (1986) attempted to scientifically brand the business incubator as an apparatus that maintains and controls conditions for the cultivation of SMEs. In their description of incubators, Smilor and Gill (1986) suggested that incubators give form and substance to start-ups, predominately in the form of structure and credibility. Well-managed incubators not only make growth more affordable, they aid in establishing realistic milestones through graduated rent structures (as some incubator increase rent every year with the view that this better prepares older incubatees to leave as they become more established), create a polished professional image and provide business consulting assistance and networking facilities (Smilor & Gill, 1986). Business incubators provide commercial space at low cost and a host of business services to help entrepreneurs survive the early stages of business development (NBIA, 1992).

More-recent incubator literature has reported that the focus of business incubation has moved from facilities and administrative services to business-support services (Peters et al., 2004). The incubator is a physical place that does not merely provide shared services with subsidised rents, also controls and links resources to facilitate incubatee growth. However, there are inconsistencies in defining incubators in the literature as one organisation or a general entrepreneurial environment nurturing individual organisations (Bergek & Norman, 2008). This research chooses to define the incubator as a general entrepreneurial environment providing various support services for ventures in their early phases.

However, drawing from the broad literature on incubation, scholars of the concept have agreed that small-business incubation is a dynamic process of business-

enterprise development. Incubators nurture young firms, helping them to survive and grow during the uncertain start-up period when they are most vulnerable to failures. Recent scholarly findings report that a predominant reason for moving a start-up business from the home setting into a business incubator is the feeling of being isolated from others (Burnett & McMurray, 2008). They also address inherent market imperfections such as the cost of information, restricted access to capital and the lack of focused business advice for new small businesses (Campbell, 1989). A business incubator is generally described as a facility providing favourable, controlled conditions to aid in the growth of new ventures (Petree et al., 1997).

3.3 Classifying Different Types of Incubators

According to the NBIA, there are more than 7,000 incubators worldwide (NBIA 2012). Approximately 1,200 business incubators were operating in North America in 2012. Incubators have been grouped according to their specialty, such as technology, manufacturing, fashion, crafts, or mixed-use (if they service diverse types of businesses) (Plosila & Allen, 1985). Specialised or targeted incubators help entrepreneurs from a specific field of industry and focus on activities fostering the development of local enterprises within a specific sector such as food processing, crafts, wood production or fashion. With a specific focus, incubator managers can build direct links to capital sources, speciality programs and markets related to that sector.

A technological incubator is a popular type of specialised incubator. Its common goal is to support the transfer of technologies from the research, development and university environment to businesses via the establishment of new, innovative, technology-oriented companies (NBIA, 2012). Technological incubators implement "research-based spin-offs", creating suitable conditions for the use of outputs of research and development and industrial and utility models, as well as the

development of innovative technologies (producing products of higher added value) (National Agency for the Development of Small and Medium Enterprises (NADSME), 2012). Most technology incubators see themselves as a key support institution for innovative technological start-up companies in their region and promoting the knowledge-based economy via the interconnection of research, development, and innovation with business practice; in this way, they aim to increase the economic competitiveness of the region (Steiner, 2010).

Technological incubators are usually situated near close or on the grounds of research and development parks, universities or research laboratories. This allows tenants to gain access to research devices and get in touch with those institutions' professionals. This proximity also makes it easier to network with experienced and successful entrepreneurs from the technology field, or even to form strategic alliances to take advantage of entrepreneurial opportunities as a sub-contractor or supplier (NADSME, 2012).

Empowerment incubators seek to promote a group of tenants, such as women that historically have been denied full access to resources and opportunities. In developing countries like India, empowerment incubators are set up to assist women in agriculture by providing them seed funding and tailored agriculture knowledge specific to the region. Australia has its own empowerment incubator set up by the Victorian Women's Trust.

An up-and-coming incubator model is the virtual business incubator. These provide similar services to other incubators, but operate online. Participants pay a small fee to become a member rather than a tenant. Membership fees provides access to online resources such as information about intellectual-property rights, business-plan creation, technology assessment and various other support services.

Incubators are also commonly identified according to their sponsorships. There are five main categories: non-profit incubators, which are generally sponsored by chambers of commerce and community-based organisations targeting economic development; university-related incubators, with objectives of research commercialisation; private, for-profit incubators; and community-sponsored incubators with job-creation motives (Allen & Raman, 1985; Temali & Campbell, 1984).

For-profit property-development incubators primarily seek to capture real-estate appreciation (Nyrop, 1986). Non-profit incubators, which can include government-supported and privately owned incubators, focus on creating jobs and enhancing the entrepreneurial climate (Kilcrease, 2011). Academic incubators seek to commercialise university technology, while simultaneously providing local economic development (Smilor & Gill 1986). For-profit seed capital or venture-capital incubators represent the physical manifestations of seed-fund managers, who create portfolios of firms in a single location - the better to attend to them. The most common business types found in business incubators are light manufacturing, technology, service firms and those businesses developing new products or engaged in research and development (NBIA, 2012).

Academics and incubator practitioners have tried to measure the effectiveness of incubators structurally, but for the most part not functionally. However, new incubator research has identified that the success of an incubator depends on the progress of its tenants (Aerts et al., 2007): in other words on its function as a place for assisting growth and development rather than a physical space defined by measures of concrete space.

This research uses the functional definition of incubators whereby an incubator provides a supportive environment for emerging ventures. The effectiveness of the support services on business development needs exposure. Business incubators predominately take on ventures in their budding phase where ideas are being developed. Therefore, there needs to be an understanding of how businesses grow in incubators and the types of support needed at this very early stage; understanding this incubator function allows the development of a theory for assessing the impact of the business incubator on firm development. The stages of firm development in the business incubator will also be documented.

The next section reviews the performance measures that have been used, why they have been used and the problems surrounding such measures.

3.4 Incubator Performance Measures: A Review of Past Incubator Research

One of the first incubator-performance research projects was conducted by Allen and McCluskey (1990), who systematically categorised incubator organisational characteristics according to their objectives in a model called the Business Incubator Continuum. Their value-added continuum assembled incubators into a number of discreet groups (for-profit property development, non-profit development corporation incubators, academic incubators and for-profit seed capital incubators). They evaluated incubator performance based on occupancy rates, jobs created and firms graduated. Their study did not find any statistically significant difference between the type of incubator and the services each type provided. Incubators within the public, academic and partnership incubators had common policies (admission and exit), while for-profit incubators were the most dissimilar (Allen & McCluskey, 1990).

Allen (1988) developed the Facility Life-Cycle Model which was divided into three stages: start-up, business development and maturity. Management changed focus as the incubator moved through the different stages of growth. Allen's research

provided the industry with a clear understanding that different sponsors had different objectives, and that this steered the incubator's direction as far as admission policies, the types of tenants recruited into the program, tenant subsidies and graduation policies (Allen & Weinberg, 1988; Plosila & Allen, 1986) Although incubators were sponsored by different parties with differing objectives, no variation was found in the types of services provided (Allen & McCluskey, 1990). Job creation is a common objective and a performance indicator used by most government-funded incubators. Sales growth and profitability measures are also used as performance measures. However, there are problems surrounding such measures. Start-ups have virtually no or minimal sales achievements. As a result, financial measures such as sales growth, return on equity and other ratios are impossible to perform.

Allen's research provided a good base to understand the types of incubators that existed in the American business landscape however it did not provide a clear understanding of the effectiveness of the programs on entrepreneurial development. More simply, a lack of understanding persists about the incubation process itself (Allen & Bazan, 1990; Allen & McCluskey, 1990; Mian, 1997).

In 1985 Allen again conducted a study on 12 incubators and 56 firms. This time his research provided government and practitioners an understanding of which services were most useful for tenant firms (Allen, 1985). Allen's study identified three incubator organisational types: public, private and university. He identified three general categories of services provided to tenants: logistical or physical shared office support and management consulting. This research found that different groups of incubators focused on different services. The two key questions addressed were: how useful are the various types of services provided and what are the most useful core services an incubator should offer? There has been limited enquiry into the

effectiveness of incubation services. Research on incubators has mainly focused on the number of jobs created, the cost of creating jobs, the number of graduates and failures, the mix of incubator tenants, their location and various other statistical data, which has provided little guidance on incubator performance.

Most incubator research in the 1980s focused on understanding the incubation concept. A research project funded by the National Science Foundation in 1985 sought to understand the inner workings of incubation in state-funded incubators however this research was descriptive and lacked methodology. Moreover, the findings were inconclusive and expressed the need for further research. The project reached five tentative conclusions:

1. Support for an innovation centre within the university budget is unlikely, unless the university has strong economic development ties with the local community.
2. The belief that a centre can become self-sustaining by obtaining an equity position in tenant companies has not yet been confirmed. Ten years of external funding may be required before the equity mechanism works.
3. Five to 10 years should be allowed before expecting strong economic development results from a centre functioning with public funds.
4. Most public funding cycles are not congruent with centre development, since the cycle ranges from two to five years before an election.
5. Some centre activities may be supported on a fee-for-service basis, but strong management and networking skills are necessary (Adapted from Smilor & Gill, 1986).

In 1985, Smilor and Gill conducted a research on 117 incubators. They listed 10 critical success factors: (1) on-site business expertise, (2) access to financing and capitalisation, (3) in-kind financial support, (4) community support, (5) entrepreneurial networks, (6) entrepreneurial education, (7) perception of success, (8) selection process of talents, (9) ties to a university and (10) concise program milestones with clear policies and procedures. They grouped services provided by incubators into four categories: secretarial, administrative, consulting and other. The

research was again descriptive, providing statistical information such as location, age and structure. It did not provide an insight into how incubators provided these services, or how incubators affect firm performance.

Several studies have suggested that business incubation is an effective business-development tool, requiring modest investment and providing a fair return on investment (ROI) to the regional economy (Hackett & Dilts, 2004; Rice, 2002). Hackett and Dilts (2004) described the business incubator as a system of controls that links resources to facilitate the development of incubates and minimise failure rates. Although business incubators play a key role in facilitating growth, much of the research has centred around incubator facilities rather than the role incubators play in fostering new ventures (Hackett & Dilts 2004)

Allen and McCluskey (1990) provided the first systematic overview of incubator-performance literature. They identified the need for increased conceptual clarity with regard to incubator development in general and incubator performance in particular.

Mian (1994, 1996, 1997) attempted to develop a multi-assessment framework for examining the effectiveness of university technology incubators operating in the US environment. Mian (1996) found that the body of knowledge was fragmented and anecdotal in nature, and did not offer a conceptual model in assessing university technology-business incubators (UTBI). In 1996 Mian looked at a sample of six technology incubators that had strong links with universities, rating tenants' perception of the usefulness of specific university-related inputs such as university image, laboratories and equipment, technology transfer programs and student employees. He did not measure the impact of value-added services such as business-consulting services and mentoring on venture development.

Mian (1996) realised that to develop a framework for assessing UTBI programs, he had to take a longitudinal approach. In 1997 he used a case-study approach and revisited the same incubators he had surveyed in 1996. He tested the UTBI effectiveness using a framework he proposed based on three dimensions: (1) program sustainability and growth; (2) tenant survival and growth; and (3) contributions to the sponsoring university's mission. The scope and effectiveness of management policies and the services provided were also assessed. He once again sent out surveys and interviewed incubator management and tenants. Mian (1997) proposed that incubator performance should be measured by growth of rentable space, growth in tenant sales, press coverage and number of visitors. He tailored the work of Allen (1988) to suit university incubators but did not examine how incubators affect the business-growth process. Hence, Mian's work did not capture the true impact of incubator services on venture growth. The goals and outcomes of incubators have yet to be fully evaluated despite their popularity in both the public and private sector and in developed and underdeveloped nations (Campbell 1989). There is no consensus of what makes a successful incubator and how to measure it (Allen, 1985; Campbell et al., 1987; Smilor & Gill, 1986).

During the 1990s, several researchers attempted to address the issue of incubator performance, but no single evaluation framework was developed (Mian 1997). Several researchers have since discussed the importance of relating performance to the activities of the incubators to identify best practices (Colombo & Delmastro, 2002; Hannon & Chaplin, 2003; Mian, 1997).

Previous research into incubators has resulted in broad generalisations making it impossible to compare results from incubators with varying objectives and characteristics (Adkins et al., 2003). Incubators are commonly evaluated on the basis

of the degree to which they meet their goals and objectives (Bearse, 1998). However, while the objectives and strategies of the various types of incubators may vary, there is one overriding concept that is shared across all types of incubator: business success (Hackett & Dilts, 2004). Therefore, the unit of analysis when measuring incubator outcomes should involve the incubatees. In fact, only when the business ventures that are being incubated grow and stabilise will the goals of all the incubators be realised. Current incubator studies have measured outcomes rather than performance (Bergek & Norman, 2008).

The importance of regularly and systematically collecting data from incubator firms must be underscored, since the non-availability of such data is identified as the major barrier to perform significant analyses (Colombo & Delmastro, 2002; Hannon & Chaplin 2003). Specifically, data that allows tracking the performance of incubated ventures after they have completed their incubation period is critical, but in most cases missing (Hackett & Dilts, 2004; Rothaermel & Thursby, 2005; Schwartz & Gothner, 2009).

Once an in-depth understanding of the growth process of an incubated venture and the impact of incubator programs on venture growth from one growth stage to another is achieved, a performance-measurement framework can be developed for the incubation industry.

Rice (1992) and Lichtenstein (1992) have been the only incubator researchers who provide exploratory research of relationships among entrepreneurs in the incubator, and between the entrepreneurs and the incubator manager. However, they were unsuccessful in developing the complete performance-evaluation model for benchmark purposes, that the incubation industry needs (Mian, 1997). There is still no agreement on the ingredients of a successful incubator or the effectiveness of the

process of business incubation and how to measure it (Mian, 1997; NBIA 1993; Campbell et al., 1988; Smilor & Gill, 1986; Allen, 1985).

In incubation literature the term “growth” has always been observed as employment growth, profit growth and sales growth. In a study conducted by Lindelof and Lofsten (2002) in Sweden the benefits of locating in a science park or an incubator were measured in terms of sales growth, employment growth and profitability. They compared the performance of new technology-based firms (NTBF) located in a park against those located off parks, and discovered that firms located on parks had much higher sales, employment and profitability growth. The business in the sample of the businesses were seven to nine years old, making it possible for the researchers to use these types of growth measures as financial information. The use of such growth measures would have been impossible for start-ups, given the lack of financial information.

Since the turn of the century, a few studies (Pena, 2004; Peters et al., 2004) have questioned the role of incubators in the developing businesses. Pena (2004) took a different perspective, making incubatees- not incubators- the centre of attention. Pena (2004) made an attempt to trace human-capital characteristics (level of education, business experience and motivation) and link them to business growth. He also made an attempt to find the impact of incubator services on firm growth. The measures of firm growth he used were employment growth, sales growth and profit growth. His study did not attempt to develop a benchmarking framework; instead, it investigated the impact of incubator services in one time frame and in one particular geographical location. Since the incubatees had entered the incubator at different times, the researchers found a problem in comparing sales and profit bases. They had to size-adjust sales and profit growth using algorithms. The researchers failed to use

profit growth which was initially meant to be a measure of firm growth. The profit-growth measure “did not perform as desired” (Pena ,2004, p229). Pena added that “there is a belief in the academic community that profit is not an accurate measure to capture venture growth” (Pena 2004, p229). Employment and sales growth were then used as a measure of firm growth. His findings suggested that business knowledge and management experience were important components in ensuring firm growth (Pena 2004, p231). He also found that business courses, individual monitoring services and monitoring provided by the incubator were positively related to employment growth.

Peters et al. (2004) attempted to test the impact of infrastructure, coaching and networks on graduation rates in non-profit, university and for-profit incubators. However, they found their model ineffective to explain the role of incubators in facilitating entrepreneurship (Peters et al., 2004, p83). The model is seen as being ineffective due to its sole focus on infrastructure, coaching and networking services. There needs to be a greater understanding of the type of services needed in incubators and in what ways these services are provided. In measuring the effectiveness of these three services, Peters et al. (2004) used the number of graduates as a performance indicator, although this can only be considered a very rough measure of the incubator’s ability to accelerate the entrepreneurial process (Peters et al., 2004). The entrepreneurial process in a business incubator is still very much under-examined (Hackett & Dilts, 2004). Hackett and Dilts (2004) considered a number of alternative theoretical foundations for explaining incubation. They described the incubator as a place where incubatees are selected from a pool of incubation candidates, monitored and assisted, and infused with resources while they undergo early-stage development. However, they did not explicitly describe the incubation process but instead attempted

to build a theory of business incubation by drawing from Options Theory. Their theory challenges the notion that most new ventures must fail; from an Options Theory perspective, incubators that help their incubatees fail quickly and cheaply are successful, because quick and cheap failures provide opportunities for entrepreneurial learning, firm recovery and repositioning.

Lindelof and Lofsten (2002) studied the added value of science parks to tenant performance by investigating employment growth, sales growth and profitability. In a recent research projects, Bergerk and Norman (2008) reclassified incubator types using five components: the selection process, infrastructure, business support, mediation and graduation policy. Their findings further extend understanding of the nature and scope of incubators. McAdam and Marlow (2008) explored the relationship between the high-technology start-up life-cycle development and the use of the incubator's resources.

Kilcrease (2011) studied 478 business-incubator clients, in five different incubator types. She surveyed perceptions of quality of service delivery for organisational, networking, financial, and technological services, finding that that for-profit seed-capital incubators were the most successful in delivering services in all four categories. Further, academic incubators were the least successful in delivering organisational and financial services, while private non-profit incubators were the least successful in delivering networking and technology services. Although the research has identified incubator performance based on incubator type, the findings have not shed light on how services are delivered and the incubator's impact on business performance.

This literature review demonstrates that to date there has been no systematic analysis on how businesses develop in business incubators. Furthermore, the works on

assessing incubator impact have been limited to discussion of the degree to which broad-based goals have been achieved. What is needed, is a framework that can help incubatee businesses assess if they are progressing and growing in the incubator environment. A framework that allows incubatees to compare performances with one another within their own incubator environment in real time without waiting for a national survey would bring about change in the current evaluation system.

Business incubators have varying degrees of effectiveness, depending on their type and the environment in which they operate (Campbell, 1989, p1). The effectiveness of a business incubator is mostly measured by client satisfaction with the services provided. This method of measuring effectiveness does not provide a good measure of the success of business incubation. Incubator researchers have called for a more comprehensive performance-evaluation model that tracks the performance of new ventures and spans businesses that are ready to graduate. According to Lalkaka (1996), the performance of a business incubator should be measured essentially by the survival and growth of the businesses it incubates.

Incubator practitioners have suggested that the industry needs to understand the development process of firms in the different types of incubators. A number of relevant suggestions emerge from this literature review:

- 1) A complete and useful evaluation methodology should examine the program implementation and corresponding outcomes (Lichtenstein, 1992 cited in Barse, 1993).
- 2) It is essential to develop a better understanding of the business-development process and how the incubator adds value (Lichtenstein 1992, cited in Barse, 1993). Apart from subsidised rents and administrative services, how does an incubator add value and help a venture grow into a sustainable business?

“Value-added” designates those specific activities in incubation programs that enhance the ability of their tenants to survive and grow in business (Allen & Bazan, 1990).

- 3) Incubator management teams must conduct rigorous evaluations at an early stage of business development. Schwartz and Blesse (2011) highlighted the importance of regularly and systematically collecting data from incubator firms. However incubator practitioners have revealed that collecting financial information from their incubatees is a problem, the incubatees as they either do not like to reveal such information or do not have the data, as they are at an early state of business development.

Despite the increasing number of incubators and the research conducted on their effectiveness, there is still uncertainty about measuring the success of different incubators, what services are provided, how they are provided and the corresponding impact on their tenants.

As well, the following issues complicate the measurement process for evaluating the success of incubators:

- 1) Businesses that enter the incubator are at a budding phase, and therefore do not have measureable data such as sales and profits.
- 2) There are different types of incubators with varying objectives driven by their sponsors; therefore, they might look at different indicators, such as growth in number of jobs, to measure performance.

The preceding sections have examined the types of business incubators, the concept of an incubation system and the need for a performance-evaluation system. The next section explores the services that support business growth and the concept of the business life cycle that consolidates the measure of business growth. This

consolidated measure will fill the current gap in business-incubator performance evaluation.

3.5 How Businesses Grow in Business Incubators

This chapter has shown that there is substantial interest from government bodies, incubator associations and researchers to develop an incubator performance-evaluation system. While some researchers and incubator associations have attempted to measure the performance of incubators, there has been a lack of systematic research to understand the development of businesses located in incubators. The core problem seen in the incubation industry is that “there has been a lack of standardisation of evaluation approaches in terms of measures and methodology” (Sherman & Chappell, 1998, p3).

Tornatzky (2001) suggests that organisational practice involves a rich mix of behaviours, norms and incentives. The examination by Allen and McCluskey (1990, p65) of the incubator value-added continuum supports this rich mix of various incubators’ objectives.

The incubator experience in the past 10 years has received great attention from sponsoring private and public bodies as either an economic development tool, a means of commercialising a new idea or various other uses. Sponsorship involves planned environmental change by government agencies, the private sector and universities to create new organisations and increase the likelihood of survival (Flynn, 1993, p130). The question is: how do incubators with differing collaborations, objectives and business focus approach business incubation? What are the structures and processes put in place to achieve the various objectives? How do these controls flow onto the start-up, and how does the incubator affect the start-up’s pattern of growth? Are the same reports that are prepared by the incubator also prepared by the incubatees?

A theoretical framework has been lacking to explain organisation growth in the context of start-ups in business incubators (Phan et al., 2005). How does an incubator with differing institutional backing add value and help a venture grow into a sustainable business? The role of performance evaluation or benchmarking is to provide the incubator practitioner with information about whether their client is doing better as a result of their inputs. Benchmarking as described by the Southern Technology Council¹ is a discipline that includes the following:

1. identifying an important domain of organizational activity
2. gathering performance data therein
3. identifying and describing “best practices” used in exemplary organizations to enhance performance in that domain of activity
4. encouraging the adoption of these practices among organizations participating in the benchmarking effort (Tornatzky 2001, p269).

This review confirms that there is still a lack of a complete evaluation framework that will allow for benchmarking activities and outcomes. The major focus of benchmarking incubators should not only be their broad goals, such as job creation but involve the specific goals achieved by entrepreneurs in the development of their business ventures. To develop a meaningful performance-benchmarking framework, all facets of incubation needs to be separated and finally measured. In the next section the dimensions and measures of performance in small-business research will be briefly reviewed to develop the base for this research.

3.6 The Complexities of Incubator Performance Measurement

Incubators are commonly evaluated on the basis of the degree to which they meet their goals and objectives (Bearse, 1998). Business incubators seek to add value by offering clients a combination of facilities and services that cannot be so easily

¹ The Southern Technology Council is a non-profit consortium composed of 15 American states. It is involved in projects aim to develop, commercialise and deploy technology. It was involved in a six-year benchmarking study on university-industry technology transfer. The author Louis G. Tornatzky was director of this council and was involved in various NBIA incubator-benchmarking initiatives.

obtained from other sources. The nature of these services and the way in which they are delivered usually have an important influence on the success of incubator tenants and hence the performance of the incubator (European Commission Enterprise Directorate-General, 2002, p48). The type and the range of support services provided by an incubator is believed to vary depending on the model and the objectives of investors financing the incubator (European Commission Enterprise Directorate-General, 2002, p49).

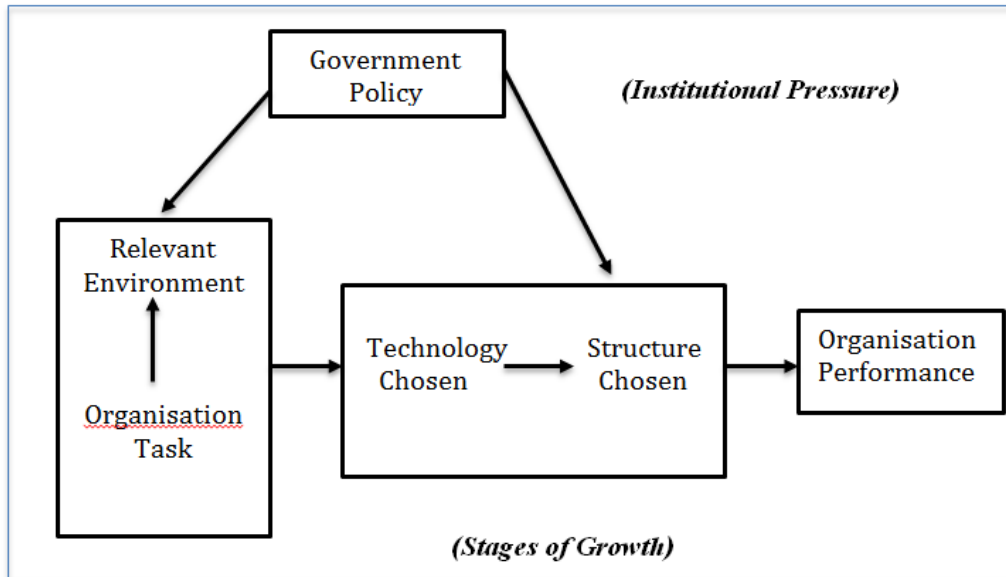
Allen and McCluskey (1990, p65) created the value-added continuum that assembled incubators into four discreet groups of investors: for-profit property development incubators, non-profit development corporation incubators, academic incubators and business-development for-profit seed-capital incubators (Allen & McCluskey, 1990). For-profit incubators seek to generate an economic return for their investors. Non-profit corporations focus on creating jobs. Incubators affiliated with universities seek to commercialise university technology. Seed-capital incubators co-locate investee businesses in order to monitor the investment portfolio. This value-added continuum did not include combination groups of sponsors, which are known as hybrid incubators, and which are a popular form of incubation. An example of a hybrid incubator is a private and for-profit incubator that started with substantial assistance from the public sector. Their investors agree to meet a variety of public-sector goals in return for public funding to defray the steep costs associated with constructing or renovating a building (Nyrop, 1986).

Operating structures, that require the involvement of a single sponsor or an array of sponsors raise the issues of goals and strategic action (Lalkaka, 1996). Hybrid incubators are a good example of the sponsoring public agency focusing on job creation, in contrast to a private-sector incubator (a private technology park for

example) pressing for high-technology businesses, often creating fewer jobs (Lalkaka, 1996).

Figure 3.1, adapted from Randolph and Dess (1984), shows this complex setting of an incubator (emphasis added in brackets):

Figure 3.1
Institutional Pressure in an Incubator



3.7 Developing an Incubator Performance-evaluation System

The selection of what to measure is an important first step in evaluating progress in a business incubator. This research does not use a single unit of analysis to measure the performance of an incubator. To develop a meaningful performance-benchmarking framework, all facets of incubation need to be separated and evaluated.

The primary role of performance measurement is to help managers understand how their organisation is currently performing, and how this performance can be improved (Neely & Al Najar, 2006). Laitinen (2002) defines performance as “the ability of an object to produce results in a dimension determined a priori, in relation to a target” (p66). This performance has traditionally been measured in financial terms (De Toni & Tonchia, 2001; Laitinen, 2002; Murphy et al., 1996). The most

commonly used measures of performance are efficiency (e.g. ROI), growth (e.g. increase in sales) and profit (Murphy et al., 1996). This one-sided view of performance has been criticised for being short-term based and lacking strategic focus (Neely & Al Najar 2006). It has also been argued that financial measures alone are not sufficient for making decisions in modern firms, and therefore performance measures should include both financial and non-financial based (Laitinen 2002).

By using an effective measurement system that tracks the growth stages of individual businesses on a more-frequent basis, the overall objectives and the desired results of fund givers, incubator managers and most importantly, the individual entrepreneur should be more achievable.

Bolton (2004) argues that the personal abilities, talent, temperament and motivations of entrepreneurs have a great effect on whether business owners want to grow their firms. The skills, knowledge and expertise of entrepreneurs underpin the competitive advantage of the firm. The attributes of an entrepreneur are an important aspect that affects the entrepreneurial process in firm development; this area is still very much under-examined in an incubator setting. Literature on the determinants of business survival and growth has focused on the effects of entrepreneurs' individual attributes on business performance (Honig, 2001). Attributes such as gender, experience, education and other entrepreneur-associated factors are the critical aspects that determine the success rate of firms (Pena, 2004).

Incubation support services and the development of entrepreneurial talent are essential processes in the creation of new ventures and the exploration of new opportunities (Totterman & Stern, 2005).

3.8 Current Performance Measurement of Business Incubators

As the research summarised above demonstrates, incubators have received an increasing level of attention from sponsoring private and public bodies, as either an economic-development tool or a means of commercialising new ideas. As a consequence, much of the research into incubators has had the underlying assumption that the supply of appropriate facilities would satisfy a demand for such facilities from intending entrepreneurs and assist entrepreneurs in developing thriving businesses. However, as has also been evident in the literature, incubators have been increasingly competitive in offering better or more-complete services to potential entrepreneurs to attract those new ventures that would best create the economic growth sought in the incubator's region. However, the question remains as to whether incubators really do contribute to the growth of businesses located in incubators, as there is a lack of a performance-measurement system that would give an integrated analysis of how incubatees are benefiting and growing within the incubator environment.

Various business-incubation organisations associations, and government sponsors such as the NBIA, European Commission and AusIndustry as well as incubator researchers, have applied financial performance measures when studying the growth of incubatees. However, as most small business researchers are aware, financial theory derived in the corporate context does not always apply to small firms.

Incubators are commonly evaluated on the basis of meeting their goals and objectives (Bearse, 1998). Business incubators seek to add value by offering clients a combination of facilities and services that cannot be easily obtained from other sources. The nature of these services and the way in which they are delivered usually have an important influence on the success of incubator tenants and hence the performance of the incubator (European Commission Enterprise Directorate-General 2002, p48). The type and the range of support services provided by an incubator are

believed to vary depending on the type of incubator and the objectives of the investors financing it (European Commission Enterprise Directorate-General 2002, p.49). The performance of business incubators should be judged primarily on the impact they make on local economic development such as employment effects (European Commission Enterprise Directorate-General, 2002). However, incubator researchers and practitioners stress that there needs to be more empirical evidence on the features and performance of incubator types to improve incubator policy (Barbero et al. 2012)

Policy-makers, business-incubation practitioners and stakeholders, and researchers have lacked a systematic approach for monitoring and evaluating the performance of business incubators across industrial sectors and geographic regions (Schaeffer & Cheng 2011). Despite growing attention by both academics and practitioners to evaluating the performance and impact of business incubators (e.g. NBIA reports 2003, 2006, 2012), the existing literature continues to suffer from methodological, theoretical and empirical limitations.

Businesses admitted to incubators are possibly exposed to selection bias (Schaeffer & Cheng, 2011). Entrepreneurs who are seeking or are selected for inclusion in incubation programs may be more educated, more motivated or more connected to business networks than an average new-business owner in the control group. In such a case, businesses in incubators are likely to perform better than peers in the control group. The second possible bias is administrative selection bias, referring to the competitive selection or screening processes of many business incubators that tend to identify and select the most promising businesses, or at least avoid those least likely to succeed (Storey & Tether, 1998). Business owners' traits, such as gender and age, and observed firm characteristics, such as size and capital to labour ratio, may only adjust for potential selection bias. Evaluating business

incubators' performance against each other requires incubators with sufficient homogeneity regarding major objectives, a set of multiple criteria covering different dimensions of incubator performance (Schwartz & Gothner , 2009).

The above challenges of tracking the performance of businesses located in incubators highlight the need for an incubator-specific performance-measurement system that allows individual business incubators to collect data within their centres and track their own performance. However, due to the inherent limitations of financial measures (they reflect historical performance, are highly aggregated and may lead to a short-term bias), many companies have sought to supplement financial measures with nonfinancial measures (Kaplan & Norton 2001). A stages-of-growth framework is designed to capture the current position of a firm in the incubator business life cycle. The main value in applying this model is the ability to inform business owners as well as incubator managers where a client firm is in its business life cycle, and what factors need attention for the client firm to move to the next activity or stage.

The key elements in an incubator appear to be the sponsoring institution, the incubator manager and the entrepreneur. Small-firm research has examined many of these elements individually: for example, the effect of the entrepreneur's personality and experience on venture success (Cooper & Gascon, 1992; Lee & Tsang, 2001). Research into incubators has listed the sorts of services provided by such institutions (Bearse, 1993; McKinnon & Hayhow, 1998). The Sponsors' requirements have been documented (Lalkaka, 1996). The steps in the transition from small business to listed company have been analysed (Churchill & Lewis, 1983; Scott & Bruce, 1987). What appears to be missing is a holistic analysis of the interactions between these key parties and the smallest steps taken in the transition from an idea to a small business.

When these small business-growth steps within an incubator are examined cross-sectionally, it may be possible to return to the question of the effectiveness of incubator services.

In building an incubator-specific performance-measurement system it is imperative that the various theories developed by researchers in many disciplines outside the realm of business incubation are explored, as business-incubation literature itself has not explored performance measurement theories.

3.9 Performance-measurement Theories

Outside the realm of business incubation, the topic of performance measurement has been feverishly debated. Firm growth was traditionally measured by hard financial measures, such as turnover, or by increased numbers of employees (Georgellis & Lange, 2007; Gray, 2006; Van Der Stede et al., 2006; Chell & Baines, 1998; Murphy et al., 1996). This traditional way of looking at success and performance has been questioned by various industries such as small-business research and women's entrepreneurship (Buttner & Moore, 1997; Chell & Baines, 1998; Walker & Brown, 2004). The performance of business ventures, is explained through four perspectives (Gartner et al, 1989; Genkema et al., 2000):

- (1) Stages of growth life-cycle theory (organisational development)
- (2) Entrepreneurship theory (personal characteristics of the entrepreneur)
- (3) Business-strategy research (strategic and operational planning and control); and
- (4) Industry and locational aspects (the environment).

Research on performance measurement has come from organisation theory and strategic management (Murphy et al., 1996). The three fundamental approaches from organisation theory are the goal-based approach (Etzioni, 1964), the systems approach (Georgopolous & Tannebaum 1957) and the multiple-constituency approach (Thompson 1967). The goal-based approach suggests that organisations be evaluated by the degree to which they meet the goals they set. However, goals vary from one

organisation to another, which makes cross-firm comparisons problematic. The systems approach compensates for problems in the goal-based approach by considering the simultaneous achievement of multiple generic performance aspects. This still fails to adequately provide an effective performance framework for examining organisations (Murphy et al., 1996). The multiple-constituency approach examines to what extent the firm meets its stakeholders' agenda or, simply put, to what extent stakeholders are getting what they want (Pennings & Goodman, 1977; Thompson, 1967).

Strategy researchers have integrated three organisational perspectives and developed performance measures in terms of multiple hierarchical constructs (Venkatraman & Ramanujam, 1986). The first is financial performance in terms of organisational effectiveness (Chakravarty, 1986). The second is organisational effectiveness as measured by product quality and market share. Financial performance measures allow for competitive analysis, where firms compare financial data regarding market share, sales, production costs or the budgets of competitors (Yasin, 2002, p217). In essence, performance evaluation provides responses to questions such as whether, how and why an organisation succeeds. Again, these approaches work well when applied to the corporate environment, where long-term data can be analysed and compared with that from other organisations. As discussed above, the problems inherent in small-firm research also confront those attempting to apply these theoretical perspectives to research into incubators and their tenants. However, non-financial operational performance measures have been used in small-firm research (Murphy et al., 1996). Given that it is problematic to collect financial data from new ventures or small businesses, operational measures form a suitable

base for building a framework for measuring the performance of start-ups located in incubators.

To develop a comprehensive operational performance-evaluation framework, it is important to identify the components of incubation and the growth process of a start-up in an incubator. The first step is to identify the controls that are put in place to further the broad objectives of the incubator. The second step is to define the domains of organisational activity in the development process of a small business. What are the core activities in organisational growth? Are they meeting their target activities on time? Given that the average time spent in an incubator is three years, what is the incubatee life cycle in a business incubator? Allen (1988) found that the incubator itself had its own developmental life cycle: start-up, business development and maturity. What is the incubatee life cycle? By identifying the life cycle and the activities of a start-up, could these activities be a measure of performance? Furthermore, would an effective framework be one where an incubator could conduct research independently, rather than depend on the broad, goal-based indicators that fail to provide a detailed picture of the impact of incubator programs on business development, such as those currently used by the NBIA or the European Commission?

Despite the lack of theory development in incubator literature, as identified by Hackett and Dilts (2004) and Bergek and Norman (2008), a variety of theoretical constructs have been used to investigate incubation and the performance of incubators.

3.9.1 Stages-of-growth Life-cycle Theory

One form of benchmarking incubator performance is through life-cycle theory. Stages-of-growth models were the most frequent theoretical approach to

understanding entrepreneurial business growth from 1962 to 2006 (Levie & Lichtenstein, 2010). In general, it is suggested that businesses follow a life cycle beginning at birth, followed by growth from stage to stage and finally death (Churchill & Lewis, 1983; McMahon et al., 1993). The stages approach to modeling growth can achieve extremely high face validity; 100 percent of founding entrepreneurs in one study were able to unambiguously identify their company as being in one of five defined stages (Eggers, Leahy, & Churchill, 1994). Churchill and Lewis (1983) introduced a five-stage model of small-business growth for start-ups consisting of: i) existence, ii) survival, iii) success, iv) take-off (a time of rapid growth) and v) resource maturity, a stage after which one can assume a new growth phase ensues, or perhaps decline sets in and a new cycle begins.

Using this theory, some researchers have attempted to apply life-cycle models to incubators. For example Allen (1988) suggests that incubators are enterprises that are going through their own developmental life cycles and as such can be measured. Allen (1988) subsequently introduced a three-stage life-cycle model: i) starting when a local community or local council considers establishing an incubator and investigates its feasibility, followed by ii) a development cycle where the incubator is financially running and attention shifts to the management of the tenant firms, finishing with iii) incubator maturation, characterised by a sophisticated enterprise-support network and demand for additional user space once the incubator has reached full occupancy.

The concept that the incubator itself can be viewed as an enterprise with its own developmental life cycle is seen by other researchers as an important advancement (Hackett & Dilts, 2004). While it is true that the measuring of variables at certain points in the lifecycle can provide a very rough framework for identifying the

whereabouts of a business in its development, one should be very careful in using this concept as a way to benchmark incubator performance, as different incubator models might have different time frames. A venture-capitalist model might have a shorter time span than a non-profit model. However, there is no knowledge currently of the variables or activities spanning the life cycle of a typical business located in an incubator.

According to Allen (1988) the start-up phase ends around the time when the incubator reaches its financial break-even point, but to fully establish a viable business incubator, i.e. the building of a successful organisation around a new concept, may take as long as 10 years (Hackett & Dilts, 2004; Lalkaka & Bishop, 2001). Given that many incubators in Australia are less than 10 years old, most are by definition still in their start-up phase.

Peters, Rice and Sundararajan (2004) discuss the incubator using a combination of life-cycle and entrepreneurship theory in explaining how the entrepreneurial process occurs in stages within incubators. Peters et al. (2004) studied the impact of infrastructure, coaching, and networks on the graduation rates from university incubators. Their study of 14 university incubators in North America indicated that the customisation of coaching programs and network formations help client companies gain a competitive advantage and encourage their survival. Drawing from a resource-based view (RBV) and learning theory, Peters et al. (2004) suggested that coaching should match governance structure and incubator goals. In-depth interviews with tenants and incubator-center directors were suggested as a useful method to identify appropriate resources. According to the NBIA (2008), the firm's incubation process is much more important than the incubator facility itself. Studies on the incubation process are sparse.

The theory used to address the development of firms in business incubators comes from the stages-of-growth or life-cycle theory. The works of Adezies (1979), Churchill and Lewis (1983), Filley and House-Scott (1969), Greiner (1972), Hanks et al, (1993), Kazanjian (1988), Miller and Frisen (1984), Scott and Bruce (1987), and Steinmetz (1969) suggests that organisations follow a predictable pattern of development which is characterised by specific stages of growth. This chapter reviews the empirical work of key stages-of-growth research and describes the methodology for testing Goal 1 of the current research which is to determine whether businesses located in incubators have an identifiable growth pattern.

A major issue in any analysis concerning the growth of a start-up firm is how to measure growth itself. The previous chapter highlighted various incubator research that attempted to measure incubator-firm growth by using financial measures such as sales growth, employee growth and profitability measures (Lindelof & Lofston 2002; Pena 2004). Such performance measures are unsuitable for start-ups, as they have generally not begun registering sales at such an early stage of their life cycle. To date, an appropriate performance measure for business incubators remains unclear. Knowledge of an organisation's present position or stage of development can aid incubator managers, investors and the entrepreneurs themselves in sourcing the types of assistance needed to improve performance.

The largest incubator association, the NBIA, is still geared towards collecting incubator-impact data through a national survey every few years. This is the most popular benchmarking system in the incubator industry. However, this practice occurs mainly in the United States; moreover, it focuses on the overall incubator performance, entirely neglecting the performance of firms within the incubator. Incubator research lacks the longevity of firms in incubators as a measure or

dependent variable for the effectiveness of incubator programs; i.e. the higher the rate of firms departing ahead of schedule, the more successful the incubator. Such analysis is needed in understanding the growth process of incubatees. There has been a lack of attention to how firms develop in incubators (Hackett & Dilts, 2004; Mian, 1997). The literature review in the previous chapter confirmed that there has been very little effort to empirically validate the process of firm growth or the impact of incubator efforts on firm growth. The lack of a complete assessment method of incubatee firms is due to the absence of a theoretical framework to explain organisation growth in the context of start-ups in business incubators (Bhabra-Remedios & Cornelius, 2003; Phan et al., 2005).

Current business-incubator performance measures in Australia, the US and Europe characterise growth in terms of sales, profitability and number of employees rather than other aspects of progress such developing a clear and precise business plan, obtaining the first sale, procuring a new technology, finalising a contract for funding and signing contracts for a distribution channel and developing a prototype. At such an early phase in the business life cycle, start-ups are generally not too concerned with profitability. In fact, Carter et al (1996) found that start-up entrepreneurs perform activities such as purchasing equipment, forming a legal entity and organising a team in their efforts to make their business tangible.

3.9.1.1 A Review of Stages-of-growth Models

Many studies of small businesses have adopted the life-cycle, or stages-of-growth, model in describing the growth of organisations (Churchill & Lewis, 1983; Filley & House-Scott, 1969; Greiner, 1972; Kazanjian, 1988; Miller & Friesen, 1984; Mount, Zinger & Forsyth, 1993; Scott & Bruce, 1987; Steinmetz, 1969). Small businesses are seen as growing by progressing through discrete stages of growth over

time (Kazanjan, 1988; Normann, 1977). Authors use term such as “life cycle”, “development stages” or “stages of growth” interchangeably. The stages that organisations follow occur in a predictable sequence and involve a range of organisational activities and structures (Daellenbach et al., 2006; Quinn & Cameron 1983, Lavoie & Culbert, 1978). Failure to solve key strategic problems at each stage will prevent the organisation from moving to the next (O’Gorman, 2001). The multitude of stages-of-growth models (Adizes, 2004; Chandler, 1962; Greiner, 1972; Kazanjan, 1988; Lippitt & Schmidt, 1967; Miller & Friesen, 1984; Scott & Bruce, 1987) agree that organisations grow in predictable patterns or a well-defined sequence over time; however, they focus on different aspects of the organisation where changes take place.

This research does not assume a priori stages of development. It seeks instead to construct a life-cycle model specifically for organisations in business incubators. The focus of this research is to identify the activities undertaken by entrepreneurs as they develop in the business incubator, then identify if there are common activities performed at specific times or stages of growth, therefore defining a sequential-development pattern. A valid life-cycle model could provide a tool for managers to identify critical organisational changes and problems as organisations grow and develop (Hanks, Jansen & Chandler, 1993; Beverland & Lockshin, 2001) The following section reviews various proposed life-cycle models to identify and confirm common stages of organisational growth. The review of these models aids in developing criteria for each a stage of development.

Chandler

Chandler (1962), one of the pioneers of entrepreneurial history at Harvard Business School, provided a framework to describe business evolution. As one of the earlier contributors, Chandler (1962) argued that as stages changed, so did firms’

strategies and structures, and identified a four-stage model of organisational evolution. While an organisation grows, its ability to make structural and strategic changes may affect the venture's growth prospects. In his landmark work *Strategy and Structure* (1962), Chandler found that organisations developed in a structured manner in response to common growth and market challenges. Although, he did not describe organisational evolution as progression in discrete stages, his findings on organisational evolution provided a foundation for Lippitt and Schmidt (1967) to design one of the earliest stages-of-growth models.

Lippitt and Schmidt

Lippitt and Schmidt (1967) were two of the earliest lifecycle theorists to define stages of growth. According to their life-cycle model, organisations progress in three stages of development: (1) birth- creating an operating system and feasibility; (2) youth- developing stability and reputation; and (3) maturity- achieving uniqueness. This model focused on major managerial concerns through the different stages of development, such as creating an operating system, achieving stability, earning a reputation and establishing product uniqueness.

Steinmetz

Steinmetz (1969) constructed a three-stage growth model consisting of direct supervision phase ("live or die"), supervised supervision ("being a manager") and indirect supervision ("making it"). He was one of the first life-cycle researchers to identify the behaviour of an entrepreneur at each stage of growth and the problems and activities undertaken at each corresponding stage. He described the entrepreneur in the direct-supervision stage as being in survival mode, depending on personal skills and delegation issues. The organisation undertakes activities such as recruiting personnel, training, filing tax returns and renting space. In the supervised-supervision stage the entrepreneur starts taking risks, and activities include measuring

performance, diversifying the product, moving to a new location and acquiring assets. In the indirect-supervision stage, the entrepreneur encounters problems involving overstaffing, staff disloyalty and carrying unprofitable product lines. Although Steinmetz provided a fairly elaborate account of the experiences of an entrepreneur during the firm life cycle, there was no clear description of activities in this stage. Moreover, the study was rather conceptual and did not investigate a large sample to test out his life-cycle model.

Greiner

Greiner (1972) was the first life-cycle theorist to propose an organizational-growth model consisting of five distinct phases. Organisations moved from phase to phase as they solved the problems inherent in each phase. He proposed that to build a model for organisational development it is essential to view the age, size, stages and growth rate of the industry. All organizational-development studies gather data at various times, then make comparisons. Greiner's focus was on changes in management style as the organisation grows. The five phases of growth were described as phases of either evolution or revolution. The evolutionary period is characterised by dominant management styles, the revolutionary period by management problems. Simply, the management style changes as the organisation encounters stage-related problems. However, Greiner did identify a few stage-specific activities such as at Phase 1 (creativity) the entrepreneur is busy developing, and then selling the product. At Phase 2(direction), the entrepreneur purchases accounting systems and puts in place incentive schemes, budgets and work standards. However, most of Greiner's description of stages of growth focused on changes in the organisation structure, such as creating product groups and investment centres, and on delegation issues.

Miller and Friesen

Miller and Friesen (1984) studied 36 large, well established corporations that had been in existence for at least 20 years. They assumed five phases of growth: birth (firms less than 10 years old, with informal structures dominated by the owner); growth (sales growth greater than 15 percent, functionally organised, early formation of policies), maturity (sales growth less than 15 percent, more bureaucratic); revival (sales growth greater than 15 percent, diversification of product lines, divisionalisation and use of sophisticated controls and planning systems) and decline (leveled-off demand, low rate of product innovation, declines in profitability). These stages were constructed based on the review of various previous life-cycle theories (Greiner, 1972; Quinn & Cameron, 1983; Scott, 1971).

Churchill and Lewis

Churchill and Lewis (1983) analysed five management factors over the lifetime of the small business and built a model consisting five stages of growth: existence, survival, take-off, success and resource maturity. They proposed that as the small business progressed through the various growth stages, the management decision-making style of the owner became less controlling and owner involvement with the firm decreased. In addition, with each successive stage of development, the three remaining management factors i.e., organisational structure, operational systems and strategic planning become increasingly complex.

The model also suggests that the goals and challenges change at different stages. The major goal at the existence stage is to stay in business. Key problems facing business at this stage are attracting enough customers, delivering the product or service, and meeting on going cash demands. In the survival stage, the main focus of the small business shifts from the need to survive to growth near the end. At the success stage the firm reaches economic health and wishes to grow further, therefore

emphasising strategic planning and management planning for the company's future, and uses cash and debt to finance growth. The owner can afford to disengage from running the company and pursue personal or strategic interests as day-to-day duties are delegated to multiple functional managers. Once companies in the success stage are consistently achieving, they move into the take-off stage, in which work is further delegated and the organisation is broken into divisions. Business operations become complex. In the resource maturity stage, the company has the advantage of size, financial resources and managerial talent. The primary challenge at this stage is to retain the advantages of being small while simultaneously controlling the financial gain that accrues from rapid growth.

Churchill and Lewis's stages concept originated from the work of Steinmetz (1969) and Greiner (1972); however, they incorporate factors of particular relevance to small businesses by differentiating growth stages according to the organisation's age, size, strategic problems and number of product lines. They collected surveys from 83 business owners who were asked to recall the stages their companies had passed through, to characterise the major changes that took place in each stage and to describe the events that led up to these changes (Churchill & Lewis, 1972). Churchill and Lewis found that some of the entrepreneurs had reached the survival stage and stayed there, with their profitability remaining the same for anywhere from five to 5 to 80 years.

Churchill and Lewis did not deal with the measure of size with much clarity. During the theorizing phase of the research they defined size as a combination of number of firm locations, complexity of product line and rate of change in products or production technology, but failed to mention the application of size in the analysis of their findings. It is therefore presumed that this problem stems from the fact that each

firm is unique, and that although they might be progressing from one stage to another there is complexity in measuring and comparing them on the basis of size.

Nevertheless, they found that there were changes in five management factors over the firm life cycle: (1) management decision-making style (i.e. the degree to which the owner delegates responsibility for decision-making); (2) complexity of organisational structure (i.e. the layers of management comprising the firm); (3) operational systems (i.e. the complexity of a firm's financial, marketing, and production systems); (4) strategic planning; and (5) owner involvement (i.e. the degree to which the owner is responsible for on going business activities and decisions).

Scott and Bruce

The five-stages of growth model developed by Scott and Bruce (1987) was based extensively on Churchill and Lewis and Greiner. However, Churchill and Lewis focused mainly on organisational structure whereas Scott and Bruce attempted to provide more insight into organisational change by reviewing the main efforts the entrepreneur is involved in at each stage. They adapted the crisis model developed by Greiner; however they described the crisis issues in more detail . They also described key activities in every stage calling them “main-stage-related efforts”. In the first stage, inception , the main efforts are developing the product and establishing a place for it in the market. The likely crises would be acquiring funds, energy and time. In the survival stage, the firm is involved in establishing credibility with suppliers, applying for bank loans, acquiring new skills, acquiring accounting systems and hiring a full-time bookkeeper. At this stage, the most likely crises would be overtrading, increased complexity of expanded distribution channels, change in the basis of competition and pressures for information. In the growth stage, the firm is involved in expanding the product range and possible firm sell-out (trade sale). The

most likely crises would be competition from larger firms and product-expansion demands. In the expansion stage the firm hires professional managers, systemises administrative functions and seeks long-term debt. The most likely crises at this stage would be the distance of top management from the “action” and the need to focus on customer needs.

Kazanjian

Kazanjian (1988) found that the stage models (Chandler, 1962; Greiner, 1972; Starbuck, 1971) did not explicitly describe the characteristics of each growth stage; instead, these founding models described organisational changes in terms of configurations or problems, structures, strategies and processes. He found that the empirical work of more recent stages-of-growth theorists (Gartner 1985; Miller & Friesen 1984; Van de Ven et al., 1984; Adizes 1979) focused on differences in internal organisational characteristics across an a priori existence of stages, rather than empirically testing historic stage models. He suggested there was a greater need for data-based research to empirically test whether organisations indeed grew in a progressive manner.

