An exploratory study into the experiences, characteristics and motivations of innovative individuals in the Australian plumbing industry

Peta Elizabeth Fray
Southern Cross University

Publication details
Fray, PE 2014, 'An exploratory study into the experiences, characteristics and motivations of innovative individuals in the Australian plumbing industry', DBA thesis, Southern Cross University, Lismore, NSW.
Copyright PE Fray 2014
Declaration

I certify that the work presented in this thesis is, to the best of my knowledge and belief, original, except as acknowledged in the text, and that the material has not been submitted, either in whole or in part, for a degree at this or any other university.

I acknowledge that I have read and understood the University’s rules, requirements, procedures and policy relating to the higher degree research award and to my thesis. I certify that I have complied with the rules, requirements, procedures and policy of the University (as they may be from time to time).

Name: Peta Fray

Signature: 

Date: 14th October 2014
Abstract

This empirical study crafts a rich picture of the experiences and motivations of innovative individuals within the Australian plumbing industry. Perspectives on the choices made by employed and self-employed innovators were gathered with the aim of improving the understanding of the innovation generation and commercialisation choices made by individuals. The plumbing industry was chosen for this study owing to the apparent lack of research into an industry that has produced a number of radical innovations, which have benefited the public health of the Australian population. The innovation appears to be generated from a small proportion of the total number of businesses, as most are importers of existing products and technology from Europe and Asia, thereby creating a unique set of circumstances in which to develop specific and locally relevant innovation.

A qualitative approach was undertaken, set within a social constructivist paradigm, with grounded theory utilised as the basis for the theoretical framework and research methodology. A literature review was conducted prior to data collection and updated during the thesis writing process. From a total population of twenty-two, data was collected via semi-structured open interviews from sixteen individuals with track records of innovation. Some of these individuals were employed by large companies in the Australian plumbing industry and others were self-employed.

In-depth, semi structured interviews were conducted providing a rich and deep information base. From the iterative data collection process, relationships were identified that suggested that self-efficacy and risk profiles play an important role in career choices and that the development of these profiles is impacted by childhood and early career experiences. It was not so much the experiences themselves that were formative, but the individuals’ reactions to them. In addition, a range of motivations play a part in the choice to innovate and subsequently the choice as to how to commercialise those innovations. These motivations were not specific to either employed or self-employed individuals. It was found that these motivations had to be satisfied in a particular order to ensure the most effective development of innovation.

Novel motivations were discovered both for employed and self-employed participants to innovate and to subsequently create and maintain ventures or choose an employed career path. The motivations for business development and growth had important implications for the ongoing development of innovation within the industry. The research also suggests that motivations, and risk and self-efficacy profiles can change over time and with changes in environment, which has implications on the stream of innovation.
This research provides many contributions to theory and practice through the identification of novel themes and the creation of a substantive model that attempts to explain the antecedents and development of career choices and their changes over time. It suggests that innovation does not occur in isolation and is part of a larger process, which includes creativity and entrepreneurship. This has implications for the industry in helping it to understand the unique characteristics of innovative individuals and ways that they can be supported and managed. In addition, it helps identify whether and why these individuals choose venture creation or employment. The findings of the research also offer opportunities for further research in other industries and other geographical areas. As with all qualitative studies, there are limitations on the generalisability of the research to other industries or individuals. Whilst the substantive model offers the opportunity for empirical testing, until this is completed, the findings of this research offer only suggestions on possible linkages.

Key Words: innovation, self-efficacy, motivations, entrepreneurship, risk, grounded theory
Acknowledgements

This thesis is the end of a long journey, which would not have been possible without the help of a large number of people.

To start with I must acknowledge the help and support of Dr Margo Poole, sadly lost to us this year. She was unwavering in her support and put me back on the right track on numerous occasions when I was losing heart. Her advice to “just get on with the primary research” gave me the kick start I needed and pushed me through a period of seemingly endless circles. With Margo’s illness, Professor Michelle Wallace stepped into the breach and has been a fantastic aide and mentor. She has kept me to a timetable to reach the end and has constantly pushed me to improve my levels of analysis and scholarly deliberation. “Just one more edit to lift the level” has been the resounding response and it has worked! I must also acknowledge the help of Dr Don McMurray for his assistance with the tricky methodology chapter.

The Australian plumbing industry is a small one and my thanks must go to the number of very busy individuals who happily gave me their time and talked to me in amazing depth about their experiences. I was humbled to be able to share, in a very small way, the stories of their efforts, successes and failures in their fantastic journeys through their careers. I hope that some of the findings from this study will ease the path of individuals to come and that the learnings that were shared so generously with me can be used to help others.

Finally my thanks must go to my family. Eddie, Charlotte and Will who have put up with me working on this for the last seven years and who have stood behind me and supported me all the way. They have appreciated what the completion of this DBA means to me and have never complained when I have been away for another weekend at a symposium, or have been too caught up in what I was doing to hear what is going on around me.

This is but one challenge in a lifetime of many, but one that would not have been met without the support of everyone mentioned and many that have not been, but who have said the right thing at the right time to keep me going.
# Table of Contents

Abstract .......................................................................................................................... ii

Acknowledgements ........................................................................................................ iv

List of Tables ................................................................................................................... ix

List of Figures .................................................................................................................. x

List of Abbreviations ....................................................................................................... xi

1 Chapter One – Introduction .......................................................................................... 1
   1.1 Background .............................................................................................................. 1

1.2 Research Scope, Context, Issues and Contribution .................................................. 3
   1.2.1 Research Scope ................................................................................................. 4
   1.2.2 Research Context .............................................................................................. 4
   1.2.3 Research Aims and Objectives .......................................................................... 5
   1.2.4 Research Contribution ...................................................................................... 6

1.3 Justification for the Research .................................................................................... 7

1.4 Methodology ............................................................................................................. 8
   1.4.1 Methodology Selection ...................................................................................... 8
   1.4.2 Data Sample Size and Collection ..................................................................... 9

1.5 Overview of the Thesis .............................................................................................. 11

1.6 Definitions ................................................................................................................ 13

1.7 Significance of the Study ......................................................................................... 14

1.8 Delimitations and Limitations .................................................................................. 14

1.9 Conclusion ................................................................................................................ 15