The central theme of Kazanjian’s (1988) stages-of-growth model revolves around the concept of dominant problems. Kazanjian believed that organisations face a series of problems that are successive in nature. Any given stage of growth contains a set of problems that are dominant at that point in the firm’s history (Kazanjian & Drazin 1989).

The managers of these technology-based new ventures faced strategic operational problems from the time of product conceptualisation through organisational maturity. Further, some of these problems seem to have been more dominant than others at times, and a sequential pattern of dominance seemed to exist. The particular problems faced at a given time appeared to be strongly associated with a venture's position in a particular stage of growth (Kazanjian 1988, p261).

Kazanjian (1988) carried out a study on two new technology-based ventures to develop a grounded base for theory building. He conducted open-ended unstructured interviews paying particular attention to how and why from their inception dates the firms took the form that they did. The managers of both the firms described their experiences and the history of their growth in terms of stages without Kazanjian referring to the construct (Kazanjian, 1988). The growth histories of both the organisations suggested that they shared a stage-development pattern. The particular problems faced at a given time appeared to be associated with a particular stage of growth.

The stages of growth identified above are summarised in Table 3.1 below.

Table 3.1
Stages-of-growth Models

Author date	Stages
Lippitt & Schmidt, 1967	Launch Survival Stability Pride/Reputation Developing Uniqueness Contribution to Society
Steinmetz, 1969	Live or Die Being a Manager Making It
Greiner, 1972	Growth Direction Delegation Coordination Collaboration
Churchill & Lewis, 1983	Existence Survival Success Take-off Maturity
Scott & Bruce, 1987	Inception Survival Growth Expansion Maturity
Kazanjian, 1988	Conception Commercialisation Growth Stability

3.9.1.2 The Application of Life- Cycle Stages of Growth Theories

A number of studies have attempted to add to an understanding of firm growth in a particular industry by applying stage-of-growth models. However, these studies into life cycles or stages of growth in organisations have been empirically weak, as they have failed to validate the application of such models in the particular industries (Miller & Friesen, 1984). Life-cycle stage definitions are vague, making their application to specific cases difficult. McAdam and McAdam (2008) conducted the most recent business-incubator research on high-tech start-ups. The main focus of their research was to explore the use of incubator resources at the different lifecycle stages. They applied the Greiner life-cycle model, but assumed the a priori existence of stages for firms in incubators. Their research made no attempts to explore if businesses in incubators have their own pattern of growth stages.

Many of the models, including that of Churchill and Lewis (1983), failed to capture in detail the early development stage of a start-up, from the original business idea through to the creation of a stable venture. The models have not provided detailed explanations of activities during the early stages of venture formation specifically for businesses located in incubators. Incubatees generally spend up to three years in an incubator (NBIA, 1996). Growth models such as Churchill and Lewis (1983), Galbraith (1982) and Greiner (1972) provide general overviews of business development from “birth” to “growth” without providing explanations as to how the venture reached a particular stage and the profound activities were that moved the venture from one stage to another. The incubation industry needs a growth model specifically suited for businesses at the infancy stages hence the steps and business activities must be retraced. Previous stage models (Churchill & Lewis, 1983; Scott & Bruce, 1987) focused on changes in managerial style, organisational structure and strategic planning through the life cycle of the small firm. Therefore, the stage

model can be further enhanced and applied for the benefit of the incubation industry by scrutinising each activity that takes place during the life cycle of a firm located in an incubator.

Penrose (1952, 1959) and Rhenman (1973) agreed that there is some pattern of firm development that is specific to particular environments or products therefore making life-cycle theories are not necessarily applicable to all organisations. Many researchers (Churchill & Lewis, 1983; Galbriath & Kazanjian, 1986; Greiner, 1972; Koberg et al., 2003; Starbuck, 1971; Zelany, 1989) have applied growth models to the study of small business development and of high-technology firms (Kazanjian 1988). It has been noted that high-growth businesses have demonstrated the tendency to invest in activities such as marketing, distribution channels, product research and development, product viability and the procurement of plant and equipment (Anderson & Zeithmal, 1984; Buzzell & Wiersma, 1981; Hambrick et al., 1982). However, there has been limited research into start-up patterns in other industries such as manufacturing, services, tourism, pharmaceuticals and environmental industries. Since the start-up phase forms the foundation of a company. and it is at this stage that businesses are most vulnerable to failure, it is necessary to take a closer look at every activity that takes place at this stage across a variety of industries.

Given that most businesses stay in an incubator for an average of three years before they graduate, is there a growth pattern shared by firms during this time frame? What are the activities in forming a business venture? What are the problems and activities during the early prospecting stage? The sequence of events that unfolds as a small firm grows in an incubator will be studied. Kazanjian (1988) argues that the typical progression of change occurring in a life-cycle model is a unitary sequence (that is, it follows a singular-stages sequence), cumulative (acquired characteristics in

the first stages are retained at the last stages) and conjunctive (stages are derived from a common underlying process). Each development stage is seen, still, as a necessary precursor of the following stage (Quinn & Cameron, 1983).

This research attempts to empirically validate the events or problems that Kazanjian (1988) highlighted as they spend time in business incubators and construct stages of growth specific to such firms.

3.9.1.3 Sequence of Events

New firms evolve through a variety of activities, and these activities should be studied (Aldrich, 1979; Hannan & Freeman, 1984). Although all life-cycle models agree that organisations grow in stages, the focus of organisational change from stage to stage has been vague, making these models' application as a performance measure weak. Several life-cycle authors have described organisational stages as involving changes in structural form and leadership style (Adizes, 1989) and management style (Churchill & Lewis, 1983; Greiner, 1972). However, the identification by Galbraith (1982) and Kazanjian (1988) of life-cycle stages in terms of tasks, events or problems has wider application in the measurement of firm growth as these authors identify problems, tasks or sequences of events that are specifically related to a stage of growth.

Kazanjian (1988) discovered that entrepreneurs described their experiences and the history of their growth in terms of stages, emphasising the problems that they faced through each stage. Kazanjian used the terms “problems” and “tasks” interchangeably. The problems or tasks described by the entrepreneurs were related to four distinct stages: conception and development, commercialisation, growth and stability (Table 3.1, Appendix 3). In his findings, Kazanjian (1988) confirmed that certain tasks (problems) are associated with each stage of growth. These stages are

made up of activities undertaken to stabilise and grow a venture, and emerge in a well-defined sequence as the organisation addresses tasks or problems.

In a longitudinal study of the sequence of events undertaken by start-ups, Gatewood, Shaver and Gartner (1995) assessed the start-up activities of entrepreneurs. The main categories were: gathering market information, estimating potential profits, finishing the ground work for the business, developing the structure of the company, and setting up business operations. Another study of start-up event sequences conducted by Carter et al.(1996) found 14 activities undertaken by nascent entrepreneurs who wanted to make their business ideas tangible (listed in no specific order): (1) organised team; (2) prepared plan; (3) bought facilities;(4) rented facilities; (5) looked for facilities; (6) invested own money; (7) asked for funding ; (8) got financial support; (9) developed models; (10) devoted fulltime; (11) applied license/patent; (12) formed legal entity; (13) hired employees; (14) saved money to invest. Using the dates associated with the activities, Carter et al. were able to construct a timeframe of firm development.

Birley (1985) proposed eight events in the nascent phase of business establishment (listed in chronological order): (1) owner's decision to start the firm; (2) owner's decision to resign regular job; (3) incorporation; (4) bank account established; (5) premises and equipment acquired (6) first order received; (7) tax first paid; (8) first full-time employees hired. These events capture the development of firms at the start-up phase.

Kazanjian (1988), Carter et al. (1996) and Birley (1984) were the few researchers who sought to find out the activities undertaken by entrepreneurs in detail without relying on any model. They simply requested the entrepreneurs to identify what activities were taken and when. However, Carter et al. (1996) and Birley (1984)

only looked at activities of the nascent entrepreneur, not at the whole entire business life cycle. The methodology applied by Carter et al. (1996) of requesting the entrepreneurs to identify the activities and time they were performed has influenced this study. It was Kazanjian's (1988) decision to derive stages from entrepreneurs' activities that were undertaken by entrepreneurs strongly influenced this study. This research seeks to identify every activity involved in establishing a business and to chart it on a time-line. One of the goals of this research is to define the process of establishing and growing a business located in a business incubator by listing each activity performed by the surveyed 57 sampled businesses during their stay in the business incubator. This will provide for a deeper understanding of venture development and hence provide the foundation for a benchmark performance-measurement model specifically for business incubators.

However, entrepreneurial research suggests that when studying business growth it is critical to consider entrepreneurial characteristics, as they influence business growth. In recent business-incubator literature, Hackett and Dilts (2004) defined business-incubation performance as being a function of selecting the right candidates, monitoring business assistance to incubatees and having an abundance of incubator resources such as funding, good management and good networks. Therefore, this study tests for the influence of various characteristics on small-business growth within business incubators. The following section explores entrepreneurship literature, which highlights the various attributes that affect the creation of enterprises.

3.9.2 Entrepreneurship Theory - Entrepreneurial Attributes Affecting Business Growth

This section reviews entrepreneurship research, which provides the framework for assessing the second building block of the performance framework: identifying the

entrepreneurial attributes affecting business growth (Goal 2). According to entrepreneurship research, the growth of the firm is also based on the entrepreneur's inherent characteristics, as knowledge, skills, experience and various other personal attributes affect the successful development of any small business (Westhead & Birley, 1995). It is critical to research entrepreneurial characteristics to understand the creation of new enterprises (Alvarez-Herranz et al., 2011).

Researchers have identified success or failure in business can be attributed to either external or internal factors. Examples of external factors that can influence the success or failure of an organisation are infrastructure expenditure, sales tax rates and other macroeconomic factors (Chen & Williams, 1999; Melicher & Hearsh, 1998; Plat, 1989). Throughout the evolution of entrepreneurship theory, different scholars have posited different characteristics that they believe are common among most entrepreneurs. By combining these disparate theories, a generalised set of entrepreneurship qualities can be developed. In general, entrepreneurs are risk-bearers, coordinators and organisers, gap-fillers, leaders and innovators or creative imitators. Although this list of characteristics is by no means fully comprehensive, it can help explain why some people become entrepreneurs while others do not. Thus, by encouraging these qualities and abilities, could it be possible for incubators to alter a tenant's progress? Leibenstein (1995) posits that entrepreneurs have the special ability to connect different markets and make up for market failures and deficiencies. Additionally, drawing from the early theories of Say and Cantillon, Leibenstein suggests that entrepreneurs have the ability to combine various inputs into new innovations to satisfy unfulfilled market demand (Leibenstein 1995).

Research has shown that internal factors such as the attributes of individual owners affect the performance of small businesses (Bloodgood et al., 1995; Fasci &

Valdez, 1998; Kalleberg & Leicht, 1991). Therefore, apart from identifying the activities undertaken by entrepreneurs to develop a successful business, it is important to identify the kinds of behaviours appropriate for certain new-venture conditions. Central to the process of venture creation is the founding individual: the entrepreneur. Previous experience and the background of the entrepreneur are likely to have an impact on the activities of start-up entrepreneurs.

Entrepreneurship is the ability to create and build something from practically nothing (Timmons 1986). The key functions of the entrepreneur are providing direction, supervision and control as well as risk-taking (Brockhaus & Horwitz, 1986). The ability to take risks is what distinguishes the entrepreneur from the manager (Brockhaus & Horwitz, 1986).

In recent years, models of the entrepreneurship process have evolved to depict the interactive nature of key variables influencing new venture success. Researchers such as Gartner have proposed that entrepreneurship can only be understood when the individual elements of the phenomenon are combined (Gartner, 1985). Gartner (1985, p696) was one of the first to propose that four major dimensions of entrepreneurship need to be integrated: the founder's characteristics, the organisation's characteristics, the environment surrounding the firm and the process by which the new venture is started.

Historically, researchers have examined the individual traits of entrepreneurs, including their need for achievement (McClelland 1961, cited in Katona, 1962), autonomy (Hornaday & Aboud, 1971), tolerance for ambiguity (Sexton & Bowman, 1985), and risk-taking propensity (Begley & Boyd, 1986; Brockhaus, 1980). A turning point occurred in the late 1980s, when Gartner (1989) defined entrepreneurship as a set of activities involved in the creation of an organisation.

A great deal of research attention has been devoted to the characteristics of individual entrepreneurs, including gender, experience, education, risk-taking propensity and other psychological characteristics (Brockhaus 1980; Sexton & Bowman 1985). A need for achievement, the belief in an internal locus of control and a risk-taking propensity are key elements in the study of entrepreneurial success (Brockhaus & Horwitz, 1986, pp27-29). The need for achievement has been classified as obtaining personal wealth and being responsible for decision-making which go hand in hand with the concept of an internal locus of control (being able to control one's own the environment) (Brockhaus & Horwitz, 1986, pp27-29).

Several behaviours have been found to influence small-firm performance. One of these behaviours is opportunity recognition, defined by Christensen, Masden and Peterson (1989) as perceiving the possibility to create a new business or to significantly change or improve an existing business. Most entrepreneurs are proactive in seeking opportunities and create value by combining resources to exploit an opportunity (Leutner et al., 2014). Personality traits are a useful tool to promote entrepreneurial success therefore organisations can benefit from selecting entrepreneurial individuals based on their personality profile (Leutner et al., 2014). Miller and Toulouse (1986) found that the CEO's personality had a strong influence on the strategies and structure of the firm. Among the personality dimensions studied, CEO flexibility had the most positive consequences for small-firm performance. Nicholson (1998) identified several distinctive features of the entrepreneurial-leadership personality, including a openness to experience, single-minded focus and resilience.

This integration of the key dimensions of the entrepreneurship process has resulted in an interactionist perspective, providing a framework for examining the ways in which an entrepreneur's personal attributes interact with other variables to ultimately affect the organisation's actions and performance.

3.9.3 The Resource-based View (RBV) - Identifying Business-incubator Services Used by Entrepreneurs

The assessment of a business incubator's performance is incomplete without examining the success of the services it delivers. This section contributes to the knowledge, understanding and explanation of how businesses incubators in Australia deliver services by identifying and exploring the various services and specifically how they are delivered. The availability of resources and the capacity of the business-incubator team to distribute these resources could be prominent in the explanation of firm performance, resulting in what is commonly described as the resource-based view (RBV).

An adequate availability of resources in conjunction with an entrepreneurial team that possesses both a sufficient level of knowledge and capabilities can create a sustainable competitive advantage, thus improving the performance of the firm.

The RBV of the firm is used to investigate how the deployment of key resources in the business incubator specifically, business support and social support - changes during the life-cycle development of incubatee businesses. As seen in the previous chapter's discussion of life-cycle theorists, as an organisation develops from stage to stage, the entrepreneur identifies the resources needed depending on the stage of business growth (Churchill & Lewis, 1993). According to the RBV (Penrose, 1959), the use of different resources can lead to differences in sustainable competitive advantage. The different types of resources used by businesses are financial, physical, human, commercial, technological and organisational (Barney, 2001). By gaining

access to resources, firms learn new and valuable capabilities (Czarnitzki & Delanote, 2013). In this section the words “services” and “resources” are used interchangeably. The above studies support the view that incubators need to deliver quality services to firms to increase a business's chances of success upon graduation.

Business incubators provide infrastructure: that is, space and shared resources. Space can be described to tenants as available office or workshop space; shared resources was described as any complementary infrastructure-related shared service such as reception, car parking, meeting rooms and commodities (Lalkaka, 2003; Sherman, 1999; Mian, 1997). Apart from providing a physical space, incubator services play a vital function for the developing business entity.

Business-support services such as coaching and training are crucial elements of learning within business incubators. Coaching is typically mentioned as an important service that they provide to their tenants (Bergek & Norman, 2008 ; Mian, 1996). “Coaching” refers to one-to-one support initiatives geared to accelerating tenants' learning and skill-development processes, generally involving tenant firms being assigned coaches or mentors, either for a fee or free of charge (Knopp, 2006). Such coaching typically covers both scientific and managerial areas of expertise (Clarysse & Bruneel 2007). Coaching interactions between the incubatee and business-incubator management increases tenants' understanding of buyer preferences (Scillitoe & Chakrabarti, 2010). Business support makes an important impact on firm development and is critical to tenants' timely departure from the incubator (Robson & Bennett 2000; Peters et al. 2004). Training is also often available within business incubators (Aerts et al., 2007; Barrow, 2001), and has been found to positively influence tenants' performance (Pena, 2004).

Business-incubation programs provide start-up companies with a wealth of services (Pena, 2004). The most common incubator services: provide business support, business incubation networking , guidelines for operating within the market, internet services, counselling in financial management, access to funds and letter of guarantee, presentation skills, leads to higher education resources, advice on selecting partners, links to venture capital, any required training programs, guidance for boards and mentors, identification of the management activity, technology transfer and aid for regulatory compliance services (Al-Mubarak & Busler, 2010; NBIA, 2006).

If an incubator doesn't track client progress formally or on a regular basis, there is a chance that neither the incubator nor the start-up will recognise problems until it's too late to address them (Knopp, 2006). Examination of business-incubator services reveals areas in need of improvement. Kilcrease (2010) focused on the poor service delivery of the various types of incubators, finding that for-profit incubators provide the best customer satisfaction but academic and non-profit incubators tend to provide poor services. She recognised the failure of BIs in assisting incubatees in building relationships with their customers (Kilcrease 2010). In their examination of university-based business incubators, Wright et al. (2008, 2012) noted that very few graduated firms have gone on to create substantial financial success indicating the need to improve overall service for client growth. A case study for a technology incubator indicated a correlation between firms' success and incubators' superior contacts in the accounting, human resources, marketing, and financial arenas (O'Neal, 2005). Hytti and Maki (2008) examined the effects of company age, duration of the incubation period, and number of employees on the quality of services received by clients in high-tech incubators. Those clients who benefitted the most from the BI services were either young or financially secure. Other studies concluded that the

incubators with the most impact on clients' success use services that emphasise coaching and networking applications (Peters et al., 2004; Rice, 2002).

Lofssten and Lindelof (2005) applied RBV to assess the impact of business-assistance services on the areas of research and development and product innovation of new technology firms residing in the business incubator. From interviews, conversations and observations of 18 high-technology start-ups regarding effective use of a university science park incubator, McAdam and McAdam (2008) found that resources and support increase as the life-cycle stage of the company increases. It emerged in their research that funding, marketing and increasing sales revenues were the greatest challenges for the entrepreneur when managing growth. It was felt that the incubator management could assist more in addressing such problems. However, McAdam and McAdam only found particular services to be useful at different stages of the business life cycle: office facilities, administrative staff, shared canteen, shared reception, car park, access to university research, access to external grant support, access to venture capitalists, university science incubator management services, exchange of advice, professionalism or image, university services, on site advice, financial support and entrepreneurial programmes which they found useful at different stages of the business life cycle (McAdam & McAdam, 2008). Therefore, this research raises the following questions: (1) What are the services needed by businesses located in business incubators? (2) Are incubators really providing the necessary resources that firms require or do firms source the required services from outside the business incubator?

Business-incubator managers are responsible for the services delivered to clients, and there are reasons why some fail in completing this responsibility (Hannon, 2005). Managerial work can be complex and contradictory because of the

significant variability of clients' needs and managers' responsibilities (Hannon 2005). Further, incubator staffs often do not have enough time to provide the tailored counselling and consulting they claim to offer (Sherman, 1999).

Business incubators provide business assistance because the majority of start-up businesses do not have all of the necessary resources for business success. During the early stage of their business development they have to struggle with a number of critical problems (Kazanjian, 1988).

To appraise the impact of incubators on firm development it is essential to list all the services they provide. These include physical services such as shared office space, printing, photocopying, scanning and high speed internet connection, which have become typical services offered by almost all incubators. The NBIA which conducts reviews of business incubators every few years, has concluded that a high percentage of incubators provide a wide range of business assistance services (NBIA, 1998). They reported that almost all incubators offered help with getting business basics in order (such as business plan and financial reports), and the vast majority offered networking opportunities and helped in marketing. More than 75 percent gave help with accounting and financial management, assisted clients with getting loans from conventional or unconventional sources, and linked clients to higher-education resources.

However, a review of the incubator literature (Allen, 1985; Allen & Levine, 1986; Smilor & Gill, 1986; Campbell, 1989; Mian, 1997; Rice, 2002; Bigliardi et al., 2006; Kilcrease, 2011) confirms that there is no clear consensus of what services a successful incubator provides and how they are delivered (Allen & Levine, 1986). However, business incubator researchers agree that most incubators currently provide a well-trained incubator manager and access to a support network. However,

incubator researchers have not clearly defined how value-added services are provided, whether internally by the incubator management or externally as sourced by the entrepreneurs themselves. A study conducted in Sweden found that individuals who have attended entrepreneurship education are more likely to survive and develop, than those who have not (Nilsson, 2012).

Bruneel et al. (2012) highlighted the importance of understanding how incubator services are delivered, and attempted to systematically study service delivery and tenant usage of services across three generations of seven European incubators in the 1980s, 1990s and 2000s . Their study found that entrepreneurs housed in incubators established in the 2000s make use of training and coaching services. Although this research is a move in the right direction for understanding how incubator services are provided, it did not classify the incubators according to their focus, making it difficult to construct an incubator model to understand how different types of incubators deliver services.

There is also no systematic review of when during their life cycle businesses seek services, and how they seek them. Once this is clearly defined incubators can decide when to provide these services, and whether to develop internal expertise or use external support networks.

3.9.4 Institutional Theory – An Understanding of Reporting Practices in Business Incubators

Much is still unknown about whether business incubators consult their incubatees, and whether firms discuss their performance with incubator managers. This is because there is currently no systematic framework to understand the reporting relationship between a venture capitalist and an investee firm, or the relationship between the incubator manager and the tenant. This research attempts to integrate institutional perspectives of how incubators' control systems are designed,

particularly the reporting practices, and whether the reporting style is transported or mimicked by incubatees. What are the common operational controls across incubators, and what is the hierarchy of reporting requirements that flows from incubator stakeholders to incubator management and, finally, the incubatees? As part of this research, the reporting practices in different incubators are collated at stakeholder, incubator-manager and tenant levels.

Institutional theory provides the theoretical perspective to aid in finding whether common reporting practices are mimicked by the incubator team and the incubatee. This process of insitutionalisation occurs when organisational structures asserted that organisations are formed due to institutional pressures and have common patterns of activity (DiMaggio & Powell, 1983; Meyer & Rowan, 1977).

Abernethy and Chua (1996) drew upon institutional theories to argue that organisational controls are dependent on the institutional environment. To study controls they used hospital archival records, including annual reports, management-consultancy reports, board of management agendas and minutes and various other reports. Their results suggested that control systems are used to rationalise and influence the allocation of resources.

The influence of stakeholders on business incubators is a much-studied area. Local governments push towards the reindustrialisation of a region; the firms they host want support for their innovative products (Escorsa & Valls 1996) . Universities, on the other hand, are interested in patents and new business opportunities (Escorsa & Valls, 1996; Massey et al., 1992). Guy (1996) suggests a two-fold system of evaluation: an *ex ante* approach with a focus on strategic planning and an *ex post* approach analysing the essential support operations such as controlling, retargeting and monitoring. In their study on the performance-measurement systems of four

major science parks in Italy, Bigliardia et al. (2006) identify the influence of variables like the development stage of the park or the different expectations of the main stakeholders on the performance-measurement system in place, and identify the influence of external forces such as accounting regulations. Unfortunately, they do not go into detail and do not show how these different expectations influence the setting up of these performance measures or how to make sense of the resulting numbers.

Business incubators are exposed to pressure from these groups and adopt certain strategies to deal with their shareholders' expectations. Therefore, it is warranted to ask how the business-incubators managers understand their own position, tasks and challenges. These considerations require taking an institutional perspective. This research adds viewpoints from the sociology-based institutional theory (DiMaggio & Powell, 1983; Meyer & Rowan, 1977), adopting a more critical view on how institutions emerge, how they are influenced by their environment and how they shape the environment in which they operate. This study is interested in how the external environment influences the behaviour of business incubators. Missing from the literature are empirical studies that examine how their direct shareholders influence the decision-making processes in business incubators a research gap this study tries to fill. The support of stakeholders and the quality of the management team are key success factors in successfully establishing and operating incubators (European Commission Enterprise Directorate-General, 2002, p34). The business incubator is an institution that houses various small businesses and lends its institutional strength towards legitimising the start-up business. It is important to address the process of venture creation in an incubator by studying whether there is a potential impact from the governing institution or stakeholder on incubator operations.

Gstraunthaler (2010) applied institutional theory in studying how institutions emerge, how they are influenced by their environment and how they shape the environment in which they operate. In-depth interviews were conducted with the management of seven business incubators in Lithuania. Lithuanian business incubators have a strong focus on property, together with the offering of training and consulting, although at a very superficial level (Gstraunthaler, 2010). There are strong arguments in favour of a mimicking process and institutional behaviour. What made these property developments so attractive was the available public money, particularly from the European Union. As long as the money keeps flowing, there is a strong incentive to grow. The managers commented that their public shareholders provided only weak support after the business incubator was set up.

Institutional theory highlights the importance of culture: both the culture system in which an organisation sits, and the corporate culture - normative glue that holds the organisation together (DiMaggio & Powell, 1983). Institutional theory is a way of looking at organisations. It highlights organisational customs, rules and protocols and describes how organisations conform to common rules or “ways of doing things” arising from the process of institutionalisation (DiMaggio & Powell, 1983). For example, people’s actions conform to the requirements imposed on them by others within the organisation (Zucker, 1983, p5). Internal organisational pressures could come from the owner or founder of the organisation, whereas external pressures come from groups, institutions or individuals outside the organisation.

Selznick (1957, p16) viewed institutionalisation as a “process”, and as something “that happens to the organisation over time”. Over time organisations gain legitimacy by incorporating practices and thus enhance their own chances for survival. The process of institutionalisation occurs when organisational structures

adapt in response to both the internal and external environment (Selznick, 1957, p21). Institutional theorists have advocated that organisations formed due to institutional pressures have common patterns of activity.

Hence, an organisation will need to instill structure and values in its employees to provide stability (Selznick, 1957, p16). Institutionalisation occurs whenever there is a reciprocal typification of habitualisation actions by types of actors (Berger & Luckmann, 1967, p72). They added that this habitualization is available to all members of a group. Actions are associated with groups of actors such as supervisors giving orders and workers following them (Scott 1995, p.495). Institutional theorists believe that this occurs because there exists a social agreement as to the way things should be done.

Institutionalisation is viewed by Berger and Luckmann (1967, p54) as an orderly system made up of processes and obligations that are rule-like in action and, today, taken for granted. This orderly system is reflected in structures, events and practices shared by organisations in the same industry, making them closely resemble one another. Organisations need to be considered as competent and acceptable in their industry. This need is more obvious in start-ups, as they have not yet established a reputation in the market. Therefore, they replicate necessary practices and events performed by stable or successful organisations to gain acceptance and legitimacy. Through this copying process they fulfil institutional expectations and receive stability, access to resources, and a market reputation (Meyer & Rowan, 1977; Oliver, 1991). Finally, organisations within a particular industry become similar in structures and practices. This process known as institutional isomorphism, leads to organisational homogeneity (DiMaggio & Powell 1983). Specific studies that have reported this occurrence have looked at the industries of education (Meyer & Rowan

1977) construction (Oliver, 1992), child-care services (Baum & Oliver, 1991), airlines (Bacharach & Bamberger, 1996) and newspapers (Dacin, 1997).

Institutional theory provides a rational, theoretical lens, through which to view organisations, and raises questions that can lead to generalisations about organisation behaviour (Scott, 1995, pxiii-xiv) Institutional-theory research seeks to combine firm behaviour with business strategy (Eisenhardt, 1988). Considerations of efficiency and legitimating appear simultaneously (Scott, 2001), although the reasons for the adoption of certain practices may vary (Tolbert & Zucker, 1983). The concept of isomorphism addresses the adoption of such already-accepted procedures to enhance competitiveness, a system rationality that emphasises market competition, niche change and fitness measures.

Institutional isomorphism derives from a striving for political power and legitimacy, and is shaped and modified by the individual environment in which organisations act (Tornatzky, 1990). Acknowledging institutional pressure on organisations does not mean that organisations have to accept passively all demands that are placed on them. Oliver (1991) developed strategic responses that organisations could adopt towards conformity, ranging from passive conformity to active resistance. The range of actions organisations can follow depends on the external pressure (DiMaggio & Powell, 1983) and the importance of conformity to survival (Meyer & Rowan, 1977). Institutional theory focuses on governmental and structural pressure, but also includes professions, interest groups and public opinion (Scott 1987). Oliver (1991) classifies an organisation's possible response as acquiescence, compromise, avoidance, defiance and manipulation. Balancing strategies attempt to reach parity among multiple stakeholders or internal interests.

This research seeks to determine whether there is evidence of institutional pressures in the business incubator by studying reporting practices at the incubator level and the firm level. Institutional theory describes how the process of adopting new practices in organisations takes place in different ways. New structures and practices are introduced to an organisation until it becomes taken for granted and becomes a norm. This process of changing structures to resemble another is known by institutional theorists as institutional isomorphism. Institutional theory distinguishes three ways an organisation becomes institutionalised: coercive isomorphism, mimetic isomorphism and normative isomorphism (DiMaggio & Powell, 1983).

3.9.4.1 Coercive Isomorphism

Coercive isomorphism has received the most attention (Mizruchi & Fein 1999; Scott 1995), perhaps since it is the most easily described. A feature of a coercive institutional environment is where “institutional sectors contain environmental agents that are sufficiently powerful to impose structural forms and/or practices on organizations” (Scott, 1987, p501). There are elaborate rules and requirements placed on an organisation. The concept of isomorphism highlights the role of conformity and standards as a response to environmental pressures. Isomorphism is defined as “a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions” (DiMaggio & Powell, 1983, p146). An organisation displays coercive features when those providing it with resources exert some control over it. The rationale underlying this institutional influence is primarily that of financial independence. An example of this is a group parent-subsidary relationship. The subsidiary might be forced to apply similar rules and protocols as practiced in the parent company to continue receiving support.

3.9.4.2 Mimetic Isomorphism

Some decision-makers attempt to model their structures based on other institutional designs, they believe to be successful or appropriate. DiMaggio and Powell (1983) call this “mimetic isomorphism”. When organisational objectives and goals are vague or uncertain, organisations may model themselves on other organisations (DiMaggio & Powell 1983). Such organisations organise themselves in the “tried and tested” way. For example, they may duplicate procedures, technology, management styles and incentive schemes.

An organisation achieves legitimacy by relying on “established, legitimated procedures that enhance organisational legitimacy and survival characteristics” (DiMaggio & Powell 1983). Organisations tend to imitate other successful organisations when they are faced with uncertainty and ambiguity. For example, one university may choose to model itself after another that it perceives to be more prestigious in the public eye. In the field of education, mimetic isomorphism is encouraged by academic conferences, exchange programs, international educational experts, and the use of information technology. Another example is the child-care industry (Baum & Oliver, 1991). Although the government had instituted safety standards, carer-child ratio and qualifications, thus exogenously imposing a degree of isomorphism, it was also found that the centres copied one another in their teaching programs and carer benefits (Baum & Oliver, 1991).

3.9.4.3 Normative Isomorphism

DiMaggio and Powell (1983 p152) suggested that the “collective struggle of members of an occupation to define the conditions and methods of their work had led to a similarity with their counterparts in other organizations”. This struggle to conform is common in professional groups. According to Larson (1977, p49-52) professionalisation is the collective struggle of members of an occupation to define

the conditions and methods of their work. This has led to a similarity in practices among a professional group although its members operate in different organisations. In this case, professional and accreditation agencies serve as gatekeepers determining who should be allowed into the profession. Normative isomorphism can also result from the type of experts that educational systems rely on to implement reforms (i.e. management consultants, management gurus etc) Normative isomorphism is typically seen in educational organisations which are typically subject to stronger institutional than technical pressures, whereas the reverse is the case for many industrial concerns. Aerts and Tarca (2010) investigated whether institutional pressures for financial reporting affect how managers wrote narrative texts in management commentary reports across 5 different countries. They found that “higher regulatory and litigation induce a more elaborative, but risk-averse explanatory stance that reduced the overall incremental value of the explanations offered” (Aerts and Tarca 2010, p.421).

Michel Foucault (1966) describes power and influence deployed by affects the arrangement of things in such a way that certain ends are achieved (in Taylor 2010, p22). Institutional theory can also demonstrate resistance to change, not only the formation of change (Borner & Verstegen 2013). The arrangement of behavioural routines in an organisational context forms organisational change through time (Borner & Verstegen, 2013). To date, no incubator research that has applied institutional theory in observing of whether institutional pressures take place in the incubator environment. As a new firm develops from one stage to another it is faced with multitude challenges; therefore, it is necessary to implement appropriate management systems. Is there a system of governance in business incubators? If so, is this system replicated by the businesses located in incubators?

A growing number of researchers have recognised the advantages of adopting institutional arguments to examine the origins of new types of organisations or industries (Aldrich & Fiol, 1994; Dezalay & Garth, 1996; Greenwood & Hinings 1993; Suchman 1995; Ventresca & Porac 2003). Institutional theory revolves around the study of organisational structures. The implementation of structures allows for both formal and informal coordination of organisational arrangements that have important effects on policy outcomes (Hull & Hjern 1987, p23). Institutional isomorphism according to DiMaggio and Powell (1983) occurs in a structured process of organisational formation: first, active interaction among similar organisations, followed by sharply defined inter-organisational structures of domination, an increase in information load for organisations and eventually a mutual awareness of mission. Once this happens, organisations realise that they need to continue to maintain the common purpose to ensure the continual receipt of resources.

3.10 Summary

The purpose of this chapter has been to highlight incubator research and identify the absence of a comprehensive performance-evaluation framework. One very important factor on which incubator researchers agree has been the lack of understanding of the growth process of businesses located in incubators and how incubator programs affect the progress of these businesses in the various incubator models (Allen & Bazan, 1990; Lichtenstein, 1992, cited in Bearse 1993). Research into incubators has listed the types of services provided by such institutions (Bearse, 1993; McKinnon & Hayhow, 1998). There has been limited research into how start-ups access the resources required for growth, how services are provided to them and the impact the services have on business growth. There have been limited attempts at understanding the growth process of incubatees, and no observations to discover if pressures placed on various types of incubators by stakeholders have any flow-on

effects on incubatees. The next chapter will provide the theoretical framework for studying the four components that form an evaluation framework in a business incubator and the structure for the empirical work that will follow. Based on the review of past research, this study has identified a gap in the knowledge of assessing the performance of business incubators and proposes a framework of designing a new evaluation system.

Chapter 4: Research Design and Data

4.1 Introduction

The previous chapter reviewed the existing literature on the performances of business incubators, and identified a gap in the literature that empirically examines the stages of growth in business incubators, identifies entrepreneurial characteristics that influence firm growth in business incubators, and the services entrepreneurs use at various stages of growth and examines the controls and performance monitoring that are put in place in the different types of incubators.

This study is designed to examine these issues and provide empirical evidence in the context of business incubators in Australia. Based on the facts presented on the background of this study in Chapter 2 and the gaps identified in the literature review in Chapter 3, this chapter will present the research design and data used for analysing the issues. More specifically, Sections 4.2 and 4.3 present the research framework and the research methodology, followed by the theoretical perspective used in this study. The specific research questions that this study attempt to answer stated in Section 4.4. The methods used to answer these questions are described in Section 4.5 under each research question. The data used in the study is described in Section 4.6, followed by an explanation on the statistical methods used in the study in Section 4.7. Section 4.8 provides a summary of the chapter.

4.2 Research Framework

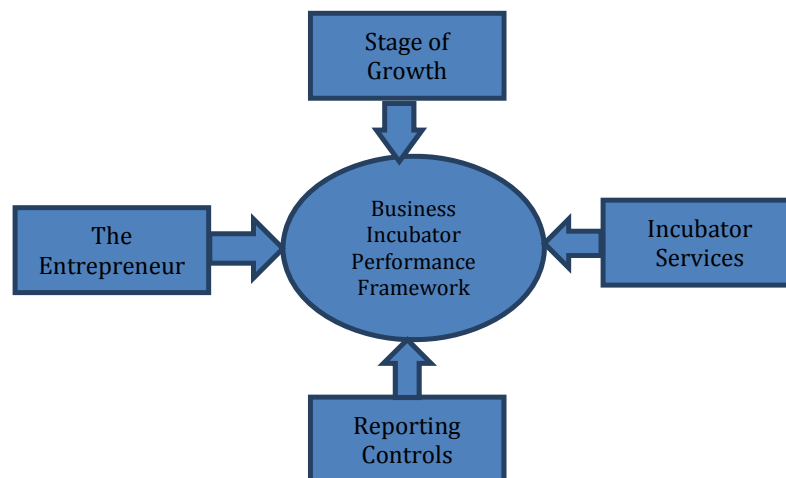
In building a comprehensive incubator-specific performance-measurement system, this study aims to first understand how businesses grow in various types of business incubators. Second, considering the effects of various entrepreneurial attributes (management skill, determination, locus of control, risk-taking propensity, creativity, ability to interact with people, number of jobs held, previous job

satisfaction, previous businesses owned, entrepreneurial parents, age, gender, parental background and educational background) can yield an understanding of the influence of attributes or traits on business development. Third, this study will chart services that businesses require to grow, and investigate how they obtain these services. Fourth, the institutional practices, such as the reporting habits of incubator managers and individual businesses, will be studied as part of understanding if there is a clear, concise, consistent reporting format. The intention is to provide better insight about incubators' own business monitoring as well as their knowledge of how their tenants are performing.

The literature review, established that the key elements involved in the business incubator are the stage of growth, the entrepreneur, institutional controls (reporting) and the incubator services (Figure 4.1).

Figure – 4.1

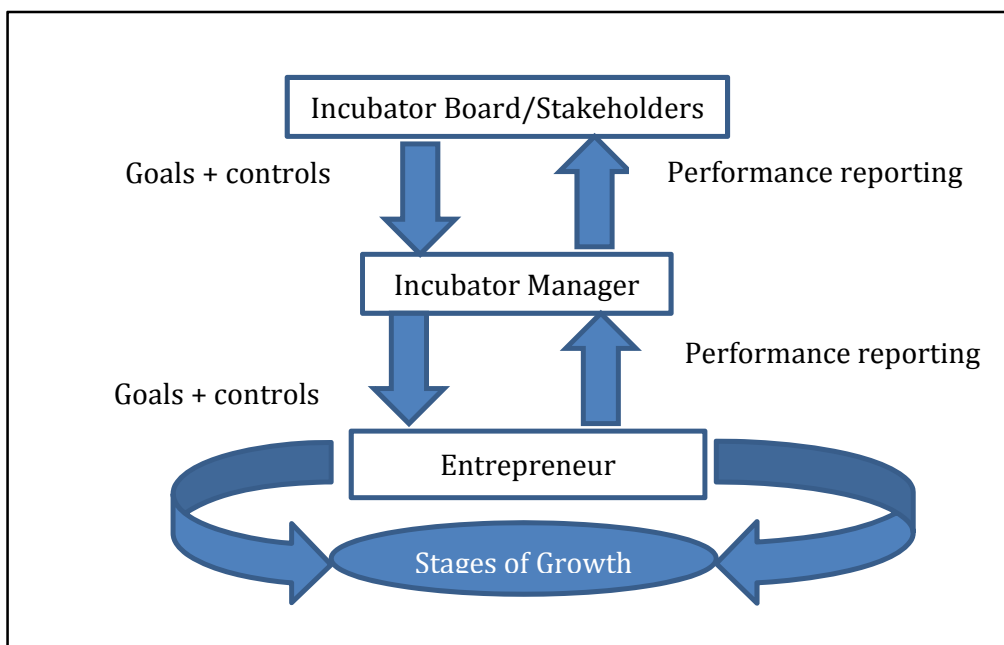
Business-incubator Performance Framework



Sponsors' requirements to achieve local economic-development goals have been documented (Lalkaka, 1996). Entrepreneurship research has examined the effect of the entrepreneur's personality and experience on venture success (Cooper &

Gascon, 1992; Lee & Tsang, 2001). The effect of entrepreneurs' attributes on firm development in the business incubator needs to be tested by drawing upon entrepreneurship research. What also appears to be missing is a holistic analysis of the interactions between the key elements mentioned above and the smallest steps taken in the transition from an idea to a small business (Figure 4.2). When these small steps in business growth taken within an incubator are examined cross-sectionally, it may be possible to return to the question of the effectiveness of incubator services and develop a framework for measuring incubator performance.

Figure 4.2
A Framework for Exposing Venture Growth in an Incubator



4.3 Research Methodology

The first two years of this research consisted of the literature review, narrowing the research focus and conducting pilot research, where in six incubator tenants from two incubators were interviewed. The pilot incubators were a mixed-use incubator and a technology incubator, reflecting of the two sets of incubators most commonly present in Australia. The development of the survey instruments was

driven by the literature reviews and pilot studies on two incubator sites in Sydney. Finally, two sets of questionnaires were developed to collect the data required to meet the goals of the study: one to question the entrepreneur, and the other to question the incubator manager. These surveys were then distributed to the selected incubators and their tenants.

The development of the survey instruments was guided by various entrepreneurial and business-development theories. The theoretical perspectives were established to allow for the development of the questions and interpretation of the results. The theoretical framework that will be used to interpret business-control habits and venture creation come from the entrepreneurship and business life-cycle theories reviewed in Chapter Three. The method of analysis was based on grounded-theory principles: involving the discovery of a new theory based on data captured through survey forms. (Charmaz, 2006; Saunders, Lewis & Thornhill, 2000; Strauss & Corbin, 1990). The practical side of the study was organised as follows:

1. Reviewing the literature and classifying incubator models and growth-stage indicators
2. Organising and conducting interviews with pilot incubator tenants (based on convergent interviewing) for pre-testing of how Kazanjian's activities in his stages-of-growth model apply in the development of businesses in the business incubator
3. Designing the structured interview questionnaires
4. Conducting regular interviews with the business-incubator managers of the three incubators in Melbourne and three in Sydney over the span of two years
5. Organising and analyzing data
6. Transcribing interviews, entering and coding data and analysing the process and findings
7. Discussing findings and revisiting the literature
8. Writing the thesis and conclusion.

Incubators have received an increasing level of attention, from sponsoring private and public bodies, as either an economic-development tool or a means of commercialising new ideas. As a consequence, much of the research into incubators has had the underlying assumption that the supply of appropriate facilities would satisfy the demand from intending entrepreneurs. However, as the literature has shown, incubators have been increasingly competitive in offering better or more complete services to potential entrepreneurs to attract those new ventures that would best create the economic growth sought in the incubator's region.

Incubator stimulated growth has been examined. In the incubation literature the term "growth" has been measured through observations of growth in employment, profit and sales. Studies such as that by Lindelof and Lofsten (2002), undertaken in Sweden, compared these growth statistics for similar firms located within and outside science parks. They found that those within science parks did benefit from their location. Their growth measures fit nicely into financial models that were derived from theories of corporate investment. However, as most small-business researchers are aware, financial theory derived in the corporate context does not always apply to small firms. The academic community shares a common belief that profit is not an accurate measure of venture growth especially in the first four years (Pena 2004). Reid (1999) found that entrepreneurs do not even reveal a profit in their financial reports during the early stages of growth, instead they include them in their salary reporting.

Incubators are commonly evaluated on the basis of meeting their goals and objectives (Bearse 1998). Business incubators seek to add value by offering clients a combination of facilities and services that cannot be so easily obtained from other sources. The nature of these services and the way they are delivered will usually have

an important influence on the success of incubator tenants and hence the performance of the incubator (European Commission Enterprise Directorate-General, 2002). The type and the range of support services provided by an incubator are believed to vary depending on the type of incubator and the objectives of the investors financing it (European Commission Enterprise Directorate-General, 2002, p.49). Thus the management literature has contributed to the theoretical constructs used to examine incubators.

4.4 Theoretical Perspectives

This section explores the four theoretical perspectives in a step towards building a comprehensive framework for understanding firm development in business incubators (Figure 4.1). Applying any one theory on its own would not provide a complete understanding of firm growth. To develop an appropriate measure of growth, a rich understanding of factors that contribute to it needs to be developed with the aid of this multi-dimensional framework. The stages or life-cycle approach in business development will highlight the activities in a firm, which take place in a managed hierarchical structure: the business incubator (Research Question 1). Entrepreneurship research allows for the understanding of the effects of individual attributes on business success (Research Question 2). The RBV of the firm (Barney, 2001; Connor, 2002; Penrose, 1959) provides a theoretical foundation for understanding the role of resources or services needed to support growth during the firm's stages of growth (Research Question 3). Finally, institutional theory will help develop an understanding of the structures, controls and management styles in different business incubators (Research Question 4).

4.5 Research Questions

The research questions have been identified to help theory and to fill the gap in research that was identified from the literature review: a deficient level of research

and theory supporting a performance-evaluation framework that incorporates how firms grow in business incubators, the effects of entrepreneurs' characteristics on growth, important services and the impact of business controls on growth. Therefore, the following research questions are proposed:

1. What are the activities and stages of growth of businesses located in incubators?
2. What are the effects of entrepreneurs' personal characteristics and attributes such as gender, age, experience, management skills and risk-taking propensity, on business growth?
3. What services used do entrepreneurs use in business incubators, and how are these services accessed?
4. What are the common reporting practices that are shared between similar incubators, and do tenants replicate the reporting practices of their business incubators?

The combination of these questions would set the path to develop the research design and procedures for data collection for the rest of the study, The four research questions of this study are answered through an analysis carried out based on structured questionnaires administered to incubatee companies and incubator managers. The design of the questionnaires is discussed under each research question below.

4.5.1 Research Question 1:

What are the activities and stages of growth of businesses located in incubators?

This research defines the process of establishing and growing a business located in a business incubator. It defines and charts in a timeline every single activity involved in establishing a business. Listing each activity performed by the surveyed

57 sampled businesses during their stay in the business incubator will provide for a deeper understanding of venture development, and hence provide the foundation for a benchmark performance-measurement model.

In constructing a stage model for firms in incubators, 57 entrepreneurs were surveyed face to face. This method was chosen, rather than email or paper survey, because the survey was extensive, comprising of various large matrix tables. An analysis of the results and sample characteristics will be provided in Chapter 5. The focus of this section is to first present the activities to be tested. The stages of growth will be defined based on the dominant activities undertaken by the surveyed participants, similar to the grounded-based-approach used by Kazanjian (1988) and Carter et al. (1996).

In Australia almost percent of incubators are mixed use and 10 percent are technology, empowerment and specialised incubators. This study chooses not to focus on any one industry, thus ensuring a wide applicability of its findings. The sample incubators in this research consist of technology, mixed-use or general-purpose, specialised and empowerment incubators.

During the pilot phase, three entrepreneurs from a technology incubator and three from a general-purpose incubator were randomly selected for identifying the key activities that take place during the development of a business. In the survey, the entrepreneurs were asked to identify problems (activities) that had occurred in the course of their business development. They were provided with the original list of activities derived from Kazanjian's (1988) case studies of two firms. The list is made up of 26 key activities from the Kazanjian's conception stage through to the stability stage (Table 4.1).

Table 4.1
List of 26 Business Activities Kazanjian (1988)

Stage I Conception and development of a product	Create idea Hire engineer to resolve technical issues- Build prototype (a product) Test prototype Build 10-20 prototypes for test and evaluation Incorporate company Sell idea to financial backers
Stage 2 Commercialisation	Develop product for commercialisation Make product work well Produce it beyond model shop Hire director of manufacturing Plan manufacturing facilities Build organisational task team Prepare to launch product Hire marketing individuals Hire software specialists Hire finance director Hire full-time bookkeeper Hire market-research consultant Launch product
Stage 3 Growth	Resolve manufacturing and marketing crises- Hire more employees in new positions Formalise company structures and reporting lines
Stage 4 Stability	Maintain growth momentum and market position Develop second-generation product Reorganise team and hire new expertise in marketing and R&D

The six firms were provided with only the list of activities and not the stages. They were told to tick those activities that they felt were relevant and include other activities that were important from the inception of their business. To track the activities undertaken by the sampled entrepreneurs, the activity had to be ticked in the year it had occurred (see survey questionnaire in Appendix 2, Question 6). The directions for Question 6 are as follows: *Please tick the appropriate time period when each activity took place. If the activity takes place in more than one period, please tick all relevant periods. If the activity has not occurred, tick Not Occured. If the activity is not relevant to your business, tick Not Applicable.*

By providing a list of activities to the entrepreneurs, the development of a company in a business incubator can be charted and the Kazanjian model can be

tested to see if companies undertake the same activities identified by Kazanjian. Table 4.2 features the outcome of the process of refining the key events that took place in the development of the six pilot firms.

Table 4.2
Final List of Activities

1	Creation of idea	25	Collect expression of buyer interests
2	Work out activities	26	Review financial resources
3	Estimate budget and resources	27	Product endorsement
4	Prepared business plan	28	Review production capabilities
5	Technical training	29	Lease or buy technology
6	Registered business name	30	Trade shows
7	Incorporated business entity	31	How to make the product work well
8	Assigned a mentor	32	Form strategic alliances or
9	Met suppliers	33	partnerships
10	Met consumers	34	Product testing
11	Applied for local patent/trademark	35	Hire personnel
12	Applied for international patent	36	Product Pilot
13	Build - Prototype	37	Product costing and pricing
14	Draft business plan with centre manager	38	Conduct direct sales
15	Board/Management formation	39	Refining knowledge of consumer
16	Review business plan	40	needs
17	Apply for government grants	41	Branding/packaging
18	Apply for commercial loans	42	Website development
19	Apply for venture capital funding	43	Margin analysis
20	Secured funding	44	Secured first sale
21	Self industry market research	45	Product launch
22	Hired market research consultant	46	Appoint retail distributor or channel
23	Consumer needs analysis	47	sales
24	Competitor analysis	48	Product diversification
			Further financial assistance
			Export market
			Trade sale

The six entrepreneurs in the initial pilot study identified 22 additional activities that were key in their business-development process. In all, 48 activities were identified as key activities undertaken by entrepreneurs in business incubators. These 48 activities were then included in the surveys administered to the remaining 51 firms. An in-depth analysis of the results is presented in Chapter 5.

4.5.2 Research Question 2

What are the effects of entrepreneurs' personal characteristics and attributes, such as gender, age, experience, management skills and risk-taking propensity, on business growth?

The performance of new ventures is influenced by general human capital (Cooper et al., 1994; Duchesneau & Gartner, 1990; Cooper et al., 1988). In developing a framework for assessing entrepreneurial performance Cooper and Gascon (1992) examined race and gender, occupation of parents, education, experience, psychological characteristics and entrepreneur's age. They found that minority entrepreneurs (such as women and African Americans) were less likely to either survive (Cooper et al., 1988) or grow (Cooper et al., 1989). It was also found that entrepreneurs with entrepreneurial parents recorded greater sales (Duchesneau & Gartner, 1990). Education is a widely researched entrepreneurial variable. The level of education has an impact on growth, but not on survival prospects (Cooper & Gascon 1992). For example, there appears to be a positive correlation between the level of education and the growth of high-technology firms (Teach et al., 1986). Bailey (1986) found that a certificate of education or trade qualification correlated with a higher rate of success for 67 Australian founders. As for experience, Hisrich (1990) and Neiswander and Drollinger (1986) found that entrepreneurs with experience in a similar field (past business or past occupation) had better chances of survival and success. A combination of experience and education in a related field increased chances of being profitable (Hoad & Rosko, 1964).

Doutriaux and Simyar (1987) found that marketing experience led to higher sales. However, other studies have found no positive relation between industry experience and performance (Van de Ven, Hudson & Schroeder 1984). The results from research into experience alone and its effects on performance have been mixed

and establishing the connection between prior entrepreneurial experience and consistent business success is complex (Cooper & Gascon, 1992; Cooper et al.,1994). Having parents who had owned a business contributed to marginal survival, but not to business growth. As for psychological characteristics, attention has been focused on three variables: need for achievement, internal locus for control and risk-taking.