2 Chapter Two – Literature Review ................................................................................. 17

2.1 Introduction .............................................................................................................. 17

2.2 Background and Overview of Subject Area .............................................................. 17

2.3 Approach to the Literature Review ......................................................................... 18

2.4 Creativity, Innovation and Entrepreneurship .......................................................... 20
   2.4.1 Creativity .......................................................................................................... 21
   2.4.2 Innovation ......................................................................................................... 23
   2.4.3 Entrepreneurship ............................................................................................. 25

2.5 Traits, Attitudes and Antecedents ............................................................................ 28
   2.5.1 Entrepreneurial Traits and Attitudes ................................................................. 29
   2.5.2 Criticisms of the Traits Approach and Subsequent Developments .............. 37
   2.5.3 Childhood ....................................................................................................... 45
   2.5.4 Early Career Experiences ................................................................................. 50
   2.5.5 Summary .......................................................................................................... 52
## Chapter Three – Methodology

### 3.1 Introduction

### 3.2 Research Paradigms and Strategies

#### 3.2.1 Research Paradigm Selection

#### 3.2.2 Appropriate Data Collection Approach

#### 3.2.3 Selection of Methodology

#### 3.2.4 Grounded Theory

### 3.3 Research Process

#### 3.3.1 Introduction

#### 3.3.2 The Research Process

#### 3.3.3 Selection of Sample Group

#### 3.3.4 Methods of Data Collection

#### 3.3.5 Interview Framework and Questions

#### 3.3.6 Interview Planner and Informed Consent Form

#### 3.3.7 Contact with Participants

#### 3.3.8 The Interview Process

#### 3.3.9 Recording and Transcribing Interviews

### 3.4 Data Analysis and Theory Building

#### 3.4.1 Theoretical Sensitivity

#### 3.4.2 The Constant Comparative Method

#### 3.4.3 Coding Procedures

#### 3.4.4 Memos

#### 3.4.5 Data Saturation
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5</td>
<td>Rigour</td>
<td>105</td>
</tr>
<tr>
<td>3.6</td>
<td>Ethical Considerations</td>
<td>107</td>
</tr>
<tr>
<td>3.6.1</td>
<td>Informed Consent</td>
<td>108</td>
</tr>
<tr>
<td>3.6.2</td>
<td>Privacy and Confidentiality</td>
<td>109</td>
</tr>
<tr>
<td>3.6.3</td>
<td>Protection from Harm and the Consequences of Participation</td>
<td>109</td>
</tr>
<tr>
<td>3.6.4</td>
<td>Researcher Knowledge and Bias</td>
<td>109</td>
</tr>
<tr>
<td>3.7</td>
<td>Limitations</td>
<td>110</td>
</tr>
<tr>
<td>3.8</td>
<td>Conclusion</td>
<td>111</td>
</tr>
<tr>
<td>4</td>
<td>Chapter Four – Results</td>
<td>112</td>
</tr>
<tr>
<td>4.1</td>
<td>Childhood and Early Career Experiences</td>
<td>112</td>
</tr>
<tr>
<td>4.1.1</td>
<td>Childhood Environment</td>
<td>113</td>
</tr>
<tr>
<td>4.1.2</td>
<td>Early Childhood and Early Career Shaping Experience</td>
<td>115</td>
</tr>
<tr>
<td>4.2</td>
<td>Personality Traits</td>
<td>120</td>
</tr>
<tr>
<td>4.2.1</td>
<td>Need for Achievement and Recognition</td>
<td>121</td>
</tr>
<tr>
<td>4.2.2</td>
<td>Locus of Control</td>
<td>122</td>
</tr>
<tr>
<td>4.2.3</td>
<td>Self-Efficacy</td>
<td>124</td>
</tr>
<tr>
<td>4.3</td>
<td>Risk</td>
<td>127</td>
</tr>
<tr>
<td>4.3.1</td>
<td>Awareness of Risk (Perception)</td>
<td>127</td>
</tr>
<tr>
<td>4.3.2</td>
<td>Risk Attitude (Preference)</td>
<td>129</td>
</tr>
<tr>
<td>4.3.3</td>
<td>Tolerance of Risk (Propensity)</td>
<td>132</td>
</tr>
<tr>
<td>4.4</td>
<td>Motivation for Innovation and Commercialisation</td>
<td>135</td>
</tr>
<tr>
<td>4.4.1</td>
<td>Innovative Idea Development</td>
<td>135</td>
</tr>
<tr>
<td>4.4.2</td>
<td>Reasons to Commercialise</td>
<td>137</td>
</tr>
<tr>
<td>4.5</td>
<td>Business Growth and Exit</td>
<td>141</td>
</tr>
<tr>
<td>4.6</td>
<td>Employed Participants and Organisational Innovation</td>
<td>143</td>
</tr>
<tr>
<td>4.6.1</td>
<td>Management of Innovative People</td>
<td>144</td>
</tr>
<tr>
<td>4.6.2</td>
<td>Group Innovation</td>
<td>145</td>
</tr>
<tr>
<td>4.6.3</td>
<td>Leadership</td>
<td>146</td>
</tr>
<tr>
<td>4.6.4</td>
<td>Innovative Culture</td>
<td>147</td>
</tr>
<tr>
<td>4.6.5</td>
<td>Innovation Implementation</td>
<td>149</td>
</tr>
<tr>
<td>4.7</td>
<td>Summary</td>
<td>151</td>
</tr>
<tr>
<td>5</td>
<td>Chapter Five – Discussion and Conclusions</td>
<td>154</td>
</tr>
<tr>
<td>5.1</td>
<td>Conclusions of the Research Issues</td>
<td>154</td>
</tr>
<tr>
<td>5.1.1</td>
<td>Major Findings</td>
<td>154</td>
</tr>
<tr>
<td>5.1.2</td>
<td>Gaps in the Literature</td>
<td>171</td>
</tr>
</tbody>
</table>
List of Tables

Table 2.1: Overview of a sample of innovation research 2013-14 ........................................ 20
Table 3.1: Criteria for Sample Unit Selection ........................................................................ 92
Table 3.2: Companies and individuals selected for inclusion in the study ......................... 93
Table 3.3: Qualitative interviewing question options ............................................................ 95
Table 5.1: The linkages between shaping experiences and level of self-efficacy and career choice ..................................................................................................................... 156
Table 5.2: The links between need for recognition, locus of control and self-efficacy, and career choice ................................................................................................................. 160
Table 5.3: Linkages between shaping experiences, personality and the development of self-efficacy and risk profiles ........................................................................................................ 163
Table 5.4: Identified gaps in the literature .............................................................................. 175
List of Figures