Numerous studies have examined the effects of age on firm survival and growth. Studies have found that older entrepreneurs were more likely to survive or have higher income (Brockhaus 1980; Cooper et al. 1989; Woo et al. 1991). Entrepreneurs' goals were also classified as a determining variable for firm survival and growth. Goals such as "avoiding working for others" were found to be positively correlated to survival, but not growth (Cooper et al.,1988). Brockhaus (1980) identified that dissatisfied employees were highly motivated to succeed since returning to the job market was distasteful. Researchers have also identified entrepreneurs' competencies in management, planning and budgeting, and marketing as vital for the successful operation of a small business (Huck & McEwen, 1991; Ibrahim & Goodwin, 1986).

The entrepreneur is an important variable in starting a new organisation and achieving venture growth. From the above analysis of entrepreneurial factors that affect performance, there is a need to better understand whether entrepreneurs with no related experience or education might still have a chance to grow in a particular incubator. If they do not have management skills such as planning and budgeting they may still perform well with the guidance provided by the incubator management. There is therefore a need to understand if the incubator provides the solutions for entrepreneurial "deficiencies".

Using the discussion above on the determinants of business growth in relation to entrepreneurs' attributes, the following data was collected from each respondent (see Appendix 2, Question 3.1- 3.10 for presentation of questions):

- Gender (Question 3.1).
- Age (Question 3.2).
- Level of education (Question 3.3).
- Jobs held (Question 3.4).
- Past experience in related field of business (Question 3.5).
- Past business ownership (Question 3.7).
- Number of businesses previously owned (Question 3.8).
- Management skill (Question 3.9: Aware of financial position)
 - Ability to interact with people (Question 3.9: Enjoy working with people)
 - Determination (Question 3.9: Determined to do what it takes to complete a venture)
 - Previous job satisfaction (Question 3.9: Dissatisfaction with previous job was a driving force for starting own business)
 - Locus of control (Question 3.9: Able to deal with a major problem without letting it upset your goals)
 - Risk-taking propensity (Question 3.9: Comfortable to mortgage your house to finance your business)
 - Creativity (Question 3.9: Often creating new ideas and finding new ways of doing things)

The individual attributes presented in the various parts of Question 3.9 were rated on a five-point Likert scale with anchors "1" for not at all true and "5" for extremely true.

- Parental background (Question 3.10)
 - Mother. One of: Entrepreneurial, Professional, White collar, Blue Collar
 - Father. One of: Entrepreneurial, Professional, White collar, Blue Collar

The two key entrepreneurship building blocks - the stages of business growth and the entrepreneurial personal characteristics and attributes affecting business performance - are two of the four pillars that form critical assessment criteria for businesses located in incubators. Although these two main pillars are the core of performance evaluation, it is not complete without assessing the following:

- (1) Small businesses enter the business incubator with an expectation to receive business assistance; therefore the resources needed for firms at each stage of

growth and how they should be delivered must be known (Research Question 3);

- (2) The controls and performance monitoring that are put in place in the different types of incubators for monitoring performance of business incubators (Research Question 4).

4.5.3 Research Question 3:

What are services do entrepreneurs use, and how are these services accessed?

The purpose of this research is to build an incubator-specific performance model. The previous section outlined the firm's stages of growth and the entrepreneur's characteristics that affect growth. An integral part of incubators is how they provide business services to tenants. Therefore, this research asks what kinds of resources or business assistance are needed, and how these services are accessed or provided in the business-incubator environment. Most incubator research questions the business-incubator manager on what services the incubator provides (NBIA, 2003, 2006, 2012; European Commission, 2002). This research asks entrepreneur directly about the resources they used during their stay in the incubator.

The RBV of the firm provides the theoretical base for understanding the role of resources in the development of firms located in business incubators. The ability to gain a sustainable competitive advantage depends on the firm's internal resources, giving rise to the RBV (Barney, 2001; Penrose, 1959; Wernerfelt, 2013). The RBV of business incubation provides an inward observation, in which the firm's depends on its ability to create a sustainable competitive advantage. An adequate availability of resources in conjunction with an entrepreneurial team that possesses both a sufficient knowledge and capabilities can create a sustainable competitive advantage, thus improving the firm's performance. An incubator team comprises an incubator manager, the board and, at times, external consultants.

All incubators recruit a manager to provide direct assistance to incubator tenants. A board comprising of sponsors and community representatives provides a monitoring function, making sure the incubator adheres to policies and the overall objectives. The board also plays a role in assisting tenants.

Incubator managers play a key role in the growth process of a start-up. They serve as a sounding board, provide advice or referrals and develop business-assistance programs. However, do they provide all services that a developing business needs? Each incubator provides its business support services differently. They might be provided by the incubator manager or expertise might be sourced externally. However, it is important to understand what services the entrepreneur needs and how services are provided. Does a particular type of incubator specialise in providing a specific service? This question forms one of the performance-measurement building blocks. One major issue raised in the discussion of a framework for evaluating performance in Chapter 2 was to discover what incubator services assist in business growth.

As part of this research, the incubator managers as well as the entrepreneurs were questioned on incubator services. The incubator managers were asked to identify the type of incubator they were operating and how incubator services were provided. The entrepreneurs were provided with the same list of services to identify how they sourced each of the services (Question 7, Incubator Managers' Questionnaire and Question 7, Company Questionnaire).

A list of business-assistance services, as featured in Table 4.3, was provided to the six selected entrepreneurs in the pilot. (The final list of services is shown in Appendix 2, Question 7. They were required to specify whether they used each service, and how the services were provided. During the course of the pilot, all six

entrepreneurs interviewed reported having to self-train or use services from outside the business incubator. Therefore, services were not only provided by the incubator manager but sourced externally. Discussions with the pilot tenants identified a number of service providers:

- 1) Incubator Manager
- 2) Internal Courses
- 3) Incubator Board
- 4) Mentors
- 5) Tenants Themselves
- 6) Tenants Source External Services
- 7) Government
- 8) Universities

Table 4.3
Business-assistance Services Provided

No.	Business-assistance Services
1	Data-base information service/library
2	Patenting, trademarks, licencing and permits assistance
3	Intellectual-property management
4	Accounting/ and Business Activity Statement submissions
5	Legal counselling
6	Networking activities
7	Providing assistance to obtain free media exposure
8	Presentation skills
9	Marketing intelligence/ research assistance
10	Financial management (taxation advice, cash-flow planning, break-even analysis, product costing, pricing)
11	Risk management and insurance advice
12	Access to government grants
13	Access to Start up Capital Revolving Loans Fund
14	Access to commercial loans or venture capital
15	Technology infrastructure sourcing
16	Establishing connections with suppliers
17	Establishing connections with buyers and customers
18	Business-plan development assistance, strategic planning
19	Hiring staff & employee relations advice
20	Health, superannuation and benefit-package advice
21	Prototype development, testing assistance
22	Marketing assistance
23	Help with regulatory compliance
24	Government contract procurement assistance
25	Building management team/board
26	Linkages with investors and strategic partners
27	Overseas trade linkages

This exercise will provide a clearer picture of what services are sourced and how are they acquired in and out of the business incubator.

4.5.4 Research Question 4:

What are the common reporting practices that are shared between similar incubators, and do, tenants replicate the reporting practices of their business incubators?

Business incubators are sponsored by various public, private and joint public-private organisations. Institutional theory provides the perspective for questioning the structures and practices put in place by the various sponsors to create an environment conducive to the birth and survival of organisations.

However, the drawback of institutional theory is that it is conceptual and filled with anecdotal evidence. How can the process of institutionalisation be measured? There has been no thorough empirical testing on the assertions of institutional theory. Therefore, a structured assessment must be used to test this theory's assertions. In developing an understanding of how organisations are structured and managed, Porter and Hjern (1981) focused on four logically interrelated implementation functions of structures: planning (deciding what specific policy activities to pursue); resource mobilisation (acquiring the material and other resources necessary to mount the intended activities); effectuation (translating the plan into action) and evaluation (evaluating the performance of implementers).

These implementation functions are intended to be used as a base for understanding the controls put in place in different sponsored incubators. Therefore, to determine whether the process of institutionalisation is occurring in the business incubator, the following questions need to be investigated:

- Are certain incubators required to prepare detailed plans and reports by their stakeholders?

- Do incubator managers who are scrutinised by their stakeholders in turn scrutinise their clients?
- Do incubator managers learn from other incubator managers and implement what is practiced elsewhere?
- Do incubators that are more diligent in preparing reports cultivate report-preparing tenants?

Therefore, the implementation-structure approach described above (Porter & Hjern, 1981) will allow for a more focused approach to observing the process of institutionalisation in incubators. By focusing on specific implementation activities, the ways and paths by which structures and controls are implemented in the incubator can be studied. It is now appropriate to examine Question 4 to determine its data requirements.

The development of the survey instruments was driven by the literature reviews and pilot studies conducted in Sydney. The pilot study was conducted to test the effectiveness of the survey. A technology incubator and a general-purpose incubator were selected given that these were the two most prevalent incubator types in the sample. Technology incubators are a fast-growing incubator focus in Australia and the general-purpose incubator represents the largest incubator type in Australia. Sydney was chosen as it has a high density of urban and suburban incubators with high occupancy levels. A total of six tenants and two incubator managers, and three entrepreneurs each from a technology and a multi-purpose incubator, were surveyed and interviewed. Two surveys were used to collect the data required to meet the goals of the study: one to question the incubator managers and the second to question the entrepreneurs.

To study the process of institutionalisation in the business incubator, questions surrounding operational controls were examined at the stakeholder, incubator-manager and incubatee-company levels. Stakeholder controls were examined by asking the incubator manager about their stakeholders' reporting requirements.

The data required to answer research question 4 is as follows:

1) Stakeholder

- The reports the incubator sponsors or board require in monitoring the performance of the incubator and the frequency at which these reports are generated (Question 4.1, Appendix 1)
- The frequency with which the incubator management meets the sponsors or incubator board (Question 4.2, Appendix 1)

2) Incubator management

- Reports that the incubator management requires from incubatees and the frequency at which these reports are generated (Question 4.4, Appendix 1)
- Key performance indicators for monitoring incubator performance (Question 4.5, Appendix 1)
- The frequency with which the incubator management meet the incubatees to discuss business progress (Question 4.6, Appendix 1)
- The reasons for contacting other incubators (Question 3.2, Appendix 1)
- The frequency with which the incubator managers meet other incubator managers (Question 3.1, Appendix 1)
- How incubator managers say they render services to incubatees (Question 7, Appendix 1)

3) Incubatee

- Reports that are prepared by incubatees to monitor their own performance and if incubator managers provide assistance (Question 4.3, Appendix 2)
- Whether the incubator manager or incubator programs were a catalyst in preparing the incubatee to manage business affairs (Question 4.6, Appendix 2)

4.6 Data

4.6.1 Data Collection

In conducting incubator performance reviews, incubators have been compared on various bases. Previous studies in the literature review (see Section 2.4) have proposed comparing incubators based on the type of sponsors, the incubator focus or the type of tenants. There is ambiguity in the precise definition of “business incubation” (Hackett & Dilts 2004, p59).

In Australia, the most comprehensive review of incubators were conducted in 1999 by the Department of Employment, Workplace Relations and Small Business (DEWRSB, 1999) 60 on mixed-use incubators, and in 2003 by the Department of Communications, Information Technology and the Arts (DCITA) on 10 incubators (Allen Consulting Group, 2003). Incubators were profiled based on who their sponsors were (e.g. government, university, technology park, corporate and community). They were also profiled into classified by legal structure (for example, company limited by guarantee) and operating structure (stand-alone, networked embedded, industry-specific). The current study’s method of profiling incubator type combines the typology used by DEWRSB in 1999 and the NBIA in 1998. This way the participants are given the flexibility to choose how they view themselves from a more comprehensive list. Incubators were profiled by way of Questions 1.2- 1.4, Appendix 1.

There are more than 120 incubators in Australia, including 109 business enterprise entres (BECs), 23 AusIndustry-funded incubators and over 23 technology incubators funded by the former Australian government Building IT Strengths (BITS) program, as well as private entities such as banks, conglomerates and venture-capital investors (business.gov.au, 2013; AusIndustry , 2012; The Fetch, 2012).

Incubators in Australia are also known as small-business accelerators and economic-development centres. The government BECs that which provide small-business advice to the public also lease rooms to small businesses and hence have called themselves business incubators. Technology parks that operate on acreage sites and lease facilities to a large numbers of small businesses also provide incubation services. Non-profit organisations like church groups have also participated in developing business incubators in Australia. These incubators are located in cities as well as suburban and regional areas. To select a representative sample of incubators for this study, a list of incubators was obtained from the 2005 Incubator AusIndustry report (AusIndustry, 2005) and the DCITA 2003 report by the Allen Consulting Group (Allen Consulting Group, 2003). These two lists 56 percent of incubators were located in New South Wales and Victoria. Therefore, incubators were selected from these two states for the study, with the exception of one incubator in Canberra. The incubator manager at CREEDA Incubator in Canberra was sent an invitation to participate, but did not provide access to tenants. Participation from CREEDA was only at the level of the incubator manager. The largest proportion of small businesses operate in the two most populated states, New South Wales (33.3 per cent) and Victoria (25.2 percent) (business.gov.au, 2013; AusIndustry, 2012).

4.6.2 Selection of Interviews

In “case study methodology, the selection of cases is purposeful and involves using replication logic” (Perry, 1998, p793). Replication logic refers to the selection of similar cases in an attempt to predict similar results (literal replication) or predict contrasting results for predictable reasons (theoretical replication) (Yin, 2003). For either type, the cases selected need to be relevant to the research problem being investigated.

As previously stated this study undertakes a single study on general-purpose, technology, empowerment and specialised incubators. A selection of interviews were conducted through contact with the Department of Employment and Workplace Relations (DEWR) advisor for New South Wales and Victoria. From this meeting a list of incubators in the region was identified, including incubator managers. Through the University of Wollongong letters were drafted to each individual incubator manager seeking permission to undertake research on the incubator and its tenants (Appendix 6).

An interview was set up with each manager. The manager provided a list of all tenants and the individual owners, and interviews with the entrepreneurs were then set up by the researcher. Most of the firms identified could be interviewed (Table 4.4).

The following section describes details of how data was collected, including the conduct of the interviews, the approach to questions and the supplementary sources of data used to validate responses from the interview process.

Potential respondents (identified as related in Section 4.6.1) were contacted through a letter identifying the project as a joint initiative between the Sutherland Council, the DEWRC and the University of Wollongong. After a week, the incubator managers then contacted potential business owners via telephone and email to arrange a meeting in which the interview could take place between the researcher and each business owner.

A standard and consistent approach was developed for all interviews with the firms. Contacts were made directly to incubator managers. A phone call from the researcher, and a letter from the head of the Accounting and Finance faculty describing the research objectives were sent to incubator managers and tenants. Included in the letter was the assurance that a summary report of the research

outcomes would be furnished to each incubator manager (the University ethics committee had reviewed the letter). A letter from the University ethics committee confirming the research methods' compliance with established ethical standards was also furnished to each incubator manager.

Once the incubator manager gave permission, each incubator manager was interviewed. Access to the tenants was controlled by the incubator managers. They selected the tenants for participation in this research on the basis of tenant willingness and time availability. However, some incubator managers agreed to be interviewed but did not give permission for their tenants to be interviewed.

4.6.3 Discussion of the Sample

4.6.3.1 Location of Incubators

This section presents the descriptive statistics of the sample, including:

- the location, number and types of business incubators
- the number of respondents
- the business age and types of entities located in incubators.

Fourteen incubators participated in the research. Eight were located in the state of New South Wales, five in Victoria and one in the Australian Capital Territory. All incubators in urban and suburban Sydney, Melbourne and Canberra were contacted. (CREEDA was the only listed incubator in Australian Capital Territory, according to the AusIndustry Small Business Incubator Program as at April 2005) .

Overall, eight were urban incubators and six were suburban. Only one incubator was located in regional New South Wales, in the city of Newcastle. The selection of incubators followed the distribution pattern of other key incubator studies abroad. For example, a study carried out in 2002 by the CSES in Europe found that 54 percent were urban, 24 percent were greenfield and six percent were rural. The 1998 National Business Incubation Industry Survey undertaken by the NBIA found that 45

percent of incubators were located in urban areas, 19 percent suburban and 36 percent rural.

4.6.3.2 Participation

Given the extensive nature of the survey forms it was imperative that face-to-face interviews be conducted. All 14 incubators were directly contacted. A phone call from the researcher herself and a letter from the Head of the School of Accounting and Finance describing the research objectives were sent to incubator managers and the tenants. The characteristics of the incubators included in the survey are shown in Table 4.4.

Table 4.4
Incubator Location, Incubator Type and Tenant Participation Levels

Incubators	Location	Incubator Type	Incubator Manager	Tenants	No of Tenants Participating	Total Tenants In Incubator	%
Business Matrix	Melbourne	Empowerment	Yes	Yes	5	13	38%
Darebin Enterprise Centre	Melbourne	General-purpose	No	Yes	2	45	4%
Information City Victoria	Melbourne	Technology	Yes	Yes	2	32	6%
Melbourne Design and Fashion Incubator	Melbourne	Specialised	Yes	Yes	4	15	27%
Monash Business Incubator	Melbourne	General-purpose	Yes	Yes	5	18	38%
Australia Technology Park	Sydney	Technology	Yes	Yes	7	30	23%
Liverpool Business Growth Centre	Sydney	General-purpose	Yes	Yes	4	18	22%
The Business Village Parramatta	Sydney	General-purpose	No	Yes	3	30	10%
The Business Village Surry Hills	Sydney	General-purpose	Yes	Yes	10	33	38%
Sutherland Hub For Economic Development	Sydney	General-purpose	Yes	Yes	11	13	85%
Hunter Business Centre	Newcastle	Technology	Yes	Yes	4	9	44%
Blue Fire	Sydney	Technology	Yes	No	0	NA	NA
Item3	Sydney	Technology	Yes	No	0	NA	NA
CREEDA Business Centres	Canberra	General-purpose	Yes	No	0	NA	NA
Total					57	267	21%

This table provides a snapshot of the participation levels of each incubator. All incubators agreed to participate, although three incubators did not complete the surveys of both the incubator manager and the tenants. The rate of participation of each incubator does not reflect the size of that incubator. All tenants were asked to participate, but not all were willing to participate due to time pressures; moreover, incubator managers who did not participate said they were overwhelmed by other surveys (primarily from sponsors) giving rise to survey “burnout”. The incubator managers confirmed orally that there were no significant differences between the participants of this research and those who did not participate².

4.6.3.3 Incubator Type

General-purpose, or mixed-use, incubators were the most significant type in the sample. This group of incubators represents the most popular incubator type. They comprise 50 percent of the sample incubator population. This proportion of general-purpose incubators appears to be similar to the proportion of mixed-use incubators in America (NBIA, 2002). Table 4.5 shows that one incubator was an empowerment incubator (focusing on minorities, women or disadvantaged groups), one specialised in design and fashion and 36 percent were technology-based incubators, which focused on commercialising new technology products. The most comprehensive Australian study on all types of incubators conducted by DEWRSB in 1999, reported that 80 percent of incubators were general-purpose and 20 percent were technology-focus. Although empowerment incubators host a diverse range of businesses, they focus on clients considered underprivileged and underserved, such as minorities and women. Therefore, the sample population of this research would be quite similar to

² There was no direct access to those who did not participate or any sightings of their financial reports; therefore their oral statement could not be confirmed.

the NBIA 2006 research if the same classifications were used, although with a slightly higher representation of technology incubators.

Table 4.5
Incubator Type

<i>Type</i>	<i>Number</i>	<i>Percent</i>
Specialised	1	7%
Empowerment	1	7%
Technology	5	36%
General-purpose	7	50%
	14	100%

4.6.3.4 Age of Business

Tables 4.6 and 4.7 display the age of the sample businesses. There are two aspects of age to consider: the number of years the business was in existence before they entered the incubator, and the time they spent in the incubator. This age split is conducted to give a clear picture of growth from the time a business enters into an incubator.

Table 4.6
Years Prior to Entry

Years in operation prior to entry	<i>n</i>	Percent
0-6 Months	22	39
7 Months - 12 Months	6	11
1 to 2 Years	8	14
2 to 3 Years	9	16
3+ Years	12	21
Total	57	100

Table 4.7
Years in Incubator

Years in operation in incubator	<i>n</i>	Percent
0-6 Months	7	12
7 Months- 12 Months	9	16
1 to 2 Years	9	16
2 to 3 Years	13	23
3+ Years	19	33
Total	57	100

4.6.3.5 Organisational Structure

Table 4.8 shows that a majority of firms in the sample incubators were operating as incorporated entities. Australia and New Zealand Standard Industrial Classification (ANZIC) codes were used to classify the firms' type of business activity, as this provided sufficient detail. The codes also provided a means of grouping businesses to form samples that would provide a basis for analysis.

Table 4.8
Type of Entity

Forms of Organization	<i>n</i>	Percent
Incorporated	37	65
Partnership	1	2
Sole Proprietorship	19	33
Total	57	100

Table A3.1 in Appendix 3 reveals that a significant majority of firms provide business services such as advertising and marketing as well as accounting and tax returns. This pattern is similar to the general industry focus of mixed-use incubators in the US and United Kingdom, where tenants are accepted from a range of different industries (European Business and Innovation Centre Network, 2009; NBIA, 2006).

4.7 Statistical Analysis

The design of the survey instrument and the specific questions were deliberate to allow for the development of the stages-of-growth framework and profiling of successful entrepreneurs. The data was entered into various Excel spreadsheets, then exported to SPSS for statistical analysis. The data was then explored for significant relationships between entrepreneurial attributes and business success. The chi-square test for independence was used to examine the statistical significance of the differences identified in the study.

4.8 Summary

This chapter presents four research questions that this study attempt to answers: (1) what are the stages of growth of businesses located in incubators?; (2) what are the business-growth factors and what impact do entrepreneurial characteristics and attributes have on these factors? (3) what are the services used by entrepreneurs in incubators? and (4) what are the reporting practices of incubator management and businesses in incubators?

The RBV of the firm provides the theoretical base for understanding the role of resources or business services needed in the development of firms located in business incubators. To date, incubator researchers have not clearly defined how business services are provided, whether they are provided internally or if entrepreneurs themselves source these services externally. Identifying all the business-assistance services that are needed could allow business incubators to provide these services, enhancing the likelihood of businesses success for their incubatees.

Institutional theory provides the basis for understanding the structures and practices in the business-incubator environment. This chapter established that knowing how business incubators are managed and describing the consultation process between the incubator and the businesses could give insights into how incubators can be managed and businesses monitored to achieve the common goal of accelerated growth.

Chapter 5: Analysis and Results

5.1 Introduction

As stated in the previous chapter, the results of this research are expected to contribute to the greater understanding of the growth of businesses located in small-business incubators and the attributes of entrepreneurs that aid these enterprises' growth. In narrowing the focus of this study, four research questions were presented. The objective of this chapter is to analyse the data gathered through detailed surveys of the incubator managers and the entrepreneurs in the states of Victoria and New South Wales and the Australian Capital Territory to answer the four research questions:

1. What are the stages of growth of businesses located in incubators?
2. What are the business-growth factors and what impact do entrepreneurial characteristics and attributes have on these factors?
3. What services do entrepreneurs use in incubators?
4. What are the reporting practices of incubator management and incubatees?

Part 1 of this chapter deals with identifying the firms' stages of growth and the activities that form each stage. Part 2 identifies the growth factors and the individual entrepreneurial characteristics and attributes, and explores their relationship with the growth factors that assist business development. Part 3 reports on the services provided to incubatees and Part 4 presents the control and reporting practices of business incubators.

5.2 Stages of Growth of Businesses Located in Incubators

5.2.1 Developing a List of Activities

In constructing a stage model for firms located in incubators, extensive face-to-face surveys of 57 entrepreneurs were conducted. The details of the surveys, together with response rates and sample characteristics, were given in the previous

chapter. Through an observation of the entrepreneurs' activities each year while in the incubator, the stages-of-growth model developed in this study was constructed.

During the pilot phase, three entrepreneurs from a technology incubator and three from a mixed-use incubator were selected for identifying the key activities of business development. In the survey, the entrepreneurs were asked to identify the activities that had taken place in the course of their own business development. They were provided with the original list of activities derived from the case studies of two firms conducted by Kazanjian in 1979 (Kazanjian, 1988, pp262-266). The list includes 26 key activities from the Kazanjian's conception stage to his stability stage (Table 5.1).

Table 5.1
List of Kazanjian's (1988) 26 Business Activities

Stage 1: Conception and development of a product	Stage 2: Commercialization	Stage 3: Growth	Stage 4: Stability
<ul style="list-style-type: none"> •Creation of an idea •Technical issues-hire engineer •Build prototype (a product) •Testing •Build 10-20 prototypes for test and evaluation •Incorporate company •Sell idea to financial backers 	<ul style="list-style-type: none"> •Developing product for commercialisation •How to make product work well •How to produce it beyond model shop •Hire director of manufacturing •Plan manufacturing facilities •Build organisational task team •Prepare to launch product •Hire marketing individuals •Hire software specialists •Hire finance director •Hire full time bookkeeper •Hire market research consultant •Product launch 	<ul style="list-style-type: none"> •Manufacturing and marketing crises- •Hire more employees in new positions •Formalize company structures and reporting lines 	<ul style="list-style-type: none"> •Formalize company structures and reporting lines •Develop second-generation product •Reorganise team and hire new expertise in marketing and R&D

The six firms were provided with only the list activities and not the stages. They were told to tick those activities that they felt were relevant and include other activities that were important from the inception of their business. They were asked to tick the activity in every year it had occurred (Appendix 2 contains the survey). By providing a list of activities to the entrepreneurs, the development of a company in a

business incubator can be charted and the Kazanjian model can be tested to see if companies undertake the same activities identified by Kazanjian. Table 4.2 (presented in Chapter 4 and reproduced below) features the outcome of the process of refining the key events that took place in development of the six pilot firms. Forty-eight activities were identified as key activities undertaken by entrepreneurs in business incubators. These 48 activities were then included in the surveys administered to the remaining 51 firms. It appears from the final list of 48 activities derived from the pilot study that there are more activities undertaken by entrepreneurs in this study compared to those Kazanjian (1988) he had studied. Kazanjian's entrepreneurs had been in technology-based businesses for longer than 10 years, and he had traced their steps from the time they had started their business. There were three technology entrepreneurs in this current pilot study, who had been in business for an average of four years. The 3 other entrepreneurs were from a mixed use incubator. An analysis of the list of 48 activities provides an indepth view of the various activities that these entrepreneurs had undertaken. Although Kazanjian had gone into detail with product development (see Table 5.1 Stage 1) key activities that were identified in the pilot such as Prepare Business Plan, Patenting, Consumer Needs Analysis, Collect Expressions of Buyer Interest were not acknowledged. In the pilot of this present study, the entrepreneurs declared that they did not only need financial assistance while growing their businesses but needed further financial support at later stages in their business life. This was not seen in the Kazanjian (1988) model. The pilot entrepreneurs also identified the need to further refine their knowledge of consumer needs later in the business cycle. This again was not identified by Kazanjian (1988). Nevertheless, Kazanjian did consolidate the 26 activities into 4 stages of growth. The

following section will present the analysis of the 48 activities and determine if there are stages of growth in a business incubator.

Table 4.2
Final List of Activities

1	Create idea	25	Collect expression of buyer interests
2	Work out activities	26	Review financial resources
3	Estimate budget and resources	27	Obtain product endorsement
4	Prepare business plan	28	Review production capabilities
5	Receive technical training	29	Lease or buy technology
6	Register business name	30	Exhibit at trade shows
7	Incorporate business entity	31	Make the product work well
8	Be assigned a mentor	32	Form strategic alliances or partnerships
9	Meet suppliers	33	Test product
10	Meet consumers	34	Hire personnel
11	Apply for local patent/trademark	35	Conduct product pilot
12	Apply for international patent	36	Determine product costing and pricing
13	Build - prototype	37	Conduct direct sales
14	Draft business plan with centre manager	38	Refine knowledge of consumer needs
15	Form board and management formation	39	Design branding /packaging
16	Review business plan	40	Develop website
17	Apply for government grants	41	Conduct margin analysis
18	Apply for commercial loans	42	Secure first sale
19	Apply for venture capital funding	43	Launch product
20	Secure funding	44	Appoint retail distributor or establish a sales channel
21	Conduct self and industry market research	45	Diversify product
22	Hire market research consultant	46	Obtain further financial assistance
23	Conduct consumer-needs analysis	47	Identify export market
24	Conduct competitor analysis	48	Trade sale

* reproduced from Chapter 4.

5.2.2 Constructing the Stages

The 57 entrepreneurs in the sample had spent anywhere between one month and more than three years in their incubators. To discover if they had activities in common during the time spent in their respective business incubators, they were asked to indicate the time frame during which they undertook the specific activity: 0-6 months, 7-12 months, 1-2 years, 2-3 years and 3+ years (see Appendix 2, Question 6).

However, the stages were constructed purely from respondents' current-year activities. For example, Company X, has been in the incubator for one year and eight months. It would therefore fall in the 1-2 years group. Activities that were performed in Year 1 (past year) and Year 2 (current year) are captured. However, only the second-year activities (current year) are taken to form a stage, not the first. This is because these activities are recent-year activities and in the forefront of the entrepreneur's memory, and hence more reliable as a basis for the stages. Next, the responses from each group were collected and ranked in order of most frequently performed activity. Table A4 in Appendix 4 displays the stages of growth developed from this process. The highlighted activities form a stage. From the examination of the tables, there were significant breaks in the frequency of activities or events undertaken by each group. Hence, the activities that fall above the break are described as being a typical of a stage.

Certain activities were performed exclusively in each stage; Others, which this study calls "yearly activities", were performed in all stages. The time spent in the incubator determines the stages of growth. These findings are displayed in Figure 5.1.

Some activities were not included in the stages-of-growth model as they were either not performed by a majority of the firms or were performed prior to entry into the incubator. For instance, creating the idea had occurred before the firm actually entered the incubator. These are called "excluded activities" (Table 5.2).

Table 5.2
Excluded Activities

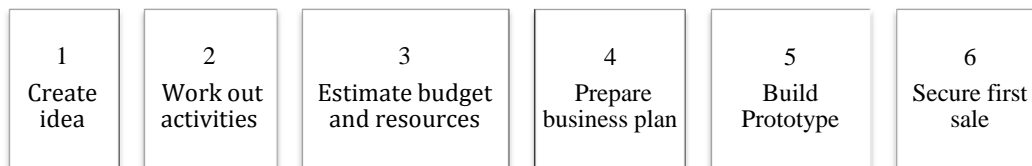
1	Create idea	11	Apply for government grants
2	Work out activities	12	Conduct self and industry market research
3	Estimate budget and resources	13	Hire market research consultant
4	Prepare business plan	14	Hire personnel
5	Receive technical training	15	Pilot product
6	Register business name	16	Secure first sale
7	Be assigned a mentor	17	Launch product
8	Build prototype	18	Determine export market
9	Draft business plan with centre manager	19	Trade sale
10	Form board and management formation	20	Apply for venture capital funding

5.2.3 Stages Discussion

In this section, the common activities shared by companies performed by each age group are presented as Pre-incubator, Operational Planning, Commercialisation, Diversification and Expansion activities. The stages-of-growth model (Figure 5.1) encompasses the growth of firms during their stay in business incubators. Nevertheless, it is important to consider the activities undertaken by entrepreneurs before businesses enter incubators. This gives incubator management a knowledge base of what an entrepreneur should accomplish before entering the incubator.

5.2.3.1 Pre-incubator Activities

Activities that were recorded to have occurred prior to entry into the business incubator are as follows:



The above results show that firms that enter incubators are not at an infancy stage, but have developed into going concerns. The majority of entrepreneurs had developed their products to a stage where they had secured their first sale prior to

entry into the incubator. Entry into the business incubator appears to be a sign that the fledgling start-up is ready to develop into a substantial business from a ‘garage’ operation. These ventures had written business plans, estimated their required resources, registered their business and built prototypes. However, this research did not investigate if these business plans were developed for the sole purpose of entry into the business incubator.

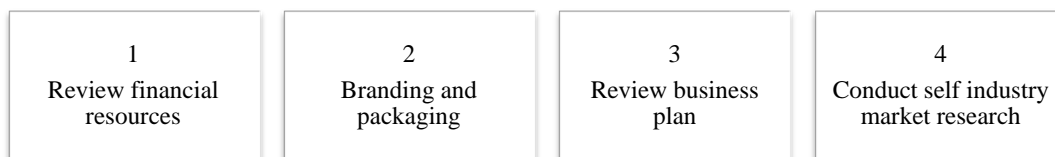
Pre-incubator activities are excluded from the final stages-of-growth model. The next section will offer an overview of activities that occur once the entrepreneurs have entered the business incubators, and expands on the stages-of-growth discussion.

5.2.3.2 *Operational Planning (0-6 Months)*

The major activities performed by entrepreneurs who have just entered the business incubator are “meet suppliers” and “meet consumers”. The entrepreneurs were preparing themselves to develop a market for their product or service by meeting their suppliers and consumers, and to gain further knowledge in their industry by attending trade shows. Other researchers have confirmed that the formation of a new venture involves the creation of an idea (Sarason, 1972; Normann, 1977; Van de Ven et al., 1984; Kazanjian & Drazin, 1990). However, this study highlighted that the process of idea creation takes place prior to entry into the incubator.

5.2.3.3 *Commercialisation (7-12 Months)*

The activities that are specific to this stage are as follows:

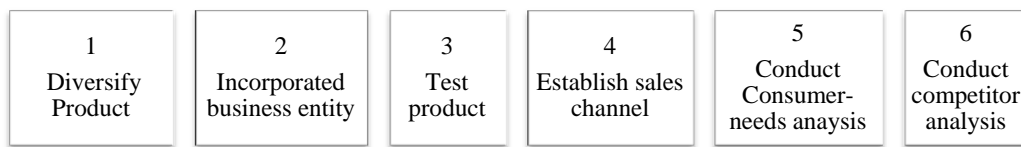


This stage consists of firms that have been in the incubator between 7 and 12 months. These firms had already developed their ideas outside the incubator and some had even secured sales before entry. However, the activities in this stage resemble the

process of commercialisation that is identified by Kazanjian (1990) and Churchill and Lewis (1983) as the second stage of enterprise development even though an analysis of activities performed prior to entry into the incubator would suggest that a majority of firms had conducted some business-commercialisation activities such as branding and packaging and even securing sales. These firms appear to have entered the incubator to further develop their business and improve the commercial standing of their product, refining their brand and their own knowledge of their consumers' needs. A majority of the incubators in Australia had as tenants marketing firms that had served almost all their fellow entrepreneurs. As a result, many entrepreneurs had repackaged their products.

5.2.3.4 Diversification (1 to 2 Years)

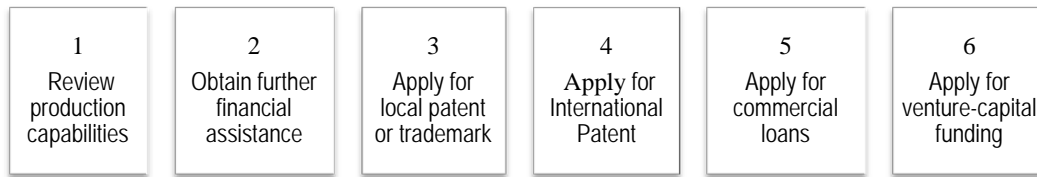
The activities performed by this group of entrepreneurs are as follows:



At this stage, between 1 one and two years of starting incubation, 56 percent of firms had entered the diversification process where they add new product or service offerings. At this stage they incorporate a business entity to create a legal structure, separating their personal assets from their business assets. They conduct product tests on their new line of products and service offerings and look for creative channels to sell their products. They perform consumer-needs analysis and competitor analysis for their new product or service offerings.

5.2.3.5 Expansion (2 to 3 Years)

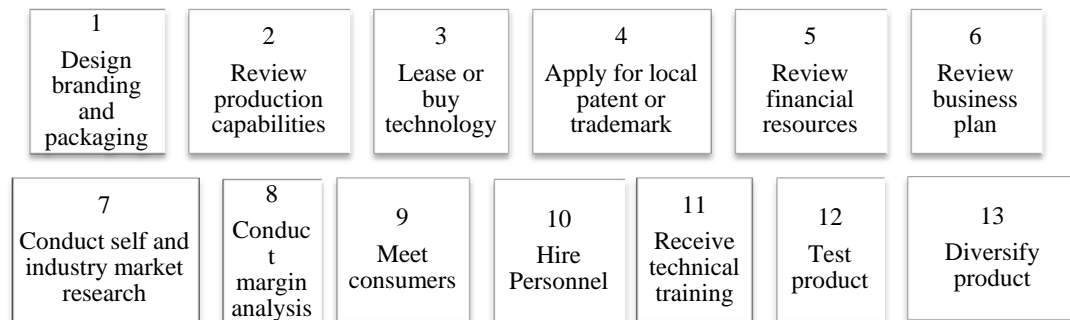
The activities performed by this group of entrepreneurs are as follows:



At this stage, the firms had spent between 2 and 3 years in the incubator. They had started securing the intellectual assets of their organisation, focusing on obtaining patents and trademarks for their product lines. They concentrated on increasing their funds and reviewed their capacity for producing more products and services to grow their business further.

5.2.3.6 Maturity (3 + Years)

The activities performed by this group of entrepreneurs are as follows:



This stage represents the firms that have been in the incubator for more than three years. At this stage the firms have established themselves as stable operating ventures as they appear to repeat activities that have occurred in a previous year. The focus of these-more mature entities is to make sure their product brand remains desirable, they have the ability to continue supplying their markets and they maintain financial security.

The repetitive nature of these activities raises questions as to whether these entrepreneurs should still be in the business incubator. Given that they are performing

activities that typically either have been done to could be done in earlier years, this group is ready to exit the business incubator.

5.2.4 Activities Common to All Stages

The following are activities that are performed every year by a majority of the 57 surveyed entrepreneurs:

1. Conduct margin analysis	2 Develop strategic alliances and partnering	3 Obtain product endorsement	4 Conduct direct sales
5 Refining knowledge of consumer needs	6 Attend trade shows	7 Conduct consumer-needs analysis	8 Conduct competitor analysis
9 Collect expressions of buyer interest	10 Develop website	11 Determine product costing and pricing	12 Make the product work well

These activities appear to be vital for the survival of each business venture. They need to be performed almost every year regardless of how long a company has been established Figure 5.1 displays the stages-of-growth. Activities common to all stages are those that are undertaken continuously throughout the business life cycle of 0- 4 years. Stage 1 is a combination of entrepreneurs who spend 0-6 months and 7-12 months in the incubator. Stage 2 is made up of entrepreneurs who spend 1-2 years, Stage 3 is entrepreneurs who spend 2-3 years and finally Stage 4 is entrepreneurs who spend more than three years in the business incubator.

Figure 5.1
Stages-of-growth Model

Activities common to all stages	Stage 1 Operational planning and commercialisation	Stage 2 Diversification	Stage 3 Expansion	Stage 4 Maturity
<ul style="list-style-type: none"> • Conduct margin analysis • Develop strategic alliances and partnering • Obtain product endorsement • Conduct direct sales • Refining knowledge of consumer needs • Attend trade shows • Conduct consumer needs analysis • Conduct competitor analysis • Collect expressions of buyer interest • Develop website • Determine product costing and pricing • Make the product work well 	<ul style="list-style-type: none"> • Meet suppliers • Meet consumers • Review financial resources • Branding and packaging • Review business plan • Conduct self and industry market research 	<ul style="list-style-type: none"> • Diversify product • Incorporate business entity • Test product • Establish sales channel • Conduct consumer-needs analysis • Conduct competitor analysis 	<ul style="list-style-type: none"> • Review production capabilities • Obtain further financial assistance • Apply for local patent or trademark • Apply for international patent • Apply for commercial loans • Apply for venture-capital funding 	<ul style="list-style-type: none"> • Design branding and packaging • Review production capabilities • Lease or buy technology • Apply for local patent or trademark • Review financial resources • Review business plan • Conduct self industry market research • Conduct margin analysis • Meet consumers • Hire personnel • Receive technical training • Test product • Diversify product

5.2.5 Validating the Stage Model

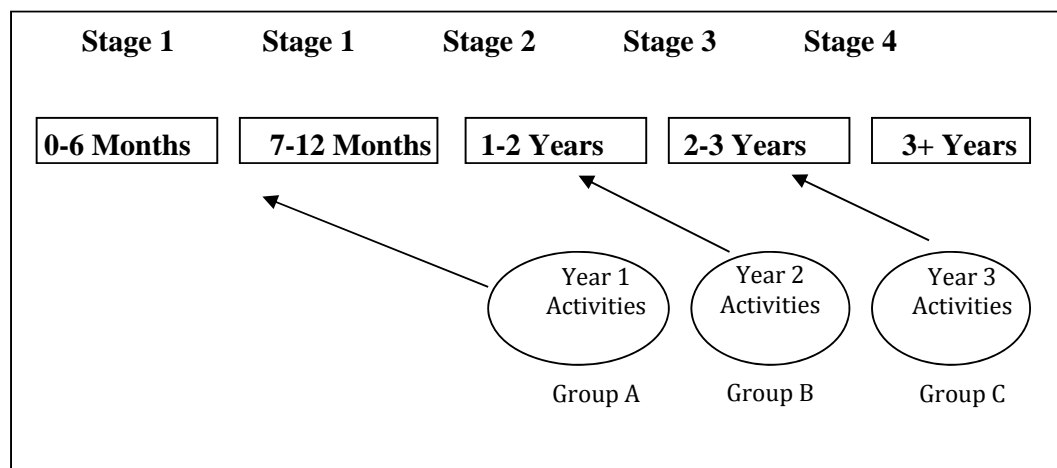
The next step was to confirm the validity of this model. The survey data also relied on voluntary information that is subject to some sources of error. It is important to note that entrepreneurs were required to recollect past-year activities; therefore there is the possibility that the participants might fail to recall historic events correctly. As a result, all activities that are performed in the current year are called “stage activities”.

To test the validity of this model, these entrepreneurs’ activities need to be compared with activities performed by other entrepreneurs in each similar time frame. All past-year activities will be validated against stage activities. In other words, did Entrepreneur Old, who is in the second year of operations, do the same activities as Entrepreneur New is doing in the first year of incubation? This is one possible way to examine the veracity of survey responses and answer the following questions: Do companies in an incubator grow in this manner? Are these activities typical of each stage?

5.2.5.1 The Validation Process

The past year's activities of a group will be compared with the stage activities. In other words, activities performed by the 2-3 Year group (companies in their second year of incubation) will be compared with Stage 2 activities. The method of this test is displayed in the Figure 5.2. The activities that formed each stage were current-year frequently performed by each year group.

Figure 5.2
Comparison of Activities by Stage



Note:

For validating activities performed by Group A in the first year, companies that are between 0-6 months and 7-12 months in the incubator are consolidated to form a full-year stage, called Stage 1.

5.2.5.2 Stage 1 Validation

Stage 1 is a combination of the two groups of companies that had spent between 0-6 months and 7-12 months in the incubator, to form a full year. As previously mentioned, because there were a group of companies that were less than six months old, they needed to be separated from the rest as they had not achieved as much as the companies that had been in the incubators for a longer period. This list will be compared with activities that were performed by companies that had been in the incubator between one and two years. These activities were selected based on the

same method that is, activities that fell above a defined break in frequency (TableA4, Column C). Eight activities were most frequently performed activities. Figure 5.3 shows the results of the validation process.

Figure 5.3
Stage 1 and 2 Validation

<i>Group A 1-2 Years in Incubator</i>	<i>Stage 1</i>	
Activities in Year 1	Activities in Year 1	Validation
Design branding and packaging Conduct self and industry market research Conduct consumer-needs analysis Review financial resources Determine product costing and pricing Collect expressions of buyer interest Conduct direct sales Refine knowledge of consumer needs	Refine knowledge of consumer needs Product costing and Pricing Develop website Review financial resources Attend trade shows Make the product work well Design, branding and packaging Meet consumers Review business plan Conduct self and industry market research Conduct consumer needs analysis Conduct competitor analysis Collect expressions of buyer interest Conduct margin analysis Meet suppliers	<p>Matching Activities: Design, branding and packaging Conduct self and industry market research Conduct consumer needs analysis Review financial resources Product costing and pricing Collect expressions of buyer interest Refine knowledge of consumer needs</p> <p>Non-matching Activity: Conduct direct sales</p> <p>Match: 7/8= 88%</p>

The above results show that 88 percent of activities performed by one to two year old companies in their first year match with Stage 1 activities. This provides a high confidence level for Stage 1, whereby companies in their first year of occupancy in the incubator do undertake operational-planning and commercialisation activities.

5.2.5.3 Stage 2 Validation

During this stage, activities that were undertaken revolved primarily around diversifying the product offerings. This validation process has confirmed that the

Group B companies in their third year of incubation had performed 60 percent of stage 3 (second year activities) activities in the previous year.

Figure 5.4
Stage 2 Validation

Group B 2-3 Years in Incubator	Stage 2	
Activities in Year 2	Activities in Year 2	Validation
Lease/buy technology	Diversify product	Matching Activities: Diversify product Form strategic alliances or partnerships Obtain product endorsement Test product Conduct margin analysis Make the product work well
Diversify product	Form strategic alliances or partnerships	
Obtain product endorsement	Incorporat business entity	
Pilot product	Obtain product endorsement	
Design, branding and Packaging	Test product	Non-matching Activities: Incorporat business entity Establish sales channel Conduct consumer needs analysis Conduct competitor analysis Match: 6/10= 60%
Develop website	Conduct margin analysis	
Review business plan	Establish sales channel	
Hire market research consultant	Conduct consumer-needs analysis	
Make the product work well	Conduct competitor analysis	
Form strategic alliances or partnerships		
Test product		
Determine product costing and pricing	Make the product work well	
Conduct direct sales		
Conduct margin analysis		

5.2.5.4 Stage 3 Validation

Stage 3 was determined to be the stage where an entity gains stability, and in which they secure their intellectual assets by obtaining product endorsements and patents. They also focus on the financial needs of the entity for further capitalisation. The validation process confirmed 40% of the activities match those of Stage 3 activities. An examination of the back ground of Group C companies provided an explanation for the weaker match. Group C companies were predominantly service-oriented companies that do not typically have intellectual assets to secure.

Figure 5.5
Stage 3 Validation

Group C 3+ Years in Incubator	Stage 3	
Activities in Year 3	Activities in year 3	Validation
Form strategic alliances or Partnering	Review production capabilities	Matching activities: Form strategic alliance or partnerships Apply for Venture-capital funding
Incorporate business entity	Obtain product endorsement	
Develop Website	Form strategic alliances or partnerships	
Apply for venture-capital funding	Obtain Further financial assistance	Non- matching Activities: Incorporate Business Entity Develop Website Secured Funding Match: 2/5= 40%
Secure funding	Apply for local patent/trademark	
	Apply for International Patent	
	Apply for commercial loans	
	Apply for venture-capital funding	

5.3 Business growth and its relationship with entrepreneurs' personal attributes

As the venture progresses from start-up through its early stages of growth and towards maturity, the entrepreneur engages his or her human capital also known as skills and personal attributes, in the planning and development of the business (Bhabra-Remedios & Cornelius, 2003). Numerous scholars have highlighted the importance of taking entrepreneurial characteristics into account to more fully understand business decisions in young developing firms (Seghers et al., 2012; LeCornu et al., 1996; McMahon et al., 1993). Therefore, the second question addressed in this study involves testing the effects of entrepreneurs' characteristics on business growth. Entrepreneurs are an innovator who develop new solutions to existing problems, mobilise resources and stimulate those around them. As indicated previously, prior research demonstrates how an entrepreneur's human capital and business development strategies are linked. However, the impact of human capital on business development in the business incubator is unknown. By identifying traits that affect business development business incubators will be able to streamline the selection process of entrepreneurs and manage their varied needs.

The characteristics of the entrepreneurs examined in this study are identified in various entrepreneurial studies (Duchesneau & Gartner, 1988; Cooper & Gascon,

1992; Teach, Tarpley & Schwartz, 1986; Hoad & Rosko, 1964; Brush and Hisrich, 1988; Neiswander & Drollinger, 1986; Timmons, 1994; Lockwood, 2006): management skill, determination, locus of control, risk-taking propensity, creativity, ability to interact with people, number of jobs held, previous job satisfaction, previous businesses owned, entrepreneurial parents, age, gender, parental background and educational background.

Literature on the determinants of business survival and growth has focused on the effects of entrepreneurs' individual attributes on business performance (Honig, 2001). Therefore, attributes such as gender, experience, education and other associated factors were singled out and tested for correlation on growth. These attributes are the critical resources that determine the success rate of firms (Pena 2004). Talent, experience and motivation that entrepreneurs infuse into their businesses are critically important to business performance (Honig, 2001). Discussions of the effects of various aspects of entrepreneurs' characteristics on business success have been integrated in the wide umbrella of entrepreneurship research as discussed in the methodology chapter.

Researchers such as Gartner (1985), Timmons (1986) and Cooper (1993) have attempted to discuss the relationship between certain entrepreneurial attributes and their effects on firm survival, success or growth. They characterised these themes as major concerns in entrepreneurship research. However, as Cooper (1993) suggested, there is a need for a "better theoretical framework and more theory-driven empirical research". MacMillan and Katz (1992) suggested that in developing a framework for understanding firms' performance, there is a need to borrow constructs and theoretical frameworks from other fields. Outside the realm of business incubators, the most extensive research relevant to this study has been conducted on the effects of

entrepreneurs' characteristics on business growth (Cooper 1993, p242). However, there has been a lack of such studies in the incubator environment. The goal of this section is to test for the effects of key entrepreneurial attributes on incubatees' business success.

5.3.1 Measuring Business Growth

The literature review identified that a variety of performance measures have been used for measuring the success of business in incubators (Schutjens & Wever, 2000). Firm growth is popularly measured based on sales and employee growth. However, it was earlier established that such measures have been criticised given their narrow application: they do not provide a complete picture of performance especially for start-up businesses. First, they generally would not have made significant sales; second, either they are not recruiting during the early phase of the startup life cycle or the business is not labour-intensive. Therefore, alternative assessments of performance need to be used to gain an understanding of firm development at infancy stages. This calls for special attention to business activities across different sectors (Schutiens & Wever, 2000).

Given that the average age of businesses in this research is 3.5 years and the businesses are from a diverse range of activities, sales and hiring measures would not provide an adequate means of measuring the progress of one business and comparing it with that of another. Most studies concur that the best approaches in measuring performance are to be found under the support of the wider qualitative paradigm. Thoroughly prepared entrepreneurs more often realise growth (Schutjens & Wever, 2000). Therefore, this study developed a performance-measurement framework for measuring the success of business incubators based the key success factors identified by Churchill and Lewis (1983): financial, personnel, systems, business resources, the

owner's goals and the owner's operational, managerial and strategic abilities. After questioning six entrepreneurs from two separate incubators (mixed-use and technology) as to how they would like to be assessed for growth and receiving their feedback on Churchill and Lewis's success factors, this study identifies the following 10 factors as important factors for determining the growth or success of businesses in incubators. In other words, the success of a business can be measured on the basis of its owner's awareness and ability to do these tasks.