Figure 1.1: Diagrammatic representation of process used in the study ....................................... 9
Figure 1.2: Research process undertaken for this study .............................................................. 11
Figure 3.2: Research process ........................................................................................................ 89
Figure 4.1: Model of Childhood Environment on Outcomes ......................................................... 119
Figure 4.2: Model of career setbacks .......................................................................................... 120
Figure 4.4: Outcomes of legacy considerations .......................................................................... 139
Figure 6.1: Model of linkages between Need for Recognition, Locus of Control and Self-Efficacy .......................................................................................................................... 184
Figure 6.2: Model of linkages between early experiences and risk and self-efficacy ............. 185
Figure 6.3: Summary of the linkages between childhood, career, traits and environment on the development of self-efficacy and risk profiles ......................................................... 185
Figure 6.4: Model of linkages between self-efficacy and risk ..................................................... 186
Figure 6.6: Model of the linkages between self-efficacy, risk, and motivations and commercialisation decisions ........................................................................................................ 188
Figure 6.7: Substantive model of antecedents, profiles, motivations and outcomes of innovators within the Australian plumbing industry ................................................................. 190
Figure 6.8: The creativity-innovation-entrepreneurship funnel .................................................... 195
List of Abbreviations

BASIX: Building Sustainability Index
EAO: Entrepreneurial Attitude Orientation
ESE: Entrepreneurial Self-Efficacy
GFC: Global Financial Crisis
ILOC: Internal Locus of Control
nAch: Need for Achievement
R&D: Research and Development
SME: Small to Medium Enterprise
WELS: Water Efficiency Labelling Standards
Chapter One – Introduction

When one thinks of innovation in the Australian context, one might consider the history of innovation from the Hills Hoist to the cask wine bladder. More recent innovations include Wi-Fi and the black box flight recorder. There is at least one unsung hero in Australian innovation and that is the plumbing industry whose innovations include the dual flush toilet and the integrated toilet and basin. This is an under-researched industry and its innovators and entrepreneurs are also under researched. The researcher’s close professional connection with this industry has prompted this study.

This chapter introduces the major research area of the experiences, characteristics and motivations of innovative people within the Australian plumbing industry and presents the wider context in which the research was undertaken. It also outlines the research problem and its justification, before outlining appropriate definitions and the delimitations and limitations of the research. The chapter also introduces grounded theory as the methodology and offers a justification for this approach. A brief summary of the contributions of the research is given along with considerations for future research.

This chapter considers the background to the research, including the broad context of the subject area in Section 1.1 before discussing the research issues and problems, and introducing the scope and theories, and giving a brief overview of the findings in Section 1.2. A short justification for the research is given in Section 1.3 before Section 1.4 considers the methodology, discusses the reasons for its selection and describes its application. Section 1.5 outlines the structure of the thesis including a description of each chapter. The chapter concludes with an overview of definitions in Section 1.6 and a review of the significance of the study in Section 1.7 before reviewing the delimitations of the research identified in Section 1.8 and a final summary in Section 1.9.

1.1 Background

The Australian plumbing industry faces mounting challenges with the advent of global competition. Following the Global Financial Crisis (GFC), many U.S. and European companies have looked for new markets, to compensate for the lack of sales in their home markets. This has resulted in an influx of new products and at the same time manufacturing in Australia has come under huge pressure from China and other Asian countries, where both raw material and manufacturing costs are much lower (ABCB 2014; Master, Builders & Association 2014). Whilst both European and Asian manufacturers have brought new
products to the market, few if any of the imports are designed specifically for Australian conditions and regulations. This means that the unique characteristics of the Australian market, both in terms of legislated standards and consumer preferences, cannot be met effectively by overseas technology. In addition the advent of legislation covering the water efficiency of plumbing products (Commonwealth of Australia 2005), which is the most recent legislation, has required a range of technical changes to products to ensure compliance. The market changes have driven an increasing need for innovation, to allow onshore manufacturers and distributors to compete in the new conditions, and also to ensure that appropriate, Australia-specific products are, and continue to be, available for consumers and plumbers alike.

The Australian plumbing industry developed using the standards and technology of its British ancestry, but has developed over the past 200 years to manage the unique circumstances that are faced in Australia. This includes the late development of urban sanitation, water shortages, the specific chemical composition of Australian water and the rapid population growth that has been experienced in the 20th and into the 21st centuries (GWA, Bathrooms & Kitchens 2015). The first manufacturing of vitreous china sanitaryware such as toilets and basins commenced in 1837 at the Fowler works in Sydney, only ceasing in 2014, and the first plastic cistern production commenced in Adelaide in 1941, where it continues to this day (GWA, Bathrooms & Kitchens 2015).

The industry was valued at $13bn in 2014 (IBISWorld 2015) and has shown continued growth over the past 30 years, driven by immigration and the subsequent demand for housing as well as the move for the average home to have 1.98 bathrooms and 73% of new homes built to have two or more bathrooms, as opposed to less than 1.1 in 1980 (HIA 2014, p. 27). During this period, the domestic industry has been increasingly challenged by overseas competition, both from Asia and Europe. This has led to the decline of local manufacture with the last sanitaryware factory closing in December 2014 and tapware production now being a specialist cottage industry with the volume of products produced overseas. The industry is polarised between a small number of very large ($300m+) businesses and a large number of SMEs ($10m or less). The industry is volatile, with a number of smaller businesses failing as they are unable to compete with low cost imports arriving from Asia and Europe (HIA 2014).

The industry has always been innovative, developing products specifically designed for the Australian market. These innovations have included the first dual flush toilet, the first plastic toilet cistern and the use of dezincified brass in domestic tapware (GWA, Bathrooms & Kitchens 2015). This tradition has continued, even as local manufacturing has declined with
the large businesses retaining their R&D departments on shore, designing and engineering products locally and SMEs finding niches within the market that they can exploit through products designed to meet a specific local need. The continued implementation of a comprehensive range of Australian Standards has aided the maintenance of Australian specific product development (ABCB 2013).

Initial investigation of the subject identified a large amount of literature in regards to innovation and its exploitation and uncovered many different themes as to why and how innovation occurred. It was, however, apparent that there was little or no research into innovation in a trade-focussed industry and that very little research had been conducted in an Australian context. It also became clear that the individual was the focus of research in both creativity, that is the production of a novel and appropriate response to a product or a solution to an open-ended task (Amabile & Pillemer 2012; Runco & Jaeger 2012), and entrepreneurship, “how and by whom and with what effects opportunity to create future goods and services are discovered, evaluated and exploited” (Shane & Venkataraman 2000, p. 218), research. The individual was less of a feature when innovation, defined as “the production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services and markets; development of new methods of production and establishment of new management systems” (Crossan & Apaydin 2010, p. 1155), was considered. It was also apparent that a grounded theory approach had rarely been used in the research area. In the context of this study grounded theory is defined as “The discovery of theory from data systematically obtained from social research” (Glaser & Strauss 1967, p. 2).

This study seeks to address the theory and knowledge gaps in the understanding of how individuals within the Australian plumbing industry innovate and take their ideas to market. In addition it considers why they choose to do this in particular ways. In this way the study aims to add to the process of innovation by suggesting changes to best practice to ensure that the Australian plumbing industry remains strong in the face of increasing competition.

1.2 Research Scope, Context, Issues and Contribution

The aim of the research is to investigate whether the experiences, characteristics and motivations of innovative individuals affect their propensity to innovate, how radical the innovation is, and whether these elements have an effect on how the innovation is commercialised. The research has the following objectives:
1. What are the main motivations for innovation, and the exploitation of those innovations, by individuals within the Australian Plumbing Industry?
2. What are the important characteristics and experiences of innovative individuals?
3. How can the learnings from these motivations, characteristics and experiences be used to facilitate the development and exploitation of innovative products throughout the sector as a whole?

The researcher concluded from the initial scoping of the industry that innovation within the Australian plumbing industry is different from innovation in other, more researched industries. Innovative businesses within the Australian plumbing industry comprise a small proportion of the total number of businesses, most of which are importers of existing products and technology, either from Europe or Asia. Within the innovating companies, there is a high emphasis and reliance on the individual, with small businesses being built by their founders on the back of their innovative idea, and larger companies being reliant on a few well known and respected individuals. This awareness determined the scope of the research.

1.2.1 Research Scope
From the initial literature review a number of areas were identified that were encompassed in the scope of the research. These included the industry, the country, and the subject area of innovation. Following a period of reflection, a further refining of the research took place and intensified the focus on the individuals who drive innovation within the industry and on the choices that these individuals made, which led to innovation exploitation either through venture creation or within established organisations. This period of reflection also helped formalise the approach to be taken to the research, that of grounded theory, as with the focus on the individual it appeared the most appropriate choice to ensure a rich picture of personal experiences was gained. In addition, the choice of face-to-face semi-structured interviews as the data collection method ensured the ability to hear first hand about the experiences and insights of the individuals in their choices.

1.2.2 Research Context
Chapter 2 provides a more detailed review of the literature accessed when considering innovation within the Australian plumbing industry. This literature was drawn on to form the basis of the theoretical framework on which the study is based. A number of theoretical areas were reviewed and these included the broad literature regarding creativity (Amabile 1982, 1998, 2012; Amabile & Pillemer 2012), innovation (Damanpour & Aravind 2012; Gilson & Madjar 2011; Zhao, F. 2005) and entrepreneurship (Antoncic & Hisrich 2003; Audretsch 2012; Shane & Venkataraman 2000).
Following this broad review, four further areas that appeared to influence behaviour and choices were identified. These included personality traits (Brockhaus 2002; Caird 1993, 1994; Zhao, H., Seibert & Lumpkin 2010), childhood and early career (Drennan, Kennedy & Renfrow 2005), organisational innovation (McAdam & McClelland 2002; Scott & Bruce 1994) and motivations for innovation (Cromie 1987; Shane, Locke & Collins 2003; Stewart & Roth 2007; Tyszka et al. 2011).

These areas provided a variety of perspectives through which the choices and behaviours of innovative individuals could be considered. They were relevant as they suggested a range of areas of interest that could be explored. These areas formed the initial basis for the draft interview questions.

### 1.2.3 Research Aims and Objectives

The initial stages of the literature review identified a range of issues, which were distilled into the following research objectives.

1. **What are the main motivations for innovation, and the exploitation of those innovations, by individuals within the Australian Plumbing Industry?**

2. **What are the important characteristics and experiences of innovative individuals?**

3. **How can the learnings from these motivations, characteristics and experiences be used to facilitate the development and exploitation of innovative products throughout the sector as a whole?**

   The objectives and the initial questions that were developed for the research proposal were further developed through the initial literature review. From this development and the refining of the research objectives the following research questions arose:

1) How and why does innovation occur in the Australian plumbing industry?

2) What are the linkages between creativity, innovation and entrepreneurship?

3) What are the antecedents, characteristics and attributes of individuals within large organisations and SMEs?

4) Do individuals exhibit the same behaviours and motivations regardless of the size and structure of the organisations in which they work?

5) Is there a model that can be developed to assist the understanding of the motivations of innovative people within the Australian plumbing industry?

6) Are there learnings that can be applied across the industry to foster innovation?
These questions represent the research problem at the heart of this study.

### 1.2.4 Research Contribution

The research has made a number of contributions regarding the development of innovation within the Australian plumbing industry. These are discussed in detail in Chapter 6 but a summary of the contributions is provided below. The main findings can be broken down into five themes: childhood and early career, personality traits, motivations, venture creation and organisational innovation.

The childhood and early careers of the participants appear to play a role in their career choices and in their attitudes towards self-employment and risk. It is not so much the experiences per se as the reactions of the individuals to them. It is this reaction that affects and is affected by the self-efficacy, risk profiles and subsequently the choices that are made.

Personality traits appear to be less important than previously identified in the literature. However there are two traits that appear to have an effect on behaviours and choices. Risk profiles and self-efficacy are significant components in career choice and appear to develop out of childhood and early career experiences. These are not constant and can change through ongoing experience and this has the ability to change the career trajectory of individuals. The research suggests that there are significant differences between the risk and self-efficacy levels of the employed and self-employed participants.