Table 5.3
Growth Factors Contributing to Success

<i>No</i>	<i>Growth Activity</i>	<i>Question</i>
1	Setting milestones	Did the owner set milestones to check the progress of the business?
2	Preparing reports	Did the owner prepare reports to keep track of business performance?
3	Reporting frequently	Did the owner prepare reports frequently?
4	Monitoring employee performance	Did the owner monitor performance of employees' regularly?
5	Knowing the product or service	Before entering the incubator, did the owner know what product or service the business wanted to offer ?
6	Knowing the customers	Before entering the incubator, did the owner know what sort of customers to attract?
7	Knowing the size of the market	Before entering the incubator, did the owner know how big the market was?
8	Knowing the location of the market	Before entering the incubator, did the owner know where the market was?
9	Knowing the competitors	Before entering the incubator, did the owner know who the competitors were?
10	Knowing the whether the product has a competitive advantage	Before entering the incubator, did the owner know the product/service had a competitive advantage?

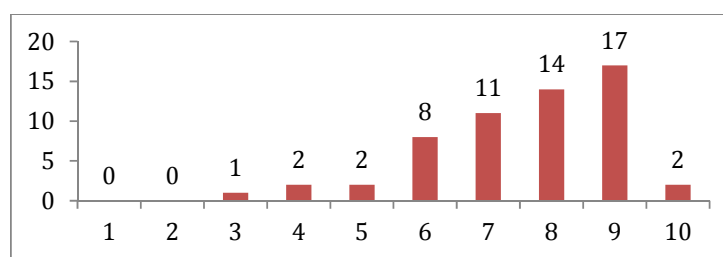
In this study, we examined the success of the companies in the incubators based on these growth factors through a number of questions included in the questionnaire. The results of this analysis are shown in Table 5.4.

Table 5.4
The Performance of Business Incubators in the Sample

<i>Growth factors</i>	<i>Number of firms</i>	<i>%</i>
1. Set milestones to achieve	53	93%
2. Prepared report to track performance	46	81%
3. Prepared reports frequently	19	33%
4. Monitored Performance of Employees	28	49%
5. Knew exactly what good or service to provide	53	93%
6. Knew what customers to attract	51	89%
7. Knew market size	36	63%
8. Knew market location	50	88%
9. Knew who were competitors	45	79%
10. Knew competitive advantage	50	88%

The data in Table 5.4 shows that that six of the 10 growth measures (1, 2, 5, 6, 8 and 10) had been achieved by over 80 percent of the sample companies, showing a higher level of performance with regard to those items. Two other measures (7 and 9) had been achieved by 60 to 80 percent of the companies. Preparing reports frequently and monitoring employees performance were the two measures least achieved, with less than half the companies performing those activities. The distribution of the overall performance of companies measured in terms of their total scores to these 10 factors is shown in the Figure 5.6.

Figure 5.6
Distribution of Growth-indicators Index



<i>Index Score</i>	<i>No. of firms</i>	<i>%</i>
Total	57	100
Min	3	30
Max	10	100
Mean	7.6	75.6
STD	2	15.4

As the figure shows, most of the sample companies are performing well, as 91 percent of the companies achieved scores of above 50 percent. For the purpose of further examining these performance measures and identifying the factors that contribute to higher performance on this index, all the sample companies were categorised into two groups: low-performing (LP) (score of 7 or below) and high-performing (HP) (score of 8 or above). Twenty-four companies were found to be low-performing, and 33 companies were found to be high-performing. The following section examines whether the personal characteristics and attributes of the entrepreneurs had any relationship to the performance of the businesses in the incubators.

5.3.2 Entrepreneurs' Personal Characteristics and Attributes

Prior studies have identified some personal characteristics and attributes that can affect business performance. However, the studies that have examined this aspect have not examined how such factors affect the performance of businesses in incubators. This study attempts to fill this gap by examining the relationship between incubatee entrepreneurs' various personal characteristics and attributes and these attributes' impact on the performance of their businesses. For this purpose, a review of prior literature was carried out to identify personal characteristics and attributes known to contribute to organisations' success. From this review, seven such attributes were identified based on the findings of Van de Ven, Hudson and Schroeder (1984) and Ibrahim and Goodwin (1986). These attributes, were then examined to determine the extent to which this study's respondents believed that they possessed them. This was done through a question in the entrepreneurs' questionnaire where the business owners were asked to rate the extent to which they agreed with statements about personal attributes on a five-point Likert scale (Question 3.9, Company

Questionnaire). The seven attributes and the statements that represented them are as follows:

<i>Attribute</i>	<i>Question</i>
Awareness of financial Position	You are aware of your financial position at all times
Outgoing nature	You enjoy working and interacting with people
Determined	You are determined to do whatever it takes to start and complete a promising venture
Dissatisfaction with previous job	Your dissatisfaction with your previous job was a driving force for starting your own business
Ability to solve problems	You are able to deal with a major problem without letting it upset your goals
Risk-taker	You are comfortable to mortgage your house to finance this business
Creative	You find yourself often creating new ideas and finding new ways of doing things

The results of this analysis are displayed in Table 5.5.

Table 5.5
Personal Attributes

	Male		Female		Overall	
	Mean	Rank	Mean	Rank	Mean	Rank
1. Determined	4.74	2	4.64	2	4.72	1
2. Aware of financial position	4.79	1	4.43	4	4.70	2
3. Outgoing nature	4.58	3	4.79	1	4.63	3
4. Creative	4.51	4	4.64	3	4.54	4
5. Problem-solver	4.35	5	4.21	5	4.32	5
6. Risk-taker	2.58	6	3.43	6	2.79	6
7. Dissatisfied with previous job	2.35	7	2.14	7	2.30	7

The results in Table 5.5 show that respondents identified determination, awareness of financial positions and outgoing nature as their three main attributes. On the other hand, they did not consider creativity and ability to solve problems, which are essential attributes for the success of small businesses, to be their strongest attributes. However, variance of the mean score of the five attributes from 4.32 to 4.72 indicates that all respondents strongly agrees that they possessed these attributes.

Surprisingly, despite the common knowledge that many small-business owners are risk-takers, the vast majority of respondents perceived themselves not to be risk takers as the mean score for this question was just 2.79 and this attribute was ranked sixth out of seven. Dissatisfaction with the previous job has also not been considered an important factor that drives these owners to create and run a business.

In addition to the above personal attributes, based on the findings in previous research mentioned above, this study examines some of personal characteristics of entrepreneurs that are known to have an impact on the performance of their business in incubators: gender, age, education, previous employment in a related field (work experience), previous business ownership and father's or mother's occupation.

5.3.3. The Effects of Personal Characteristics or Attributes on Business Performance

The literature revealed that there is not much empirical work examining the effects of human characteristics on business growth (Pena 2004). In a study of the effects of human capital on business performance in incubators conducted by Pena (2004), the effect of human-capital characteristics (education level, previous job experience and from an entrepreneurial family) were tested against employment growth, sales growth and profit growth. However, Pena (2004) expressed the limitations of using sales and profits as a measure of growth, given that there is a lack of such data at early stages of business growth. Pena (2004) recommended future research into the influence of human capital on business growth using better growth measures.

This research extends previous incubator research (Pena, 2004; Rice, 2002; Mian, 1996) by focusing on the impact of a more extensive number of entrepreneurial traits on business growth. Instead of using profit and sales measures, this study identified key business activities undertaken by entrepreneurs during the early stages

of the growth life cycle. Testing this can determine whether particular personality traits affect business performance. The interviews with the incubator managers that it was necessary to know the type of entrepreneur that responds well in a business incubator, which would aid in the screening process for evaluating potential tenant companies during the admission phase. The managers called for a screening process that would assist in assessing entrepreneurs, with the hope that they would have a greater chance of success and compatibility with the incubator and existing tenant businesses. During the interviews, incubator managers asked the researcher if there were particular skills or personalities they should be looking at during the admission process. They were worried that without this careful screening process, an incubator could accept a business that has no chance of growing successfully or that would conflict with the incubator's other companies.

In this study, we examine the impact of the entrepreneurs' personal attributes and personal characteristics on business performance using the chi-square test for independence. However, considering the fact that the chi-square test may produce misleading results when the number of observations is very small, resulting in thin cells in crosstab analysis, Fisher's exact test of independence is used in such situations. Fisher's exact test is a statistical-significance test that is used particularly when dealing with small sample sizes (Bower, 2003). It is named after its inventor, R. A. Fisher, and is one of a class of exact tests. It calculates exact probabilities when testing for the significance of relationships between the control and dependent variables.

5.3.4 Results and Discussion

5.3.4.1 Gender

Three-quarters of the entrepreneurs in the sample business incubators were male, and one-quarter were female.. Table 5.6 shows the results of the chi-square test for

independence carried out to examine whether gender has any relationship with the performance of incubatees.

Table 5.6
The Relationship Between Gender and Business Performance

Performance Group	Male		Female		Total	
	No.	%	No.	%	No.	%
Low-performing	17	40	7	50	24	42
High performing	26	60	7	50	33	58
Total	43	100	14	100	57	100
	75%		25%		100%	

$$X^2 = 0.474, p = 0.544$$

Male entrepreneurs seemed to out perform female entrepreneurs, as 60 percent of male entrepreneurs were in the high-performing category, as against 50 percent of females in that category. However, the result of the chi-square test for independence ($X^2 = 0.474$, $p = 0.544$) showed statistically significant difference between the performance of males and females in the sample. Table 5.7 shows the responses of the incubatees in relation to each performance indicator in the questionnaire by gender.

Table 5.7
The Relationship Between Gender and Business Performance by Item

Performance indicators	Male				Female				Fisher's exact test
	Yes	%	No	%	Yes	%	No	%	
1. Set milestones to achieve	40	93	3	7	13	93	1	7	1.000
2. Prepared report to track performance	36	84	7	26	10	71	4	29	0.436
3. Prepared reports frequently	13	30	30	70	6	43	8	57	0.516
4. Monitored employee performance	26	61	17	39	2	14	12	86	0.005***
5. Knew what good/service to provide	40	93	3	7	13	93	1	7	1.000
6. Knew what customers to attract	39	91	4	9	12	86	2	14	0.629
7. Knew market size	29	67	14	33	7	50	7	50	0.340
8. Knew market location	34	79	9	21	11	79	3	21	1.000
9. Knew who were competitors	37	86	6	14	13	93	1	7	0.669
10. Knew competitive advantage	39	91	4	9	11	79	3	21	0.346

*** Significant at the 1% level; ** Significant at the 5% level

The results showed that the performance of entrepreneurs did not vary between males and females in relation to nine of the 10 indicators. The only indicator where there was a significant difference between male and female entrepreneurs was the indicator on monitoring employee : only 14 percent of the female entrepreneurs monitored their employees' performance, in comparison to 61 percent of the male entrepreneurs. This is an interesting result given that this aspect has not been examined in any of the prior incubator studies.

Another interesting finding is that both male and female entrepreneurs had paid less attention to preparing reports frequently, with fewer than half the respondents answering affirmatively to this question (male 30 percent and Female 43percent).

In conclusion, most research outside the realm of business incubators examining the effects of gender in business ownership has found that inherent differences do exist between males and females in human-capital inputs that business success. The research findings reported from an Australian longitudinal study (Johnson & McMohan, 2005) found that there was no consistent statistically significant relationship in financial performance and business growth between male and female business owners once demographic and other relevant controlling influence were taken into account. The results in this study are consistent with the findings of Johnson and McMohan (2005), although their study is based on small businesses not businesses located in incubators.

5.3.4.2 Age

The incubatees who responded to the survey consisted of both young and old entrepreneurs. The analysis of the respondents' age is shown in Table 5.8.

Table 5.8
Age Analysis of the Respondents

Age Groups	Male		Female		Total	
	No.	%	No.	%	No.	%
<30 years	5	12	4	29	9	16
30 – 39 years	20	47	4	29	24	42
40 – 49 years	13	30	5	36	18	32
50 – 59 years	4	9	1	7	5	9
>60 + years	1	2	0	0	1	2
Total	43	100	14	100	57	100

Fifty-nine percent of the male respondents and 58 percent of the female respondents were younger than 40. Because of the small sample size, which results in thin cells for the statistical analysis, the age bands were combined into two groups: young entrepreneurs (aged 19-39) and old entrepreneurs (aged 40 and older). The results of the chi-square test for independence carried out to examine whether there is a significant difference between the performance of these two age groups are shown in Table 5.9.

Table 5.9
The Relationship Between Age and Business Performance

Performance Group	Young Entrepreneurs		Old Entrepreneurs		Total	
	Number	%	Number	%	Number	%
Low-performing	16	49	8	33	24	42
High-performing	17	52	16	67	33	58
Total	33	100	24	100	57	100
	58%		42%		100%	

$$X^2 = 1.309, p = 0.288$$

The data shows that 58 percent of respondents are young entrepreneurs while 42 percent are old entrepreneurs . It also shows that 67 percent of the old entrepreneurs are in the high-performing category as against 52 percent of young entrepreneurs suggesting that the old entrepreneurs perform better than young entrepreneurs. However, the results of the chi-square test for independence ($X^2 = 1.309$, $p = 0.288$) showed no statistically significant difference between the performance of these two groups. Table 5.10 below shows the responses of the incubatees of these two groups in relation to each performance indicator in the questionnaire.

Table 5.10
The Relationship Between Age and Business Performance by Item

Performance Indicator	Young Entrepreneurs				Old Entrepreneurs				Fisher's Exact Test
	Yes	%	No	%	Yes	%	No	%	
1. Set milestones to achieve	31	94	2	6	22	92	2	8	1.000
2. Prepared report to track performance	25	76	8	24	21	88	3	13	0.326
3. Prepared reports frequently	12	36	21	64	7	29	17	71	0.777
4. Monitored performance of employees	17	52	16	48	11	46	13	54	0.790
5. Knew what good/service to provide	30	91	3	9	23	96	1	4	0.631
6. Knew what customers to attract	29	88	4	12	22	92	2	8	1.000
7. Knew market size	23	70	10	30	13	54	11	46	0.274
8. Knew market location	26	79	7	21	19	79	5	21	1.000
9. Knew who were competitors	29	88	4	12	21	88	3	13	1.000
10. Knew competitive advantage	27	82	6	18	23	96	1	4	0.220

*** Significant at the 1% level; ** Significant at the 5% level

The results do not show any statistically significant differences between the young and old entrepreneurial groups in relation to any of the 10 performance indicators. However, they indicate that neither young nor old entrepreneurs paid enough attention to the tasks of preparing reports frequently or monitoring employees' performance.

Numerous studies have been conducted on the effects of entrepreneurs' age on their firms performance. However, no other incubator studies have related age and growth observations. Studies have found that the businesses of older entrepreneurs were more likely to survive or have higher incomes (Brockhaus, 1980; Cooper Dunkelberg & Woo, 1988). Despite the fact that there was no significant difference between the performance of the two groups, this study's results support this view. The incubator environment appears to provide enough motivation and support for all age groups to succeed. The entrepreneur interviews revealed that tenants found the incubator to be a place of social interaction and sharing of ideas where like-minded people mingled in hall-ways and cafes together added motivation talks organised by the incubator. They commented that this was important for nurturing their business.

5.3.4.3 Education

Is tertiary-educated entrepreneur more capable in a business incubator? Or do entrepreneurs who are less educated or do not have a college degree develop the ability to perform typical business functions from experience or the incubator business-support network? To examine whether the entrepreneurs' level of education affects their firms' performance in an incubator, this study examined the relationship between level of education and performance. Table 5.11 shows the education qualification of the respondents.

Table 5.11
Educational Level of Incubatees

Qualification	Male		Female		Total	
	Number	%	Number	%	Number	%
HSC	9	21	1	7	10	18
Diploma	5	12	4	29	9	16
Bachelor's	18	42	7	50	25	44
Masters	7	16	2	14	9	16
PhD	4	9	0	0	4	7
Total	43	100	14	100	57	100

The majority of the incubatees (67 percent) had tertiary education; the remainder had completed the HSC or a diploma. Interestingly, the education level of males (67 percent) and females (64 percent) was very similar. However, 24 percent of the male entrepreneurs held postgraduate qualifications as against just 14 percent of female entrepreneurs. Another notable difference is that 9 percent of the male entrepreneurs had doctoral degrees, while no female entrepreneur in the sample had a doctoral degree. Table 5.12 below shows the results of the analysis examining the relationship between the business performance of the two groups: less educated (people with non-tertiary qualifications), who constituted 33 percent of respondents, and highly educated (people with tertiary qualifications), who constituted 67 percent.

Table 5.12
The Relationship Between Level of Education and Business Performance

Performance Group	Less Educated		Highly Educated		Total	
	Number	%	Number	%	Number	%
Low-performing	12	63	12	32	24	42
High-performing	7	37	26	68	33	58
Total	19	100	38	100	57	100

$X^2 = 5.182, p = 0.023^{**}$; ** Significant at the 5% level

The results in Table 5.12 suggest a significant relationship between incubatees' level of education and overall business performance at the 5 percent significant level. More specifically, 68 percent of the highly educated incubatees were in the high-performing category in contrast to only 37 percent of the less-educated incubatees. This clearly shows that entrepreneurs who are highly educated perform better in an incubator. Table 5.13 provide further analysis by examining the performance of these two groups in terms of each of the 10 performance indicators.

Table 5.13
The Relationship Between Level of Education and Business Performance by Item

Performance Indicator	Less Educated				Highly Educated				Fisher's Exact Test
	Ye s	%	No	%	Ye s	%	No	%	
1. Set milestones to achieve	18	95	1	5	35	92	3	8	1.000
2. Prepared report to track performance	14	74	5	26	32	84	6	16	0.478
3. Prepared reports frequently	8	42	11	58	11	29	27	71	0.379
4. Monitored employees' performance	6	32	13	68	22	58	16	42	0.092*
5. Knew what good/service to provide	17	89	2	11	36	95	2	5	0.594
6. Knew what customers to attract	15	79	4	21	36	95	2	5	0.088*
7. Knew market size	10	53	9	47	26	68	12	32	0.261
8. Knew market location	13	68	6	32	32	84	6	16	0.187
9. Knew who were competitors	17	89	2	11	33	87	5	13	1.000
10. Knew competitive advantage	16	84	3	16	34	89	4	11	0.675

*** Significant at the 1% level; ** Significant at the 5% level * Significant at the 10% level

The results in Table 5.13 show significant differences between the two groups with regard to two performance indicators: monitoring employees' and knowledge about what customers to attract. As the results indicate, only 32 percent of the less educated incubatees monitored the performance of their employees, in comparison to 58 percent of the highly educated incubatees. On other hand, 79 percent of the less educated incubatees knew what customers to attract as against just 36 percent of the educated incubatees, showing that educated incubatees had less knowledge about this aspect.

Although these results show that entrepreneurs with higher level of education are more likely to achieve higher performance, and therefore be successful in running their businesses, it should not be considered as the sole measure in admitting

entrepreneurs into a business. Results reported by the Australian government in 2012 found that Australian business founders are well equipped with human capital in the form of different types of experience that may benefit the start-up. Their data further found that a firm with increased education-based human capital is more likely to create employment for others, and obtain higher levels of profit once established as a young firm. However, education does not increase the likelihood of a start-up becoming operational, or surviving (DIICSRTE, 2012, p9; Schutjens & Wever, 2000).

5.3.4.4 Previous Employment in Related Field (Work Experience)

Experience-based human capital more commonly influences venture success than does education-based human capital. More than half of the start-ups have at least one founder who has prior start-up experience. Increased industry experience improves a venture's chance of survival, increases the likelihood of employment generation, and allows young firms to derive larger profits (DIICSRTE, 2012, p9). To examine the relationship between incubatees' experience and business performance, this study examined how the incubatees learned to managed their businesses, how many years of experience they had and whether they had experience more than one job. Table 5.14 shows how the incubatees in the sample incubators learned their trade.

Table 5.14
How Incubatees Learn to Manage Business Affairs

Learn to manage from	Male			Female			Total		
	No.	%	Rank	No	%	Rank	Yes	%	Rank
Past experience	33	77	1	8	57	1	41	72	1
Past business course	18	42	2	4	29	5	22	39	2
Fellow business entrepreneur	7	16	5	8	57	2	15	26	3
Incubator manager	7	16	6	7	50	3	14	25	4
Incubator programs	8	19	4	5	36	4	13	23	5
Mentor	10	23	3	2	14	6	12	21	6
Business enterprise entre	0	0	8	2	14	7	2	4	7
Accountant	1	2	7	0	0	8	1	2	8

The vast majority of the incubatees (72percent) learned to manage business through their past experiences. The data also shows that past business courses and fellow business entrepreneurs are the next most important sources that helped incubatees to learn business affairs. Surprisingly, incubator managers were the fourth major source of help. However, 50 percent of the female incubatees valued the services of their incubator managers, placing them as the third major source of learning. Despite perceptions that incubator programs and mentors help entrepreneurs with their business learning, the results show that the incubatees themselves did not consider them to be valuable source of learning. Table 5.15 indicates the incubatees' experience levels.

Table 5.15
Work Experience of Incubatees

Experience	One Job		> one Job		Total	
	Number	%	Number	%	Number	%
0-2 years	14	31	2	17	16	28
3-5 years	4	9	3	25	7	12
6-10 years	7	16	1	8	8	14
> 10 years	20	44	6	50	26	46
Total	45	100	12	100	57	100
	79%		21%		100%	

The detailed analysis of the data in Table 5.15 shows that 46 percent of the entrepreneurs in the sample had worked more than 10 years in an area related to their present business, and only 28 percent had less than two years' experience and only 11 percent having not worked at all in a similar area. The remainder had worked between one and eight years in an area related to their business.

The results from previous research into experience and performance have been mixed, and "it would be difficult to make the case that prior entrepreneurial experience is associated consistently with success" (Cooper & Gascon, 1992). However, the data in Table 5.14 shows that incubators are learning to manage

business not only from their own experience in working in similar businesses but also from other sources such as business courses (39 percent), other entrepreneurs in incubators (26 percent), incubator manager (26 percent) and incubator programs (23 percent). To examine whether there is a relationship between incubatees' level of experience and their business performance, the incubatees in the study sample were categorised into two groups: less experienced (entrepreneurs with less than 10 years experience) and highly experienced (entrepreneurs with 10 or more years of experience). The result of the analysis is shown in Table 5.16 below.

Table 5.16
The Relationship Between Level of Experience and Business Performance

Performance Group	Less Experienced		Highly Experienced		Total	
	Number	%	Number	%	Number	%
Low-performing	10	43	14	41	24	42
High-performing	13	57	20	59	33	58
Total	23	100	34	100	57	100

$$X^2 = 0.030, p = 0.863$$

As shown in Table 5.16, 57 percent of less experienced incubatees and 59 percent of highly experienced incubatees were in the high-performing group. This indicates that there was no relationship between incubatees' experience and business performance. The p values of 0.863 for the chi-square test of independence also confirmed that the difference between the performance level of the two groups is not statically significant. Table 5.17 presents the results of this analysis in relation to individual performance indicators used in the study.

Table 5.17
The Relationship Between Work Experience and Performance by Item

Performance indicators	Less Experienced				Highly Experienced				Fisher's Exact Test
	Yes	%	No	%	Yes	%	No	%	
1. Set milestones to achieve	30	88	4	12	23	100	0	0	0.140
2. Prepared report to track performance	29	85	5	15	17	74	6	26	0.322
3. Prepared reports frequently	8	24	26	76	11	48	12	52	0.086*
4. Monitored employees' performance	19	56	15	44	9	39	14	61	0.283
5. Knew what good/service to provide	31	91	3	9	22	96	1	4	0.641
6. Knew what customers to attract	30	88	4	12	21	91	2	9	1.000
7. Knew market size	23	68	11	32	13	57	10	43	0.416
8. Knew market location	26	76	8	24	19	83	4	17	0.744
9. Knew who were competitors	28	82	6	18	22	96	1	4	0.223
10. Knew competitive advantage	31	91	3	9	19	83	4	17	0.423

*** Significant at the 1% level; ** Significant at the 5% level; * Significant at the 10% level

The results of the analysis examining the relationship between individual performance indicators and the two experience levels did not reveal any significant difference in relation to nine of the 10 performance items. The only item where there was significant difference was the frequency at which of reports were prepared. The results show that only 24 percent of the less experienced incubatees prepared reports frequently in contrast to 48 percent of the experienced incubatees. It seems that entrepreneurs learnt with experience the importance of preparing reports frequently.

5.3.4.5 Previous Business Ownership

Previous research has identified that entrepreneurs with previous business ownership perform better in incubators, as they have already learned how to run a business. For example, Brush and Hisrich (1988) and Neiswander and Drollinger (1986) found that entrepreneurs with experience in a similar field had better chances of survival and success. Westhead, Ucbasaran and Wright (2005) found that entrepreneurs with prior business-ownership experience were more apt at identifying opportunities for business growth and obtaining information from their customers.

To examine whether previous business ownership effects business performance, the study questionnaire asked the respondents whether they had owned a business prior to entering the incubator. Out of the 57 incubatees who responded to the questionnaire, 21 (37 percent) said that they had owned a business previously. After the study our sample was divided into two categories - owned a business (37 percent) and not owned a business (63 percent), a chi-square test of independence crosstabbed these two groups with the two performance groups; the results are shown in Table 5.18.

Table 5.18
The Relationship Between Previous Business Ownership and Performance

Performance Group	Owned a Business		Never Owned a Business		Total	
	Number	%	Number	%	Number	%
Low-performing	7	33	17	47	24	42
High-performing	14	67	19	53	33	58
Total	21	100	34	100	57	100

$$X^2 = 1.050, p = 0.306$$

The Table 5.18 shows that despite the public perception that previous business ownership helps business performance, this study did not find a significant difference between the level of performance of the entrepreneurs with previous business ownership and those without. However, although the difference in the level of performance between these two groups is not statistically significant, the results indicate that incubatees with previous business ownership perform better, as 67 percent were in the high-performing category, in contrast to 53 percent of those with no previous business ownership. Table 5.19 indicates the results of assessing whether there is a difference between the two groups with regard to individual performance indicators.

Table 5.19
The Relationship Between Previous Business Ownership and Performance by Item

Performance indicators	Owned a business				Never owned a business				Fisher's exact test
	Yes	%	No	%	Yes	%	No	%	
1. Set milestones to achieve	20	95	1	5	33	92	3	8	1.000
2. Prepared report to track performance	16	76	5	24	30	83	6	17	0.511
3. Prepared reports frequently	7	33	14	67	12	33	24	67	1.000
4. Monitored Employees' performance	15	71	6	29	13	36	23	64	0.014***
5. Knew what good/service to provide	19	90	2	10	34	94	2	6	0.62
6. Knew what customers to attract	21	100	0	0	30	83	6	17	0.075*
7. Knew market size	14	67	7	33	22	61	14	39	0.779
8. Knew market location	17	81	4	19	28	78	8	22	1.000
9. Knew who were competitors	18	86	3	14	32	89	4	11	0.701
10. Knew competitive advantage	20	95	1	5	30	83	6	17	0.243

*** Significant at the 1% level; ** Significant at the 5% level; * Significant at the 10% level

Similar to the results in Table 5.18, there was no significant difference between the two groups based on previous business ownership for eight of the 10 performance indicators. However, significant differences were observed with regard to two items. First, 71 percent of the incubatees with previous business ownership monitored the performance of their employees while only 36 percent of the incubatees without previous business ownership did so. This suggests that incubatees with no previous business-ownership experience give less (or no) attention to this aspect. Second, all of the incubatees with previous business ownership knew what sort of customers to attract, while in contrast to 83 percent of the incubatees with no previous business ownership.

Overall, the results show that previous business ownership does not necessarily equip the entrepreneur with skills to manage a business expertly, except in two aspects of performance. Therefore, a business incubator may still need to run

business-management courses for entrepreneurs regardless of their previous business-ownership experience.

5.3.4.6 Parental Background

Thus far in business-incubator research there has been no study into the effects of parental background on business performance. Parental entrepreneurship is a strong, probably the strongest, determinant of respondents' own entrepreneurship (Lindquist et al., 2012). Parental entrepreneurship increases the probability of children's entrepreneurship by about 60 percent. Fairlie and Robb (2007) find that having business entrepreneurs as parents increases profits and sales, and lowers closure, but only when the entrepreneur child has work experience in the family business. Dushesneau and Gartner (1988) found that entrepreneurs with entrepreneurial parents recorded greater sales. In contrast, Sørensen (2007) and Roberts (1991) found no evidence that the children of self-employed parents performed better as entrepreneurs.

In examining whether there is relationship between parental background and business performance, this study generated the following results.

Table 5.20
The Relationship Between Parental Background and Business Performance

Performance Group	Entrepreneurial and Professional Parents		Non-entrepreneurial and Non-professional Parents		Total	
	Number	%	Number	%	Number	%
Low-performing	8	29	16	55	24	42
High-performing	20	71	13	45	33	58
Total	28	100	29	100	57	100

$$X^2 = 4.135, p = 0.042^{**}$$

**** Significant at the 5% level**

As Table 5.20 shows 28 of the 57 incubatees (49 percent) had parents with entrepreneurial and professional backgrounds. Interestingly, in line with public perception, incubatees with entrepreneurial or professional parents performed extremely well in the incubator with 71 percent of them in the high-performing category. In contrast, only 45 percent of the incubates who did not have parents with entrepreneurial or professional backgrounds belonged to the high-performing category. After having observed a difference between these two groups in relation to their overall performance level, we then examined whether differences exist in relation to the individual performance indicators. The results of this analysis are shown in Table 5.21.

Table 5.21
The Relationship Between Parental Background and Business Performance by Item

Performance indicators	Entrepreneurial and Professional Parents				Non-entrepreneurial and Professional Parents				Fisher's exact test
	Yes	%	No	%	Yes	%	No	%	
1. Set milestones to achieve	27	96	1	4	26	90	3	10	0.611
2. Prepared report to track performance	23	82	5	18	23	79	6	21	1.000
3. Prepared reports frequently	10	36	18	64	9	31	20	69	0.783
4. Monitored employees' performance	14	50	14	50	14	48	15	52	1.000
5. Knew what good/service to provide	28	100	0	0	25	86	4	14	0.112
6. Knew what customers to attract	26	93	2	7	25	86	4	14	0.670
7. Knew market size	21	75	7	25	15	52	14	48	0.100
8. Knew market location	23	82	5	18	22	76	7	24	0.747
9. Knew who were competitors	26	93	2	7	24	83	5	17	0.423
10. Knew competitive advantage	25	89	3	11	25	86	4	14	1.000

*** Significant at the 1% level; ** Significant at the 5% level

The results in Table 5.21 do not show a significant relationship between parental background and any of the 10 performance indicators. Therefore, it can be concluded that the results are not compelling enough to suggest that having entrepreneurial parents predisposes an entrepreneur for success in a business located

in an incubator. Therefore, in the admission process of entrepreneurs into the business incubator having entrepreneurial parents should not be used as a sole criterion

5.3.4.6 Awareness of Financial Position

An important entrepreneurship skill that supports the creation of new business and growth is having knowledge of the entity's financial position (Seghers et al., 2012, Cassar, 2004). The results show that entrepreneurs who understood concepts assets, liabilities (basics of balance sheets), revenues and expenses (cash flow statements) were more likely to track their business performance and prepare reports. In the interviews, these entrepreneurs expressed more confidence about where their businesses , as opposed to those who had no basic financial knowledge. They confirmed they felt in control of their current business position and business development. In evaluating potential entrepreneurs before admission, it is therefore important to ensure they either already have basic finance skills or to provide training within the first few months of admission. Following Table 5.22 shows the results of an analysis of whether incubatees' awareness of financial position affects their business performance.

Table 5.22
The Relationship Between Awareness of Financial
Position and Business Performance

Performance Group	Not Well Aware of Financial Position		Well Aware of Financial Position		Total	
	Number	%	Number	%	Number	%
Low-performing	1	33	23	43	24	42
High-performing	2	67	31	57	33	58
Total	3	100	54	100	57	100

Fisher's exact test - P Value = 1.000

As Table 5.22 indicates, almost all of the incubatees (95 percent) were well aware of their financial position. Only three of the 57 respondents were not very sure

about their financial position. The Fisher's exact test also did not find any statistically significant difference between the two groups. The performance of these groups were examined to determine if they differed by looking at their performance with regard to 10 individual performance measures. The results of this analysis is shown in Table 5.23 below.

Table 5.23
The Relationship Between Awareness of Financial Position and Business Performance by Item

Performance indicators	Not aware of financial position				Aware of financial position				Fisher's exact test
	Yes	%	No	%	Yes	%	No	%	
1. Set milestones to achieve	3	100	0	0	50	93	4	7	1.000
2. Prepared report to track performance	1	33	2	67	45	83	9	17	0.092*
3. Prepared reports frequently	3	100	0	0	16	30	38	70	0.033**
4. Monitored employees' performance	1	33	2	67	27	50	27	50	1.000
5. Knew what good/service to provide	2	67	1	33	51	94	3	6	0.199
6. Knew what customers to attract	2	67	1	33	49	91	5	9	0.288
7. Knew market size	2	67	1	33	34	63	20	37	1.000
8. Knew market location	2	67	1	33	43	80	11	20	0.515
9. Knew who were competitors	3	100	0	0	47	87	7	13	1.000
10. Knew competitive advantage	3	100	0	0	47	87	7	13	1.000

*** Significant at the 1% level; ** Significant at the 5% level

The performances of incubatees' performance differed between the two groups with regard to two performance items: preparing reports to track performance and preparing reports frequently. Eighty-three percent of the incubatees who were aware of their financial position prepared reports to track firm performance, compared to only 33 percent who are not well aware of their financial position. However, when it comes to the frequency of preparing reports, incubatees without knowledge of financial position performed better, preparing reports more frequently than the other groups, although not all reports they prepared aimed at tracking firm performance.

5.3.4.7 Outgoing Nature

Many researchers have found that entrepreneurs' behaviours have an impact on

building successful businesses (Shane & Venkataraman, 2000; Baron, 2004; Mitchell et al, 2002). Table 5.24 shows that 95 percent of the surveyed tenants described themselves as being outgoing in nature, and only 5 percent thought that they were not outgoing. The overall performance of these two groups is indicated in Table 5.24 below.

Table 5.24
The Relationship Between Outgoing Nature and Business Performance

Performance Group	Not outgoing		Outgoing		Total	
	Number	%	Number	%	Number	%
Low-performing	1	33	23	43	24	42
High-performing	2	67	31	57	33	58
Total	3	100	54	100	57	100

Fisher's exact test - P Value = 1.000

The results in Table 5.24 do not indicate a relationship between the performance of the two groups based on their outgoing nature; instead, they suggest that an outgoing nature is not an important factor to be considered in admitting incubatees. The results in Table 5.25 were obtained when the performance of the two groups on each of the 10 performance indicators was examined.

Table 5.25
The Relationship Between Outgoing Nature and Business Performance by Item

Performance indicators	Not outgoing				Outgoing				Fisher's exact test
	Yes	%	No	%	Yes	%	No	%	
1. Set milestones to achieve	2	67	1	33	51	94	3	6	0.199
2. Prepared report to track performance	3	100	0	0	43	80	11	20	1.000
3. Prepared reports frequently	2	67	1	33	17	31	37	69	0.255
4. Monitored employees' performance	0	0	3	100	28	52	26	48	0.125
5. Knew what good/ service to provide	3	100	0	0	50	93	4	7	1.000
6. Knew what customers to attract	3	100	0	0	48	89	6	11	1.000
7. Knew market size	2	67	1	33	34	63	20	37	1.000
8. Knew market location	2	67	1	33	43	80	11	20	0.515
9. Knew who were competitors	3	100	0	0	47	87	7	13	1.000
10. Knew competitive advantage	3	100	0	0	47	87	7	13	1.000

*** Significant at the 1% level; ** Significant at the 5% level

The analysis did not identify any significant differences between the two groups in relation to any of the performance items. An overwhelming majority of these outgoing entrepreneurs were diligent at setting milestones (94 percent) and possessed other strategic business qualities; for example, they knew exactly what good or service to provide (93 percent). However, the surveyed results suggest that these outgoing individuals do not prepare reports (31 percent) or monitor the performance of their employees (52 percent). They lack financial-management skills. Therefore business incubators should make a greater effort to help entrepreneurs in the area of financial management, such as providing mentors and training programs.

5.3.4.8 Determination (Grit)

Most entrepreneurs in the surveyed business incubators considered themselves to possess determination or grit: the trait that keeps someone from wavering from their long term goals. Table 5.26 summarises the incubatees' responses in relation to their assessment on the level of determination they have to be successful. Their responses to this question are shown in Table 5.26.

Table 5.26
The Relationship Between Determination and Business Performance

Performance Group	Not determined		Determined		Total	
	Number	%	Number	%	Number	%
Low-performing	0	0	24	43	24	42
High-performing	1	100	32	57	33	58
Total	1	100	56	100	57	100

Fisher's exact test - P Value = 1.000

According to the data in Table 5.26, all but one of the respondents indicated that they were very determined to succeed in their business affairs in the incubator.

Table 5.27 below shows the results of an analysis carried out to examine the difference in the performance of the two groups - determined and not determined - with regard to individual performance indicators.

Table 5.27
The Relationship Between Determination and Business Performance by Item

Performance indicators	Not determined				Determined				Fisher's exact test
	Yes	%	No	%	Yes	%	No	%	
1. Set milestones to achieve	1	100	0	0	52	93	4	7	1.000
2. Prepared report to track performance	1	100	0	0	45	80	11	20	0.807
3. Prepared reports frequently	0	0	1	100	19	34	37	66	1.000
4. Monitor employees' performance	0	0	1	100	28	50	28	50	1.000
5. Knew what good/service to provide	1	100	0	0	52	93	4	7	1.000
6. Knew what customers to attract	1	100	0	0	50	89	6	11	1.000
7. Knew market size	1	100	0	0	35	63	21	38	1.000
8. Knew market location	1	100	0	0	44	79	12	21	1.000
9. Knew who were competitors	1	100	0	0	49	88	7	13	1.000
10. Knew competitive advantage	1	100	0	0	49	88	7	13	1.000

*** Significant at the 1% level; ** Significant at the 5% level

The results in Table 5.27 also did not identify any differences between the two groups with regard to any of the 10 performance items. This indicates that there appear to be no correlation between grit and business performance. However, it is interesting to note when these determined entrepreneurs were singled out, the data showed 66 percent did not prepare business management reports frequently. During the interview phase they explained that they did not have the software package and were not keen on spending their scarce funds. Entrepreneurs further recommended that incubators could look into investing in business-monitoring software that could be shared by incubator tenants. This way entrepreneurs would be in better control of their finances and performance. By providing the business tools incubators could be in a better position to oversee tenant development and communicate performance targets. Although this relationship between incubator and tenant company can be

sensitive, the development of concise company milestones and the monitoring of performance can contribute to a greater likelihood of business success.

5.3.4.9 Dissatisfaction with Previous Job

Previous research shows that entrepreneurs' dissatisfaction with their previous job has been an important factor in their success while a part of a business incubator. In the current study, 43 out of the 57 entrepreneurs indicated that they had been dissatisfied with their previous job. Table 5.28 shows the relationship between the performances of entrepreneurs dissatisfied with their previous job and those not dissatisfied.

Table 5.28
Relationship Between Dissatisfaction with Previous Job and Business Performance

Performance Group	Not very dissatisfied with previous job		Very dissatisfied with previous job		Total	
	Number	%	Number	%	Number	%
Low-performing	21	49	3	21	24	42
High-performing	22	51	11	79	33	58
Total	43	100	14	100	57	100

$X^2 = 3.255$, $p = 0.071^*$; * Significant at the 10% level

As Table 5.28 shows, 79 percent of the incubatees who had been dissatisfied with their jobs achieved high performance, compared to only 51 percent of the incubatees who had not been dissatisfied with their jobs, statistically significant difference at 10 percent level. This result suggests that dissatisfaction with previous job makes entrepreneurs work harder, thus perform better. This study also examined how the incubatees of these two groups performed in relation to the individual performance indicators (Table 5.29).

Table 5.29**Dissatisfaction with Previous Job and Business Performance by Item**

Performance indicators	Not very dissatisfied with previous job				Very dissatisfied with previous job				Fisher's Exact Test
	Yes	%	No	%	Yes	%	No	%	
1. Set milestones to achieve	40	93	3	7	13	93	1	7	1.000
2. Prepared report to track performance	33	77	10	23	13	93	1	7	0.261
3. Prepared reports frequently	16	37	27	63	3	21	11	79	0.343
4. Monitored employees' performance	18	55	15	45	10	71	4	29	0.070*
5. Knew what good/service to provide	40	93	3	7	53	93	4	7	1.000
6. Knew what customers to attract	38	88	5	12	13	93	1	7	1.000
7. Knew market size	26	60	17	40	10	71	4	29	0.583
8. Knew market location	31	72	12	28	14	100	0	0	0.027**
9. Knew who were competitors	37	86	6	14	13	93	1	7	0.669
10. Knew competitive advantage	36	84	7	16	14	100	0	0	0.176

*** Significant at the 1% level; ** Significant at the 5% level

As the results shown in Table 5.29, there was a significant difference between the two groups for two performance items. First, 71 percent of the incubatees had been were dissatisfied with their previous jobs monitored their employees' performance, compared to 55 percent of the other group. Second, all the incubatees who had been dissatisfied with their previous job knew about the market location, while only 72 percent of those in the other group had this knowledge. Apart from these two measures, there were no significant differences in the performance of the two groups. These weak results suggest that dissatisfaction with previous job cannot be considered to be a major benchmark in the monitoring of businesses, or even as a useful admission criterion for admission into the business incubator. The drive for achievement and the hunger for success was more a catalyst to start a business.

5.3.4.10 Ability to Deal with Major Problem

The ability to deal with problems or stay focused to complete tasks and achieve goals is a trait commonly known as self-efficacy. A sense of self-efficacy can play a major

role in how one approaches goals, tasks and challenges (Luszczynska, & Schwarzer, (2005). The comparison between the performance of focused and not-focused incubatees is shown in Table 5.30 below.

Table 5.30
The Relationship Between Focus and Business Performance

Performance Group	Not very focused		Very focused		Total	
	Number	%	Number	%	Number	%
Low-performing	6	50	18	40	24	42
High-performing (HP)	6	50	27	60	33	58
Total	12	100	45	100	57	100

$$X^2 = 0.389, p = 0.533$$

The results show that 60 percent of the entrepreneurs who considers themselves to be focused on the job achieved high performance, as against 50 percent of the entrepreneurs who did not consider themselves very focused. However, this difference was found not statistically significant. The results of a similar analysis done on the individual performance items is shown in Table 5.31.

Table 5.31
The Relationship Between Focus and Business Performance by Item

Performance indicator	Not Focused				Focused				Fisher's Exact Test
	Yes	%	No	%	Yes	%	No	%	
1. Set milestones to achieve	9	75	3	25	44	98	1	2	.0260**
2. Prepared report to track performance	8	67	4	33	38	84	7	16	0.219
3. Prepared reports frequently	6	55	5	45	13	29	32	71	0.187
4. Monitored employees' performance	4	33	8	67	24	53	21	47	0.331
5. Knew what good/service to provide	10	83	2	17	43	96	2	4	0.192
6. Knew what customers to attract	8	67	4	33	43	96	2	4	.0150**
7. Knew market size	7	58	5	42	29	64	16	36	0.744
8. Knew market location	7	58	5	42	38	84	7	16	0.104
9. Knew who were competitors	11	92	1	8	39	87	6	13	1.000
10. Knew competitive advantage	10	83	2	17	40	89	5	11	0.630

*** Significant at the 1% level; ** Significant at the 5% level

These results show that entrepreneurs who consider themselves focused are more likely to set milestones than to those who do not have a sense of self-efficacy. The results also suggest that entrepreneurs who are more focused have the ability to attract the right customers, an important component of business success.

5.3.4.11 Risk-Taker

Economists include risk-taking as an important entrepreneurial function (Divir et al., 2012; Kanbur, 1980; Schumpeter, 1934). Risk-taking is defined as the perceived probability of receiving rewards associated with the success of a situation that individuals require before they will subject themselves to the consequences associated with failure (Brockhaus, 1980). Many studies of entrepreneurs' personalities have included risk-taking (Cunningham & Lischeron, 1991; Ho & Koh, 1992; Kilby & Koh, 1996; Hai & See, 1997; Stewart & Roth, 2001), portraying entrepreneurs as risk-takers who expect profits as reward for this bearing risk and whose risk-taking leads to better performance outcomes.

Based on the respondents' answers to a question on risk, this study classified the 57 incubatees into two groups: risk taking and not risk taking. As shown in the Table 5.32, 21 of the 57 incubatees (37 percent) were found to be risk-takers. The study then examined whether there is relationship between risk-taking and business performance.

Table 5.32
The Relationship Between Risk-Takers and Business Performance

Performance Group	Non-risk taker		Risk-taker		Total	
	Number	%	Number	%	Number	%
Low-performing	21	58	3	14	24	42
High-performing	15	42	18	86	33	58
Total	36	100	21	100	57	100

$$X^2 = 10.556, p = 0.001$$

** Significant at the 1% level

The results of this analysis show that risk-takers perform better than non-risk-takers. More specifically, only 42 percent of the non-risk takers were identified as high-performing, compared to 86 percent of risk-takers. More importantly, this difference in performance between the two groups is statically significant at the 1% level, indicating that there is a very high probability that risk-takers performed better than non-risk-taker in incubators. This aspect is further examined in the analysis shown in Table 5.33.

Table 5.33
The Relationship Risk-takers and Business Performance by Item

Performance indicators	Not risk taker				Risk taker				Fisher's exact test
	Yes	%	No	%	Yes	%	No	%	
1. Set milestones to achieve	34	94	2	6	19	90	2	10	0.620
2. Prepared report to track performance	29	81	7	19	17	81	4	19	1.000
3. Prepared reports frequently	11	31	25	69	8	38	13	62	0.575
4. Monitored employees' performance	14	39	22	61	14	67	7	33	.043**
5. Knew what good/service to provide	33	92	3	8	20	95	1	5	1.000
6. Knew what customers to attract	30	83	6	17	21	100	0	0	0.075*
7. Knew market size	18	50	18	50	18	86	3	14	0.010***
8. Knew market location	25	69	11	31	20	95	1	5	0.040**
9. Knew who were competitors	30	83	6	17	20	95	1	5	0.243
10. Knew competitive advantage	31	86	5	14	19	90	2	10	1.000

*** Significant at the 1% level; ** Significant at the 5% level

Risk-takers performed significantly better than and non-risk-takers with regard to four of the 10 performance indicators: monitored employees' performance, knew what customers to attract, knew market size and knew market location. Overall, the show a positive correlation between risk-taking and business performance.

5.3.4.12 Creativity

Creativity has been considered a driving force behind entrepreneurship which since Schumpeter (1942) coined the term "creative destruction" to describe economic growth through innovation. Little has been written about how entrepreneurs use

creativity to develop new ideas (Gemmell, 2012). Creative entrepreneurs move quickly from research and conceptual analysis into an active experiment to concretely validate and develop important ideas (Gemmell et al., 2012). Forty-seven of the 57 entrepreneurs interviewed in this research considered themselves moderately to highly creative; this study grouped these entrepreneurs under the single heading “creative”. Table 5.34 presents the results of the analysis examining the relationship between creativity and business performance.

Table 5.34
The Relationship Between Creativity and Business Performance

Performance Group	Not very creative		Creative		Total	
	Number	%	Number	%	Number	%
Low-performing	7	70	17	36	24	42
High-performing	3	30	30	64	33	58
Total	10	100	47	100	57	100

$\chi^2 = 3.871$, $p = 0.049^{**}$, ** Significant at the 5% level

The results showed a statistically significant relationship between creativity and business performance. Table 5.35 further analysed this aspect in relation to individual performance indicators.

Table 5.35
The Relationship Between Creativity and Business Performance by Item

Performance indicators	Not creative				Creative				Fisher's exact test
	Yes	%	No	%	Yes	%	No	%	
1. Set milestones to achieve	10	100	0	0	43	91	4	9	1.000
2. Prepared report to track performance	9	90	1	10	37	79	10	21	0.668
3. Prepared reports frequently	2	20	8	80	17	36	30	64	0.469
4. Monitor employees' performance	6	60	4	40	22	47	25	53	0.504
5. Knew what good/service to provide	8	80	2	20	45	96	2	4	0.138
6. Knew what customers to attract	9	90	1	10	42	89	5	11	1.000
7. Knew market size	4	40	6	60	32	68	15	32	0.148
8. Knew market location	5	50	5	50	40	85	7	15	0.026 **
9. Knew who were competitors	8	80	2	20	42	89	5	11	0.594
10. Knew competitive advantage	10	100	0	0	40	85	7	15	0.333

*** Significant at the 1% level; ** Significant at the 5% level

However, despite the fact that creativity appears to make a significant impact on the performance of the business incubatees according to the results in Table 5.34, it makes no significant impact on the performance when performance is measured in terms of individual indicators as there was no difference between the two groups for nine of the 10 performance indicators.

5.4 The Use and Accessibility of Services

The key to successfully growing a new venture in an incubator lies not only in the ability of the entrepreneur but also in the type of incubator services provided (Bhabra-Remedios & Cornelius, 2003). Professional business services have been cited repeatedly over the years as fundamental criteria for positive outcomes in business incubators (Allen, 1985; Allen and Rahman, 1985; Smilor, 1987; Tornatzky et al., 2002). Business-consulting services consist of marketing consulting, financial consulting and varied business-management assistance are meant to complement the limited skills and knowledge of entrepreneurs and the incubator manager.

This research explores the development of an incubator model that allows incubators to track the performance of businesses and identify characteristics of entrepreneurs that stimulate growth. The third section of this dynamic model is to identify the services needed at each stage of business development, as well as to understand how these services are provided. The data gathered from the questionnaires as well as interviews with individual entrepreneurs found that a business needs a range of assistance at the start-up level, and that for the study sample these services were sourced within the incubator as well as from external sources. Each type of incubator appeared to provide services differently. All 57 companies in the sample were grouped in their respective stages of development: 0-6 months old, 7-

12 month, 1-2 years, 2-3 years and 3+ years - and the various services needed at each stage of growth were identified.

Incubator managers disclosed that incubators do not tend to have sufficient resources to provide all the assistance that businesses need. However, they do understand the importance of these services and, therefore, tap into various resources to organise customised services. The interviews conducted in this study revealed that the entrepreneurs saw business programs organised by the incubator as being extremely valuable.

Although this research found a well-defined stage of development (Figure 5.1), there is no distinct pattern of services needed for particular stages of development. However, there was a distinction in the way services were delivered in the four types of incubators (general-purpose, technology, empowerment and specialised). The inputs from respondents through interviews and survey results found that the ad-hoc advice provided by incubator managers with an open-door policy allowing tenants to “come in” anytime as well as internal programs run by the business incubator are extremely valuable and aid, firm growth.

A list of business assistance services (Table 3.2 in Chapter 3) was provided to the six selected entrepreneurs in the pilot. Since the interviews were conducted face to face, it was possible to gather sufficient feedback regarding the effectiveness of service-provision in incubators. The feedbacks allowed for the list of services in Table 3.2 to be refined and expanded. The final table of services is shown in Appendix 2, Question 7.

The six pilot entrepreneurs reported that services are provided by any of the following ways:

- 9) Incubator manager
- 10) Internal courses
- 11) Incubator board
- 12) Mentors
- 13) Tenants themselves
- 14) External services sourced by tenants
- 15) Government small-business services
- 16) Universities/TAFEs

The next step was determining if any differences in the way services were offered internally or accessed externally in the four types of business incubators.

Almost all incubators provide business-assistance services such as financial management, legal advice, networking, marketing assistance, funding services, business knowledge and other value-added services (NBIA, 1998, p21). However, researchers seem to agree that different incubators focus on different services, depending on the objectives of the incubator. Publicly funded incubators with economic-development objectives provide infrastructure and basic services such as business-plan development and some management advice (Cooper, 1985; Mian, 1996; Grimaldi & Grandi, 2005). University business incubators in the US and European Business Innovation Centres (BICs) focus on commercialising technology and providing external financing opportunity, communication channels, technology-transfer programs and other value-added services (Mian, 1996; Grimaldi & Grandi 2005).