Motivations are important in the development of innovation. These include both the motivation to innovate and the motivation to commercialise. Both the self-employed and employed participants share motivations but they were acted on in different ways or in a different order. This difference in order appears to have an impact on how radical the developed innovation is.

Venture creation and the subsequent development of the business is a vibrant theme. Business owners make a range of choices in regards to the foundation and development of their businesses. These choices are impacted by previous experiences and the risk and self-efficacy profiles of the participants, and can have a dramatic impact on the development and exploitation of innovation. Finally, it is apparent that organisations need to treat innovative individuals differently to other employees to maximise innovation development. The management of these individuals may need to be different depending on their previous experiences. A failure to effectively manage them may have an impact on the innovative potential of the company.
The implications of the contribution for theory, including the proposal of a new theoretical model to understand the choices and motivations of innovative individuals, are outlined in Sections 6.2 and 6.5 of Chapter 6. The implications for policy and practice are discussed in Section 6.5.

1.3 Justification for the Research

As outlined earlier, innovation is of great importance to the Australian plumbing industry in terms of its performance and its ongoing success in the face of international competition. Chapter 2 reviews the significant amount of literature available. Whilst the literature provides insights into many facets of creativity, innovation and entrepreneurship, it does not identify a generic theoretical framework or operational model that incorporates all facets of the process from the spark of creativity, to the delivery of that idea through an existing or new venture. In addition, most experience-based studies focus on a specific part of the literature rather than offering a holistic approach.

There also appears to be lack of literature with regard to the specific market segment being researched. The Australian plumbing industry is dynamic in terms of product development and innovation and the present researcher found no previous research in this industry regarding product innovation and the development of entrepreneurial ventures. Trade industries, such as the plumbing industry are highly specialised and depend not only on innovative products, but those that are able to meet local legislative standards. In this way, it is very different from other service industries. To confirm that the Australian plumbing industry has not received any specific attention in the literature and moreover that trade-based industries are also under represented, an Emerald Insight search using the parameters of 2014, entrepreneurship, innovation and Australia was conducted. Nineteen journal articles were found and none of these related to trade-based industries: Four were focused on education, three on health and the remainder on a combination of agri-business, construction, organisational innovation, manufacturing and innovation in SMEs. The industry is of interest to the researcher as she works within it and the insights gained could drive understanding of the process of innovative product development and could bring about improvements in performance in difficult economic circumstances.
1.4 Methodology

1.4.1 Methodology Selection

The study uses grounded theory (Charmaz 2006; Glaser & Strauss 1967) to identify learnings from the participants in respect of their choices, motivations, and background. Grounded theory was chosen as it best fits a piece of research where a broad theory is needed as existing theories do not address the problem or the participants that are being studied, or minimal theories exist in the research area. As the theory is “grounded” in the data, it provides a better explanation than “off the shelf” theories, as it fits the actual participants and works in the specific circumstances of the study (Creswell 2012). It can be used to study new properties of existing phenomena that shape and are shaped by new conditions and consequences (Charmaz 2008). As outlined in Chapter 3, a number of different theoretical approaches were considered. It was determined at the research proposal stage that this study would be exploratory and that it was therefore appropriate to take a constructivist approach, in which behaviour is seen as determined by the phenomena of experience rather than by external objective and physical circumstances (Creswell 2003; Patton 2002; Remenyi et al. 2002). On the premise that the constructivist approach can offer a deeper and richer description of phenomena within a business context because it is more adaptable to multiple realities (Lincoln & Guba 1985), it is argued that the most appropriate approach for this study was qualitative, as the research was narrowly focussed, and aimed at producing a specific result for a specific set of circumstances. To facilitate this the qualitative approach, face-to-face interviews were considered appropriate, as they would provide a rich picture of the experiences and perceptions of the participants.

From this assessment, discussed in more detail in Section 3.2 of Chapter 3, grounded theory was selected as the optimal approach to capture the participants’ experiences and develop a substantive model to explain the choices and behaviours seen, from which practical recommendations could be developed and disseminated for the greater benefit of the Australian plumbing industry. The essence of grounded theory is that it is an original analysis, grounded in the experience of participants (Glaser & Strauss 1967). Data is studied in an iterative coding process that gradually reduces the data to a series of core themes, before focussing on a single core theme. The adequacy of a theory generated by grounded theory cannot be separated from the process that generates it (Glaser & Strauss 1967). It can be therefore seen that grounded theory is meant to build theory and not to test it (Patton 2002).

The researcher set out to understand as much detail about the phenomenon under study as possible and the following summary of the process highlights the key techniques, tools and
concepts used within the research design to ensure a robust method was used. Figure 1.1 is a diagrammatic representation of the process used in the study.

![Diagrammatic representation of process used in the study](image)

**Figure 1.1: Diagrammatic representation of process used in the study**

Source: developed for this study

The process outlined above summarises the various tools and techniques used in this study. To some extent it also describes the sequence in which they were used, but as shown in the figure, grounded theory is an iterative method and some elements such as theoretical sensitivity and memoing occurred throughout the process. In line with the grounded theory approach, the research took a non-linear approach from the earliest data collection through to the final phase of theory development.

### 1.4.2 Data Sample Size and Collection

Grounded theory proposes that sample size is not a matter of population representation, but rather that data saturation is achieved by obtaining sufficient data for the construction of a theory (Strauss & Corbin 2000). It also suggests that in-depth interviews can provide a deep understanding and a complete picture of the area of interest (Charmaz 2006). For this research, the data set comprised sixteen of the available twenty-two participants, and each of these undertook a face-to-face, semi-structured interview for a minimum of one hour. The data set included ten self-employed and six employed individuals and the interviews resulted in over eighteen hours of interview transcripts and over one hundred and twenty thousand words to transcribe.
The data was collected in adherence to guidelines laid down by Southern Cross University, as it was important to ensure that the participants understood the ethical considerations of the research, especially in regards to consent and confidentiality. All participants were emailed a research outline and consent form prior to the interview to allow an appreciation and understanding of the topic under consideration, and to provide an overview of the areas likely to be discussed. This communication is included in Appendices 3.2 and 3.3. A more detailed review of the ethics of the research and the steps that were taken to ensure these standards were maintained are outlined in section 3.6 in Chapter 3.

The interviews used a semi-structured format to allow a level of consistency whilst enabling participants to explore areas of interest to them without restrictions. The participants were asked to answer broad questions from their experiences and perceptions. The aim was to understand the choices that were made and equally those that were not made. Throughout the interviews the participants were given time to reflect on their answers through the use of summaries and clarification questions to ensure that the answers given accurately reflected their point of view. This enabled the researcher to provide compelling explanations for choices and actions from which to build the substantive theory.

Grounded theory is an iterative process, in that it readdresses both the literature and participants as new themes emerge (Charmaz 2006). However the interviews were conducted in a linear fashion. This resulted in a number of early participants being contacted by email at a later stage of the research process, to address new themes that emerged from later participants. It also involved a comprehensive member check being undertaken towards the end of the data analysis phase. This approach adhered to the principles of grounded theory by building on outcomes until theoretical saturation was reached (Strauss & Corbin 2000). The complete process that was undertaken during the course of the study is shown in Figure 1.2 below.
Chapter 3 offers a more detailed insight into the methodology, its selection, the justification for its selection and its application.

1.5 Overview of the Thesis

The structure of the thesis is as follows:

Chapter 1 – Introduction

The introduction gives a background to the research area and the process of defining the research problem and issues. It gives an overview of the research and the justification for its completion before outlining the methodology selected and used. It then gives an overview of the structure of the thesis and outlines the identified limitations of the scope of the research.
Chapter 2 – Literature Review

Chapter 2 discusses the literature reviewed for the study that helped define the research and identified areas of interest, problems and gaps. As grounded theory is an iterative process the literature review also contains material that emerged as new themes became apparent during the data collection process. The literature review in Chapter 2 is broader than a traditional grounded theory review, which tends to approach the research area with little reference to existing literature so as not to be trapped into data forcing (Glaser 1992). This approach was taken on account of the extent of literature across the broad areas of the literature, although this examination identified that there was little or no research into the specific area of study.

Chapter 3 – Methodology

This chapter offers an overview of the research paradigms and possible approaches before identifying the selection of the appropriate research method and outlining the theoretical process. It then discusses the data collection methods including the data sample and selection process. It also addresses generalisability and validity issues as well as ethical considerations. This chapter identifies the high level of iteration that occurred during the data collection process, not only in returning to participants to check understanding and novel themes, but also to the literature to understand the availability or lack of, of literature on the emerging themes.

Chapter 4 – Results

The findings chapter presents the findings of the research broken down into six areas. The findings are drawn from the data collection and analysis process and relate back to the individuals’ specific experiences, as well as being brought together into collective findings. One of the features of the findings, which adds to the rich picture of the experiences of the participants, is the use of the direct voice of the participants, through the use of quotes, to support and illustrate the findings.

Chapter 5 – Discussion of Results

Chapter 5 discusses the results that emerged from the research and consolidates them into six major issues. It then relates them back to the literature identifying gaps that exist in the literature.
Chapter 6 – Conclusions and Recommendations

The final chapter examines the implications for theory and proposes a new substantive model to explain the choices that the participants made. It also offers suggestions for policy and practice to improve the level of innovation within the Australian plumbing industry. Finally, it acknowledges the limitations of the study and suggests further areas for research to address some of these limitations. As it is a grounded theory study, the proposed substantive model would be expected to have limited generalisability and, as discussed earlier, this method is meant to propose theory and not test it.

1.6 Definitions

This section identifies the definitions that have been used in the context of this study and how they relate to the subject matter. This is important to ensure that terms are not inaccurately defined or left undefined.

*Creativity* – The production of a novel and appropriate response to a product or a solution to an open-ended task (Amabile & Pillemer 2012; Runco & Jaeger 2012). Originality is a core value of creativity, but being original is not enough; the idea must have value in terms of usefulness or fit to the organisation (Runco & Jaeger 2012).

*Entrepreneurial Attitude Orientation* – A model measures the entrepreneurial attitudes of individuals with a composite score based on measures from four attitude subscales comprising achievement in business, innovation in business, perceive personal control of business outcomes and perceived self esteem in business (Gibson et al. 2011, p. 1023; Harris and Gibson 2008, p. 569).

*Entrepreneurship* – “How and by whom and with what effects opportunity to create future goods and services are discovered, evaluated and exploited” (Shane & Venkataraman 2000, p. 218).

*Innovation* – “The production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services and markets; development of new methods of production and establishment of new management systems. It is both a process and an outcome” (Crossan & Apaydin 2010, p. 1155).

*Grounded theory* – “The discovery of theory from data systematically obtained from social research” (Glaser & Strauss 1967, p. 2).

*Legacy* – The ability to provide future security for family members, specifically children through the provision of employment opportunities within a business.

*Locus of Control* – How an individual perceives an event, whether within or beyond their personal control and understanding (Mueller & Thomas 2000).
**Motivation** – The reasons that individuals choose to undertake or not to undertake specific activities.

**Need for Achievement** – Taking personal responsibility for finding solutions to problems, setting moderate achievement goals and taking calculated risks, and requiring concrete feedback on performance (McClelland 1961).

**Need for Recognition** – The requirement for external recognition of achievements as part of an individual’s’ validation process (Carter et al. 2003).

**Risk Perception** – The awareness of risk within a situation (Douglas 2006).

**Risk Preference** – The general desire to pursue or avoid risk (Barbosa, Gerhardt & Kickul 2007).

**Risk Propensity** – “The perceived probability of receiving the rewards associated with the success of the proposed situation which is required by an individual before he will subject himself to the consequences associated with failure” (Brockhaus 1980, p. 513).

**Self-Efficacy** – The belief of the individual in their ability to develop and deliver activities that produce expected outcomes or facilitate the ability to control events (Bandura 1977b, 1977a; Chen, Greene & Crick 1998; LeRoux, Pretorius & Millard 2006).