This section discusses the results for service provision in the four types of business incubators located in Australia. The respondents selected the ways they sourced each service in the survey (Appendix 2, Question 7). Table 5A in Appendix 5 provides the results of how the 27 services were sourced.

An examination of the results in Table 5A identifies the main services provided by each of the nine services providers (including “other”) identified in this study. The three main services provided by each provider are shown in Table 5.36:

Table 5.36
Main Services Provided by Each Type of Service Provider

Centre manager	n	%	Tenants themselves	n	%
Providing assistance to access free media exposure	35	61%	Presentation skills	47	82%
Networking activities	25	44%	Establishing connections with suppliers	46	81%
Technology infrastructure sourcing	24	42%	Establishing connections with buyers/customers	45	79%
Internal courses			Tenants source external private services		
Intellectual-property management	14	25%	Risk-management and insurance advice	41	72%
Marketing assistance	13	23%	Health, superannuation and benefit package advice	41	72%
Patenting and trademarks	13	23%	Accounting and Business Activity submissions	39	68%
Incubator board			Submissions		
Networking activities	7	12%	Government small-business services		
Financial management	5	9%	Patenting and trademarks	14	25%
Business-plan development assistance, strategic planning	5	9%	Help with regulatory compliance	14	25%
Mentor			Business-plan development assistance, strategic planning	13	23%
Financial management	11	19%	University/TAFE		
Networking activities	7	12%	Database Information service and library	7	12%
Intellectual-property management	5	9%	Patenting and trademarks	4	7%
			Intellectual-property management	4	7%

As shown in Table 5.36, the three main services provided by tenants themselves are used by almost over 79 percent of the incubatees, making them one of their own major service providers. The three main services by external providers that tenants source for themselves also had a high usage rate, over 68 percent. This was followed by centre managers, whose main services were used by 42 to 61 percent of

the incubatees. Other services provided by all other providers ranged from 7 to 25 percent, indicating that a majority of the tenants did not use their services. In summary, most of the commonly used services were provided by tenants themselves, tenants source external private service providers that the tenants sourced themselves and centre managers.

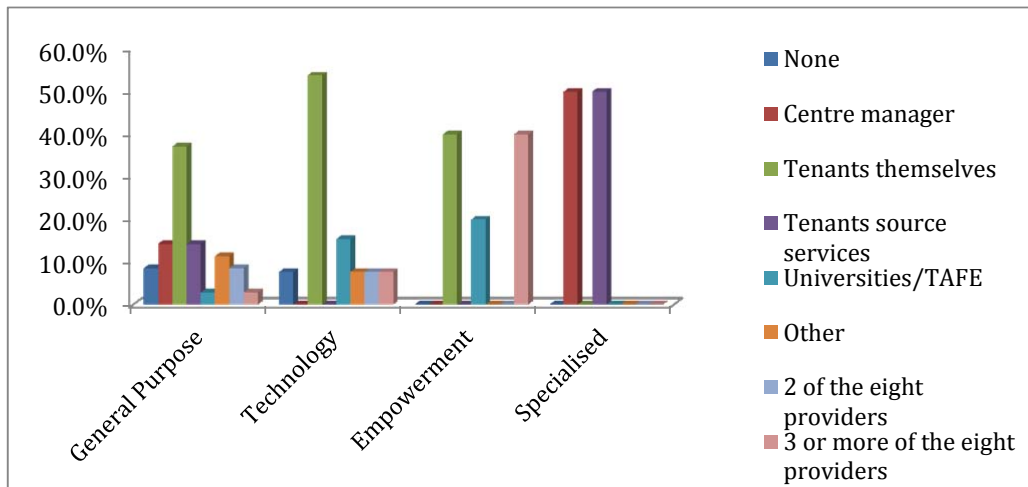
For the purpose of understanding the ways in which services were provided, the service providers were classified ,as internal and external. Internal providers were the incubator manager, internal courses, incubator board and tenants themselves. External providers were mentors, external services sourced by tenants, government small business services and universities or TAFEs.

The following sections describes why the four incubator types used each service. (Appendix 6 contains the detailed data used in this analysis).

5.4.1 Data-base Information Services

Data-base information or library services give entrepreneurs access to the latest published research in their field for business-planning purposes. Table 5B in Appendix 5 shows that this need is constant in every year of incubation with 89 percent of incubatees needing it in the first 12 months and 100 percent in the following years. As shown in Table 5A in Appendix 5, tenants themselves (40 percent), centre managers (19 percent) and external services sourced by tenants (18 percent) are the three major providers of this service. Figure 5.7 depicts the way that incubatees in each of the four types of incubators obtained database information services.

Figure 5.7
Providers of Database Information Services for Each Incubator Type



As shown in the figure above, tenants themselves acted as the main providers of database information services except in specialised incubators, which received this service from the centre managers and external private service providers. The other distinctive feature is that the empowerment and technology incubators placed a considerable reliance on other sources to obtain this service. Seventeen percent of general-purpose incubators and 8 percent of technology incubators obtained this service from more than two providers. Overall, internal service providers were the main providers of the database information service for three of the incubator types: general-purpose (62 percent), empowerment (80 percent) and specialised (75 percent). However, technology incubators obtained most of this service (65 percent) from external sources.

5.4.2 Patenting, Trademarks, Licenses and Permit Services

Business requires various patents, trademarks, licenses or permits issued by local, state and federal government or non-government organizations. The need for this service appears constant at each stage of development. As shown in Table 5A in

Appendix 5, external services sourced by tenants (30 percent), government small-business services (25 percent) are the two major providers of this service. Figure 5.8 below provides information about how incubatees obtained this service is obtained.

Figure 5.8
Providers of Patenting, Trademarks, Licenses and Permits Services

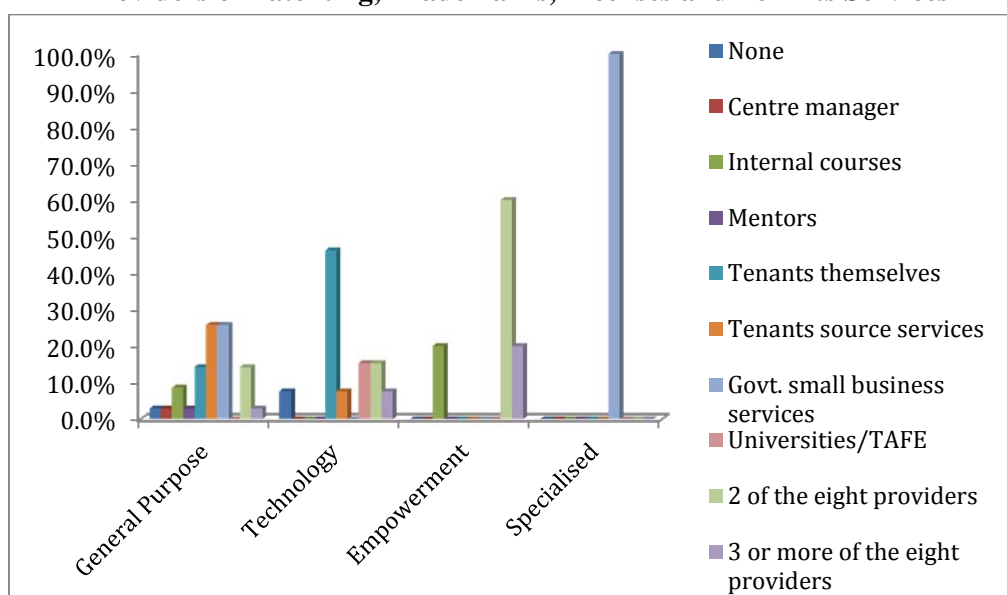


Figure 5.8 shows a clear difference in the way this service was sourced by the four incubator types. Tenants at general-purpose incubators outsourced this service (26 percent) and used government small-business services (26 percent). While 14 percent of tenants managed this need themselves. Technology incubators mostly relied on tenants themselves and universities for this service. In contrast, more than 80% of the empowerment incubators used more than two sources. During the interview phase it was found that tenants at technology incubators found it enough to use internet websites such as <http://www.smallbusiness.wa.gov.au/business-licence-finder>.

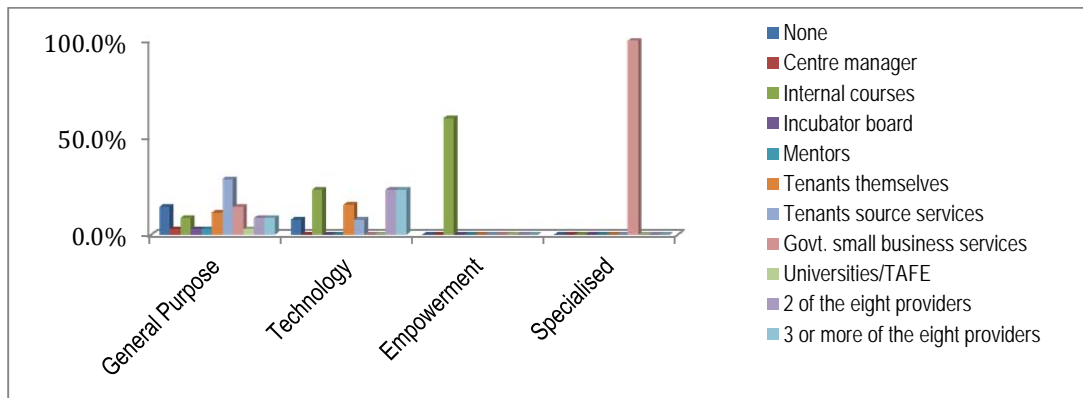
Technology incubators also accessed this service via their established links with universities. Tenants in specialised incubators only accessed these services only using government small-business services. Overall (Table 5C), this service was mainly provided by internal service providers in three of the incubators: for general-purpose (57 percent), technology (63 percent) and empowerment (percent). In the specialised incubator all the tenants sourced this service externally.

5.4.3 Intellectual-property management

Figure 5.9 shows a clear difference in the way the four incubator types used intellectual –property management services. As shown in Table 5A in Appendix 5, which provides an overall snapshot of how services are provided across all types of incubators, external services sourced by tenants (26 percent), internal courses (25 percent) and government small-business services were the three major providers of this service. Figure 5.9 provides information about how incubatees obtained this service.

Sixty-three percent of tenants in general-purpose incubator sourced this service externally, while 47 percent sourced it internally. Figure 5.9 shows how tenants sourced this service according to incubator type. Tenants in general-purpose incubators have outsourced this service to professionals (29 percent) and used government small-business services (26 percent). In empowerment incubators, 60% of tenants attended internal courses for this service. At the specialised incubator, all tenants sought this service through government small-business services. Therefore, most respondents acknowledged attending internal courses at the technology and empowerment incubators.

Figure 5.9
Providers of Intellectual-property Management service

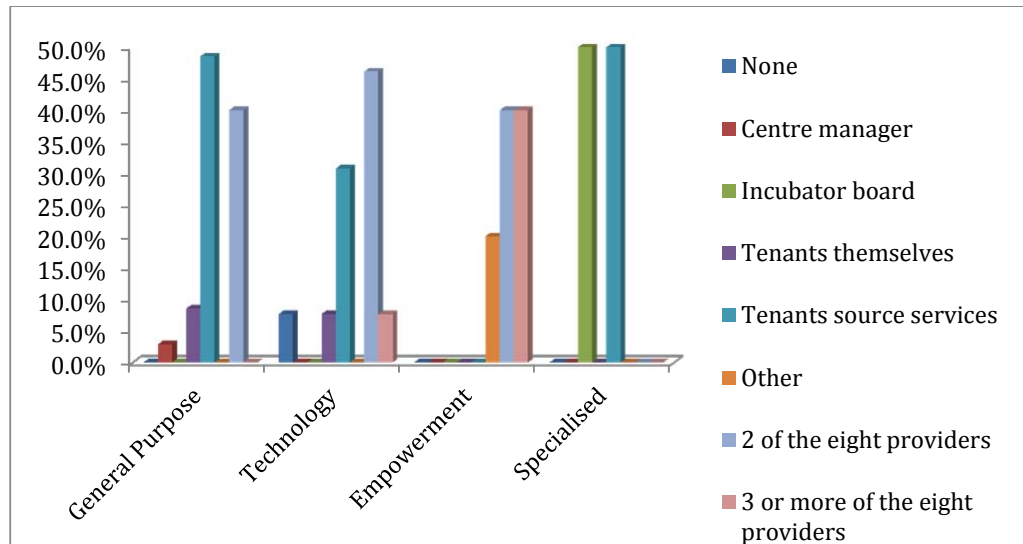


5.4.4 Accounting and Business Activity Statement Submissions

Australian businesses are required to submit a quarterly Business Activity Statement reporting their income, and to pay taxes to the Australian tax office based on the statement. These statements are completed by the individual business owners. Although respondents prepare their own activity statements and file their own taxes, there is often a need to obtain advice from qualified individuals. Table 5A in Appendix 5 shows 68 percent of tenants in this study sourced external professional services. Thirty-five percent prepared their own tax submissions. Figure 5.10 shows a clear difference in the way the four incubator types used this service. The respondents in the specialised incubator indicated that they did not get any advice from the manager or internal courses at the incubator. Through interviews, tenants indicated that they would like to attend courses that would help them understand about quarterly financial reporting. The incubator board in the specialised incubator was the most proactive in this area compared to the other incubators; however board members' attendance at the incubator was infrequent. The technology incubators were most proactive in providing access to mentoring for accounting services. Most tenants indicated that they fulfilled this need on their own, but they would like more

support from their incubators by way of courses to update their knowledge of information reporting to the government.

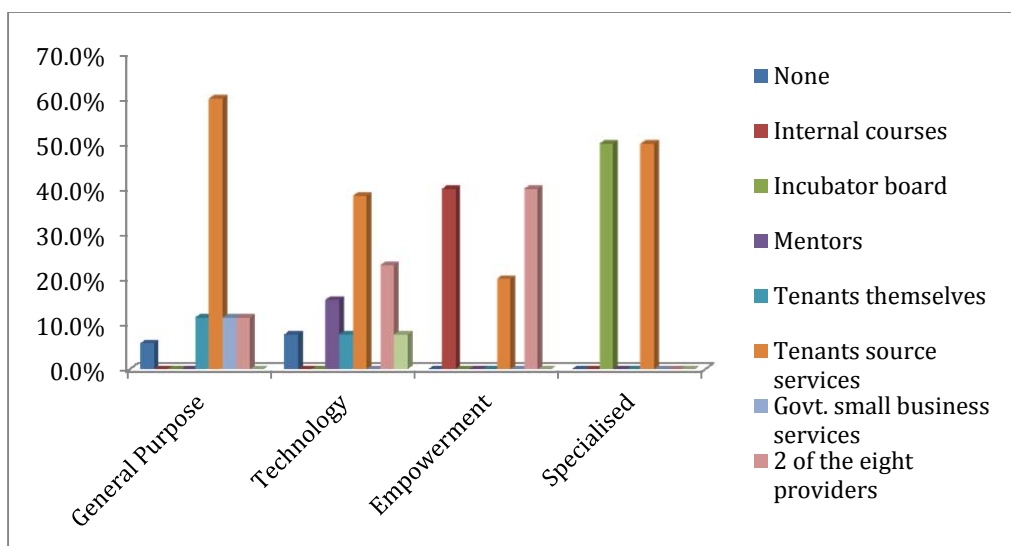
Figure 5.10
Providers of Accounting and Business Activity Statement Submissions



5.4.5 Legal Counseling

As shown in Table 5A in Appendix 5, an overwhelming 67 percent of the 57 surveyed tenants used external services for legal counseling. Figure 5.11 shows a clear difference in the way the four incubator types use this service. The majority of tenants in general-purpose incubators (68 percent) use external services for legal counseling while tenants in technology incubators use internal sources (63 percent). There was a greater tendency for the incubator manager at the empowerment incubator to provide this service. The incubator board at the specialised incubator provided legal counseling. The tenants in technology incubators appeared to also be seeking the advice of their mentors in this area. The results support the views of authors in the literature review who emphasised that small-business incubators need to provide start-up businesses with legal support, patent assistance and data-base information services (Allen, 1985; Allen & Rahman, 1985; Smilor, 1987).

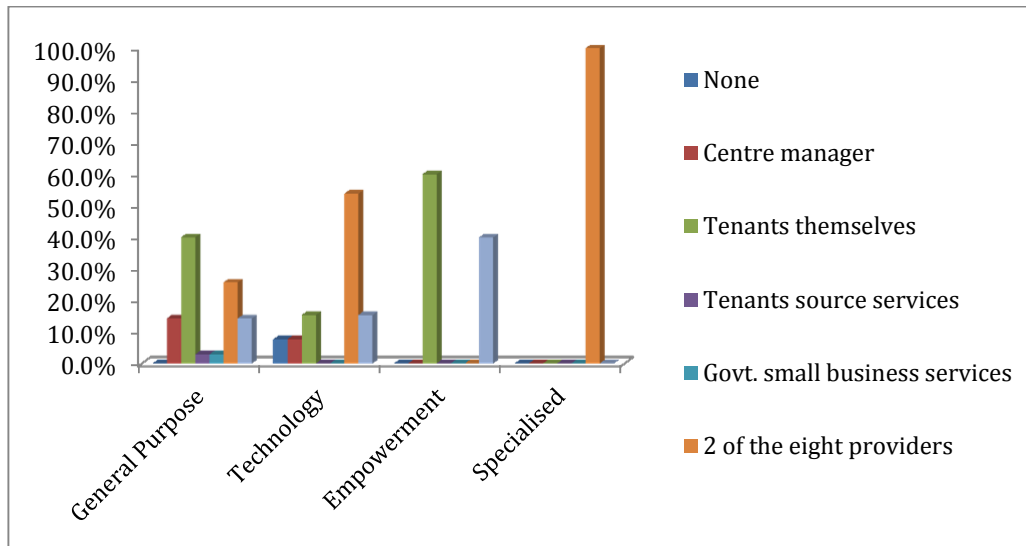
Figure 5.11
Providers of Legal Counseling



5.4.6 Networking Activities

Through the interviews, entrepreneurs revealed that they found networking activities to be important for information exchange, and in many cases provided opportunities to exchange business leads and referrals. Table 5A in Appendix 5 shows the active participation of incubator managers: 44 percent of tenants depended on their business incubator manager to provide this service. Figure 5.12 gives a better insight into the data. Tenants in general-purpose and empowerment incubators appeared to actively source this service themselves. Incubator managers at general-purpose (40 percent) and technology (60 percent) incubators actively provide this service. Incubator boards provided this service at the empowerment and specialised incubators.

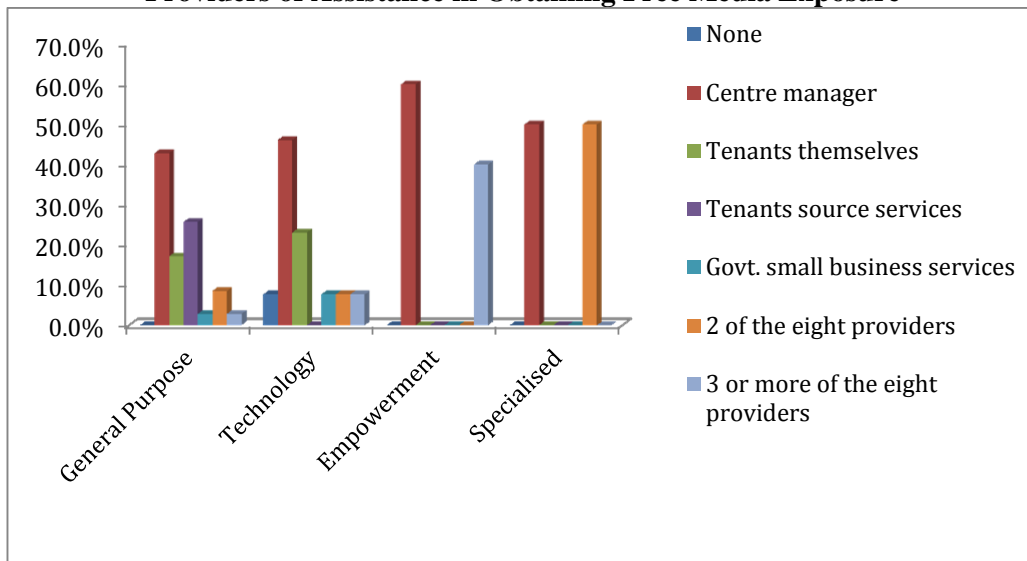
Figure 5.12
Providers of Networking Activities



5.4.7 Free Media Exposure

All incubators provided assistance in obtaining free media exposure; either by the incubator manager or through courses run by the incubators. Incubator managers identified the print media, broadcast news or internet sites in which their tenants wanted to be featured, searched for contact details and directed their tenants to suitable media sources. As seen in Table 5A in Appendix 1, 61 percent of tenants sourced this service through their incubator managers. Figure 5.13 displays the active participation of incubator managers in all the incubators. Board members and mentors at the specialised and empowerment incubators provided this service as well. Through interviews, tenants indicated that media exposure is needed at every stage of development.

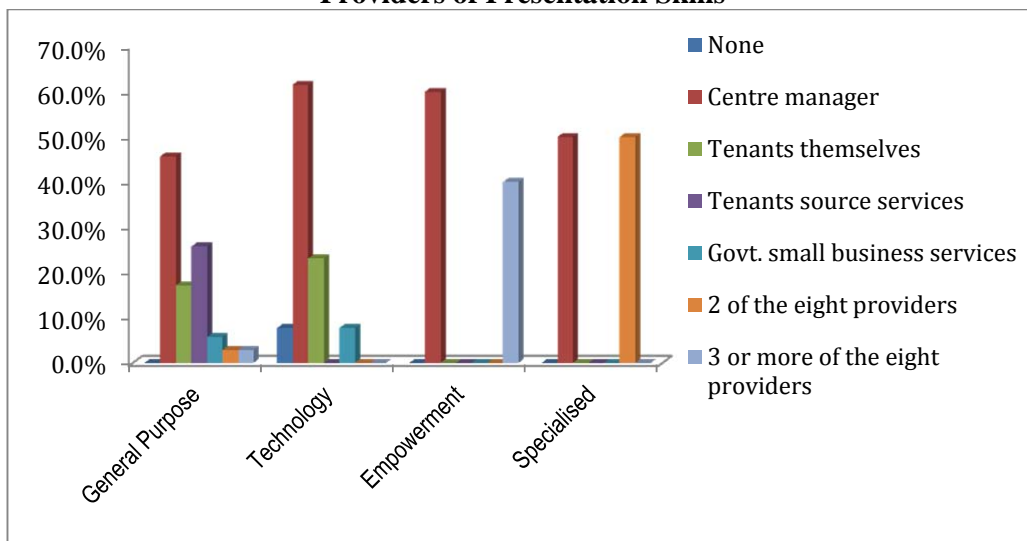
Figure 5.13
Providers of Assistance in Obtaining Free Media Exposure



5.4.8 Presentation Skills

Respondents found that giving a presentation was a necessary part of growing their business. Through the interviews, they revealed that they found it important to be well prepared, and that they felt this was a skill that needed to be mastered. As shown in Figure 5.14, the incubator manager played an active role in developing presentation skills across the four types of incubators.

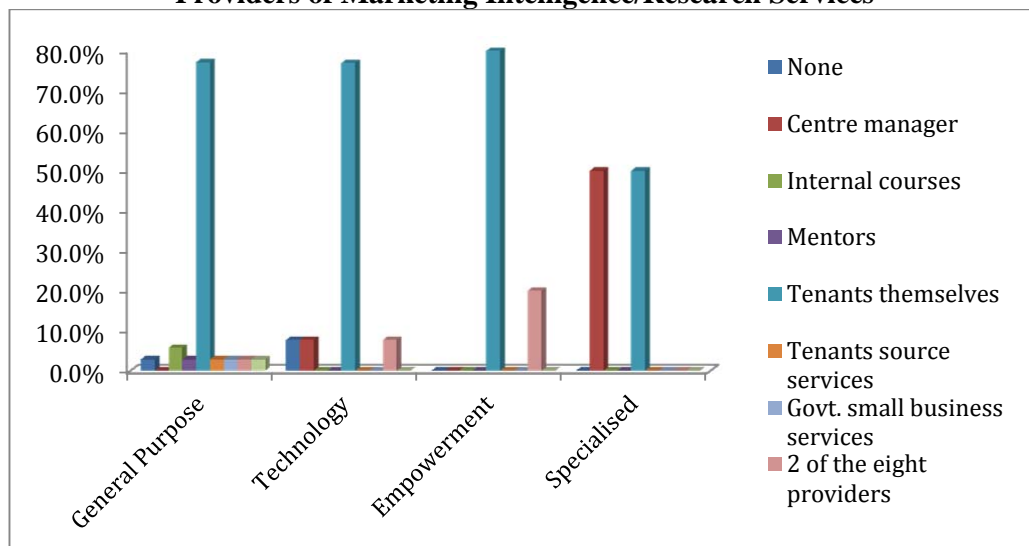
Figure 5.14
Providers of Presentation Skills



5.4.9 Marketing Intelligence/Research Services

All respondents considered this service important during the first year in the business incubator. The respondents researched their prospective markets for better business decision-making. As shown in Figure 5.15, tenants themselves in general-purpose (77 percent), Technology (77 percent), Empowerment (80 percent) and specialised (50 percent) incubators satisfied their own needs for marketing information. Interviews revealed that respondents considered the internet to be the greatest source of information. The business-incubator manager in the specialised incubator played an active role in this area. At the fashion incubator the incubator manager personally helped tenants enter the retail business.

Figure 5.15
Providers of Marketing Intelligence/Research Services

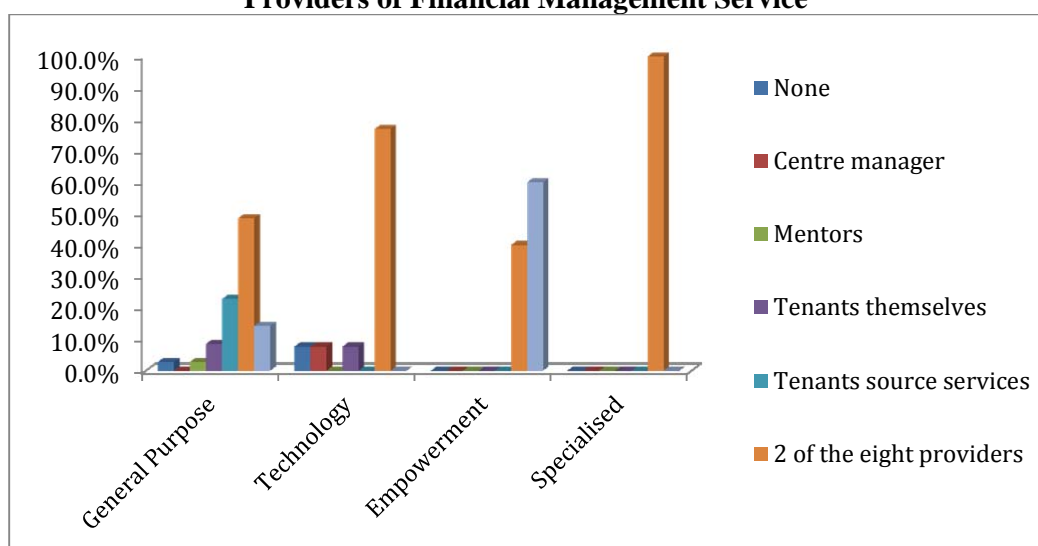


5.4.10 Financial Management Services

As shown in table 5C in Appendix 5, financial-management services were provided internally in all four incubators types. Table 5A shows that 60 percent of tenants perform this function themselves and 26 percent sought the services of the centre manager. Interviews revealed that, respondents found financial-management support services, helpful in achieving business stability. General-purpose incubators

were most active in providing this service through internal courses compared to other incubator types. The results show the centre manager and incubator board at the specialised incubator playing an active role in coaching in this area. However, most tenants either performed this function themselves or sourced help from external professionals. Interviews revealed that respondents would like the incubator to organise mentors for financial-management services.

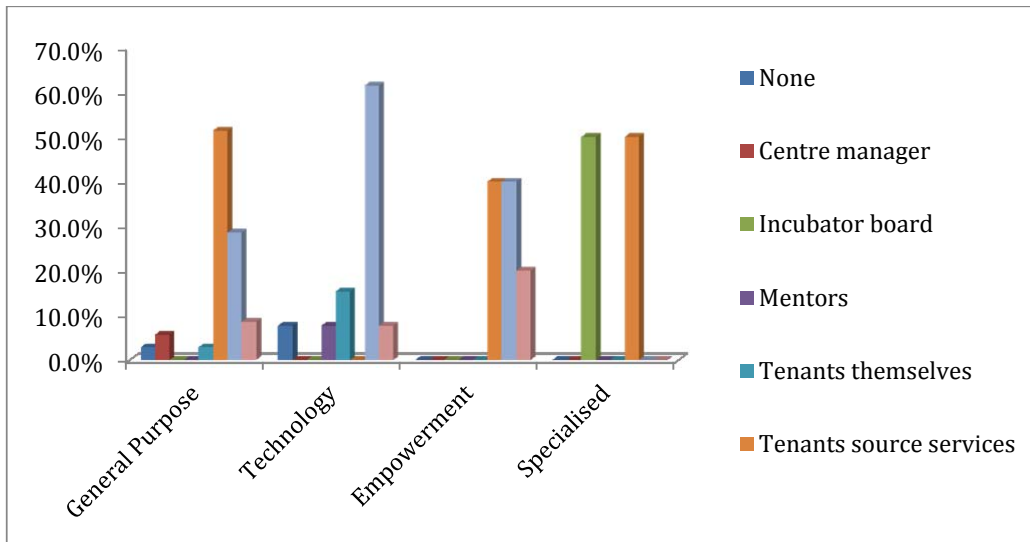
Figure 5.16
Providers of Financial Management Service



5.4.11 Risk-management or Insurance Advice

Risk-management or insurance advice helps businesses identify the risk they potentially face during the running of their day-to-day business. General-purpose incubators appeared to be actively providing this service internally. The incubator board at the specialised incubator was the only one that provided this service to their tenants (see Table 5C in Appendix 5). Mentors at the technology incubator were involved in providing risk-management advice to tenants. However, 72 percent of tenants across all the incubators sourced this service externally, as in Figure 5.17.

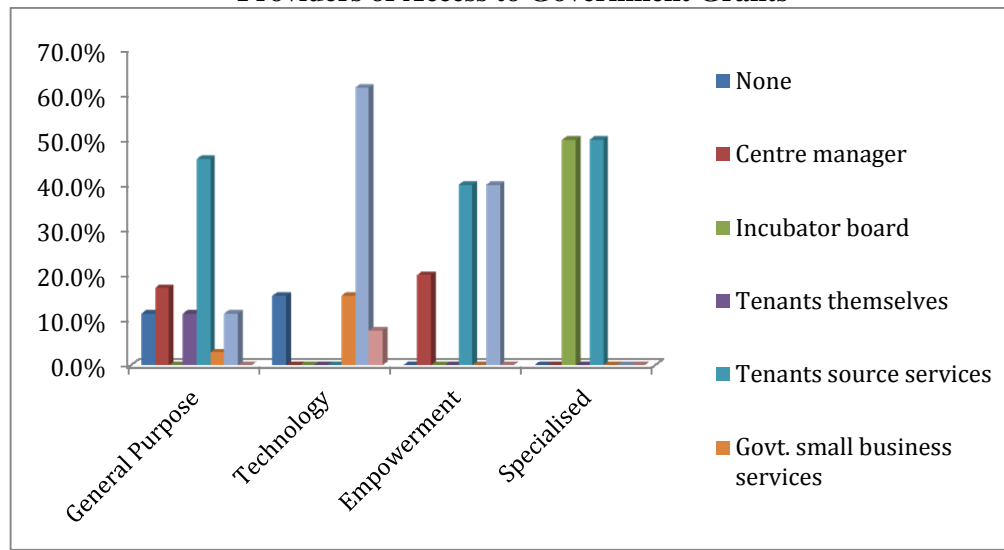
Figure 5.17
Providers of Risk-management or Insurance Advice



5.4.12 Access to Government Grants

There is a distinction in how the different incubator types provide this service. As shown in Figure 5.18, there was a strong tendency for the incubator board (50 percent) at the specialised incubator to provide access to government grants. The data in Table 5C in Appendix 5 shows that access to government grants was provided actively internally at technology incubators, where mentors and centre managers consulted their tenants regularly. Further interviews with respondents provided better insight: they disclosed that they regularly look out for government grants. However, given the fact that the pool of grant funds is limited and the grants are highly competitive, tenants wish to know immediately when the government releases grants. Therefore, they wish for their incubator managers to alert them when the opportunity arises.

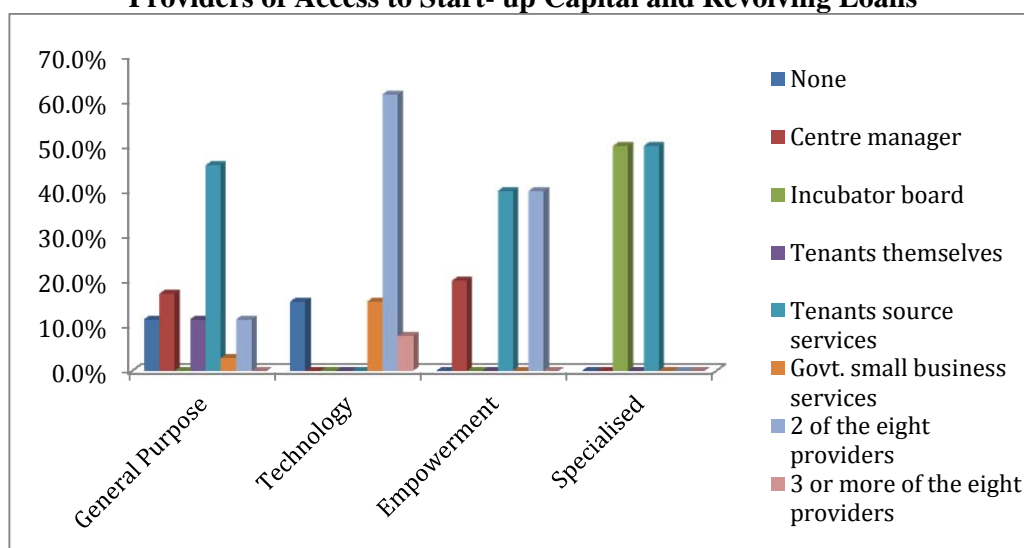
Figure 5.18
Providers of Access to Government Grants



5.4.13 Access to Start-Up Capital and Revolving Loans

According to Table 5C in Appendix 5, this service was mainly provided internally across all the incubator types. Incubator managers and boards at technology and empowerment incubators played an active role in this area. Mentors at the technology incubators were more proactive at providing this service. There as also a strong tendency for tenants at general-purpose incubators to source this service themselves (Figure 5.19). This service as not in demand at general-purpose compared to other services. Further discussions with participants revealed that new businesses at technology incubators by their very nature required start-up capital for product development, and therefore found this service extremely important. Businesses in general-purpose incubators were more service-driven, and did not depend heavily on start-up capital and revolving loans.

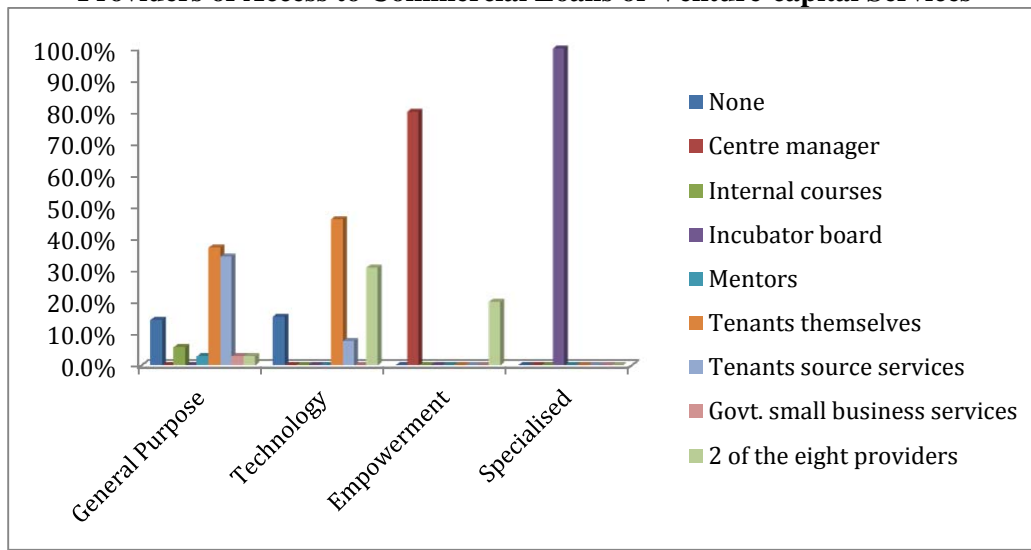
Figure 5.19
Providers of Access to Start- up Capital and Revolving Loans



5.4.14 Access to Commercial Loans or Venture-capital Services

Like access to start-up loans, access to venture-capital services is an important service during the early stages of business development, and this study's results showed a strong relationship between incubator type and incubator managers. This service is also mainly provided internally across all four incubators, as shown in Table 5C in Appendix 5. The board at the specialised incubator was proactive at providing this service compared to the other incubators. Technology incubators were most proactive at providing this service through internal courses. However, most tenants there still sourced this service themselves. Through the interviews tenants at technology incubators expressed the importance of this service and wished for the incubator managers and mentors to play a more active role in providing continued support.

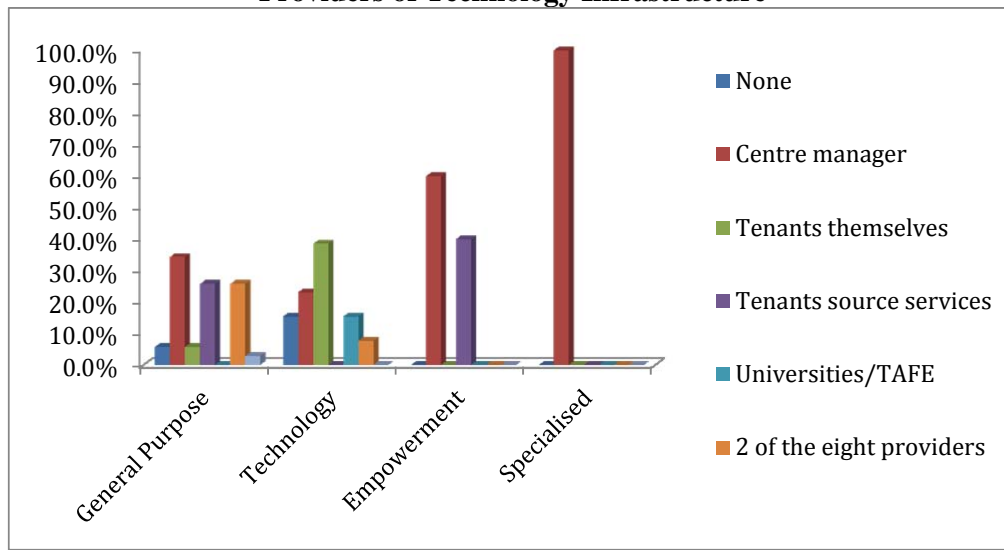
Figure 5.20
Providers of Access to Commercial Loans or Venture-capital Services



5.4.15 Technology Infrastructure

Technology infrastructure is part of the physical infrastructure provided at every business incubator. As part of the lease agreement, all incubators provide at least one computer and a high-speed internet connection with anti-virus protections and firewalls. As seen in Figure 5.21, the managers at all the incubators appeared to provide this service. Interviews conducted with respondents at the SSHED (Sutherland Shire Hub for Economic Development) provided an online tracking system, where tenants received email reminders to help manage their projects, keeping them motivated and on track with their goals; they found this extremely helpful.

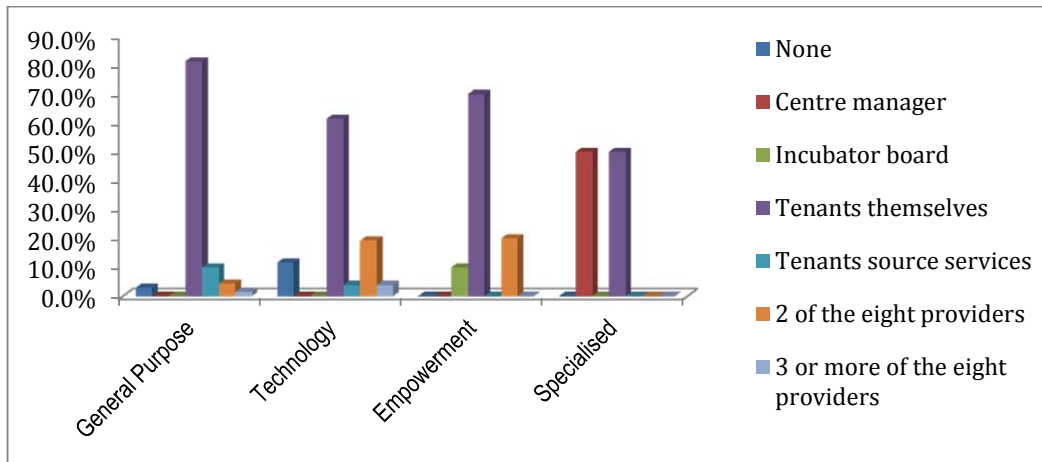
Figure 5.21
Providers of Technology Infrastructure



5.4.16 Connections with Suppliers and Buyers

Establishing connection with suppliers and buyers is a business service that is fulfilled mostly by tenants themselves. The results show that the incubator manager in the specialised incubators provides this service actively (Figure 5.22). In the interviews most respondents stated that their incubators did not need to be involved in this area, with 80 percent of respondents fulfilling this role themselves, especially in general-purpose incubators (Table 5A in Appendix 5). The incubator manager in the fashion incubator advised clients how to present their look books in order to increase their chances of being able to sell their fashion in the major retail stores around the country. The fashion tenants found this service most important in their business development.

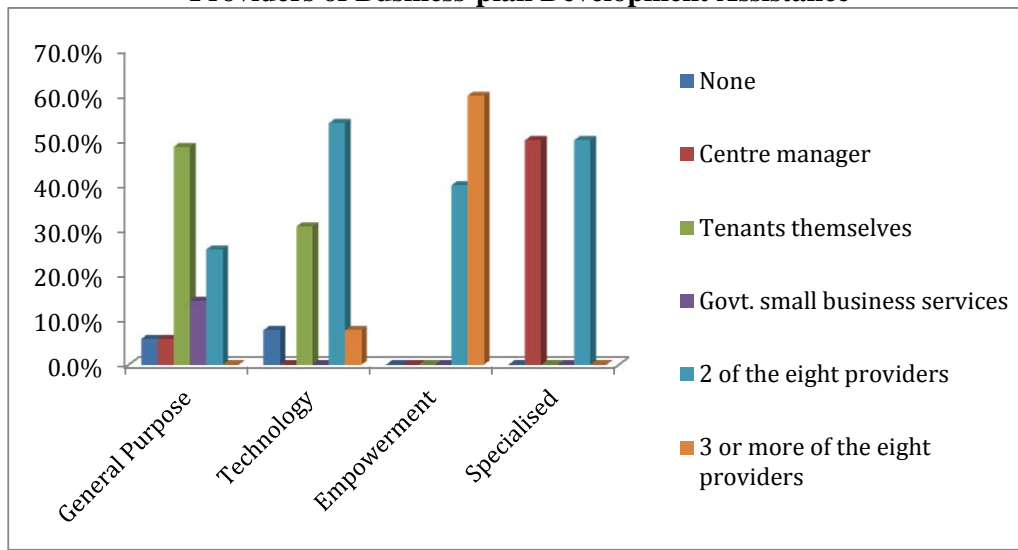
Figure 5.22
Providers of Connections with Suppliers and Buyers



5.4.17 Business Plan Development Assistance

Assistance with developing business plans was provided differently in the four incubators. Although most of the incubator managers were involved in this area, there was a tendency for the specialised incubator to be more involved. Figure 5.23 shows tenants at general-purpose incubators developing business plans themselves. There is also a tendency for tenants at the general-purpose to access this service from the government. In the interviews they expressed the need for assistance in this area. Mentors at technology incubators were more inclined to provide this service than mentors in other incubators. There was a strong tendency for tenants in technology incubators to source this service themselves from outside the incubator. Business-plan development assistance is required at every stage of development as the entrepreneur revisits the business plan throughout the business lifecycle in the incubator.

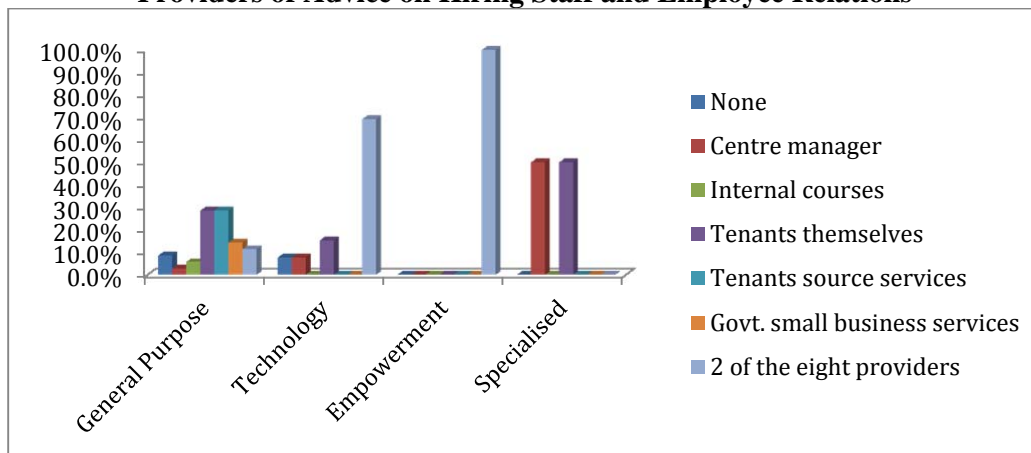
Figure 5.23
Providers of Business-plan Development Assistance



5.4.18 Providing Advice on Hiring Staff and Employee Relations advice

There is a relationship in how the different incubator types provide this service. There is indication for the general-purpose and empowerment incubators tended to provide this service through internal courses (Figure 5.24). The incubator manager at the specialised incubator advised tenants in this area. However, this service is mostly fulfilled by tenants themselves during every stage of the business (Appendix 5).

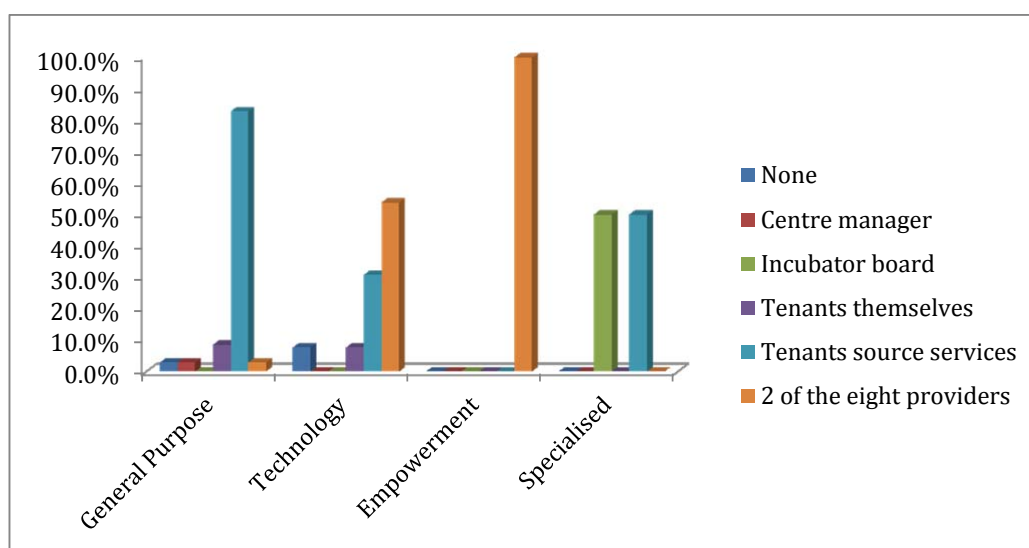
Figure 5.24
Providers of Advice on Hiring Staff and Employee Relations



5.4.19 Health and Superannuation Advice

As shown in Figure 5.25, tenants at general-purpose (82percent), specialised (50 percent) and technology incubators (31 percent) sourced this service externally themselves. Empowerment incubators provide this service externally (Table 5C in Appendix 5). In contrast, the incubator board in the specialised incubator provided this advice to tenants. There was a tendency for mentors to provide this service at technology incubators.

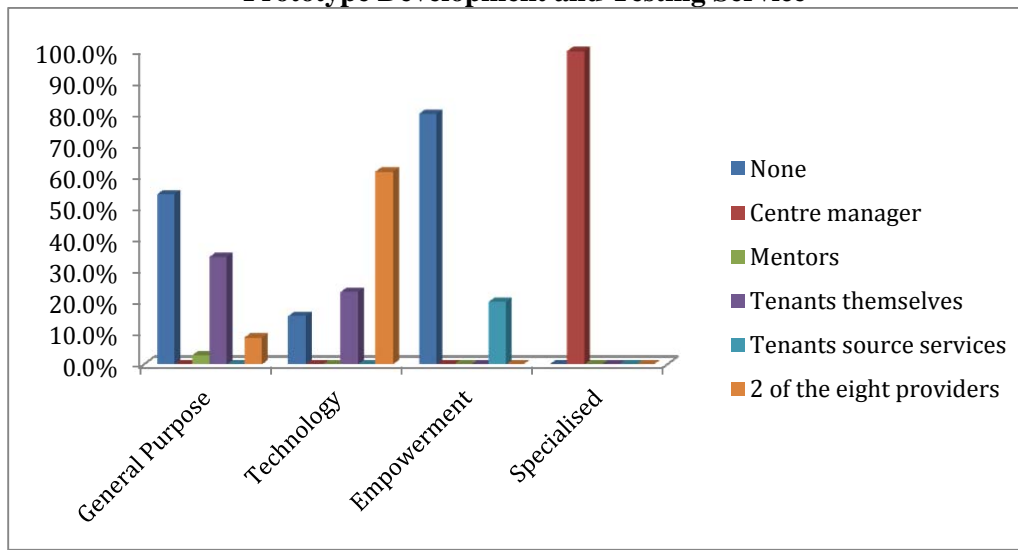
Figure 5.25
Providers of Health and Superannuation Advice



5.4.20 Prototype Development and Testing Services

The main providers of this development and testing services were the tenants themselves (44% percent and external providers that the tenants sourced services from (18 percent). However, as seen in Figure 5.26, there were clear differences in the way this service was provided in different types of incubators.