### 1.7 Significance of the Study

This study explores and establishes relationships amongst a range of factors contributing to the development of creativity, innovation and entrepreneurship and their outcomes within the Australian plumbing industry. As a result, the research makes an original contribution to the body of knowledge by identifying a number of themes and relationships, which warrant further empirical testing. In specific terms, this research provides a substantive model and six propositions developed using a grounded theory methodology that can be empirically tested to validate the findings. In addition, the research offers a critique of the use of traits in identifying entrepreneurial individuals and considers the motivations for innovation. Finally, it offers a suggestion of a combined model of creativity, innovation and entrepreneurship and a range of implications for policy and practice for both entrepreneurs and organisations.

### 1.8 Delimitations and Limitations

This research has been consciously limited and it addresses a discrete area. Its aim is to capture the personal experiences of a limited number of individuals within a specific industry and a number of limitations are apparent in such an approach. The research focuses on innovation within the Australian plumbing industry and excludes other industries and geographic areas. Its focus is restricted to those individuals who have produced innovative products, defined as new or novel, in the plumbing industry.
This study is not a psychology research thesis. It draws on areas of psychological study such as personality traits, but it does not use testing instruments to identify and examine these traits. The study is focused on the rich experiences of the individual participants and uses the terminology of psychology to help put these experiences into context. The research also does not aim to give an in-depth review of innovation within organisations, although this is touched on. The focus remains on the individual, regardless of their career path.

The definitions used for each of the areas studied emerged from the literature review. They were carefully chosen as the most relevant to the research. It is acknowledged that a range of definitions exist for each of these terms and any references to these within the thesis relates only to the definitions as outlined.

Decisions were made in respect of the scope and integration of creativity, innovation and entrepreneurship. These areas are variously defined and often the definitions overlap (Scott & Bruce 1994). In the literature review, definitions of each of these areas were selected that covered the information discovered in both the literature review and the research. Through a review of the literature and during the study, it appeared to the researcher that creativity, innovation and entrepreneurship were part of a whole rather than separate activities. The choice to integrate these three concepts in this way was made for the purposes of the research and it is acknowledged that this integration is a suggestion that would need empirical testing to confirm its validity.

The limitations that are acknowledged are the small sample size, albeit the research reached sixteen of the twenty-two potential participants, the single industry approach and the methodology used. Given the limited nature of the research there is a great deal of opportunity for further research, not only to apply the research problem more broadly but also to test the proposed substantive model in other industries, geographies and potentially genders. These limitations and opportunities are discussed in greater detail in Sections 6.6 and 6.8 of Chapter 6.

1.9 Conclusion

The aim of this research is to identify and develop a greater understanding of innovation within the Australian plumbing industry. This chapter provides an overview of the complete research by providing a background to the industry and an overview of the problem area, research context and findings and contribution. It then provides a justification for the research before giving an overview of the research methodology. Finally, it offers a summary of the
structure of the thesis along with a range of definitions for terms used within the thesis, before examining the limitations of the research and opportunities for further study.

The next chapter examines the literature that relates to the area of study. It considers the broad area of creativity, innovation and entrepreneurship. It then focuses on individual and personal elements of innovation and its commercialisation through both venture creation and organisational innovation.
2 Chapter Two – Literature Review

2.1 Introduction
This chapter outlines the literature review that was undertaken for this study. It provides an overview of the literature that was reviewed in the areas of creativity, innovation and entrepreneurship. It is broken up into eight sections with the introduction followed by Section 2.2, which gives an overview of the subject area, industry and planned research. This is followed by Section 2.3, which outlines the conceptual framework used to address the literature, before Section 2.4 considers the broad literature of creativity, innovation and entrepreneurship. Section 2.5 considers the more specific literature regarding traits, attitudes and antecedents before addressing the criticisms of this approach and subsequent developments. Section 2.6 considers the micro, meso and macro motivators, which impel individuals and organisations to create, innovate and establish ventures whilst Section 2.7 examines the specific circumstances faced when innovating within an organisation. Section 2.8 provides a critical analysis of the literature, identification of the literature gaps and development of the research questions before Section 2.9 offers a summary and conclusions.

2.2 Background and Overview of Subject Area
The focus of this study is the development of creativity, innovation and entrepreneurship within the context of the Australian plumbing industry. Whilst all three areas have received previous attention, this study considers the importance of the combination of all three into a whole. To innovate, a creative idea must be identified and for it to reach its full potential, it must be commercialised, either through the creation of a new venture or through an existing organisation, hence the need to integrate all three areas into an emergent theory. Innovation is crucial for long-term economic growth and is a fundamental differentiator of performance between firms, regions and countries (Crossan & Apaydin 2010; Fagerberg 2003b). As the individual is the driver of innovative action within organisations, be they large or small, research into individual innovation regardless of organisational context is a valid area of interest.

The plumbing industry in Australia has undergone a major change in the past ten years, driven by the advent of new government regulations in regards to water usage including the implementation of the WELS scheme (Commonwealth of Australia 2005), BASIX (Government of NSW 2004) and other schemes mandating water efficient products. These regulatory initiatives have encouraged both large and small organisations to innovate, both to
comply with the regulations and to revisit their products, utilising the regulations as a competitive advantage, for example by offering higher water efficiency as a benefit of the product. In addition there is an underlying level of innovation occurring that is improving the products and services available to the market and this is being driven throughout all industry sectors.

This study intends to fill gaps identified in the literature by considering the individual as the key focus of the study, regardless of the size of the organisation in which they work. Through purposive selection of innovative people within large organisations and SMEs, this study aims to identify the important characteristics, experiences and main motivations of the individuals and the impact these have had on their choices and subsequently, their innovation outcomes. It expects to contribute to the body of knowledge by answering the following questions:

1. What are the main motivations for innovation, and the exploitation of those innovations, by individuals within the Australian Plumbing Industry?
2. What are the important characteristics and experiences of innovative individuals?
3. How can the learnings from these motivations, characteristics and experiences be used to facilitate the development and exploitation of innovative products throughout the sector as a whole?

A further outcome is expected to be the emergence of a theory, grounded in the data that starts to explain the processes at work and creates a foundation for subsequent research into the motivation and management of these individuals.

2.3 Approach to the Literature Review
During the initial stages of the literature review, online library collection search engines such as Emerald were used to identify literature relating to the subject area under consideration. After discussions with colleagues and the researcher’s doctoral supervisor, sixteen journals were identified for further analysis as outlined in Appendix 2.1.