Figure 5.26
Prototype Development and Testing Service



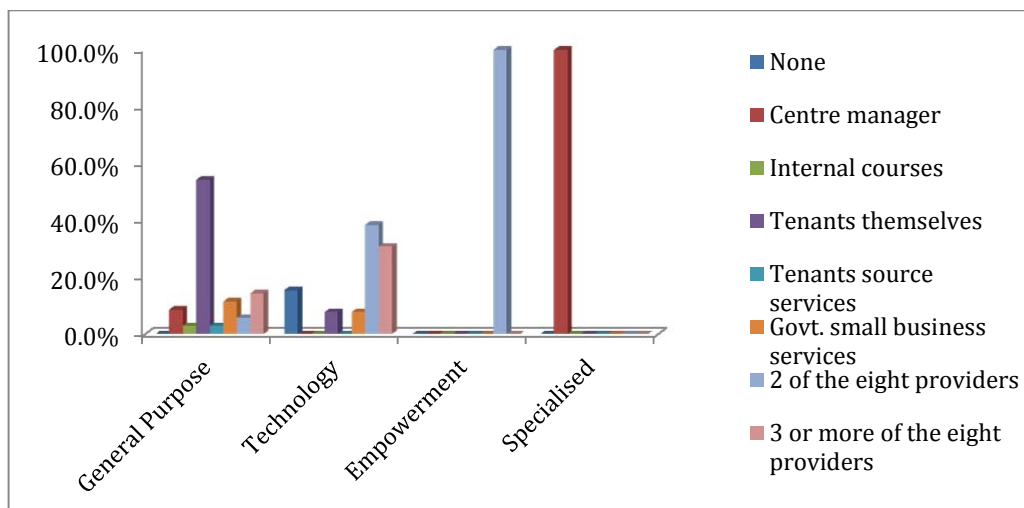
As the above figure shows, 54.3 percent of incubatees in general-purpose incubators and 80 percent of those in empowerment incubators did not obtain this service from anyone. Overall, both the general-purpose (58 percent) and empowerment (56 percent) incubators relied on external services, while the technical incubators (52%) received this development and testing services mainly from internal sources such as incubator manager. In general, this service was not perceived to be important during the growth life cycle of the business while in the business incubator. During the interview phase most respondents stated they had developed their product prototype before entering the business incubator and hence did not find this service necessary.

5.4.21 Marketing Assistance

According to Table 5A, 51 percent of all sampled tenants met their own marketing needs. However, the incubator manager at the empowerment incubator provided this service to 100 percent of its clients. Fifty-four percent of tenants at the general-purpose incubator satisfied this need themselves, while technology-incubator clients sources this service from more than two sources outside the business incubator

Marketing assistance is required during the entire business life cycle in the incubator for branding and development and extension of new ideas, then bringing them to market.

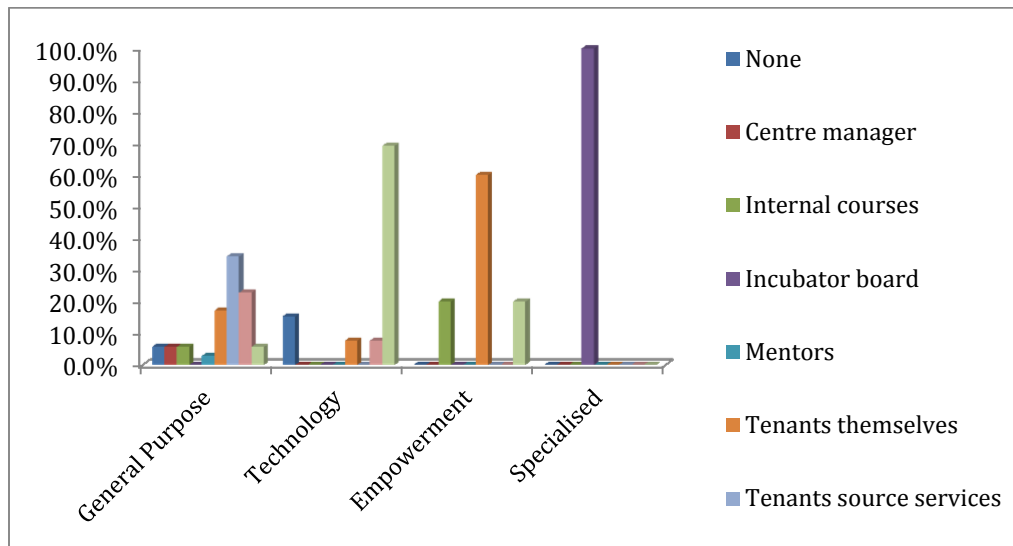
Figure 5.27
Providers of Marketing Assistance



5.4.22 Regulatory Compliance

Managers at specialised incubators were more likely to advise their tenants and provide courses on this topic than those at other incubators (Figure 5.28). However, results show that in the empowerment incubator, this service was mostly fulfilled by tenants themselves during every stage of the business life cycle. In technology incubators, this service was delivered through internal courses (Figure 5.28). During the interview phase, respondents indicated that information about regulatory compliance for their business could be sourced mostly online. Interestingly this is one of the few services that appeared to gain importance during later stages of business development.

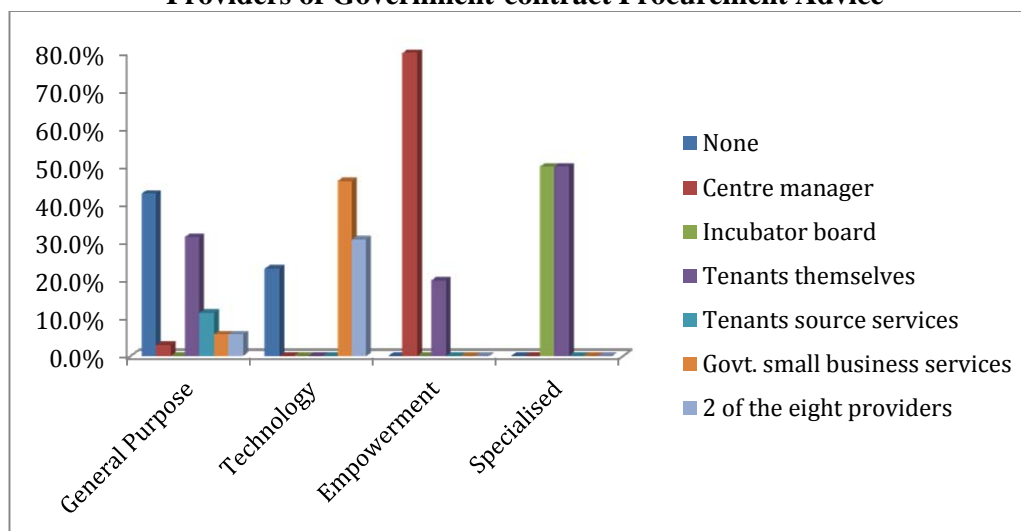
Figure 5.28
Providers of Assistance with Regulatory Compliance



5.4.23 Government Contract Procurement

As seen in Figure 5.29, the incubator manager at the empowerment incubator actively provided this assistance in securing government contracts. The board of the specialised incubator appeared to play a more active role in this area than those of the other incubators. Most tenants at the technology incubator sourced this service from a government office.

Figure 5.29
Providers of Government-contract Procurement Advice

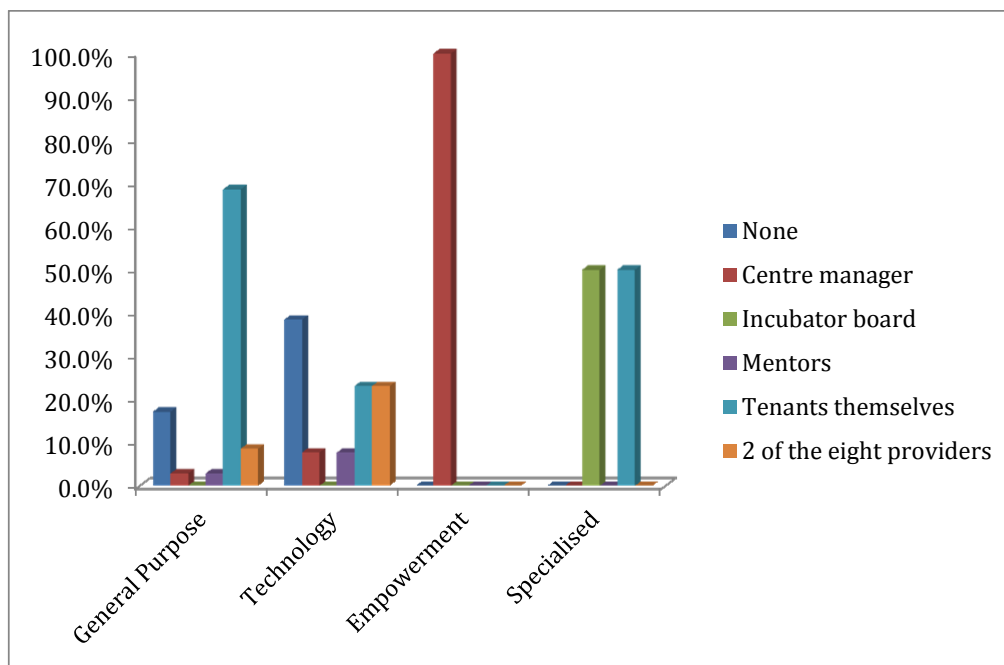


5.4.24 Advice on Building Management Team

While the pilot respondents indicated that advice on building a management team was a service that incubators offered, the 57 surveyed respondents indicated that they required little assistance in this area. Most tenants appeared to be fulfilling this need themselves apart from the tenants at the empowerment incubator, where the incubator manager played an active role in providing this service (Figure 5.30). The incubator manager at the empowerment incubator found team-building to be an important service to provide at an early stage, as it was important for all team members to be focused on their mission and not waver under the pressure of failure during the infancy stages of business development.

Figure 5.30

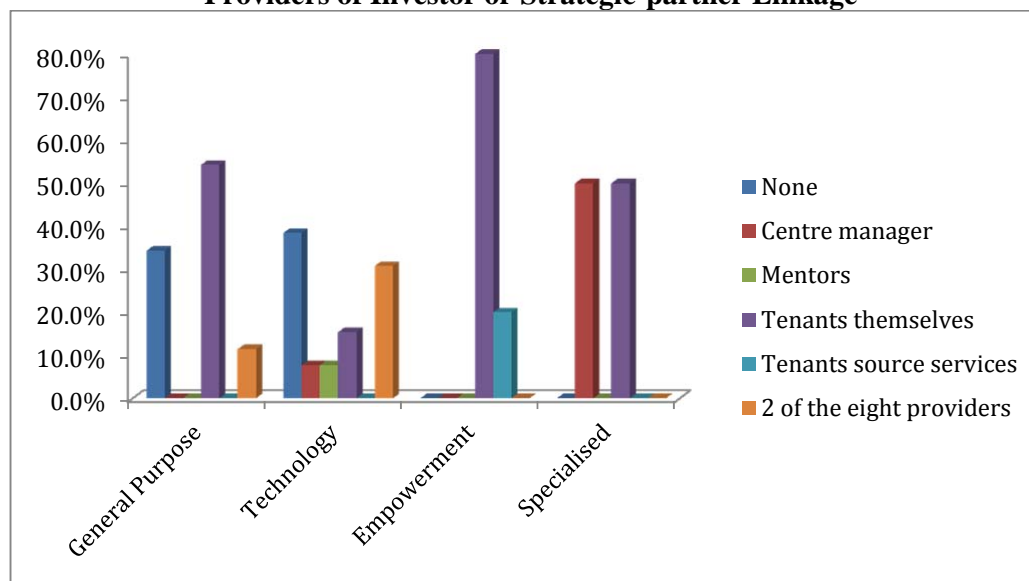
Providers of Advice on Building the Management Team



5.4.25 Investor or Strategic-partner Linkage

Building strategic partnerships is a service to help develop or enhance a business offering through partnerships. This service was mostly satisfied by tenants themselves as seen in Figure 5.31. The incubator manager at the specialised incubator was the only one of the four types of incubators providing this service. However, given the specialty of the fashion incubator in helping its tenants access the retail industry, the tenants at the fashion incubator had the expectation that their incubator manager would help them access retail fashion channels.

Figure 5.31
Providers of Investor or Strategic-partner Linkage

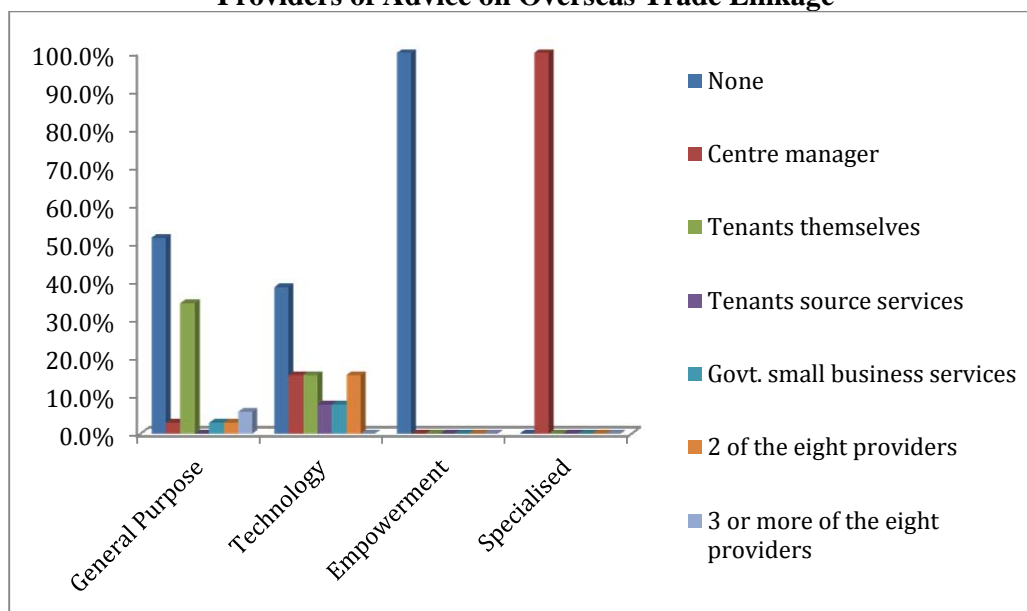


5.4.26 Advice on Overseas Trade Linkage

As shown in figure 5.32, most tenants did not need this service. Only a few of the surveyed respondents were interested in tapping into foreign markets for exporting their products and services. Respondents did not feel there was much justification for incubators to provide this service internally perhaps only to point out information sources. In contrast, the incubator manager at the specialized fashion incubator

helped fashion tenants tap into overseas markets, and mentors at the technology incubator appeared to assist respondents.

Figure 5.32
Providers of Advice on Overseas Trade Linkage



Overall, Whilst all incubators offer their clients office space and shared administrative services the heart of a true business incubation program is the services it provides to startup companies. This study found that the 4 types of incubators vary in how services are delivered.

From the above analysis it was found that the incubator manager in the specialised incubator is most active in providing business development services to clients themselves. Specialised incubators made providing services relatively straightforward, insofar they were largely dealing with clients from a similar industry with the same business focus, requirements and needs.

General-purpose and technology incubators varied in the way they delivered their services. Tenants in general-purpose and technology incubators came from a wide range of business sectors, and accessed business services through multiple

sources. Managers in general-purpose and technology incubators functioned more as facilitators, connecting entrepreneurs to firms or individuals that could provide a particular type of service. Managers in technology incubators actively organised courses and informal information evenings where speakers from industry were invited to meet and mentor their tenants. Technology incubators found services delivered this way to be more than sufficient. Most tenants across all the incubators favoured centre managers who had an open-door policy that encouraged tenants to seek help on an ad-hoc basis.

5.5 Reporting Practices in Business Incubators

The objective of this research is to build an incubator performance model. This model contains four parts. The first part focused on identifying the stages of growth in business incubators; the second part was dedicated to identifying characteristics or human capital that aided in nurturing a successful business. The third part of the model is to identify how services were provided in the different types of incubators. The final part of this model is to identify common reporting practices within companies in the incubators and to examine whether similar types of incubators share common reporting practices. Also, this section will examine the institutional pressure of adopting the reporting practices of the incubator at the tenant level.

Large numbers of incubator performance reports are published by government agencies, government-appointed consultants and incubator associations in Australia and overseas. However, past studies on the quality of service delivery by business incubators has been too broad, failing to identify specific incubator types, or too narrow, identifying only one or two types (Kilcrease 2011). Performance reports, such as the NBIA periodic State of the Business Industry report, are prepared sporadically

and provide general performance information such as the number of incubators and jobs created (OECD, 1987, AusIndustry, 2005). Governments are keen to fund incubators and through this research it was found that incubators are expected to report on their performance as a prerequisite for continued funding. However, the results from business-incubator clients show that many believe that the incubators' service delivery and performance reporting is done in a tepid manner. This is an issue that incubator managers must take into consideration and they should annually evaluate their services through a third party to avoid validity issues (Kilcrease, 2011). The following section examines, what reporting practices are used and what reports prepared in business incubators, and whether tenants prepare similar reports, as predicted by institutional theory.

Institutionalisation is defined as "the process through which components of formal structure become widely accepted, as both appropriate and necessary, and serve to legitimate organizations" (Tolbert & Zucker, 1983, p. 25). Institutional theory focuses on governmental and structural pressure, but also includes professions, interest groups and public opinion (Scott, 1987). To explain the adoption of new practices and their growing similarity within social systems, institutional theorists adopt two approaches: striving for efficiency or legitimacy considerations (DiMaggio & Powell, 1983; Tolbert & Zucker, 1983; Westphal *et al.*, 1997; Strang & Soule, 1998). This institutionalisation process is observed through common operational controls across incubators and the hierarchy of reporting requirements that flows from incubator stakeholders to incubator management and finally the incubatees.

This section reports the results of a survey where the effects of institutional pressures (mimetic isomorphism) were considered. In observing this, the reporting practices in different incubators were collated the levels of stakeholders, incubator

managers and tenants. Given that the stakeholders were not contactable or willing to take part in the survey the incubator managers were asked about the various reports that they submitted to their stakeholders (See Section 4 of the Incubator Managers Survey). They were asked for the types of reports, how frequently they met their stakeholders and the types of reports they required from their tenants.

5.5.1 Incubator Reports

An important point that has been raised in the literature is the need for a customised approach for performance reporting of incubators and tenants (Colombo & Delmastro, 2002; Hannon & Chaplin, 2003). There has been no examination thus far into how incubators monitor and report performance. Therefore, this research seeks to shed some light on whether common reporting practices are shared between similar incubators, and if tenants replicate the reporting practices of their business incubators.

This section starts with an analysis of information on reports that are required by business incubator sponsors. General observations are presented in the form of descriptive statistics, which provide initial insights in the data so that a better understanding can be gained about the data set. The descriptive statistics are shown in the form of tables. The Table 5.37 below provides an overview of responses from Question 4 (Controls) of the Incubator Managers Questionnaire.

Table 5.37
Reporting Practices of Business Incubators

	Never		Monthly		Quarterly		Half yearly		Annually		At Admission		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Budgets	0	0	6	50	3	25	0	0	3	25	0	0	12	100
Financial statements	0	0	9	75	3	25	0	0	0	0	0	0	12	100
Tenants performance	1	8	2	17	6	50	1	8	2	17	0	0	12	100
Incubator business plans	2	17	1	8	0	0	0	0	9	75	0	0	12	100
Tenants business plans	4	33	0	0	0	0	1	8	4	33	3	25	12	100
Incubator issues	1	8	8	67	3	25	0	0	0	0	0	0	12	100
Service quality	4	33	3	25	2	17	0	0	3	25	0	0	12	100

An examination of the data in Table 5.37 shows that a relatively large number of incubator managers (12) submit incubator budgets and financial statements to their stakeholders on a fairly regular basis, either monthly or quarterly. Fifty percent prepare budgets on a monthly basis, and 50 percent also provide their stakeholders with updates on the performance of their tenants on a quarterly basis. Seventy-five percent of incubator managers submit copies of incubator business plans annually. Forty-two percent review and submit their tenants' business plans to their sponsors. Thirty-three percent (three general-purpose and one technology) never submit copies of tenants' business plans to stake-holders.

Table 5.38 provides the frequency with which incubator managers conducted meetings with their stakeholders.

Table 5.38
Frequency with which Incubator Manager Met Board

Frequency of Meetings	Count	%
Never	1	8%
Monthly	8	67%
Quarterly	3	25%
Half-yearly	0	0%
Annually	0	0%
Total Incubators	12	100%

A majority of incubator managers met their board regularly. Sixty-seven percent met their boards on a monthly basis and a further 25 percent on a quarterly basis. Surprisingly, one manager (8percent) had never met with the board. Table 5.39 below shows the frequency of these meetings according to incubator type.

Table 5.39
Frequency with which Incubator Met Board and Sponsor
Scrutiny by Incubator Type

Incubator Type	Frequency Met Board	Sponsor Scrutiny
Technology	Bimonthly	No
Technology	Monthly	No
Technology	Quarterly	Yes
Technology	Monthly	Yes
Technology	Quarterly	Yes
General	Monthly	No
General	Monthly	No
General	Monthly	No
General	Monthly	No
General	Quarterly	No
Specialised	Monthly	No
Empowerment	Never	Yes

Except for the empowerment incubator, which never met its board members regularly, all other incubators conducted either monthly or quarterly meetings. When the incubator manager at the women's empowerment incubator was questioned about the reason for not meeting with the board, he disclosed that he was new on the job. However, the previous manager had also very infrequent meetings with the board. The incubator had a very small budget and was struggling to meet its overheads and was mostly supported by donations from the community. However, the incubator manager added that there were two female sponsors from well-connected families who regularly visited the incubator to meet and assist tenants in areas of developing business contacts, and that some tenants had benefited through the interest these sponsors had paid to their businesses. These sponsors would scrutinise the activities of the startups, paying detailed attention to their business activities and financial wellbeing. Incubator board members were generally made up of government officials, members of the public, incubator management and direct investors or sponsors.

This research found that technology incubators had tighter performance controls than the other types. Not only did technology companies have frequent board

meetings, they also enjoyed a close relationship with their individual sponsors. All general-purpose incubators reported no sponsor scrutiny, while 60 percent of technology incubators reported sponsor scrutiny into incubator affairs. Three of the five technology incubators reported having their sponsors scrutinise incubator services and financial well being as well as the performance of their tenants. The incubator managers disclosed that their sponsors sent regular emails asking for detailed information on tenants' performance (such as sales figures). Sponsors would visit regularly to provide mentoring and guidance for start-up founders and management teams. This was especially common at ATP Innovations, Sydney-based technology incubator. This frequently held information exchange evenings where tenants and sponsors would be invited to get together in an informal setting. Both tenants and sponsors found these sessions extremely beneficial. Some of the sponsors who had invested directly in the startups in exchange for some equity found that regular meetings with tenants albeit informal in nature gave them updates on the development of the individual businesses. Question 4 of the Incubator Manager's questionnaire focused on material that the incubator board or the sponsors requested from the incubator manager. The results of this analysis are shown in Tables 5.40 to 5.45 below.

Table 5.40
Incubator Reporting Practices According to Incubator Type
Budgets

Incubator Type	Never		Bi-Monthly		Monthly		Quarterly		Half Yearly		Annually		At Admission		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Technology	0	0	0	0	2	40	2	40	0	0	1	20	0	0	5	100
General-purpose	0	0	1	20	1	20	1	20	0	0	2	40	0	0	5	100
Specialised	0	0	0	0	0	0	0	0	0	0	1	100	0	0	1	100
Empowerment	0	0	0	0	1	100	0	0	0	0	0	0	0	0	1	100

Budgets were submitted by the incubator managers either to the incubator board or directly to the individual sponsors. Forty percent of technology incubators

submitted budgets on a monthly basis, and 40 percent on a quarterly basis. This demonstrates tighter sponsor scrutiny in technology incubators. In general-purpose incubators, 40 percent submit annually.

Table 5.41
Incubator Reporting Practices According to Incubator Type
Financial Statements

Incubator Type	Never		Bi-Monthly		Monthly		Quarterly		Half Yearly		Annually		At Admission		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Technology	0	0	1	20	2	40	1	20	0	0	1	20	0	0	5	100
General-purpose	0	0	1	0	2	50	1	25	0	0	1	25	0	0	5	100
Specialised	0	0	0	0	1	0	0	0	0	0	1	100	0	0	1	100
Empowerment	0	0	0	0	1	100	0	0	0	0	0	0	0	0	1	100

Most incubators submit financial statements on either a monthly or a quarterly basis. In Australia, regular updates are a prerequisite for continued funding in the government incubator program for all incubator types.

Table 5.42
Incubator Reporting Practices A: Tenant Performance

Incubator Type	Never		Bi-Monthly		Monthly		Quarterly		Half Yearly		Annually		At Admission		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Technology	1	0	0	0	2	40	2	40	0	0	1	20	0	0	5	100
General-purpose	0	0	0	0	1	17	3	50	1	17	1	17	0	0	6	100
Specialised	0	0	0	0	0	0	0	0	0	0	1	100	0	0	1	100
Empowerment	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	100

Incubators are also required to prove updates on tenants' performance. 50 percent of technology incubators informed their stakeholders on tenants' performance. However, these updates were general, rather than detailed financial reports. The board and sponsors were keen to know if tenants were developing as expected and meeting their business-plan targets.

Table 5.43**Incubator Reporting Practices According to Incubator Type Incubator Business Plans**

Incubator Type	Never		Bi-Monthly		Monthly		Quarterly		Half Yearly		Annually		At Admission		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Technology	0	0	0	0	1	20	0	0	0	0	4	80	0	0	5	100
General-purpose	0	0	0	0	0	0	0	0	0	0	5	100	0	0	5	100
Specialised	0	0	0	0	0	0	0	0	0	0	1	100	0	0	1	100
Empowerment	0	0	0	0	1	100	0	0	0	0	0	0	0	0	1	100

Most Australian incubators submit annual incubator business plans, not least because it is a prerequisite for funding for both private and public incubators. The empowerment incubator was submitting monthly business plans, as it was in the process of requiring fresh capital from its sponsors, although normally it too submitted plans on an annual basis.

Table 5.44**Incubator Reporting Practices According to Incubator Type:
Incubator Issues**

Incubator Type	Never		Bi-Monthly		Monthly		Quarterly		Half Yearly		Annually		At Admission		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Technology	0	0	1	20	2	40	2	40	0	0	0	0	0	0	5	100
General-purpose	0	0	0	0	4	80	1	20	0	0	0	0	0	0	5	100
Specialised	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	100
Empowerment	1	100	0	0	0	0	0	0	0	0	0	0	0	0	1	100

General-purpose incubators and technology incubators were most regular in updating their stakeholders and sponsors regularly. Most of the incubator issues were logistical, billing and building issues. The general-purpose incubator managers especially did not have the as much authority as technology incubators to resolve problems themselves, and required inputs from their stakeholders.

Table 5.45
Incubator Reporting Practices According to Incubator Type Service Quality

Incubator Type	Never		Bi-Monthly		Monthly		Quarterly		Half Yearly		Annually		At Admission		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Technology	2	40	0	0	1	20	1	20	0	0	1	20	0	0	5	100
General-purpose	1	20	1	20	2	40	0	0	0	0	1	20	0	0	5	100
Specialised	0	0	0	0	0	0	1	100	0	0	0	100	0	0	1	100
Empowerment	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	100

Most incubators with the exception of the empowerment incubator reported to their stakeholders on service quality. Most incubators generally administer surveys from time to time to find out if tenants benefit from the support services that are provided . Surprisingly, 40% of the technology incubators in this sample did not survey their clients.

The next step in this part of the model development was to identify whether this sample of incubators shared common key performance indicators. Table 5.46 shows how the incubators rated the use of the various performance indicators.

Table 5.46
Incubator Performance Indicators

	Essential		Important		Not Important		Total	
	n	%	n	%	n	%	n	%
Occupancy rates	5	42	4	33	3	25	12	100
Graduating	6	50	5	42	1	8	12	100
Jobs created	4	33	6	50	2	17	12	100
Turnover	2	17	6	50	4	33	12	100
Incubator financial performance	9	75	3	25	0	0	12	100
Tenant financial performance	5	42	7	58	0	0	12	100
Incubator service quality	6	50	3	25	3	25	12	100

Seventy-five percent of incubators considered incubator financial performance to be essential as a performance indicator. Fifty percent of incubators considered graduating from the incubator within three years to be an essential performance indicator. Fifty-seven percent found tenants' performance as being important.

General-purpose incubators found it essential to measure their performance based on occupancy rates. The results also showed a relationship between incubator type and measuring performance by number of graduates, although the empowerment incubator that did not use number of graduates as a performance indicator. Given that there was only one empowerment incubator in the sample, this result may not be typical.

General-purpose incubators tend to use occupancy rates to measure their performance and technology incubators reported greater sponsorship scrutiny. Apart from this there appears to be an orderly system of reporting practices shared by incubators regardless of their type. Through this mimetic pressure they fulfill institutional expectations and receive stability, access to resources, and a market reputation (Oliver, 1991; Meyer & Rowan, 1977). This process is also known as institutional isomorphism, leads to organisational homogeneity (DiMaggio & Powell, 1983).

The empirical results offer interesting insights into the management of Australian business incubators, their setup and the environment in which they operate. It has to be questioned there are gaps in performance reporting. Incubators engage in the commercialisation of research output from universities by actively fostering the connection between research institutions and companies within their premises and outside. Their own activities include hosting workshops to create awareness for companies to engage in R&D or just to inform companies of the possibilities certain technologies offer. Institutional theory has provided a rational, theoretical lens through which to view organisations, and raise questions leading to generalisations about organisational behaviour (Scott, 1995). By applying institutional theory in

studying the common practices shared by incubators, the results suggest that all incubators regardless of type, share most reporting practices in common.

The survey results also indicate that there is a relationship between incubator type and performance reporting for sponsor scrutiny in the operations of a business incubator. Sponsors of technology incubators look more closely at them compared to those of other incubator types. Incubator managers in technology incubators appear to meet their tenants more frequently any other incubator. Most technology incubator managers believe that setting strict guidelines in the beginning and then monitoring business incubators through the process (instead of forcing them to succeed immediately) helps lead to more regular and accurate reports.

5.5.2 Common Reporting Practices Between Incubators and Tenants

This section examines common reporting practices among incubator management and tenants. Given that the incubator houses many small organisations, the question that was raised in the previous section of whether these tenants replicated the accounting and reporting practices initiated by the incubator and their funding organisations. The question now is, do tenants copy or model their reporting practices on those of the incubators that house them? Or simply, are tenants more prone to prepare reports in incubators that prepare reports given the interaction between the two parties on a regular basis? The interviews revealed that the sample incubator managers or stakeholders did not require tenants to prepare reports. The analysis does not show a relationship between incubators preparing budgets and tenants preparing management reports. A detailed examination of the data shows that even when incubators rarely prepared budgets, tenants were found to still prepare management reports including budgets on a timely basis. Table 5.47 shows that incubator managers do not often view management reports prepared by incubatees.

Table 5.47
Tenant Reports Viewed by Incubator Managers

Performance indicators	Business Plans		Budgets		Financial statements		Diaries	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Never	2	17	5	42	6	50	9	75
Monthly	0	0	0	0	0	0	0	0
Quarterly	2	17	1	8	3	25	2	17
Half-yearly	1	8	1	8	1	8	1	8
Annually	4	33	4	33	1	8	0	0
At admission	3	25	1	8	1	8	0	0
Total incubators	12	100	12	100	12	100	12	100

Tenant expectations could include various tangible benefits such as increased space, reduced rent, and shared services, but might include more intangible benefits such as a supportive atmosphere and access to local networks and markets. It was recognised that incubator managers would attempt to attract budding entrepreneurs to their facility by offering a variety of benefits and services to prospective tenants. The current study was designed, in part, to examine the expectations of both parties, and, particularly, to discover if their respective needs were compatible. From the survey results, it does not appear that there was any relationship between the type of incubator and the reporting practices of individual incubatees.

The survey permits additional examination of the relationships between the immediate players and external influences. The results show some interesting relationships between the interaction parameters, the characteristics of the participants, and the effectiveness of the incubator process, and provide additional depth to the literature on incubators. It appears from these tests that businesses located in incubators are not influenced by their incubators' reporting practices. This conclusion is also supported by the incubatee management reporting findings in Table 5.48.

Table 5.48
Tenant Management Reporting

Firms that prepare management reports	n	%
Yes	46	81
No	11	19
Total	57	100
Firms that set business milestones		
Yes	53	93
No	4	7
Total	57	100
Who developed company management report		
Your self	32	56
Manager	1	2
Yourself and manager	3	5
Accountant	18	32
NA	3	5
Total	57	100
Management reporting frequency		
Monthly	23	40
Quarterly	15	26
NA	12	21
Annually	5	9
Half-yearly	1	2
Weekly	1	2
Total	57	100

* Manager refers to Incubator Manager

Businesses located in incubators prepare reports diligently, identify milestones and develop their reports by themselves or with the help of their accountants. The results in Table 5.48 show that incubator managers do not actively consult on management reporting. These results further prove that a majority of incubatees do not learn how to manage their business affairs through incubator programs or incubator managers. Incubatees generally have prior experience of managing their company reporting, and therefore feel they do not require consultations from their incubator manager.

5.6 Summary of the Chapter

This chapter highlights the major findings of this research that businesses in incubators grow in four well defined stages: conception and development of a new

product, diversification, expansion and maturity. Each stage has a clear set of activities. The analysis also uncovers that to move to a new stage, a firm completes all the activities in its current stage. Firms also undertake recurring business activities at every stage of growth. These activities were identified and were classified as activities common to all stages, and they appear to be vital for the survival of each business venture. They need to be performed almost every year regardless of how long a company has been established for. This stages-of-growth model can help the incubator manager identify where a firm is in the development cycle. By tracking a company's growth based on the activities it has performed, an incubator manager can work together with entrepreneurs to identify the next activities in the typical development cycle of a business located in an incubator. Incubators are considered successful when incubatees consistently complete the identified key business activities and move from one stage to another within a reasonable time period. This is vital information given that most companies in the very early stages of development are not revenue-producing; this model allows a business to be assessed or benchmarked even without sales or revenue information.

The literature review continued by extending entrepreneurial theory into the area of how entrepreneur's attributes affect the planning and development of a start-up incubator firm. As the venture progresses from start-up through its early stages of growth and towards maturity the entrepreneur engages his or her human capital or personal attributes. Numerous scholars have highlighted the importance of taking entrepreneurial characteristics into account to more fully understand business decisions and its impact of firm development. Therefore this study tested the effects of entrepreneurs' characteristics on business growth. The effects of 13 entrepreneurial attributes - identified as gender, age, education, work experience,

previous business ownership, parental background, awareness of financial position, nature, determination, dissatisfaction with previous job, able to deal with major problems, risk-taker and creativity - were tested against Churchill and Lewis's (1983) 10 key success growth factors: set milestone to achieve, prepare reports to track performance, prepare reports frequently, monitor performance of employees', know what good or service to provide, know market size, know market location, know who were competitors and know competitive advantage.

It was found that gender and age did not affect the performance of firms in an incubator. However, the results suggested that there was a significant relationship between the entrepreneur's level of education and overall business performance. Entrepreneurs with higher level of education were more likely to achieve higher performance and therefore be successful in running their businesses. As for previous experience, the results showed no relationship between prior work experience and business management. However, having prior business-ownership experience proved to have some impact on business management and development. The results of having entrepreneurial parents, having financial knowledge, or, being outgoing or determined were not compelling enough to suggest that they predisposed an incubatee business for success. However, there was some indication that entrepreneurs being dissatisfied with their previous job makes them work harder and as a result perform better. The results also suggested that entrepreneurs who see themselves as more focused have the ability to attract the right customers, which is an important component of business success. The findings show that being a risk-taker and being creative both correlate with better business performance. In summary, certain attributes can affect business performance in an incubator. Therefore, by gaining an understanding of an entrepreneurs attributes, the incubator manager can better predict and manage the

tools required for an entrepreneur to progress through the stages of growth in a business incubator.

The third building block of a performance evaluation framework was to identify how services were delivered across the four types of incubators. It was found that all types of incubators vary in the way they deliver services. Incubator managers in technology incubators actively organise courses and informal information evenings where speakers from industry were invited to meet and mentor their tenants. In contrast, in general-purpose incubators, the tenants themselves tended to actively source services from multiple sources. Most tenants across all the incubators favored centre managers who had an open-door policy where tenants could seek help on an ad-hoc basis.

The final goal of this study's performance-framework was to identify if similar-type incubators shared common reporting practices, and whether there was an institutional pressure for tenants to adopt the reporting practices of the incubator. This research found that technology incubators had more, and more stringent, performance controls than the other types of incubators. They had frequent board meetings, and fostered a close relationship among all three parties: the incubator managers, with individual sponsors and tenants. Incubator managers at technology incubators met their tenants more frequently than those at any other incubator type. Managers met regularly with sponsors and tenants regularly met with their sponsors and discussed performance. This close-knit relationship resulted in better reporting and exchange of ideas.

Chapter 6: Conclusions

6.1 Introduction

In building an incubator performance-evaluation system, the core of this study was to discover the stages of growth of businesses located in business incubators. Through an observation of the activities that were performed by the entrepreneurs each year while in the incubator, this study has succeeded in identifying a distinct pattern of five stages of growth: pre-incubator, operational planning, commercialization, diversification and expansion. Although pre-incubator activities were identified, the main focus of this study was the subsequent four stages of growth, which applied to firms during their stay in business incubators. No prior incubator studies have identified common activities performed by tenants, nor have they constructed an incubator-specific stages-of-growth model.

The second research objective involved testing the effects of entrepreneurs' characteristics on business growth. There is an abundance of research outside the business-incubator environment that demonstrates how an entrepreneur's human capital and business development are linked; however, the impact of human capital on business development in the incubator is unknown. By identifying traits that affect business development, business incubators will be able to manage the varied needs of entrepreneurs based on their skills and background.

Business incubators provide not only provide a physical space but business support services that aid in nurturing businesses. The third research objective was to identify the services that are needed at each stage of development, as well as to understand how these services are provided. Many business-incubator researchers have researched perceptions of the importance of business-incubator services. This research successfully identified what services entrepreneurs use, as well as whether

they are accessed internally or external to the incubator. Entrepreneurs recommended that incubators could look into investing in business-monitoring software that could be shared by incubator tenants. This way entrepreneurs would be in better control of their finances and performance. By providing the business tools incubators could be in a better position to oversee tenant development and communicate performance targets. Although this relationship between incubator and tenant company can be sensitive, the development of concise company milestones and the monitoring of performance can increase to the likelihood of business success and companies successfully exiting the business incubator in a shorter time.

In summary, this study discusses the historical development of incubators together with the various types of incubators, placing this study in an Australian context (Chapter 2). This study contributes a comprehensive literature review on stages of growth of businesses located in incubators (Chapter 3), which gives an insight into previous and current incubator performance-measurement issues in Europe, America and Australia. The chapter further highlights the need for a comprehensive performance-evaluation model for incubation practitioners, their funders and the businesses incubatees and proposes a performance-evaluation framework encompassing the development of businesses based on incubator-specific stages of growth, entrepreneurial attributes, services provision and reporting standards. The performance-measurement literature in small-business research is reviewed to develop provide a base for developing an incubator-specific performance-evaluation framework. The research design and methods adopted in empirical examinations are discussed in Chapter 4. On the basis of data obtained from a questionnaire survey, Chapter 5 charts the passage of activities a business undergoes from induction to graduation, which form the first stages-of-growth framework for

business incubators. This research extends previous incubator research by focusing on the impact of a more extensive number of entrepreneurial traits on business growth. The impact of entrepreneurs' personal attributes and personal characteristics on firm performance is tested and findings revealed. As part of a performance-evaluation framework it is important to identify the services needed as well as to understand how these services are delivered. Finally, the study reveals the reporting practices used by incubator managers as well as their tenants. The main purpose of this chapter is to discuss the findings of how businesses grow in incubators and how this growth should be measured. On the basis of these findings and the conclusions, this chapter makes recommendation for the improvement of incubator performance measurement, reporting, education and monitoring.

6.2 Summary of Findings

6.2.1 Stages-of-growth Model

In constructing a stage model for firms located in incubators, extensive face-to-face surveys of 57 entrepreneurs were conducted. All the entrepreneurs' activities during each year in the incubator were recorded through the surveys and the stage-of-growth model was constructed. Forty-eight activities were identified as key activities undertaken by entrepreneurs in business incubators. The common activities shared by companies performed during their time in each age group were designated as pre-incubator, operational-planning, commercialisation, diversification and expansion activities.

6.2.1.1 Pre-incubator (Prior to Entering the incubator)

Most entrepreneurs had developed their products to a stage where they had secured their first sale prior to entry into the incubator. Entry into the business incubator appears to be a sign that the fledging start-up is ready to develop into a

business from a “garage” operation. These ventures had written business plans, estimated their required resources, registered their business and built prototypes.

6.2.1.2 Operational Planning (0-6 Months)

The major activities performed by entrepreneurs between 0-6 months were meeting suppliers and meeting consumers. At this stage, the entrepreneurs were preparing themselves to develop a market for their product or service and gaining further knowledge of their industry by attending trade shows.

6.2.1.3 Commercialisation (7-12 Months)

This stage consists of firms that have been in the incubator between 7 and 12 months. These firms had already developed their ideas outside the incubator and some had even secured sales before entry. However, the activities that take place in this stage resembles the process of commercialisation identified by Kazanjian (1990) and Churchill and Lewis (1983). These firms entered the incubator to further develop their business and improve the commercial standing of their product. They refined the knowledge of their consumer needs and the brand of their products.

6.2.1.4 Diversification (1-2 Years)

At this stage the firms they incorporated a business entity to create a legal structure, separating their personal assets from their business assets. They conducted product tests on their new line of products and service offerings, and looked for creative channels to sell their products and they performed consumer-needs analysis and competitor analysis for their new product or service offerings.

6.2.1.5 Expansion (2-3 Years)

At this stage, the firms had spent between two and three years in the incubator. They were now securing the intellectual assets of their organisation, focusing on

obtaining patents and trademarks for their product lines. They concentrated on increasing their funds and reviewing their capacity for producing more products and services to grow their business further.

6.2.1.6 Maturity (3+ Years)

This stage represents the firms that have been in the incubator for more than three years. At this stage the firms have established themselves as stable operating ventures as they appear to repeat activities that have occurred in the previous year. The focus of these more mature entities is to make sure their product brand remains desirable, and that they can continue supplying their markets and maintain financial security. The repetitive nature of these activities raises questions as to whether these entrepreneurs should still be in the business incubator. Given that they are performing activities that typically either have been done or could have been done in earlier years, this group is ready to exit the business incubator.

6.2.2 Business Growth and Its Relationship with Entrepreneurs' personal attributes

As the venture progresses from start-up through its early stages of growth and towards maturity the entrepreneur engages his or her human capital also known as skills and personal attributes in the planning and development of the business (Bhabra-Remedios & Cornelius, 2003). The second question addressed in this study involves testing the effects of entrepreneurs' characteristics on business growth. Entrepreneurs are innovators who develop new solutions to existing problems, mobilise resources and stimulate those around them. Prior research demonstrates how an entrepreneur's human capital and business development strategies are linked (for example, Hoing, 2001; Pena, 2004). The knowledge about the impact that entrepreneurial traits have on business performance is important to business

incubators as such knowledge will streamline the selection of entrepreneurs and manage the varied needs of entrepreneurs. However, there has been no academic evidence on this aspect in the case of business incubators in Australia. Therefore, to fill this void, this study examines the impact of the entrepreneurs' personal attributes and personal characteristics on business performance through the data collected from a questionnaire.

This study uses the 10 growth factors identified by Churchill and Lewis (1983) as important factors for determining the growth or success of business in the incubators while the personal attributes are chosen from prior literature. The 13 personal attributes that were tested in this study were gender, age, education, work experience, previous business ownership, parental background, awareness of financial position, nature, determination, dissatisfaction with previous job, ability to deal with major problem, risk-taking and creativity. These attributes were tested against Churchill and Lewis's (1983) 10 key success growth factors: set milestone to achieve, prepare reports to track performance, prepare reports frequently, monitor employees' performance, know what good or service to provide, know market size, know market location, know who were competitors and know competitive advantage. The following sections present the results of the findings.

6.2.2.1 Gender

This study found that there was no consistent, statistically significant relationship in financial performance and business growth for either male or female business owners.

6.2.2.2 Age

There were no statistically significant differences between the young and old entrepreneurial groups in relation to any of the 10 performance indicator items.

6.2.2.3 Education

The results suggest that there was a significant relationship between the level of education and overall business performance of the incubatees at the 5 percent significance level. More specifically, 68 percent of the highly educated incubatees were in the high-performing category, in contrast to only 37 percent of the less-educated incubatees. This clearly shows that entrepreneurs who were highly educated were performing better in the incubator.

6.2.2.4 Work Experience

There was no relationship between incubatees' work experience and business performance.

6.2.2.5 Previous Business Ownership

The results indicate that incubatees with previous business ownership perform better: 67 percent of such incubatees were in the high-performing category in contrast to 53 percent with no previous business ownership.

6.2.2.6 Parental Background

The results were not compelling enough to suggest that having entrepreneurial parents predisposes businesses in a business incubator to success.

6.2.2.7 Awareness of Financial Position

It was found that 83 percent of the incubatees who were aware of their financial position prepared reports to track their company's performance, while only

33 percent of the incubatees were are not well aware of their company's financial position paid attention to this aspect.

6.2.2.8 Outgoing Nature

The analysis did not identify any significant differences between the entrepreneurs who viewed themselves as outgoing and those who did not. However, an overwhelming majority of these outgoing entrepreneurs were diligent at setting milestones (94 percent) and possessed other strategic business qualities: for example, they knew exactly what goods or service to provide (93 percent). However, the survey results suggest that these outgoing individuals did not prepare reports (31 percent) or monitor their employees' performance (52 percent), and lacked financial-management skills. Therefore business incubators should make a greater effort to assist entrepreneurs or provide mentors and training programs in financial management.

6.2.2.9 Determination (Grit)

There appears to be no correlation between grit and the performance of the businesses in the incubator.

6.2.2.10 Dissatisfaction with Previous Job

Entrepreneurs' dissatisfaction with their previous job cannot be considered as major catalyst in business growth or even as a criterion for entrepreneurs' admission a the business incubator.

6.2.2.11 Ability to Deal With A Major Problem

The results show that entrepreneurs who see themselves as focused are more likely to set milestones than those who do not have a sense of self-efficacy. The results also suggest that entrepreneurs who are more focused have the ability to attract the right customers which is an important component of business success.

6.2.2.12 Risk Taking

The findings showed a positive correlation between risk taking and business performance possibly because taking risks places entrepreneurs in a position to take advantage of new challenges and opportunities.

6.2.2.13 Creativity

Forty-seven of the 57 entrepreneurs interviewed in this research found themselves to range from being moderately to highly creative; the two groups were combined under the category “creative”. There was a statistically significant positive relationship between creativity and business performance.

Overall, this research found that some personal attributes can affect how entrepreneurs manage their businesses. Attributes such as educational background, previous business experience and an entrepreneur’s awareness of financial position do affect business performance. Therefore, it is recommended that potential tenants or tenants who are already admitted into incubator programs be screened for these attributes so that the incubator managers can tailor services to suit each entrepreneur.

6.2.3 The Use and Accessibility of Services

The third objective of this study is to examine which services are found useful and how they are sourced. Tenants were found to have accessed business-assistance services eight different ways: incubator manager, internal courses, incubator board, mentors, tenants themselves, tenants outsourcing externally, government small-business services and universities.

Although a distinct stage of development (Figure 5.1) was found in this research, there is no distinct pattern for which services are needed at specific stages of development. However, there is a distinction in the way services are delivered among the four types of incubators. The inputs from respondents through interviews and

survey results found that entrepreneurs consider the ad-hoc advice provided by incubator managers with an open-door policy (allowing tenants to “come in” anytime) as well as internal programs run by the business incubator to be extremely valuable and aid in the growth of the firm.

The three main services provided by tenants themselves were used by almost over 79 percent of the incubatees, making them a major service provider in incubators. The three main services for which tenants used external sources also had a relatively high usage rate of over 68 percent. This was followed by centre managers whose main services were used by 42 percent to 61 percent of the incubatees. The use of other service-providers examined ranged from 7 percent to 25 percent, indicating that the majority of the tenants did not use their services. In summary, most of the commonly used services were provided by tenants themselves, tenants sourcing external private service providers and centre managers.

This study found that the four types of incubators varied in how services were delivered. The incubator manager in the specialised incubator was the most active in providing business-development services to clients. Specialised incubators made providing services relatively straightforward, insofar as they were largely dealing with clients from a similar industry with the same business focus, requirements and needs.

General-purpose and technology incubators varied in the way they delivered their services. Tenants in general-purpose and technology incubators, which came from a wide range of business sectors, would access business services through multiple sources. Business-incubator managers in general-purpose and technology incubators functioned more as facilitators connecting entrepreneurs to firms or individuals that could provide a particular type of service. Incubator managers in technology incubators actively organised courses and informal information evenings

where speakers from industry are invited to meet and mentor the tenants. Technology incubators find services delivered this way more than sufficient. Most tenants across all the incubators favored centre managers having an open-door policy where tenants could seek help on an adhoc basis.

6.2.4 Reporting Practices in Business Incubators

The final part of this model was to identify common reporting practices within companies in the incubators, and to examine whether incubators of similar types shared common reporting practices.

This research found that technology incubators had used tighter performance controls than the other types of incubators. Not only did technology companies have frequent board meetings, but they also enjoyed a close relationship with their individual sponsors. All general-purpose incubators reported no sponsor scrutiny, while 60 percent of technology incubators reported sponsor scrutiny into incubator affairs.

Budgets were submitted by the incubator managers to either the incubator board or directly to the individual sponsors. Forty percent of technology incubators submitted budgets on a monthly basis and 40 percent submitted on a quarterly basis. This demonstrates tighter sponsor scrutiny in technology incubators. In general-purpose incubators, 40 percent submitted annually.

Incubators were also required to provide updates on tenants' performance. Fifty percent of technology incubators informed their stakeholders about tenants' performance. However, these updates are general, not detailed, financial reports. The board and sponsors are keen to know whether tenants are developing as expected and meeting their business-plan targets.

General-purpose incubators and technology incubators were most regular in updating their incubator stakeholders and sponsors. Most of the incubator issues were logistical, billing and building issues. The general-purpose incubator managers especially did not have as much authority as technology incubators to resolve problems themselves, and required inputs from their stakeholders.

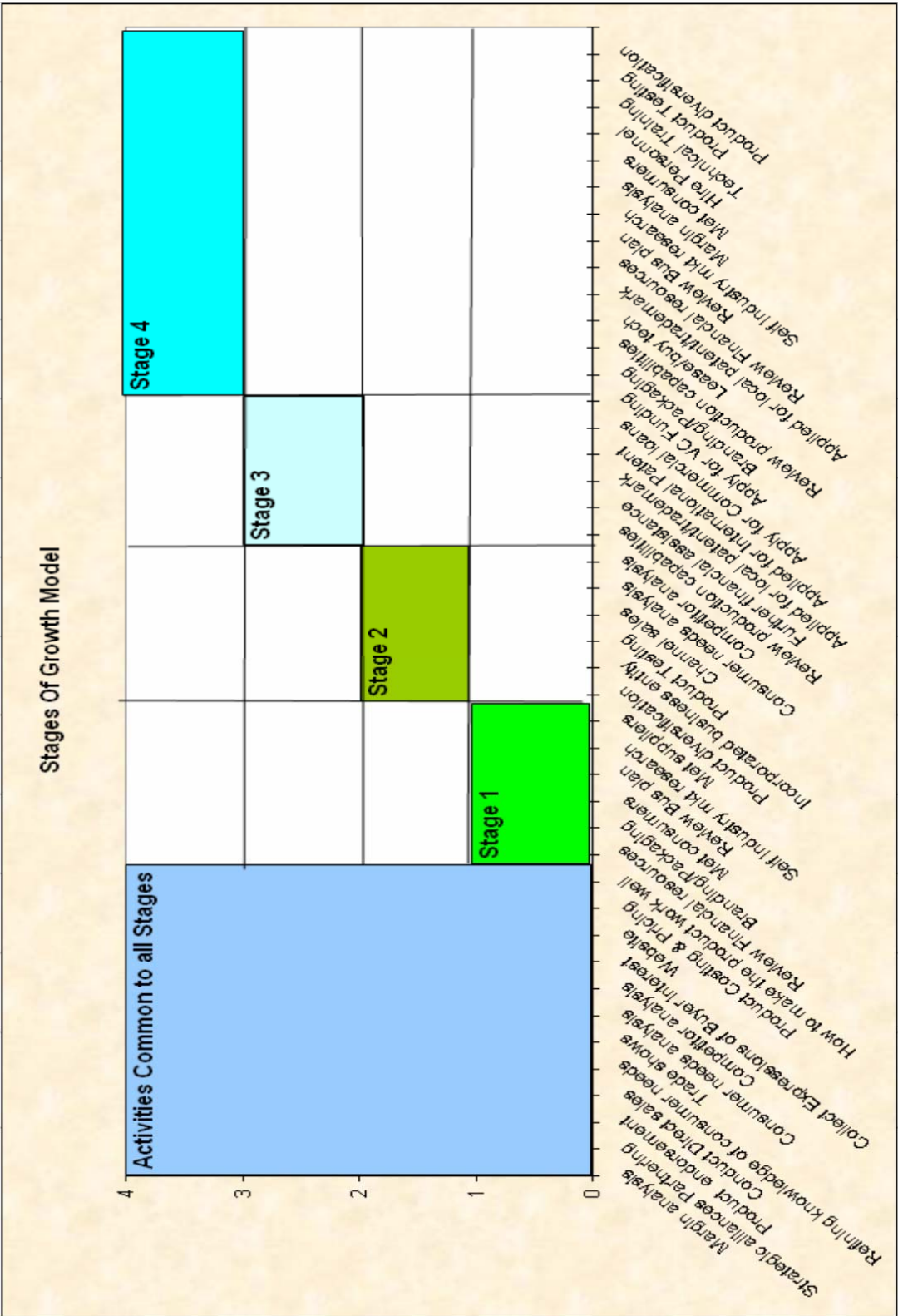
The survey results also indicated that there is a relationship between incubator type and performance reporting for sponsor scrutiny. Technology incubators have sponsors looking more closely at them compared to other incubator types. Incubator managers in technology incubators appear to meet their tenants more frequently than those any other incubator. Most technology-incubator managers believe that setting strict guidelines in the beginning and then monitoring businesses through the process (instead of forcing them to succeed immediately) leads to more regular and accurate reports.

6.3. Recommendations

Recommendation 1: Monitor Performance of Incubatees Based on the Stages-of-growth-Model

This research has discovered that businesses grow in a well-defined pattern, undertaking certain activities within a set timeframe. It appears imperative that the entrepreneur completes a selection of activities in each stage of business development to move to the next. What is interesting to note as well is that completing activities within the defined time frame of 12 months is also crucial. It appears that keeping an urgent momentum of accomplishing activities promotes progress through the stages-of-growth model. This model, as shown in Figure 6.1, allows for incubator managers and entrepreneurs to monitor the performance of their business development against this benchmark.

Figure 6.1
Stages-of-growth Model



Recommendation 2: Improved Business Assistance

This research has provided evidence that businesses in business incubators grow in four distinct stages. Business education or services can now be planned to meet the entrepreneurs' education or business-assistance needs as they progress through the operational Planning, commercialisation, diversification and expansion stages. This research has identified the various core services that businesses seek. The 27 types of services were found to be delivered in nine different ways. The incubator delivers some of these services but when there is a shortfall in programs or services, incubatees are left to seek them externally. This research reports on the types of services that tenants source for themselves outside the business incubator.

This research has presented the opportunity for incubators to review their programs and the educational aspect of business development in an the incubator. The stages-of-growth model coupled with the results from the services research here allows incubator managers to design educational programs to assist entrepreneurs in their delivery, of networking services, marketing research, accounting and various services that were identified in Chapter 5. The incubator manager will need to be very resourceful, in pulling resources from around the incubator network of sponsors or externally to create a team for each new business tenant. The manager will need to be able to manage multiple workflows and keep tenants on track according to the stages-of-growth.

Recommendation 3: Harness Positive Attributes

Business incubators should influence and proactively participate in formation of an entrepreneurial culture- an innovating, invigorating spirit that takes uncertainty in stride. This research found that certain entrepreneurial attributes contributes to

business progress. Being creative and a risk taker appears to make a significant impact on the performance of the business incubatees. Pink (2005) and Nickerson (1999) proposed creative techniques that involved stimulating and rewarding curiosity whilst, encouraging confidence and a willingness to take risks.

Recommendation 4: Improve Reporting Practices of Business Incubators

Most incubators, regardless of their type, use occupancy rates and the number of graduates to monitor their performance. More than 50 percent of incubators rarely or never report on the quality of services provided at the incubators (Table A3.2)

Most incubators do not look at their tenants' performance reports tenants (Table A3.8). As Table A3.10 shows, incubator managers do not actively consult on management reports. However, businesses in incubators prepare reports diligently and develop their reports by themselves or with the help of their accountants. During the interviews, most incubator managers felt that it would be an infringement of privacy to view client reports. Perhaps incubator managers could inform tenants at the time of admission that a requirement for renting space in the incubator is that incubator management from time to time would like to discuss business progress and look at their management reports to help them achieve their business goals.

Recommendation 5: Prepare Firms in the Redundant Group (Stage 4) for

Departure from the Incubator

Stage 4 represents the firms that have been in the incubator for more than three years. At this stage the firms have established themselves as stable operating ventures as they appear to repeat activities that have occurred in the previous year. The repetitive nature of these activities raises questions as to whether these entrepreneurs should still be in the business incubator. Given that they are performing

activities that typically either have been done or could have been done in earlier years, this group is ready to exit the business incubator. Therefore, the incubator should prepare these firms to face life outside the incubator, perhaps recommending suitable alternative premises and maintaining a connection with them in the event they need some support.

6.4 Significance of This Study

The results of this study are significant in that it is the first time the sequence of events of businesses located in an incubator has been documented. This study has also presented an alternative means of evaluating firm performance by using a stages-of-growth model that can be implemented by all types of incubators hosting various types of businesses to benchmark business growth. This model has universal application. Therefore, business-incubator managers need not rely on random surveys, instead measuring firm performance using the stages-of-growth model. Moreover, providers of capital to incubators can use a more holistic approach to monitor the performance of tenant businesses.

The conclusions that have been drawn from the research questions indicate that government support has a role to play in an array of areas. Public-sector policy is important in providing knowledge, resources and support to small businesses in Australia. First, the federal government should continue its support of business incubators in Australia. The findings of this study show that firms located in business incubators find it a nurturing environment for innovation; however, they are procuring business advice and services externally. The role of AusIndustry could be expanded in providing advice through their customer-service managers. For incubators in regional areas it is imperative that policy allows access to the same resources that are available to incubators in metropolitan areas. This may be in the form of high-speed broadband

links or a greater number of personnel who can provide professional advice on market development, contacts with potential customers and networks with firms in different geographical locations.

6.5 Limitations

The findings of this research may be affected by a few factors that could limit its generalisation. This includes the incubator types, the location of the incubators and the size of the sample.

The analysis relating to the attributes of incubatees is based on the data collected from the questionnaires and therefore may inherit self-reporting biases. However, given the fact that questions on incubatees' attributes did not require revealing any confidential or too-personal information, the impact of this limitation on the findings is considered to be insignificant.

Due to a lack of proper research methods in business-incubation research to build upon, the development of the research instrument and data analysis must be considered exploratory and developmental. This is particularly the case for the items that made up the questions regarding for the effects of entrepreneurial characteristics on business growth and reporting practices in incubators.

This study may have aspired in trying to cover far too many entrepreneurial characteristics and link them to a set of growth measures. It may be too ambitious to expect a complete and robust theory due to the various types of businesses located in incubators. However by integrating perspectives and by applying analytic, empirical and experimental tools from a range of entrepreneurial studies outside the realms of business incubators, some of the fundamental questions were answered.

6.6 Future Research Directions

This research has examined the development of business incubators in Australia. The theoretical grounding provided by the stages-of-growth theory together with empirical evidence suggests that businesses in incubators grow in a standard format. Similar studies need to be undertaken in different locations around the world to confirm this assertion.

The question as to the effect of the various business-assistance services provided to businesses warrants further investigation. The statistical results concerned with the effects of entrepreneurial traits on business growth have given rise to a number of possible areas of research. Future research could refine the research instrument and the analysis of the impact of incubator service on business growth. The research instrument for this study relied heavily on the interpretation of business growth by various entrepreneurial theorists. Its direct application to businesses in incubators must be seen as developmental and provides a starting point for future research with more robust instruments and analytical techniques.

Due to the nature of this study and the research methods used, the examination of the relationship between the incubators and tenant entrepreneurs was constrained as some of the information required for such an examination could not be obtained from the data collection methods used in this study. Therefore, it is suggested that a future study could explore and reinforce the nature of detachment between incubators and tenant entrepreneurs' personal characteristics through case studies of business incubators in Australia.

Finally, the statistical results concerned with reporting practices in the different types of incubators have given rise to a number of possible areas of research. The theoretical grounding provided by institutional theory provided a useful

mechanism to examine reporting practices in incubators. There appears to be an orderly system that is reflected in the reporting practices shared by all types of incubators, making them closely resemble one another. Continued studies into this area may lead to a greater understanding of the complex issues of performance-measurement choices and reporting practices in business incubators.

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APPENDICES

Appendix 1



Bob White
General Manager
Darebin Enterprise Centre

Dear Bob,

Re: Research on Incubators/Business Accelerators/Technology Parks

I would like to seek the participation of your business centre for an Australia wide and international incubation research that is underway from the University of Wollongong. This research is being supported by the University of Wollongong and the Australian Government. It has also received the endorsement of the Australian New Zealand Association of Business Incubators (ANZABI).

The aim of this research is to make incubator services more useful and relevant to businesses. For incubation management teams, this research can be incredibly valuable in terms of:

- Ensuring that you are a 'best' practice environment
- Maximising your effectiveness
- Proving that you are adding value and delivering real economic impact
- Learning from others

On a wider level, emerging trends, by region or sector, for example, will help Wollongong University and policy makers to understand how the incubation community is developing and identify relevant tools to accelerate this process.

The University of Wollongong would like to assure you that the information that is collected would be treated in strict confidence and will adhere to privacy protocols. Surveys are used to collect the required information. The information that is collected forms part of the sample data which will be analysed to form general conclusions. No information is supplied to any third party. Please complete the attached survey.

I am looking forward to your participation and involvement in this research.

Thanking you in advance,

Rekha Bhabra-Remedios



Contact name
Position
Contact details	Tel.....
	Fax.....
	E-mail.....

(1) Company limited by Guarantee ☐

(2) Private Limited Company ☐

(3) Co-operative ☐

(4) Association ☐

(5) Public listed ☐

(6) Other- please specify:..... ☐



1.4 Please indicate the operating structure that describes the incubator. Pick as many applicable:

Operating structure

- | | |
|--|--------------------------|
| (1) Government funded | <input type="checkbox"/> |
| (2) University Related | <input type="checkbox"/> |
| (3) Venture-capital | <input type="checkbox"/> |
| (4) Corporate/franchise | <input type="checkbox"/> |
| (e.g an incubator owned by one or two investors in the business of renting space to start-ups) | |
| (5) Other- please specify | |

2 Incubator Goals and Structure

2.1 What are the main objectives of the incubator? Please rank the following objectives in order of importance (where 1= very important, 2= important and 3= not important):

Objectives of incubator

- | | |
|--|--------------------------|
| (1) To contribute to competitiveness and local job creation | <input type="checkbox"/> |
| (2) To help universities and R&D centres commercialise know-how | <input type="checkbox"/> |
| (3) To help companies generate spin-off activities | <input type="checkbox"/> |
| (4) To help disadvantages communities /individuals with projects | <input type="checkbox"/> |
| (5) To provide a return on investment | <input type="checkbox"/> |
| (6) Other roles- please specify..... | <input type="checkbox"/> |
| | |

2.2 Who are the main partners involved in setting up and operating the incubator? *Please distinguish between board members and in kind contributor. Also tick if they have provided capital to the incubator and/or incubatees.*

Partners	Board Member	In kind Contributor	Incubator Capital Contributor	Incubatee Capital Contributor
(1) Government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(2) Private Investors/Companies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(3) Bank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(4) Venture Capital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(5) Chambers of Commerce/Professional Body	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(6) Community and voluntary organisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(7) University	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(8) EU and/or other international agency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9) Other please specify	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



2.3 How does the incubator cover its costs? Please distinguish between sources of funding for (a) setting up the incubator and (b) to help cover running costs?

Sources of funding	Set up Costs	Running Costs
Subsidies from Gov't	%	%
Companies (Private sector)	%	%
Bank	%	%
Venture Capital	%	%
Rental income and other incubator charges	%	%
Investment income, eg royalties, equity returns	%	%
Other sources-specify:.....	%	%
Total	100 %	100 %

2.4 Who are the main capital contributors to your incubator?

- (1) _____
 (2) _____
 (3) _____

2.5 Does the incubator invest in its incubatees? Yes ☐ No ☐

Describe nature of investment: _____

3 Personal Background

3.1 How often do you visit or get in contact with other incubators?.....

Are they: Local ☐ Interstate ☐ Overseas ☐

3.2 What is the nature of your visit(s) to those incubators? Please tick all appropriate boxes:

- (1) To discover processes being used elsewhere ☐
 (2) To find co-investors in incubates ☐
 (3) To replicate incubator programs elsewhere ☐
 (4) Other- please specify ☐

3.3 Do you attend incubator seminars? Yes ☐ No ☐

Number of seminars attended in the past year ☐

3.4 Are you a member of an incubator association?

Yes ☐ No ☐

If Yes, please provide incubator association _____



3.5 How did you become a manager with this incubator? Please tick appropriate boxes:

- You are an investor in the incubator ☐
- You were approached by the sponsors' ☐
- You applied for the position ☐
- Other- please specify.....

3.6 What is your previous work experience (provide years for all that apply, you may approximate):

Years	Area	Years	Area
	Business management		Economic Development
	Property Management		Financial Services
	Sales/Marketing		Business Consulting
	Start up experience		Academic
	Business Owner		Previous Incubator
	Engineering		Other.....

3.7 In which year did you join this incubator?

.....

3.8 What is your highest level of education (please specify type of diploma/degree):

.....

4 Incubator Operations (Controls)

4.1 The incubator **sponsors/board** require which of the following material to be submitted? *Please indicate when each report is submitted. N=Never, M=Monthly, Q=Quarterly, H=Half-Yearly, A=Annually, AA= At Admission*

Reports

- | | |
|--|--------------------------|
| Incubator Budgets- Actual Vs Planned | <input type="checkbox"/> |
| Incubator Financial Statements- Balance Sheet, Income Statement, Cash flow | <input type="checkbox"/> |
| Tenant Performance Report | <input type="checkbox"/> |
| Incubator Business plans | <input type="checkbox"/> |
| Tenant Business plans | <input type="checkbox"/> |
| Summary of Incubator Issues | <input type="checkbox"/> |
| Quality of incubator services | <input type="checkbox"/> |
| Others- please specify..... | |



4.2 How often do you meet the sponsors/board?

Never ☐ Monthly ☐ Quarterly ☐ Half-Yearly ☐ Annually ☐

4.3 Does any one sponsor group follow incubator operations more closely than others? If so, which group and why?

.....

4.4 You require which of the following material from the **tenant companies**? Please indicate when each report is submitted. N=Never, M=Monthly, Q=Quarterly, H=Half-Yearly, A=Annually, AA= At Admission

Reports

Business Plan	<input type="checkbox"/>
Budgets	<input type="checkbox"/>
Financial Statements	<input type="checkbox"/>
Diaries	<input type="checkbox"/>
Others- please specify	

4.5 What sort of criteria do **you** use to monitor the performance of the incubator?

	Essential	Important	Not Important
Incubator occupancy rates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Number of companies graduating from incubator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jobs created by tenant/graduate companies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Turnover of tenant/graduate companies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial performance of incubator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial Performance of tenants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality of incubator services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other criteria – please specify:.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.6 How often do you meet tenants to discuss their business progress?

Never ☐ Monthly ☐ Quarterly ☐ Half-Yearly ☐ Annually ☐



Ad-hoc ☐

4.7 Percent of time you as a manager spends on each of the following functions (estimate percentages):

	Consultation with tenants
	Preparing reports for board meetings
	Establishing and maintaining connections with external networks
	Office management (staff mgmt, budgeting etc)
	Applying for additional incubator funding
	Other- specify: _____
100%	TOTAL (percentage should add to 100%)

4.8 How many people are employed to run the affairs of the incubator? Please state their roles:

.....

5. Tenant Profile

5.1 What sort of business activities are the tenant companies undertaking? Please indicate the number of clients falling in each of the following categories?

Industry Classification	Number
(1) Agriculture, Forestry and Fishing	
(2) Manufacturing	
(3) Construction	
(4) Wholesale Trade	
(5) Retail Trade	
(6) Finance and Insurance	
(7) Information and Communication Technologies	
(8) Research and Development	
(9) Other- please specify	
Total number of tenants	<input type="text"/>

5.2 Where did the current tenant business originate? Please indicate the number in each category?

Origins	Number
(1) Start up	<input type="checkbox"/>
(2) Branch of existing firm	<input type="checkbox"/>
(3) Spin-off from university or R&D centre	<input type="checkbox"/>
(4) Anchor tenant (permanent tenant other than small businesses)	<input type="checkbox"/>
(5) Other- please specify.....	



5.3 Which of the following criteria are used for selecting potential tenants? Please rank the following criteria in order of importance (*where 1= essential, 2= important and 3= not important*):

- | | |
|--|--------------------------|
| Quality of business plan | <input type="checkbox"/> |
| Ability to pay rent | <input type="checkbox"/> |
| A unique product | <input type="checkbox"/> |
| Projected growth prospects based on business plan | <input type="checkbox"/> |
| Compatibility of business objectives to the incubator sponsors | <input type="checkbox"/> |
| Previous business experience in similar area | <input type="checkbox"/> |

Other-please specify.....

6 Tenants Graduation Information

6.1 Does the incubator impose compulsory graduation or exit conditions on their tenants?

Yes ☐ No ☐

6.2 Please indicate which of the following best describes your graduation policy? (*where, 1= essential, 2=important and 3= not important*):

- | | |
|--|--------------------------|
| Tenant has overstayed maximum time limit | <input type="checkbox"/> |
| Tenant has grown and needs more space | <input type="checkbox"/> |
| Tenant is self-sustainable | <input type="checkbox"/> |
| Tenant has had a trade sale approach | <input type="checkbox"/> |
| Tenant has met all milestones set by incubator | <input type="checkbox"/> |

Other please- specify.....

6.3 How long do tenants stay on average till graduation from the incubator?

6.4 How many tenants have been admitted into the incubator since establishment?

6.5 Since establishment, how many have graduated and continued business elsewhere?

6.6 Since establishment, how many have left the incubator due to business failure?

6.7 How many tenants have **you** admitted into the incubator?

6.8 How many tenants have graduated during **your term** as incubator manager?

6.9 How many tenants have left the incubator due to business failure during **your term** as incubator manager?



7 Nature and scope of incubator services

Please tick the appropriate source(s) for each service

	Centre Manager	Internal Courses	Incubator Board	Mentors	Tenants themselves	Tenants source external private services	Govern- ment Small Business Services	University TAFE	Others (Please specify in box)
<u>Business Assistance Services</u>									
Data base Information service/Library									
Patenting and Trademarks Licences and Permits Assistance									
Intellectual Property Management									
Accounting/ Business Activity Statement Submissions									
Legal counselling									
Networking Activities									
Providing assistance to free media exposure									
Presentation Skills									
Marketing Intelligence/ Research Assistance									
Financial Management (Taxation Advice, Cash flow planning, break even analysis, product costing, pricing)									
Risk Management/Insurance Advice									



	Centre Manager	Internal Courses	Incubator Board	Mentors	Tenants themselves	Tenants source external private services	Govern- ment Small Business Services	University TAFE	Others (Please specify in box)
Access to Government grants									
Access to Start up Capital Revolving Loans Fund									
Access to Commerce Loan or venture capitals									
Technology Infrastructure Sourcing									
Establishing Connections with Suppliers									
Establishing Connections with Buyers/Customers									
Business plan development Assistance, Strategic Planning									
Hiring Staff & Employee relations advice									
Health, superannuation and benefit package advice									
Prototype development, testing assistance									
Marketing Assistance									
Help with regulatory compliance									
Government Contract Procurement Assistance									
Building management team/board									
Investor/Strategic partner Linkages									
Overseas Trade Linkages									
Other service									



Thank you for completing the questionnaire. Please return to Rekha Bhabra-Remedios, 20 Perry St, Campsie, 2194 NSW, Australia or fax to 02-97875780.

University Ethics Statement

No information of a person or entity is singled out in any published report without prior consent. This information is used strictly for statistical analysis in this study.

This document must not be reproduced without prior consent from author.

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AUSTRALIAN and NEW ZEALAND ASSOCIATION of BUSINESS INCUBATORS
“Advocacy and Support for Incubation in Asia Pacific”

This research is sponsored by:

The Department of Employment and Workplace Relations Incubation fund

Sutherland Shire Hub For Economic Development (SSHED)

The University of Wollongong

Appendix 2

INCUBATEE COMPANY QUESTIONNAIRE

1. Name of Company

Address

Street

Street

City

Country.....

Post Code.....

Contact Name/position:

.....

Contact Details:

Tel:.....Fax:.....

E-mail:.....

Name of Incubator where company is/was located:

2. Company Details

2.1 What is the company's main business activity? Please describe:

.....

.....

2.2 Is your establishment a:

Sole proprietorship or partnership

Incorporated company/not listed

Public company/listed on stock exchange

Branch or subsidiary of larger company

5

Other- please specify.....

What is the equity structure in you business?

Yourself%

Incubator%

Angels%

Venture Capitalists%

Family and Friends%

Others%

2.3 When did you start this business?

Year..... Month.....

2.4 When did you move into this business incubator?

Year..... Month.....



2.4 Why did you locate your business in this business incubator?

- You had an idea but needed help preparing a business plan ☐
- You had a prototype but needed access to funds ☐
- You had a product, had problems attracting customers and needed strategic marketing help ☐
- You have reached financial stability and needed help expanding the company ☐
- You wanted cheap office space ☐
- You felt isolated and needed to interact with fellow entrepreneurs ☐
- Other- please specify
-

2.5 How many people does the company employ? Please provide details for the last four years:

	1999-2000	2000-2001	2001-2002	2002-2003
Number of full time staff				
Number of part time staff				

2.6 What is your company's sales revenue? Please provide **approximates** for the past four years:

Sales	1999-2000	2000-2001	2001-2002	2002-2003
\$ AUD('ooo)				

2.7 While in the incubator, have you received funding from any of the following sources? Please tick all applicable:

- Incubator/incubator capital providers ☐ \$.....
- Private Investors (unrelated to incubator) ☐ \$.....
- Venture Capitalists ☐ \$.....
- Banks ☐ \$.....
- Others- please specify..... ☐ \$.....

3. About the Owner

3.1 Gender: Male ☐ Female ☐

3.2 Age: 19-29 ☐ 30-39 ☐ 40-49 ☐ 50-59 ☐ 60+ ☐

3.3 What is your highest level of education and corresponding field of study?

.....

3.4 How many jobs do you hold now including this one?

1 ☐ 2 ☐ 3 ☐ 4 ☐

3.5 How many years were you employed in an area related to this business?

1-2 years ☐ 3-5 years ☐ 6-8 years ☐ 8-10 years ☐ 10years+ ☐

3.6 Did you own any other business prior to this current business?

Yes ☐ No ☐



If you answered -Yes- to question 3.6 please answer the following questions, otherwise skip to Question 3.9

3.7 How many businesses did you previously own?

3.8 Please describe the type of business/s you previously owned?

- (1).....
(2).....
(3).....

3.9 Please answer the following questions by circling '1' for 'not at all true' up to '5' for 'extremely true'

You are aware of your financial position at all times	1	2	3	4	5
You enjoy working and interacting with people	1	2	3	4	5
You are determined to do whatever it takes to start and complete a promising venture	1	2	3	4	5
Your dissatisfaction with your previous job was a driving force for starting your own business	1	2	3	4	5
You are able to deal with a major problem without letting it upset your goals	1	2	3	4	5
You are comfortable to mortgage your house to finance this business	1	2	3	4	5
You find yourself often creating new ideas and finding new ways of doing things	1	2	3	4	5

3.10 Parental background:

Mother

Entrepreneurial ☐ Professional ☐ White collar ☐ Blue Collar ☐

Other-please specify.....

Father:

Entrepreneurial ☐ Professional ☐ White collar ☐ Blue Collar ☐

Other-please specify.....

4. Your company business planning and control

4.1 Have you set milestones for your company to achieve?

Yes ☐ No ☐

4.2 Do you prepare company reports to keep track of business performance (Excluding Business Activity Statements (BAS))?

Yes ☐ No ☐



4.3 The reports that you prepare were developed by:

- Yourself ☐
- Incubator manager ☐
- You and your incubator manager ☐
- Accountant ☐
- Others- please specify

4.4 How often are these reports prepared?

- Monthly ☐
- Quarterly ☐
- Half yearly ☐
- Annually ☐

4.5 Do you monitor the performance of your employees if any?

Yes ☐ No ☐ Not Applicable ☐

4.6 How have you learnt to manage your business affairs? *(Tick all applicable)*

- Incubator programs ☐
- Incubator manager ☐
- Past experience ☐
- Past business course ☐
- Mentor ☐
- Fellow business entrepreneur ☐
- Other- please specify

5. Your experience as an entrepreneur before entering the incubator

5.1 In which year did you conceive/acquire the idea for your present business?

5.2 Please tick any of the following sources you used to gather information regarding your business idea?

- Your government small business agency ☐
- Your accountant ☐
- Your solicitor ☐
- You bank manager ☐
- Trade association or chambers of commerce ☐
- Publications (Trade and business magazines) ☐
- Bureau of Statistics ☐
- Others, please specify



5.3 You knew the following before entering the incubator:

	Yes	Not Sure	No
Exactly what good or service your business would provide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What sort of customers you might attract	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How big your market was	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Where your market was	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Who were your competitors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Whether your product or service would be different or better to existing products/services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5.4 Did your company have a written business plan when you entered the incubation program?

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

5.5 What were the main contents of the business plan? *Please tick all applicable*

Mission statement	<input type="checkbox"/>
Market research	<input type="checkbox"/>
Competitor analysis	<input type="checkbox"/>
Marketing Plan	<input type="checkbox"/>
Short-run operational plan	<input type="checkbox"/>
Strategic or long run plan	<input type="checkbox"/>
Financial plans for past or future financing	<input type="checkbox"/>
Other-please specify.....	
.....	



6. Tracking your business activities

Please tick the appropriate time period when each activity took place. If the activity takes place in more than one period, please tick all relevant periods. If the activity has not occurred, tick Not Occured. If the activity is not relevant to your business, tick Not Applicable.

Months Events	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Not Occu- red	Not Applic- able
Creation of idea											
Work Out Activities											
Estimate Budget and Resources											
Prepared Business Plan											
Technical Training											
Registered business name											
Incorporated business entity											
Assigned a mentor											
Met suppliers											
Met consumers											
Applied for Local Patent/trademark											
Applied for International Patent											
Build-Prototype											
Draft Business Plan with Help of Centre Manager											
Board/Management Formation											
Review Business Plan											
Apply for Government Grants											
Apply for Commercial Loans											
Apply for Venture Capital Funding											
Secured Funding											
Self industry and market size research											
Hired market research Consultant											
Months											



Events	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Not Occu- red	Not Applic- able
Consumer needs analysis											
Competitor Analysis											
Collect expressions of buyer interest											
Review or plan financial resources											
Product Endorsement											
Review Production Capabilities											
Lease or buy technology for production											
Attend trade shows											
How to make the product work well											
Strategic Alliances/Partnering											
Product Testing											
Hire Personnel											
Product Pilot											
Product Costing and Pricing											
Conduct Direct Sales											
Refining knowledge of consumer needs											
Branding/Packaging											
Build website for publicity											
Margin Analysis											
Secured first contract/first sale											
Product launch											
Appoint Retail Distributors/Channel Sales											
Product diversification											
Further financial assistance											
Review export market											
Trade Sale Approach											
Other relevant activities											

7 Nature and scope of incubator services

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Please tick the appropriate source(s) for each service

	Centre Manager	Internal Courses	Incubator Board	Mentors	Tenants themselves	Tenants source external private services	Govern- ment Small Business Services	University TAFE	Others (Please specify in box)
<u>Business Assistance Services</u>									
Data base Information service/Library									
Patenting and Trademarks Licences and Permits Assistance									
Intellectual Property Management									
Accounting/ Business Activity Statement Submissions									
Legal counselling									
Networking Activities									
Providing assistance to free media exposure									
Presentation Skills									
Marketing Intelligence/ Research Assistance									
Financial Management (Taxation Advice, Cash flow planning, break even analysis, product costing, pricing)									
Risk Management/Insurance Advice									



	Centre Manager	Internal Courses	Incubator Board	Mentors	Tenants themselves	Tenants source external private services	Govern- ment Small Business Services	University TAFE	Others (Please specify in box)
Access to Government grants									
Access to Start up Capital Revolving Loans Fund									
Access to Commerce Loan or venture capitals									
Technology Infrastructure Sourcing									
Establishing Connections with Suppliers									
Establishing Connections with Buyers/Customers									
Business plan development Assistance, Strategic Planning									
Hiring Staff & Employee relations advice									
Health, superannuation and benefit package advice									
Prototype development, testing assistance									
Marketing Assistance									
Help with regulatory compliance									
Government Contract Procurement Assistance									
Building management team/board									
Investor/Strategic partner Linkages									
Overseas Trade Linkages									
Other service									



Thank you for completing the questionnaire. Please return it to your centre manager or to Rekha Bhabra- by fax (+612-97875780) or post (Rekha Bhabra-Remedios, 20 Perry St, Campsie, 2194 NSW, Australia).

University Ethics Statement

No information of a person or entity is singled out in any published report without prior consent. This information is used strictly for statistical analysis in this study.

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Sutherland Shire Hub For Economic Development (SSHED)

The University of Wollongong

Appendix 3

Table A3.1 Type of businesses in incubators

ANZIC Code	Industry Classification	<i>n</i>	Percent
100	Agriculture	1	2
300	Forestry and Logging	1	2
7120	Telecommunication Services	2	4
4200	Construction Trade Services	2	4
4700	Personal and Household Good wholesaling	2	4
9500	Personal Services	2	4
2200	Textile, Clothing, Footware and Leather Manufacturing	4	7
4600	Machinery and Motor Vehicle Wholesaling	5	9
7810	Scientific Research	7	12
7800	Business Services	31	54
Grand Total		57	100

Table A3.2
Reporting Practices in Business Incubators

	Budgets		Financial Statements		Tenant Performance		Incubator Business Plans		Tenant Business Plans		Incubator Issues		Service Quality	
Never	0	0%	0	0%	1	8%	2	17%	4	33%	1	8%	4	33%
Monthly	6	50%	9	75%	2	17%	1	8%	0	0%	8	67%	3	25%
Quarterly	3	25%	3	25%	6	50%	0	0%	0	0%	3	25%	2	17%
Half Yearly	0	0%	0	0%	1	8%	0	0%	1	8%	0	0%	0	0%
Annually	3	25%	0	0%	2	17%	9	75%	4	33%	0	0%	3	25%
At Admission	0	0%	0	0%	0	0%	0	0%	3	25%	0	0%	0	0%
Total Incubators	12		12		12		12		12		12		12	

Table A3.3
Frequency Incubator Management Meet Stakeholders

Never	1	8%
Monthly	8	67%
Quarterly	3	25%
Half Yearly	0	0%
Annually	0	0%
Total Incubators	12	

Table A3.4 Chi-square results on Incubator type and performance reporting

	Sponsor Scrutiny	Budgets	Financial Statements	Tenant Performance	Incubator Business Plan	Tenant Business Plan	Incubator Issues	Service Quality
Incubator Type	0.086	0.57	0.757	0.276	0.28	0.456	0.043	0.419

Table A3.5 Incubator Performance Indicators

	Occupancy Rates		Graduating		Jobs Created		Turnover		Incubator Financial Performance		Tenant Financial Performance		Incubator Service Quality	
Essential	5	42%	6	50%	4	33%	2	17%	9	75%	5	42%	6	50%
Important	4	33%	5	42%	6	50%	6	50%	3	25%	7	58%	3	25%
Not Important	3	25%	1	8%	2	17%	4	33%	0	0%	0	0%	3	25%
	12	1	12	1	12	1	12	1	12	1	12	1	12	1

Table A3.6 Chi-square results on Incubator type and key performance indicators

	Occupancy Rates	Number of Graduates	Jobs Created	Tenant Turnover	Financial Performance of Incubator	Financial Performance of Tenant	Incubator Service Quality
Incubator Type	0.089	0.037	0.21	0.731	0.133	0.144	0.57

Table A3.7 Relationship between Incubator Prepare Budgets and Incubatee Prepare Management Reports

	Asymp.Sig. (2-sided)
Pearson Chi-square	0.279

Table A3.8 Tenant Reports that are viewed by Incubator Managers

	Business Plans		Budgets		Financial Statements		Diaries	
Never	2	17%	5	42%	6	50%	9	75%
Monthly	0	0%	0	0%	0	0%	0	0%
Quarterly	2	17%	1	8%	3	25%	2	17%
Half Yearly	1	8%	1	8%	1	8%	1	8%
Annually	4	33%	4	33%	1	8%	0	0%
At Admission	3	25%	1	8%	1	8%	0	0%
Total Incubators	12		12		12		12	

Table A3.9 Relationship between Incubator Type and Incubatee Prepare Management Reports

	Asymp.Sig. (2-sided)
Pearson Chi-Square	0.423

Table A3.10 Incubatee Management Reporting

	<i>n</i>	Percent		<i>n</i>	Percent
Firms that prepare management reports			Respondents that Sets Business Milestones		
No	11	19	No	4	7
Yes	46	81	Yes	53	93
Total	57	100	Total	57	100
Who developed company management reports			Management Reporting Frequency		
Yourself	32	56	Monthly	23	40
Manager	1	2	Quarterly	15	26
Yourself and Manager	3	5	NA	12	21
Accountant	18	32	Annually	5	9
NA	3	5	Halfyearly	1	2
Total	57	100	Weekly	1	2
			Total	57	100

Table A3.11 Incubatee Learn to Manage Business Affairs

	<i>n</i>	Percent		<i>n</i>	Percent
Incubator Programs			Mentor		
NA	44	77	NA	45	79
Yes	13	23	Yes	12	21
Grand Total	57	100	Grand Total	57	100
Incubator Manager			Fellow Business Entrepreneur		
NA	43	75	NA	42	74
Yes	14	25	Yes	15	26
Grand Total	57	100	Grand Total	57	100
Past Experience			Accountant		
NA	16	28	NA	56	98
Yes	41	72	Yes	1	2
Grand Total	57	100	Grand Total	57	100
Past Business Course			Government Small Business Councillng		
NA	35	61	NA	55	96
Yes	22	39	Yes	2	4
Grand Total	57	100	Grand Total	57	100

Table A3.12 General Characteristics

	<i>n</i>	Percent		<i>n</i>	Percent
Gender			Present Jobs Held		
Male	43	75	1	45	79
Female	14	25	2	10	18
Total	57	100	3	2	4
Age			Total	57	100
19-29	9	16	Employed in An Area Related to This Business		
30-39	24	42	0	6	11
40-49	18	32	1-2	10	18
50-59	4	7	3-5	7	12
50-60	1	2	6-8	3	5
60+	1	2	8-10	5	9
Total	57	100	10+	26	46
Education			Total	57	100
Bbus	1	2			0
Bsc	1	2	Other Business Ownership		0
Diploma IT	1	2	No	36	63
MSC	1	2	Yes	21	37
Bcom	2	4	Total	57	100
Tafe	2	4			0
BEng	4	7	No of Business Owned		0
PhD	4	7	1	11	19
Diploma	6	11	2	5	9
Masters	8	14	3	3	5
HSC	10	18	4	1	2
Bachelor	17	30	7	1	2
Total	57	100	(blank)	1	2
Mother Occupation			NA	35	61
NA	2	4	Total	57	100
Professional	7	12			0
Housewife	10	18	Type of business owned		0
Blue Collar	12	21	Moreorless same	1	2
Enterprener	12	21	Related	1	2
White collar	14	25	Different	9	16
Total	57	100	same	10	18
Father Occupation			NA	36	63
Academic	1	2	Total	57	100
NA	2	4			
Professional	11	19			
Entrepreneur	13	23			
Blue Collar	15	26			
White Collar	15	26			
Total	57	100			

Table A3.13 Personal Characteristics

	<i>n</i>	Percent		<i>n</i>	Percent
Aware of financial position			Determination		
1	0	0	1	0	0
2	1	2	2	0	0
3	2	4	3	1	2
4	10	18	4	14	25
5	44	77	5	42	74
Total	57	100	Total	57	100
Focused			Creative		
1	0	0	1	0	0
2	0	0	2	0	0
3	12	21	3	5	9
4	15	26	4	16	28
5	30	53	5	36	63
Total	57	100	Total	57	100
Outgoing			Dissatisfaction with previous job		
1	2	4	1	25	44
2	0	0	2	9	16
3	1	2	3	11	19
4	11	19	4	5	9
5	43	75	5	7	12
Total	57	100	Total	57	100
Risk Taker					
1	23	40			
2	2	4			
3	11	19			
4	6	11			
5	15	26			
Total	57	100			

‘1’ for ‘not at all true’ up to ‘5’ for ‘extremely true’

Table A3.14 Information Gathering

	<i>n</i>	Percent
Government small business agency	14	25
Accountant	7	12
Solicitor	3	5
Bank Manager	0	
Trade Association or Chamber of commerce	10	18
Publications	12	21
ABS	6	11

Table A3.15 Other Sources of Information Gathering

	<i>n</i>	Percent
Experience Mentor	1	2
Experience, Networking	1	2
Internet, Experience	1	2
Internet, Friends in industry	1	2
Internet, Market research	1	2
Obervation	1	2
University	1	2
Wife experience	1	2
Industry People	2	4
Peter Mac	2	4
Own research	5	9
NA	11	19
Internet	12	21
Experience	17	30
Grand Total	57	100

Table A3.16 Prior Market Knowledge

	<i>n</i>				Percent			
	yes	No	Not sure	Total	yes	No	Not sure	Total
Exactly what good	53	0	4	57	93%	0%	7%	100%
Customer type	51	3	3	57	89%	5%	5%	100%
Market size	36	9	12	57	63%	16%	21%	100%
Market Location	45	2	10	57	79%	4%	18%	100%
Competitors	50	3	4	57	88%	5%	7%	100%
Competitive Advantage	50	4	3	57	88%	7%	5%	100%

Table A3.17 Prior Written Business Plan

	<i>n</i>	Percent
No	22	39
Yes	35	61
Grand Total	57	100

Table A3.18 Contents of Business Plan

	<i>n</i>			Percent		
	Yes	NA	Total	Yes	NA	Total
Mission Statement	31	26	57	54%	46%	100%
Market Research	29	28	57	51%	49%	100%
Competitor Analysis	30	26	56	54%	46%	100%
Marketing plan	35	22	57	61%	39%	100%
Operational Plan	30	27	57	53%	47%	100%
Strategic Direction	21	36	57	37%	63%	100%
Financial Plan	30	27	57	53%	47%	100%

Table A3.19

Help with Business Plan

		<i>n</i>			Percent	
Incubator	NA	Yes	Total	% NA	% Yes	Total
Technology	6	1	7	86%	14%	100%
Technology	0	2	2	0%	100%	100%
Technology	2	2	4	50%	50%	100%
Mixed	2	0	2	100%	0%	100%
Mixed	4	0	4	100%	0%	100%
Mixed	5	0	5	100%	0%	100%
Mixed	3	0	3	100%	0%	100%
Mixed	9	1	10	90%	10%	100%
Mixed	5	6	11	45%	55%	100%
Specialised	2	2	4	50%	50%	100%
Empowerment	4	1	5	80%	20%	100%

Access to Funds

		<i>n</i>			Percent	
Incubator	NA	Yes	Total	% NA	% Yes	Total
Technology	6	1	7	86%	14%	100%
Technology	0	2	2	0%	100%	100%
Technology	4	0	4	100%	0%	100%
Mixed	2	0	2	100%	0%	100%
Mixed	4	0	4	100%	0%	100%
Mixed	5	0	5	100%	0%	100%
Mixed	3	0	3	100%	0%	100%
Mixed	10	0	10	100%	0%	100%
Mixed	11	0	11	100%	0%	100%
Specialised	0	4	4	0%	100%	100%
Empowerment	4	1	5	80%	20%	100%

Marketing Help

		<i>n</i>			Percent	
Incubator	NA	Yes	Total	% NA	% Yes	Total
Technology	5	2	7	71%	29%	100%
Technology	0	2	2	0%	100%	100%
Technology	4	0	4	100%	0%	100%
Mixed	2	0	2	100%	0%	100%
Mixed	4	0	4	100%	0%	100%
Mixed	4	1	5	80%	20%	100%
Mixed	3	0	3	100%	0%	100%
Mixed	9	1	10	90%	10%	100%
Mixed	8	3	11	73%	27%	100%
Specialised	0	4	4	0%	100%	100%
Empowerment	4	1	5	80%	20%	100%

Help with Expanding Business

		<i>n</i>			Percent	
Incubator	NA	Yes	Total	% NA	% Yes	Total
Technology	7	0	7	100%	0%	100%
Technology	2	0	2	100%	0%	100%
Technology	2	2	4	50%	50%	100%
Mixed	2	0	2	100%	0%	100%
Mixed	4	0	4	100%	0%	100%
Mixed	3	2	5	60%	40%	100%
Mixed	3	0	3	100%	0%	100%
Mixed	10	0	10	100%	0%	100%
Mixed	7	4	11	64%	36%	100%
Specialised	4	0	4	100%	0%	100%
Empowerment	5	0	5	100%	0%	100%

Cheap Space

		<i>n</i>			Percent	
Incubator	NA	Yes	Total	% NA	% Yes	Total
Technology	0	7	7	0%	100%	100%
Technology	2	0	2	100%	0%	100%
Technology	2	2	4	50%	50%	100%
Mixed	0	2	2	0%	100%	100%
Mixed	0	4	4	0%	100%	100%
Mixed	3	2	5	60%	40%	100%
Mixed	0	3	3	0%	100%	100%
Mixed	3	7	10	30%	70%	100%
Mixed	7	4	11	64%	36%	100%
Specialised	2	2	4	50%	50%	100%
Empowerment	0	5	5	0%	100%	100%

Feeling Isolated

		<i>n</i>			Percent	
Incubator	NA	Yes	Total	% NA	% Yes	Total
Technology	2	5	7	29%	71%	100
Technology	2	0	2	100%	0%	100
Technology	2	2	4	50%	50%	100
Mixed	2	0	2	100%	0%	100
Mixed	2	2	4	50%	50%	100
Mixed	3	2	5	60%	40%	100
Mixed	1	2	3	33%	67%	100
Mixed	6	4	10	60%	40%	100
Mixed	3	8	11	27%	73%	100
Specialised	2	2	4	50%	50%	100
Empowerment	0	5	5	0%	100%	100

Feeling Isolated

		<i>n</i>			Percent	
Incubator	NA	Yes	Total	% NA	% Yes	Total
Technology	2	5	7	29%	71%	100
Technology	2	0	2	100%	0%	100
Technology	2	2	4	50%	50%	100
Mixed	2	0	2	100%	0%	100
Mixed	2	2	4	50%	50%	100
Mixed	3	2	5	60%	40%	100
Mixed	1	2	3	33%	67%	100
Mixed	6	4	10	60%	40%	100
Mixed	3	8	11	27%	73%	100
Specialised	2	2	4	50%	50%	100
Empowerment	0	5	5	0%	100%	100

Appendix 4

Stages of Growth

0-6 Months in Incubator		7-12 Months in Incubator	
Stage 1		Stage 1	
Activities in 6 Months	YES %	Activities in 7-12 Months	Yes %
Met suppliers	71%	Refining knowledge of consumer needs	89%
Met consumers	57%	Product Costing & Pricing	78%
Trade shows	43%	Website	78%
Creation of Idea	0%	Review Financial resources	67%
Work out activities	0%	Trade shows	67%
Estimate budget and resources	0%	How to make the product work well	67%
Prepared business plan	0%	Branding/Packaging	67%
Technical Training	0%	Met consumers	56%
Registered business name	0%	Review Bus plan	56%
Incorporated business entity	0%	Self industry mkt research	56%
Assigned a mentor	0%	Consumer needs analysis	56%
Applied for local patent/trademark	0%	Competitor analysis	56%
Applied for International Patent	0%	Collect Expressions of Buyer interest	56%
Build -Prototype	0%	Margin analysis	56%
Draft bus plan manager	0%	Strategic alliances Partnering	44%
Board formation	0%	Product Testing	44%
Review Bus plan	0%	Conduct Direct sales	44%
Apply for Govt grants	0%	Product diversification	44%
Apply for Commercial loans	0%	Assigned a mentor	33%
Apply for VC Funding	0%	Met suppliers	33%
Secured funding	0%	Product endorsement	33%
Self industry mkt research	0%	Hire Personnel	33%
Hired market research consultant	0%	Channel sales	33%
Consumer needs analysis	0%	Estimate budget and resources	22%
Competitor analysis	0%	Prepared business plan	22%
Collect Expressions of Buyer interest	0%	Technical Training	22%
Review Financial resources	0%	Applied for local patent/trademark	22%
Product endorsement	0%	Draft bus plan manager	22%
Review production capabilities	0%	Review production capabilities	22%
Lease/buy tech	0%	Lease/buy tech	22%
How to make the product work well	0%	Product launch	22%
Strategic alliances Partnering	0%	Work out activities	11%
Product Testing	0%	Board formation	11%
Hire Personnel	0%	Apply for Govt grants	11%
Pilot	0%	Apply for Commercial loans	11%
Product Costing & Pricing	0%	Hired market research consultant	11%
Conduct Direct sales	0%	Pilot	11%
Refining knowledge of consumer needs	0%	Secured first sale	11%
Branding/Packaging	0%	Further financial assistance	11%
Website	0%	Export market	11%
Margin analysis	0%	Trade sale	11%
Secured first sale	0%	Creation of Idea	0%
Product launch	0%	Registered business name	0%
Channel sales	0%	Incorporated business entity	0%
Product diversification	0%	Applied for International Patent	0%
Further financial assistance	0%	Build -Prototype	0%
Export market	0%	Apply for VC Funding	0%
Trade sale	0%	Secured funding	0%

1-2 Years in Incubator									
			Stage 2						
% of entities performing these activities only in Year 1	Yes %		% of entities performing these activities only in Year 2	Yes %	% of entities performing these activities only in Year 1 & 2	Yes %		% of entities performing these activities every year	Yes %
Branding/Packaging	44%	67%	Product diversification	56%	Collect Expressions of Buyer interest	44%		Consumer needs analysis	89%
Met suppliers	33%	33%	Strategic alliances Partnering	44%	Trade shows	44%		Collect Expressions of Buyer interest	78%
Met consumers	33%	56%	Incorporated business entity	33%	Website	44%		Competitor analysis	56%
Self industry mkt research	33%	56%	Product endorsement	33%	Consumer needs analysis	33%		Trade shows	56%
Consumer needs analysis	33%	56%	Product Testing	33%	Competitor analysis	33%		Strategic alliances Partnering	56%
Review Financial resources	33%	67%	Margin analysis	33%	Conduct Direct sales	11%		Branding/Packaging	56%
Product Costing & Pricing	33%	78%	Channel sales	33%	Refining knowledge of consumer needs	11%		Product diversification	56%
Collect Expressions of Buyer interest	22%	56%	Consumer needs analysis	22%	Creation of Idea	0%		Self industry mkt research	44%
Conduct Direct sales	22%	44%	Competitor analysis	22%	Work out activities	0%		Review Financial resources	44%
Refining knowledge of consumer needs	22%	89%	How to make the product work well	22%	Estimate budget and resources	0%		Product Testing	44%
Estimate budget and resources	11%	22%	Registered business name	11%	Prepared business plan	0%		Product Costing & Pricing	44%
Technical Training	11%	22%	Board formation	11%	Technical Training	0%		Conduct Direct sales	44%
Review production capabilities	11%	22%	Review Bus plan	11%	Registered business name	0%		Refining knowledge of consumer needs	44%
Lease/buy tech	11%	22%	Self industry mkt research	11%	Incorporated business entity	0%		Website	44%
How to make the product work well	11%	67%	Collect Expressions of Buyer interest	11%	Assigned a mentor	0%		Margin analysis	44%
Strategic alliances Partnering	11%	44%	Review Financial resources	11%	Met suppliers	0%		Incorporated business entity	33%
Product Testing	11%	44%	Review production capabilities	11%	Met consumers	0%		Product endorsement	33%
Hire Personnel	11%	33%	Lease/buy tech	11%	Applied for local patent/trademark	0%		How to make the product work well	33%
Margin analysis	11%	56%	Trade shows	11%	Applied for International Patent	0%		Channel sales	33%
Export market	11%	11%	Hire Personnel	11%	Build -Prototype	0%		Review production capabilities	22%
Creation of Idea	0%	0%	Pilot	11%	Draft bus plan manager	0%		Lease/buy tech	22%
Work out activities	0%	11%	Product Costing & Pricing	11%	Board formation	0%		Hire Personnel	22%
Prepared business plan	0%	22%	Conduct Direct sales	11%	Review Bus plan	0%		Export market	22%
Registered business name	0%	0%	Refining knowledge of consumer needs	11%	Apply for Govt grants	0%		Estimate budget and resources	11%
Incorporated business entity	0%	0%	Branding/Packaging	11%	Apply for Commercial loans	0%		Technical Training	11%
Assigned a mentor	0%	33%	Secured first sale	11%	Apply for VC Funding	0%		Registered business name	11%
Applied for local patent/trademark	0%	22%	Product launch	11%	Secured funding	0%		Met suppliers	11%
Applied for International Patent	0%	0%	Export market	11%	Self industry mkt research	0%		Met consumers	11%
Build -Prototype	0%	0%	Creation of Idea	0%	Hired market research consultant	0%		Board formation	11%
Draft bus plan manager	0%	22%	Work out activities	0%	Review Financial resources	0%		Review Bus plan	11%
Board formation	0%	11%	Estimate budget and resources	0%	Product endorsement	0%		Pilot	11%
Review Bus plan	0%	56%	Prepared business plan	0%	Review production capabilities	0%		Secured first sale	11%
Apply for Govt grants	0%	11%	Technical Training	0%	Lease/buy tech	0%		Product launch	11%
Apply for Commercial loans	0%	11%	Assigned a mentor	0%	How to make the product work well	0%		Creation of Idea	0%
Apply for VC Funding	0%	0%	Met suppliers	0%	Strategic alliances Partnering	0%		Work out activities	0%
Secured funding	0%	0%	Met consumers	0%	Product Testing	0%		Prepared business plan	0%
Hired market research consultant	0%	11%	Applied for local patent/trademark	0%	Hire Personnel	0%		Assigned a mentor	0%
Competitor analysis	0%	56%	Applied for International Patent	0%	Pilot	0%		Applied for local patent/trademark	0%
Product endorsement	0%	33%	Build -Prototype	0%	Product Costing & Pricing	0%		Applied for International Patent	0%
Trade shows	0%	67%	Draft bus plan manager	0%	Branding/Packaging	0%		Build -Prototype	0%
Pilot	0%	11%	Apply for Govt grants	0%	Margin analysis	0%		Draft bus plan manager	0%
Website	0%	78%	Apply for Commercial loans	0%	Secured first sale	0%		Apply for Govt grants	0%
Secured first sale	0%	11%	Apply for VC Funding	0%	Product launch	0%		Apply for Commercial loans	0%
Product launch	0%	22%	Secured funding	0%	Channel sales	0%		Apply for VC Funding	0%
Channel sales	0%	33%	Hired market research consultant	0%	Product diversification	0%		Secured funding	0%
Product diversification	0%	44%	Website	0%	Further financial assistance	0%		Hired market research consultant	0%
Further financial assistance	0%	11%	Further financial assistance	0%	Export market	0%		Further financial assistance	0%
Trade sale	0%	11%	Trade sale	0%	Trade sale	0%		Trade sale	0%

2-3 Years in Incubator												
						Stage 3						
% of entities performing these activities only in Year 1	Yes %	% of entities performing these activities only in Year 2	Yes %		% of entities performing these activities only in Year 3	Yes %	% of entities performing these activities every year	Yes %		Sum of Activities Performed	Yes %	
Met consumers	54%	Lease/buy tech	31%		Review production capabilities	31%	Collect Expressions of Buyer interest	46%		Product Costing & Pricing	85%	
Met suppliers	38%	Product diversification	31%		Product endorsement	23%	Product Costing & Pricing	38%		Strategic alliances Partnering	69%	
Self industry mkt research	38%	Incorporated business entity	23%		Strategic alliances Partnering	23%	Review Financial resources	31%		Met consumers	62%	
Competitor analysis	38%	Product endorsement	23%		Further financial assistance	23%	Consumer needs analysis	23%		Consumer needs analysis	62%	
Draft bus plan manager	31%	Pilot	23%		Applied for local patent/trademark	15%	Hire Personnel	23%		Review Financial resources	62%	
Consumer needs analysis	31%	Branding/Packaging	23%		Applied for International Patent	15%	Conduct Direct sales	23%		Lease/buy tech	62%	
Review Financial resources	31%	Website	23%		Apply for Commercial loans	15%	Refining knowledge of consumer needs	23%		Branding/Packaging	62%	
Lease/buy tech	31%	Review Bus plan	15%		Apply for VC Funding	8%	Website	23%		Self industry mkt research	54%	
How to make the product work well	31%	Hired market research consultant	15%		Creation of Idea	0%	Technical Training	15%		Competitor analysis	54%	
Product Testing	31%	How to make the product work well	15%		Work out activities	0%	Review Bus plan	15%		Collect Expressions of Buyer interest	54%	
Product Costing & Pricing	31%	Strategic alliances Partnering	15%		Estimate budget and resources	0%	Apply for Commercial loans	15%		Review production capabilities	54%	
Prepared business plan	23%	Product Testing	15%		Prepared business plan	0%	Apply for VC Funding	15%		How to make the product work well	54%	
Trade shows	23%	Product Costing & Pricing	15%		Technical Training	0%	Self industry mkt research	15%		Product Testing	54%	
Hire Personnel	23%	Conduct Direct sales	15%		Registered business name	0%	Competitor analysis	15%		Conduct Direct sales	54%	
Refining knowledge of consumer needs	23%	Margin analysis	15%		Incorporated business entity	0%	Review production capabilities	15%		Refining knowledge of consumer needs	54%	
Branding/Packaging	23%	Registered business name	8%		Assigned a mentor	0%	Strategic alliances Partnering	15%		Website	54%	
Margin analysis	23%	Apply for Govt grants	8%		Met suppliers	0%	Branding/Packaging	15%		Margin analysis	54%	
Product launch	23%	Consumer needs analysis	8%		Met consumers	0%	Margin analysis	15%		Met suppliers	46%	
Work out activities	15%	Trade shows	8%		Build -Prototype	0%	Met suppliers	8%		Review Bus plan	46%	
Estimate budget and resources	15%	Refining knowledge of consumer needs	8%		Draft bus plan manager	0%	Met consumers	8%		Product endorsement	46%	
Registered business name	15%	Creation of Idea	0%		Board formation	0%	Applied for local patent/trademark	8%		Hire Personnel	46%	
Incorporated business entity	15%	Work out activities	0%		Review Bus plan	0%	Applied for International Patent	8%		Incorporated business entity	38%	
Review Bus plan	15%	Estimate budget and resources	0%		Apply for Govt grants	0%	How to make the product work well	8%		Pilot	38%	
Secured funding	15%	Prepared business plan	0%		Secured funding	0%	Product Testing	8%		Draft bus plan manager	31%	
Strategic alliances Partnering	15%	Technical Training	0%		Self industry mkt research	0%	Creation of Idea	0%		Apply for Commercial loans	31%	
Pilot	15%	Assigned a mentor	0%		Hired market research consultant	0%	Work out activities	0%		Trade shows	31%	
Conduct Direct sales	15%	Met suppliers	0%		Consumer needs analysis	0%	Estimate budget and resources	0%		Product diversification	31%	
Secured first sale	15%	Met consumers	0%		Competitor analysis	0%	Prepared business plan	0%		Prepared business plan	23%	
Export market	15%	Applied for local patent/trademark	0%		Collect Expressions of Buyer interest	0%	Registered business name	0%		Registered business name	23%	
Assigned a mentor	8%	Applied for International Patent	0%		Review Financial resources	0%	Incorporated business entity	0%		Applied for local patent/trademark	23%	
Build -Prototype	8%	Build -Prototype	0%		Lease/buy tech	0%	Assigned a mentor	0%		Applied for International Patent	23%	
Hired market research consultant	8%	Draft bus plan manager	0%		Trade shows	0%	Build -Prototype	0%		Apply for VC Funding	23%	
Collect Expressions of Buyer interest	8%	Board formation	0%		How to make the product work well	0%	Draft bus plan manager	0%		Hired market research consultant	23%	
Review production capabilities	8%	Apply for Commercial loans	0%		Product Testing	0%	Board formation	0%		Product launch	23%	
Website	8%	Apply for VC Funding	0%		Hire Personnel	0%	Apply for Govt grants	0%		Further financial assistance	23%	
Creation of Idea	0%	Secured funding	0%		Pilot	0%	Secured funding	0%		Work out activities	15%	
Technical Training	0%	Self industry mkt research	0%		Product Costing & Pricing	0%	Hired market research consultant	0%		Estimate budget and resources	15%	
Applied for local patent/trademark	0%	Competitor analysis	0%		Conduct Direct sales	0%	Product endorsement	0%		Technical Training	15%	
Applied for International Patent	0%	Collect Expressions of Buyer interest	0%		Refining knowledge of consumer needs	0%	Lease/buy tech	0%		Secured funding	15%	
Board formation	0%	Review Financial resources	0%		Branding/Packaging	0%	Trade shows	0%		Secured first sale	15%	
Apply for Govt grants	0%	Review production capabilities	0%		Website	0%	Pilot	0%		Export market	15%	
Apply for Commercial loans	0%	Hire Personnel	0%		Margin analysis	0%	Secured first sale	0%		Assigned a mentor	8%	
Apply for VC Funding	0%	Secured first sale	0%		Product launch	0%	Product launch	0%		Build -Prototype	8%	
Product endorsement	0%	Product launch	0%		Channel sales	0%	Channel sales	0%		Apply for Govt grants	8%	
Channel sales	0%	Channel sales	0%		Channel sales	0%	Product diversification	0%		Creation of Idea	0%	
Product diversification	0	Further financial assistance	0		Product diversification	0%	Further financial assistance	0		Board formation	0%	
Further financial assistance	0%	Export market	0%		Export market	0%	Export market	0%		Channel sales	0%	
Trade sale	0%	Trade sale	0%		Trade sale	0%	Trade sale	0%		Trade sale	0%	

More than 3 Years in Incubator					
				Stage 4	
Activities only in 1st Year	Yes %	Activities only In 2nd Year	Yes %	Activities only in 3rd Year	Yes %
Met suppliers	42%	Product endorsement	21%	Strategic alliances Partnering	21%
Met consumers	32%	Product diversification	21%	Incorporated business entity	16%
Estimate budget and resources	26%	Lease/buy tech	16%	Website	16%
Self industry mkt research	21%	Branding/Packaging	16%	Apply for VC Funding	11%
Draft bus plan manager	16%	Website	16%	Secured funding	11%
Competitor analysis	16%	Channel sales	16%	Estimate budget and resources	10%
Collect Expressions of Buyer interest	16%	Met consumers	11%	Apply for Commercial loans	10%
Review Financial resources	16%	Apply for Commercial loans	11%	Consumer needs analysis	10%
Hire Personnel	16%	Secured funding	11%	Competitor analysis	10%
Branding/Packaging	16%	Consumer needs analysis	11%	Product endorsement	10%
Margin analysis	16%	Strategic alliances Partnering	11%	Review production capabilities	10%
Secured first sale	16%	Pilot	11%	Product Testing	10%
Prepared business plan	11%	Creation of Idea	5%	Branding/Packaging	10%
Technical Training	11%	Work out activities	5%	Margin analysis	10%
Registered business name	11%	Prepared business plan	5%	Product launch	10%
Incorporated business entity	11%	Met suppliers	5%	Product diversification	10%
Secured funding	11%	Applied for local patent/trademark	5%	Further financial assistance	0%
Consumer needs analysis	11%	Applied for International Patent	5%	Creation of Idea	0%
Lease/buy tech	11%	Review Bus plan	5%	Work out activities	0%
Trade shows	11%	Apply for Govt grants	5%	Prepared business plan	0%
How to make the product work well	11%	Self industry mkt research	5%	Technical Training	0%
Strategic alliances Partnering	11%	Competitor analysis	5%	Registered business name	0%
Product Costing & Pricing	11%	Review production capabilities	5%	Assigned a mentor	0%
Refining knowledge of consumer needs	11%	How to make the product work well	5%	Met suppliers	0%
Product launch	11%	Hire Personnel	5%	Strategic alliances Partnering	11%
Product diversification	11%	Met consumers	5%	Product launch	11%
Work out activities	5%	Product Costing & Pricing	5%	Technical Training	0%
Assigned a mentor	5%	Conduct Direct sales	5%	Product endorsement	5%
Applied for local patent/trademark	5%	Refined knowledge of consumer needs	5%	Product diversification	5%
Applied for International Patent	5%	Margin analysis	5%	Product launch	5%
Build -Prototype	5%	Secured first sale	5%	Product Costing & Pricing	5%
Board formation	5%	Product launch	5%	Website	5%
Review Bus plan	5%	Estimate budget and resources	0%	Product Testing	5%
Apply for Govt grants	5%	Technical Training	0%	Product diversification	5%
Hired market research consultant	5%	Registered business name	0%	Website	5%
Review production capabilities	5%	Incorporated business entity	0%	Product launch	5%
Product Testing	5%	Assigned a mentor	0%	Product Costing & Pricing	5%
Pilot	5%	Build -Prototype	0%	Product endorsement	5%
Conduct Direct sales	5%	Lease/buy tech	0%	Product diversification	5%
Export market	5%	Draft bus plan manager	0%	Product launch	5%
Creation of Idea	0%	Board formation	0%	Product Costing & Pricing	5%
Apply for Commercial loans	0%	Apply for VC Funding	0%	Product endorsement	5%
Apply for VC Funding	0%	Hired market research consultant	0%	Product launch	5%
Product endorsement	0%	Product launch	0%	Product Costing & Pricing	5%
Website	0%	Product Testing	0%	Product endorsement	5%
Channel sales	0%	Further financial assistance	0%	Product launch	5%
Further financial assistance	0%	Export market	0%	Product Costing & Pricing	5%
Trade sale	0%	Trade sale	0%	Product endorsement	5%

Appendix 5A
Business assistance services and service providers

	Business Assistance Services	Centre manager	Internal courses	Incubator board	Mentors	Tenants themselves	Tenants source external sources	Government Small business services	University	Other
No.		n %	n %	n %	n %	n %	n %	n %	n %	n %
1	Data base Information service/Library	11 19%	2 4%	1 2%	3 5%	23 40%	10 18%	1 2%	7 12%	7 12%
2	Patenting and Trademarks	3 5%	13 23%	1 2%	5 9%	13 23%	17 30%	14 25%	4 7%	1 2%
3	Intellectual Property Management	4 7%	14 25%	2 4%	5 9%	8 14%	15 26%	9 16%	4 7%	1 2%
4	Accounting/ Business Activity Statement Submissions	6 11%	3 5%	5 9%	4 7%	20 35%	39 68%	0 0%	1 2%	5 9%
5	Legal counselling	3 5%	5 9%	3 5%	3 5%	7 12%	38 67%	4 7%	0 0%	1 2%
6	Networking Activities	25 44%	6 11%	7 12%	7 12%	32 56%	10 18%	6 11%	1 2%	1 2%
7	Providing assistance to free media exposure	35 61%	0 0%	5 9%	2 4%	10 18%	10 18%	3 5%	0 0%	0 0%
8	Presentation Skills	3 5%	4 7%	0 0%	1 2%	47 82%	2 4%	1 2%	1 2%	0 0%
9	Marketing Intelligence/ Research Assistance	3 5%	7 12%	0 0%	2 4%	32 56%	18 32%	5 9%	1 2%	2 4%
10	Financial Management	15 26%	12 21%	5 9%	11 19%	34 60%	25 44%	4 7%	0 0%	1 2%
11	Risk Management/Insurance Advice	16 28%	7 12%	2 4%	4 7%	13 23%	41 72%	0 0%	1 2%	0 0%
12	Access to Government grants	14 25%	3 5%	3 5%	3 5%	11 19%	22 39%	11 19%	1 2%	1 2%
13	Access to Start up Capital Revolving Loans Fund	7 12%	0 0%	4 7%	2 4%	15 26%	24 42%	8 14%	0 0%	1 2%
14	Access to Commerce Loan or venture capitals	8 14%	3 5%	4 7%	4 7%	21 37%	14 25%	1 2%	0 0%	1 2%
15	Technology Infrastructure Sourcing	24 42%	1 2%	0 0%	0 0%	16 28%	21 37%	0 0%	3 5%	0 0%
16	Establishing Connections with Suppliers	5 9%	0 0%	1 2%	2 4%	46 81%	7 12%	0 0%	0 0%	0 0%
17	Establishing Connections with Buyers/Customers	5 9%	0 0%	1 2%	2 4%	45 79%	7 12%	2 4%	1 2%	1 2%
18	Business plan development Assistance, Strategic Planning	13 23%	9 16%	5 9%	4 7%	32 56%	7 12%	13 23%	0 0%	0 0%
19	Hiring Staff & Employee relations advice	7 12%	10 18%	0 0%	2 4%	24 42%	17 30%	6 11%	0 0%	5 9%
20	Health, superannuation and benefit package advice	3 5%	5 9%	2 4%	2 4%	10 18%	41 72%	0 0%	0 0%	5 9%
21	Prototype development, testing assistance	5 9%	0 0%	0 0%	1 2%	25 44%	10 18%	0 0%	2 4%	0 0%
22	Marketing Assistance	15 26%	13 23%	0 0%	4 7%	29 51%	13 23%	6 11%	0 0%	5 9%
23	Help with regulatory compliance	7 12%	7 12%	4 7%	3 5%	14 25%	15 26%	14 25%	0 0%	0 0%
24	Government Contract Procurement Assistance	9 16%	0 0%	4 7%	2 4%	16 28%	5 9%	10 18%	0 0%	0 0%
25	Building management team/board	12 21%	1 2%	3 5%	4 7%	31 54%	0 0%	1 2%	0 0%	0 0%
26	Investor/Strategic partner Linkages	9 16%	2 4%	0 0%	4 7%	28 49%	5 9%	0 0%	0 0%	0 0%

Appendix 5B

Table 1-Cross check of service offerings

Index of Services	General Purpose Incubator																											
Services	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
1 Data Base Information Service / Library	Manager/Internal*	M				M	M	M	M	M			M			M	M		M	M	M		M					M
2 Patenting, Trademarks, Lisences & Permits	Tennant** M	M	M	M			M	M		M	M	M	M			M			M	M			M	M	M	M	M	M
3 Intellectual Property Mgmt	Tennant** I	I	I	I	I	I			I	I	I		I		I				I	I			I	I				
4 Accounting/BAS submissions	Tennant** MI	MI							MI	MI	MI				MI	MI			MI				MI			MI	MI	MI
5 Legal Councelling																												
6 Networking Activities																												
7 Free Media Exposure	* Services offered at the incubator as reported by the Incubator Manager, as being conducted by the Manager or via courses held in the incubator.																											
8 Presentation Skills	** If any of the tennants reported in their survey that a particular services was used in then that services is listed as provided (M If done by the incubator manager, and I if via Internal courses																											
9 Marketing Intelligence/Research Assts																												
10 Financial Mgmt (Tax,cashflow, breakeven etc)	List of Tennants																											
11 Risk Mgmt/Insurance Advice	Tenant 1						M	I	M		M				M							M						
12 Access to gov't grants	Tenant 2	I	I	I		I			I	MI	MI	I		I					MI	I			I	I		MI	MI	MI
13 Access to start up capital revolving loans	Tenant 3		I			I			I	MI	MI	I		I					MI	I			I	I		M	MI	MI
14 Access to Commerce Loan or VCs	Tenant 4		I				M	I	I	M	MI				M				M			M						
15 Technology Infrastructure	Tenant 5																											
16 Connections with suppliers	Tenant 6	M	I	I			M			I					MI	MI			I				M			M	M	
17 Connections with buyers	Tenant 7					M	M	I	I			M							MI				I		M			
18 Business plan development assistance	Tenant 8					M	M					M			M									M	M	M		M
19 Hiring staff & employee relations advise	Tenant 9		M	M			M								M				M				M				M	
20 Health superanuation	Tenant 10		I	I	I		M	M		MI	I		M							M			MI					
21 Prototype dev, testing advise	Tenant 11											M				M			M				M					
22 Marketing assistance	Overall " M "	1	1	1	0	0	3	9	0	1	1	2	3	0	0	5	0	0	3	1	0	0	5	1	2	3	1	2
23 Regulatory compliace	Overall " I "	1	5	3	1	2	0	0	3	4	2	0	2	0	2	0	0	0	1	2	0	0	3	2	0	0	0	0
24 Gov't contract procurement advice	Overall " MI "	0	0	0	0	0	0	0	0	1	2	3	0	0	1	1	0	0	3	0	0	0	1	0	0	1	2	2
25 Building mgmt team advise																												
26 Investor/strategic partner linkage	Tenant Summary	2	6	4	1	2	3	9	3	6	5	5	5	0	3	6	0	0	7	3	0	0	9	3	2	4	3	4
27 overseas trade linkage																												

Table 2- Cross check of service offerings

Index of Services	General Purpose Incubator																											
1 Data Base Information Service / Library	Services	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
2 Patenting, Trademarks, Lisences & Permits	Manager/Internal*	M	M	M			M	M		M	I		M		M	M	M	M	I			M		M				
3 Intellectual Property Mgmt	Tennant** M	M					M	M								M												
4 Accounting/BAS submissions	Tennant** I		I	I			I				I	I							I	I								
5 Legal Counselling	Tennant** MI																											
6 Networking Activities																												
7 Free Media Exposure	* Services offered at the incubator as reported by the Incubator Manager, as being conducted by the Manager or via courses held in the incubator.																											
8 Presentation Skills	** If any of the tenants reported in their survey that a particular services was used in then that services is listed as provided																											
9 Marketing Intelligence/Research Assts																												
10 Financial Mgmt (Tax,cashflow, breakeven etc)	List of Tennants																											
11 Risk Mgmt/Insurance Advice	Tenant 1	M	I	NA			I	M			I	I				M			I	I			NA					
12 Access to gov't grants	Tenant 2	M	I	I			I	M			I	I				M			I	I			NA					
13 Access to start up capital revolving loans	Tenant 3	M	NA	I			I	M			I	I				M			I	I			NA					
14 Access to Commerce Loan or VCs	Tenant 4																											
15 Technology Infrastructure	Tenant 5																											
16 Connections with suppliers	Tenant 6	M					M	M																				
17 Connections with buyers	Tenant 7	M					M	M																				
18 Business plan development assistance	Tenant 8																											
19 Hiring staff & employee relations advise	Tenant 9																											
20 Health superanuation	Tenant 10																											
21 Prototype dev, testing advise																												
22 Marketing assistance	Overall " M "	5	0	0	0	0	2	5	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
23 Regulatory compicance	Overall " I "	0	2	2	0	0	3	0	0	0	3	3	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0
24 Gov't contract procurement advice	Overall " MI "	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Building mgmt team advise																												
26 Investor/strategic partner linkage	Tenant Summary	5	2	2	0	0	5	5	0	0	3	3	0	0	0	3	0	0	3	3	0	0	0	0	0	0	0	0
27 overseas trade linkage																												

Table 3-Cross check of service offerings

Index of Services	General Purpose Incubator																											
1 Data Base Information Service / Library	Services	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
2 Patenting, Trademarks, Lisences & Permits	Manager/Internal*	M	M	M	M		M	M	M	M	M	M	M						M	M	M		M	M	M			
3 Intellectual Property Mgmt	Tenant** M																											
4 Accounting/BAS submissions	Tenant** I																											
5 Legal Counselling	Tenant** MI																											
6 Networking Activities																												
7 Free Media Exposure	* Services offered at the incubator as reported by the Incubator Manager, as being conducted by the Manager or via courses held in the incubator.																											
8 Presentation Skills	** If any of the tenants reported in their survey that a particular services was used in then that services is listed as provided																											
9 Marketing Intelligence/Research Assts																												
10 Financial Mgmt (Tax,cashflow, breakeven etc)	List of Tennants																											
11 Risk Mgmt/Insurance Advice	Tenant 1			NA																	NA					NA	NA	
12 Access to gov't grants	Tenant 2			NA																	NA					NA	NA	
13 Access to start up capital revolving loans	Tenant 3																				NA					NA	NA	
14 Access to Commerce Loan or VCs	Tenant 4																				NA					NA	NA	
15 Technology Infrastructure																												
16 Connections with suppliers																												
17 Connections with buyers																												
18 Business plan development assistance																												
19 Hiring staff & employee relations advise																												
20 Health superanuation																												
21 Prototype dev, testing advise																												
22 Marketing assistance	Overall " M "	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 Regulatory compliance	Overall " I "	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 Gov't contract procurement advice	Overall " MI "	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Building mgmt team advise																												
26 Investor/strategic partner linkage	Tenant Summary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 overseas trade linkage																												

Table 4- Cross check of service offerings

Index of Services	General Purpose Incubator																											
1 Data Base Information Service / Library	Services	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
2 Patenting, Trademarks, Lisences & Permits	Manager/Internal*	M	I		MI	M	M	M	M	M	MI	MI	M		M	MI			MI	MI			MI				M	M
3 Intellectual Property Mgmt	Tennant** M	M					M	M	M		M					M	M	M	M	M		M	M				M	M
4 Accounting/BAS submissions	Tennant** I																											
5 Legal Counselling	Tennant** MI																											
6 Networking Activities																												
7 Free Media Exposure	* Services offered at the incubator as reported by the Incubator Manager, as being conducted by the Manager or via courses held in the incubator.																											
8 Presentation Skills	** If any of the tennants reported in their survey that a particular services was used in then that services is listed as provided																											
9 Marketing Intelligence/Research Assts																												
10 Financial Mgmt (Tax,cashflow, breakeven etc)	List of Tennants																											
11 Risk Mgmt/Insurance Advice	Tenant 1	M					M	M	M		M					M	M	M	M	M		M	M				M	M
12 Access to gov't grants	Tenant 2	M					M	M	M		M					M	M	M	M	M		M	M				M	M
13 Access to start up capital revolving loans	Tenant 3						M	M			M					M						M	M					M
14 Access to Commerce Loan or VCs	Tenant 4						M	M			M					M						M	M					M
15 Technology Infrastructure																												
16 Connections with suppliers																												
17 Connections with buyers																												
18 Business plan development assistance																												
19 Hiring staff & employee relations advise																												
20 Health superanuation																												
21 Prototype dev, testing advise																												
22 Marketing assistance	Overall " M "	2	0	0	0	0	4	4	2	0	4	0	0	0	0	4	2	2	2	2	0	4	4	0	0	0	2	4
23 Regulatory compliace	Overall " I "	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 Gov't contract procurement advice	Overall " MI "	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Building mgmt team advise																												
26 Investor/strategic partner linkage	Tenant Summary	2	0	0	0	0	4	4	2	0	4	0	0	0	0	4	2	2	2	2	0	4	4	0	0	0	2	4
27 overseas trade linkage																												

Table 5-Cross check of service offerings

[illegible]

Table 6-Cross check of service offerings

Index of Services	Technology Incubator																											
1 Data Base Information Service / Library	Services	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
2 Patenting, Trademarks, Lisences & Permits	Manager/Internal*		MI		MI		M	M	M	M	MI	MI	M			MI			MI	M			MI	MI				
3 Intellectual Property Mgmt	Tennant** M		M	M	M	M	M	M	M	M	M			M	M	M	M	M	M	M		M	M	M	M	M	M	M
4 Accounting/BAS submissions	Tennant** I		I			I				I																		
5 Legal Counselling	Tennant** MI	MI										MI																
6 Networking Activities																												
7 Free Media Exposure	* Services offered at the incubator as reported by the Incubator Manager, as being conducted by the Manager or via courses held in the incubator.																											
8 Presentation Skills	** If any of the tennants reported in their survey that a particular services was used in then that services is listed as provided																											
9 Marketing Intelligence/Research Assits																												
10 Financial Mgmt (Tax,cashflow, breakeven etc)	List of Tennants																											
11 Risk Mgmt/Insurance Advice	Tenant 1	MI	I		I	M	M	M	I	M	MI			M	M		M		M				M					
12 Access to gov't grants	Tenant 2																											
13 Access to start up capital revolving loans	Tenant 3						M								M													
14 Access to Commerce Loan or VCs	Tenant 4		M	M	M	M	M		M	M			M			M		M	M		M	M	M	M	M	M	M	
15 Technology Infrastructure																												
16 Connections with suppliers																												
17 Connections with buyers																												
18 Business plan development assistance																												
19 Hiring staff & employee relations advise																												
20 Health superanuation																												
21 Prototype dev, testing advise																												
22 Marketing assistance	Overall " M "	0	1	1	1	1	2	3	1	1	2	0	0	1	1	2	1	1	1	2	0	1	2	1	1	1	1	0
23 Regulatory compliance	Overall " I "	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 Gov't contract procurement advice	Overall " MI "	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 Building mgmt team advise																												
26 Investor/strategic partner linkage	Tenant Summary	1	2	1	1	2	2	3	1	2	2	1	0	1	1	2	1	1	1	2	0	1	2	1	1	1	1	0
27 overseas trade linkage																												

Table 7- Cross check of service offerings

[illegible]

Table 8- Cross check of service offerings

[illegible]

Table 9- Cross check of service offerings

[illegible]

APPENDIX-5C
SERVICE PROVISION IN BUSINESS INCUBATORS

Legend	
1 Incubator manager	5 Tenants themselves
2 Internal courses	6 Tenants source external services
3 Incubator board	7 Government
4 Mentors	8 Universities

1. database information service * Incubator Type Crosstabulation

	Incubator Type Cross-tabulation								Total	
	Incubator Type									
	General Purpose		Technology		Empowerment		Specialised		Count	%
Count	%	Count	%	Count	%	Count	%			
None	3	8.6%	1	7.7%	0	0.0%	0	0.0%	4	7.0%
Centre manager	5	14.3%	0	0.0%	0	0.0%	2	50.0%	7	12.3%
Tenants themselves	13	37.1%	7	53.8%	2	40.0%	0	0.0%	22	38.6%
Tenants source services	5	14.3%	0	0.0%	0	0.0%	2	50.0%	7	12.3%
Universities/TAFE	1	2.9%	2	15.4%	1	20.0%	0	0.0%	4	7.0%
Other	4	11.4%	1	7.7%	0	0.0%	0	0.0%	5	8.8%
2 of the eight providers	3	8.6%	1	7.7%	0	0.0%	0	0.0%	4	7.0%
3 or more of the eight providers	1	2.9%	1	7.7%	2	40.0%	0	0.0%	4	7.0%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

2. patenting and trademark service * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	1	2.9%	1	7.7%	0	0.0%	0	0.0%	2	3.5%
Centre manager	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Internal courses	3	8.6%	0	0.0%	1	20.0%	0	0.0%	4	7.0%
Mentors	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Tenants themselves	5	14.3%	6	46.2%	0	0.0%	0	0.0%	11	19.3%
Tenants source services	9	25.7%	1	7.7%	0	0.0%	0	0.0%	10	17.5%
Govt. small business services	9	25.7%	0	0.0%	0	0.0%	4	100.0%	13	22.8%
Universities/TAFE	0	0.0%	2	15.4%	0	0.0%	0	0.0%	2	3.5%
2 of the eight providers	5	14.3%	2	15.4%	3	60.0%	0	0.0%	10	17.5%
3 or more of the eight providers	1	2.9%	1	7.7%	1	20.0%	0	0.0%	3	5.3%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

3. intellectual property management service * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	5	14.3%	1	7.7%	0	0.0%	0	0.0%	6	10.5%
Centre manager	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Internal courses	3	8.6%	3	23.1%	3	60.0%	0	0.0%	9	15.8%
Incubator board	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Mentors	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Tenants themselves	4	11.4%	2	15.4%	0	0.0%	0	0.0%	6	10.5%
Tenants source services	10	28.6%	1	7.7%	0	0.0%	0	0.0%	11	19.3%
Govt. small business services	5	14.3%	0	0.0%	0	0.0%	4	100.0%	9	15.8%
Universities/TAFE	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
2 of the eight providers	3	8.6%	3	23.1%	0	0.0%	0	0.0%	6	10.5%
3 or more of the eight providers	1	2.9%	3	23.1%	2	40.0%	0	0.0%	6	10.5%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

4. accounting activity statement service * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	0	0.0%	1	7.7%	0	0.0%	0	0.0%	1	1.8%
Centre manager	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Incubator board	0	0.0%	0	0.0%	0	0.0%	2	50.0%	2	3.5%
Tenants themselves	3	8.6%	1	7.7%	0	0.0%	0	0.0%	4	7.0%
Tenants source services	17	48.6%	4	30.8%	0	0.0%	2	50.0%	23	40.4%
Other	0	0.0%	0	0.0%	1	20.0%	0	0.0%	1	1.8%
2 of the eight providers	14	40.0%	6	46.2%	2	40.0%	0	0.0%	22	38.6%
3 or more of the eight providers	0	0.0%	1	7.7%	2	40.0%	0	0.0%	3	5.3%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

5. legal counselling * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	2	5.7%	1	7.7%	0	0.0%	0	0.0%	3	5.3%
Internal courses	0	0.0%	0	0.0%	2	40.0%	0	0.0%	2	3.5%
Incubator board	0	0.0%	0	0.0%	0	0.0%	2	50.0%	2	3.5%
Mentors	0	0.0%	2	15.4%	0	0.0%	0	0.0%	2	3.5%
Tenants themselves	4	11.4%	1	7.7%	0	0.0%	0	0.0%	5	8.8%
Tenants source services	21	60.0%	5	38.5%	1	20.0%	2	50.0%	29	50.9%
Govt. small business services	4	11.4%	0	0.0%	0	0.0%	0	0.0%	4	7.0%
2 of the eight providers	4	11.4%	3	23.1%	2	40.0%	0	0.0%	9	15.8%
3 or more of the eight providers	0	0.0%	1	7.7%	0	0.0%	0	0.0%	1	1.8%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

6. networking activities * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	0	0.0%	1	7.7%	0	0.0%	0	0.0%	1	1.8%
Centre manager	5	14.3%	1	7.7%	0	0.0%	0	0.0%	6	10.5%
Tenants themselves	14	40.0%	2	15.4%	3	60.0%	0	0.0%	19	33.3%
Tenants source services	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Govt. small business services	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
2 of the eight providers	9	25.7%	7	53.8%	0	0.0%	4	100.0%	20	35.1%
3 or more of the eight providers	5	14.3%	2	15.4%	2	40.0%	0	0.0%	9	15.8%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

7. free media exposure * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	0	0.0%	1	7.7%	0	0.0%	0	0.0%	1	1.8%
Centre manager	15	42.9%	6	46.2%	3	60.0%	2	50.0%	26	45.6%
Tenants themselves	6	17.1%	3	23.1%	0	0.0%	0	0.0%	9	15.8%
Tenants source services	9	25.7%	0	0.0%	0	0.0%	0	0.0%	9	15.8%
Govt. small business services	1	2.9%	1	7.7%	0	0.0%	0	0.0%	2	3.5%
2 of the eight providers	3	8.6%	1	7.7%	0	0.0%	2	50.0%	6	10.5%
3 or more of the eight providers	1	2.9%	1	7.7%	2	40.0%	0	0.0%	4	7.0%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

8. presentation skills * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	0	0.0%	1	7.7%	0	0.0%	0	0.0%	1	1.8%
Centre manager	16	45.7%	8	61.5%	3	60.0%	2	50.0%	29	50.9%
Tenants themselves	6	17.1%	3	23.1%	0	0.0%	0	0.0%	9	15.8%
Tenants source services	9	25.7%	0	0.0%	0	0.0%	0	0.0%	9	15.8%
Govt. small business services	2	5.7%	1	7.7%	0	0.0%	0	0.0%	3	5.3%
2 of the eight providers	1	2.9%	0	0.0%	0	0.0%	2	50.0%	3	5.3%
3 or more of the eight providers	1	2.9%	0	0.0%	2	40.0%	0	0.0%	3	5.3%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

9. Marketing Intelligence or Research Assistance * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	1	2.9%	1	7.7%	0	0.0%	0	0.0%	2	3.5%
Centre manager	0	0.0%	1	7.7%	0	0.0%	2	50.0%	3	5.3%
Internal courses	2	5.7%	0	0.0%	0	0.0%	0	0.0%	2	3.5%
Mentors	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Tenants themselves	27	77.1%	10	76.9%	4	80.0%	2	50.0%	43	75.4%
Tenants source services	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Govt. small business services	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
2 of the eight providers	1	2.9%	1	7.7%	1	20.0%	0	0.0%	3	5.3%
3 or more of the eight providers	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

10. Financial Management * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	1	2.9%	1	7.7%	0	0.0%	0	0.0%	2	3.5%
Centre manager	0	0.0%	1	7.7%	0	0.0%	0	0.0%	1	1.8%
Mentors	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Tenants themselves	3	8.6%	1	7.7%	0	0.0%	0	0.0%	4	7.0%
Tenants source services	8	22.9%	0	0.0%	0	0.0%	0	0.0%	8	14.0%
2 of the eight providers	17	48.6%	10	76.9%	2	40.0%	4	100.0%	33	57.9%
3 or more of the eight providers	5	14.3%	0	0.0%	3	60.0%	0	0.0%	8	14.0%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

11. Risk Management/Insurance Advice * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	1	2.9%	1	7.7%	0	0.0%	0	0.0%	2	3.5%
Centre manager	2	5.7%	0	0.0%	0	0.0%	0	0.0%	2	3.5%
Incubator board	0	0.0%	0	0.0%	0	0.0%	2	50.0%	2	3.5%
Mentors	0	0.0%	1	7.7%	0	0.0%	0	0.0%	1	1.8%
Tenants themselves	1	2.9%	2	15.4%	0	0.0%	0	0.0%	3	5.3%
Tenants source services	18	51.4%	0	0.0%	2	40.0%	2	50.0%	22	38.6%
2 of the eight providers	10	28.6%	8	61.5%	2	40.0%	0	0.0%	20	35.1%
3 or more of the eight providers	3	8.6%	1	7.7%	1	20.0%	0	0.0%	5	8.8%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

12. Access to Government Grants * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	4	11.4%	2	15.4%	0	0.0%	0	0.0%	6	10.5%
Centre manager	6	17.1%	0	0.0%	1	20.0%	0	0.0%	7	12.3%
Incubator board	0	0.0%	0	0.0%	0	0.0%	2	50.0%	2	3.5%
Tenants themselves	4	11.4%	0	0.0%	0	0.0%	0	0.0%	4	7.0%
Tenants source services	16	45.7%	0	0.0%	2	40.0%	2	50.0%	20	35.1%
Govt. small business services	1	2.9%	2	15.4%	0	0.0%	0	0.0%	3	5.3%
2 of the eight providers	4	11.4%	8	61.5%	2	40.0%	0	0.0%	14	24.6%
3 or more of the eight providers	0	0.0%	1	7.7%	0	0.0%	0	0.0%	1	1.8%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

13. Access to start up capital revolving loans * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	4	11.4%	2	15.4%	0	0.0%	0	0.0%	6	10.5%
Centre manager	6	17.1%	0	0.0%	1	20.0%	0	0.0%	7	12.3%
Incubator board	0	0.0%	0	0.0%	0	0.0%	2	50.0%	2	3.5%
Tenants themselves	4	11.4%	0	0.0%	0	0.0%	0	0.0%	4	7.0%
Tenants source services	16	45.7%	0	0.0%	2	40.0%	2	50.0%	20	35.1%
Govt. small business services	1	2.9%	2	15.4%	0	0.0%	0	0.0%	3	5.3%
2 of the eight providers	4	11.4%	8	61.5%	2	40.0%	0	0.0%	14	24.6%
3 or more of the eight providers	0	0.0%	1	7.7%	0	0.0%	0	0.0%	1	1.8%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

14. Access to Commerce Loan or VCs * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	5	14.3%	2	15.4%	0	0.0%	0	0.0%	7	12.3%
Centre manager	0	0.0%	0	0.0%	4	80.0%	0	0.0%	4	7.0%
Internal courses	2	5.7%	0	0.0%	0	0.0%	0	0.0%	2	3.5%
Incubator board	0	0.0%	0	0.0%	0	0.0%	4	100.0%	4	7.0%
Mentors	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Tenants themselves	13	37.1%	6	46.2%	0	0.0%	0	0.0%	19	33.3%
Tenants source services	12	34.3%	1	7.7%	0	0.0%	0	0.0%	13	22.8%
Govt. small business services	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
2 of the eight providers	1	2.9%	4	30.8%	1	20.0%	0	0.0%	6	10.5%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

15. Technology Infrastructure * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	2	5.7%	2	15.4%	0	0.0%	0	0.0%	4	7.0%
Centre manager	12	34.3%	3	23.1%	3	60.0%	4	100.0%	22	38.6%
Tenants themselves	2	5.7%	5	38.5%	0	0.0%	0	0.0%	7	12.3%
Tenants source services	9	25.7%	0	0.0%	2	40.0%	0	0.0%	11	19.3%
Universities/TAFE	0	0.0%	2	15.4%	0	0.0%	0	0.0%	2	3.5%
2 of the eight providers	9	25.7%	1	7.7%	0	0.0%	0	0.0%	10	17.5%
3 or more of the eight providers	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

16. Connections with suppliers * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	1	2.9%	1	7.7%	0	0.0%	0	0.0%	2	3.5%
Centre manager	0	0.0%	0	0.0%	0	0.0%	2	50.0%	2	3.5%
Incubator board	0	0.0%	0	0.0%	1	20.0%	0	0.0%	1	1.8%
Tenants themselves	29	82.9%	9	69.2%	3	60.0%	2	50.0%	43	75.4%
Tenants source services	4	11.4%	0	0.0%	0	0.0%	0	0.0%	4	7.0%
2 of the eight providers	1	2.9%	2	15.4%	1	20.0%	0	0.0%	4	7.0%
3 or more of the eight providers	0	0.0%	1	7.7%	0	0.0%	0	0.0%	1	1.8%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

17. Connections with buyers * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	1	2.9%	2	15.4%	0	0.0%	0	0.0%	3	5.3%
Centre manager	0	0.0%	0	0.0%	0	0.0%	2	50.0%	2	3.5%
Tenants themselves	28	80.0%	7	53.8%	4	80.0%	2	50.0%	41	71.9%
Tenants source services	3	8.6%	1	7.7%	0	0.0%	0	0.0%	4	7.0%
2 of the eight providers	2	5.7%	3	23.1%	1	20.0%	0	0.0%	6	10.5%
3 or more of the eight providers	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

18. Connections with suppliers & buyer * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	2	2.9%	3	11.5%	0	0.0%	0	0.0%	2	3.5%
Centre manager	0	0.0%	0	0.0%	0	0.0%	4	50.0%	2	3.5%
Incubator board	0	0.0%	0	0.0%	1	10.0%	0	0.0%	1	1.8%
Tenants themselves	57	81.4%	16	61.5%	7	70.0%	4	50.0%	43	75.4%
Tenants source services	7	10.0%	1	3.8%	0	0.0%	0	0.0%	4	7.0%
2 of the eight providers	3	4.3%	5	19.2%	2	20.0%	0	0.0%	4	7.0%
3 or more of the eight providers	1	1.4%	1	3.8%	0	0.0%	0	0.0%	1	1.8%
	70	100.0%	26	100.0%	10	100.0%	8	100.0%	57	100.0%

19. Business plan development assistance * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	2	5.7%	1	7.7%	0	0.0%	0	0.0%	3	5.3%
Centre manager	2	5.7%	0	0.0%	0	0.0%	2	50.0%	4	7.0%
Tenants themselves	17	48.6%	4	30.8%	0	0.0%	0	0.0%	21	36.8%
Govt. small business services	5	14.3%	0	0.0%	0	0.0%	0	0.0%	5	8.8%
2 of the eight providers	9	25.7%	7	53.8%	2	40.0%	2	50.0%	20	35.1%
3 or more of the eight providers	0	0.0%	1	7.7%	3	60.0%	0	0.0%	4	7.0%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

20. Hiring staff & employee relations advise * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	3	8.6%	1	7.7%	0	0.0%	0	0.0%	4	7.0%
Centre manager	1	2.9%	1	7.7%	0	0.0%	2	50.0%	4	7.0%
Internal courses	2	5.7%	0	0.0%	0	0.0%	0	0.0%	2	3.5%
Tenants themselves	10	28.6%	2	15.4%	0	0.0%	2	50.0%	14	24.6%
Tenants source services	10	28.6%	0	0.0%	0	0.0%	0	0.0%	10	17.5%
Govt. small business services	5	14.3%	0	0.0%	0	0.0%	0	0.0%	5	8.8%
2 of the eight providers	4	11.4%	9	69.2%	5	100.0%	0	0.0%	18	31.6%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

21. Health superannuation * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	1	2.9%	1	7.7%	0	0.0%	0	0.0%	2	3.5%
Centre manager	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Incubator board	0	0.0%	0	0.0%	0	0.0%	2	50.0%	2	3.5%
Tenants themselves	3	8.6%	1	7.7%	0	0.0%	0	0.0%	4	7.0%
Tenants source services	29	82.9%	4	30.8%	0	0.0%	2	50.0%	35	61.4%
2 of the eight providers	1	2.9%	7	53.8%	5	100.0%	0	0.0%	13	22.8%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

22. Prototype dev, testing advise * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	19	54.3%	2	15.4%	4	80.0%	0	0.0%	25	43.9%
Centre manager	0	0.0%	0	0.0%	0	0.0%	4	100.0%	4	7.0%
Mentors	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Tenants themselves	12	34.3%	3	23.1%	0	0.0%	0	0.0%	15	26.3%
Tenants source services	0	0.0%	0	0.0%	1	20.0%	0	0.0%	1	1.8%
2 of the eight providers	3	8.6%	8	61.5%	0	0.0%	0	0.0%	11	19.3%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

23. Marketing assistance * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	0	0.0%	2	15.4%	0	0.0%	0	0.0%	2	3.5%
Centre manager	3	8.6%	0	0.0%	0	0.0%	4	100.0%	7	12.3%
Internal courses	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Tenants themselves	19	54.3%	1	7.7%	0	0.0%	0	0.0%	20	35.1%
Tenants source services	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Govt. small business services	4	11.4%	1	7.7%	0	0.0%	0	0.0%	5	8.8%
2 of the eight providers	2	5.7%	5	38.5%	5	100.0%	0	0.0%	12	21.1%
3 or more of the eight providers	5	14.3%	4	30.8%	0	0.0%	0	0.0%	9	15.8%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

24. Regulatory compliance * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	2	5.7%	2	15.4%	0	0.0%	0	0.0%	4	7.0%
Centre manager	2	5.7%	0	0.0%	0	0.0%	0	0.0%	2	3.5%
Internal courses	2	5.7%	0	0.0%	1	20.0%	0	0.0%	3	5.3%
Incubator board	0	0.0%	0	0.0%	0	0.0%	4	100.0%	4	7.0%
Mentors	1	2.9%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Tenants themselves	6	17.1%	1	7.7%	3	60.0%	0	0.0%	10	17.5%
Tenants source services	12	34.3%	0	0.0%	0	0.0%	0	0.0%	12	21.1%
Govt. small business services	8	22.9%	1	7.7%	0	0.0%	0	0.0%	9	15.8%
2 of the eight providers	2	5.7%	9	69.2%	1	20.0%	0	0.0%	12	21.1%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

25. Govt contract procurement advice * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	15	42.9%	3	23.1%	0	0.0%	0	0.0%	18	31.6%
Centre manager	1	2.9%	0	0.0%	4	80.0%	0	0.0%	5	8.8%
Incubator board	0	0.0%	0	0.0%	0	0.0%	2	50.0%	2	3.5%
Tenants themselves	11	31.4%	0	0.0%	1	20.0%	2	50.0%	14	24.6%
Tenants source services	4	11.4%	0	0.0%	0	0.0%	0	0.0%	4	7.0%
Govt. small business services	2	5.7%	6	46.2%	0	0.0%	0	0.0%	8	14.0%
2 of the eight providers	2	5.7%	4	30.8%	0	0.0%	0	0.0%	6	10.5%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

26. Building mgmt team advise * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	6	17.1%	5	38.5%	0	0.0%	0	0.0%	11	19.3%
Centre manager	1	2.9%	1	7.7%	5	100.0%	0	0.0%	7	12.3%
Incubator board	0	0.0%	0	0.0%	0	0.0%	2	50.0%	2	3.5%
Mentors	1	2.9%	1	7.7%	0	0.0%	0	0.0%	2	3.5%
Tenants themselves	24	68.6%	3	23.1%	0	0.0%	2	50.0%	29	50.9%
2 of the eight providers	3	8.6%	3	23.1%	0	0.0%	0	0.0%	6	10.5%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

27. Investor/strategic partner linkage * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	12	34.3%	5	38.5%	0	0.0%	0	0.0%	17	29.8%
Centre manager	0	0.0%	1	7.7%	0	0.0%	2	50.0%	3	5.3%
Mentors	0	0.0%	1	7.7%	0	0.0%	0	0.0%	1	1.8%
Tenants themselves	19	54.3%	2	15.4%	4	80.0%	2	50.0%	27	47.4%
Tenants source services	0	0.0%	0	0.0%	1	20.0%	0	0.0%	1	1.8%
2 of the eight providers	4	11.4%	4	30.8%	0	0.0%	0	0.0%	8	14.0%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

28. overseas trade linkage * Incubator Type Crosstabulation

	Incubator Type								Total	
	General Purpose		Technology		Empowerment		Specialised			
	Count	%	Count	%	Count	%	Count	%	Count	%
None	18	51.4%	5	38.5%	5	100.0%	0	0.0%	28	49.1%
Centre manager	1	2.9%	2	15.4%	0	0.0%	4	100.0%	7	12.3%
Tenants themselves	12	34.3%	2	15.4%	0	0.0%	0	0.0%	14	24.6%
Tenants source services	0	0.0%	1	7.7%	0	0.0%	0	0.0%	1	1.8%
Govt. small business services	1	2.9%	1	7.7%	0	0.0%	0	0.0%	2	3.5%
2 of the eight providers	1	2.9%	2	15.4%	0	0.0%	0	0.0%	3	5.3%
3 or more of the eight providers	2	5.7%	0	0.0%	0	0.0%	0	0.0%	2	3.5%
	35	100.0%	13	100.0%	5	100.0%	4	100.0%	57	100.0%

Appendix 5D
Business Assistance Services and Incubators

		General Purpose (35)		Technology (13)		Empowerment (5)		Specialised (4)		Total	
	Business Assistance Services	Internal	External	Internal	External	Internal	External	Internal	External	Internal	External
No.		n %	n %	n %	n %	n %	n %	n %	n %	n %	n %
1	Data base Information service/Library	21 57%	16 43%	10 67%	5 33%	4 44%	5 56%	2 50%	2 50%	37 57%	28 43%
2	Patenting and Trademarks	35 57%	26 43%	10 63%	6 38%	5 50%	5 50%	0 0%	4 100%	50 55%	41 45%
3	Intellectual Property Management	15 37%	26 63%	10 63%	6 38%	5 50%	5 50%	0 0%	4 100%	30 42%	41 58%
4	Accounting/ Business Activity Statement Submissions	35 60%	23 40%	12 63%	7 37%	5 100%	0 0%	0 0%	4 100%	52 60%	34 40%
5	Legal counselling	11 32%	23 68%	12 63%	7 37%	5 100%	0 0%	0 0%	4 100%	28 45%	34 55%
6	Networking Activities	35 55%	29 45%	9 45%	11 55%	4 36%	7 64%	2 50%	2 50%	50 51%	49 49%
7	Providing assistance to free media exposure	19 40%	29 60%	9 45%	11 55%	4 36%	7 64%	2 50%	2 50%	34 41%	49 59%
8	Presentation Skills	35 54%	30 46%	6 35%	11 65%	4 57%	3 43%	2 50%	2 50%	47 51%	46 49%
9	Marketing Intelligence/ Research Assistance	6 17%	30 83%	6 35%	11 65%	4 57%	3 43%	2 50%	2 50%	18 28%	46 72%
10	Financial Management	35 69%	16 31%	16 76%	5 24%	6 60%	4 40%	8 100%	0 0%	65 72%	25 28%
11	Risk Management/Insurance Advice	40 71%	16 29%	16 76%	5 24%	6 60%	4 40%	8 100%	0 0%	70 74%	25 26%
12	Access to Government grants	35 74%	12 26%	11 92%	1 8%	7 78%	2 22%	6 100%	0 0%	59 80%	15 20%
13	Access to Start up Capital Revolving Loans Fund	26 68%	12 32%	11 92%	1 8%	7 78%	2 22%	6 100%	0 0%	50 77%	15 23%
14	Access to Commerce Loan or venture capitals	35 85%	6 15%	13 100%	0 0%	5 83%	1 17%	4 100%	0 0%	57 89%	7 11%
15	Technology Infrastructure Sourcing	32 84%	6 16%	13 100%	0 0%	5 83%	1 17%	4 100%	0 0%	54 89%	7 11%
16	Establishing Connections with Suppliers	35 66%	18 34%	12 75%	4 25%	5 50%	5 50%	4 100%	0 0%	56 67%	27 33%
17	Establishing Connections with Buyers/Customers	21 54%	18 46%	12 75%	4 25%	5 50%	5 50%	4 100%	0 0%	42 61%	27 39%
18	Business plan development Assistance, Strategic Planning	35 54%	30 46%	12 55%	10 45%	13 100%	0 0%	8 100%	0 0%	68 63%	40 37%
19	Hiring Staff & Employee relations advice	33 52%	30 48%	12 55%	10 45%	13 100%	0 0%	8 100%	0 0%	66 62%	40 38%
20	Health, superannuation and benefit package advice	35 55%	29 45%	11 52%	10 48%	4 44%	5 56%	2 50%	2 50%	52 53%	46 47%
21	Prototype development, testing assistance	21 42%	29 58%	11 52%	10 48%	4 44%	5 56%	2 50%	2 50%	38 45%	46 55%
22	Marketing Assistance	35 63%	21 38%	10 43%	13 57%	5 71%	2 29%	2 50%	2 50%	52 58%	38 42%
23	Help with regulatory compliance	14 40%	21 60%	10 43%	13 57%	5 71%	2 29%	2 50%	2 50%	31 45%	38 55%
24	Government Contract Procurement Assistance	35 59%	24 41%	10 67%	5 33%	4 67%	2 33%	4 50%	4 50%	53 60%	35 40%
25	Building management team/board	8 25%	24 75%	10 67%	5 33%	4 67%	2 33%	4 50%	4 50%	26 43%	35 57%
26	Investor/Strategic partner Linkages	35 71%	14 29%	11 73%	4 27%	4 67%	2 33%	4 100%	0 0%	54 73%	20 27%
27	Overseas trade Linkages	17 55%	14 45%	11 73%	4 27%	4 67%	2 33%	4 100%	0 0%	36 64%	20 36%

Legend used more internal services used more external services used both internal and external services