These journals were focused on management, generally within larger organisations, small businesses, creativity, innovation and entrepreneurship and occupational and organisational psychology. The journals provided insights into the subject area under investigation and were also a source of theoretical approaches to both the research area and possible research methodologies. After this initial reading, further independent reading and recommendations
from colleagues and academic contacts, some specific articles, books and conference proceedings were also reviewed.

(Gilson & Madjar 2011; Laguna 2013; Reitzschel, Nijstad & Stroebe 2010; Schoon & Duckworth 2012; Unsworth & Clegg 2010; Zhang & Bartol 2010b)

Through the consideration of the different research areas, a conceptual framework for the identification of literature has been developed and is identified below.

**Research Area 1**  
Creativity, Innovation, Entrepreneurship Literature

**Research Area 2**  
Traits attitudes and Antecedents

**Research Area 3**  
Organisational Innovation

**Research issues and propositions**

- The characteristics, attitudes and experiences of innovative and entrepreneurial individuals
- The learnings that can be gained from this understanding

*Figure 2.1: Approach to the Literature Review*

Source: Developed for this study

From the initial literature review it was apparent that innovation is a dynamic subject area although limited research is being conducted in the immediate subject area. The literature was examined, through an Emerald Insights search, using the parameters of innovation and 2013-14. This resulted in just over 8000 results. Through the selection of 200 of these results, the following table outlines the subject areas covered, illustrating the limited research into trade based product innovation.
Table 2.1: Overview of a sample of innovation research 2013-14

Source: Developed for this study

<table>
<thead>
<tr>
<th>Major Subject Matter</th>
<th>Detailed Topic</th>
<th>Number of Articles (from sample of 204)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation Theory</td>
<td>Organisational Innovation</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Innovation Theory</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Innovation Management</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Ethics</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Open Innovation</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Sustainability</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Adoption and Diffusion</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Co-Creation</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Commercialisation</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Risk</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Dynamic Innovation</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Disruptive Innovation</td>
<td>1</td>
</tr>
<tr>
<td>Industries</td>
<td>IT</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>SMEs</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Supply Chain</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Health</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Tourism</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Construction</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Public Sector</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Agri-business</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Manufacturing</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Libraries</td>
<td>1</td>
</tr>
<tr>
<td>Geographies</td>
<td>China</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Latin America</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Italy</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Australia</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Japan</td>
<td>1</td>
</tr>
<tr>
<td>Innovation Type</td>
<td>Product</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Service</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Radical or Incremental</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Pricing</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>Gender</td>
<td>5</td>
</tr>
</tbody>
</table>

2.4 Creativity, Innovation and Entrepreneurship

This section addresses the research areas of creativity, innovation and entrepreneurship, their definitions, scope and linkages. Several approaches in the literature will be reviewed including those found in the psychological, behavioural, small business, and management literature.

In the study of creativity, innovation and entrepreneurship it appears that many of the terms used to define innovation, and the attributes and traits used to identify it, can be equally applied to creativity or entrepreneurship and are often interchanged (Scott & Bruce 1994). To
address this, this section of the literature review will examine the areas of creativity, innovation, and entrepreneurship and suggest that these are in fact parts of one whole rather than separate activities. It will consider the similarities and differences within the literature.

2.4.1 Creativity
Creativity is important for the development of new ideas that enable businesses to innovate. The literature suggests an agreed standard definition of creativity, that is: “the production of a novel and appropriate response to a product or a solution to an open ended task” (Amabile 2012, p. 3). Originality is a core value of creativity but being original is not enough; the idea must have value, in terms of usefulness or fit to the organisation (Runco & Jaeger 2012).

The literature suggests that creativity is linked to innovation, but there appears to be little consensus on the dimensions of creativity, where it stops and where innovation starts (Hirst, Van Knippenberg & Zhou 2009). Creativity and innovation have been studied by different traditions, with innovation being the province of sociology, economics, engineering and organisational theory, and creativity research being embedded in sociology (Moneta et al. 2010). There has been little interaction between the two fields, leading to creativity often being seen as the same thing as innovation but at a different level of analysis, or creativity as having a limited role with its only importance being as an input into the stage of the innovation process where alternative ideas are originated (Ford 1996). In addition, as a function of the tradition in which the majority of creativity research has been completed, sociology has mainly focussed on the individual and little attention has been paid to the organisation (Moneta et al. 2010). In contrast, innovation research has ignored much of the creativity research into individuals and groups. Instead, it has concentrated on empirical studies looking at adoption and diffusion (Ford 1996). A more balanced view may be to consider the role creativity plays across different phases of the innovation process and to combine the two strands of research.

Creativity research has developed many theories across a number of traditions. Many of these theories overlap but three have gained widespread acceptance in the organisational creativity literature (Hammond et al. 2011). These are Woodman, Sawyer and Griffin’s (1993) Interactional Framework of Organisational Creativity, Amabile’s (1983, 2012) Componential Theory of Creativity and Ford’s (1996) Theory of Individual Creative Action in Multiple Social Domains which builds on both the previous two theories.

Woodman, Sawyer and Griffin’s (1993, p. 294) Interactional Framework of Organisational Creativity suggests that “creativity is a complex product of a person’s behaviour in a given
situation”. It sees creativity as a function of antecedent conditions, cognitive styles and abilities, personality, motivational factors and knowledge. The authors suggest that cognitive skills are the key to creativity and that a combination of divergent and convergent thinking is required depending on the stage of creativity. These factors are influenced by and influence in turn, the social and contextual factors in which the individual is operating. Finally, the research suggests that intrinsic motivation is a driver and that domain-relevant knowledge and creativity-relative skills are important.

The second and dominant theory emerging from the psychology tradition is Amabile’s (1983, 2012) Componential Theory of Creativity. Amabile (2012) suggests that there are three components of creativity: domain-relevant skills, creativity-relevant processes and task motivation, which are moderated by the social environment. She also goes onto suggest that creativity will be at its highest when an intrinsically motivated individual with high domain expertise and high skills in creative thinking works in an environment high in support for creativity. This theory also sees creativity as a process comprising problem task recognition, preparation, response generation, response validation and outcome. The process can end with either success or failure, or it may be recast to better define the problem, and so the process restarts (Amabile 1983, 2012; Amabile & Pillemer 2012; Baer 2012).

More recent research has also extended creativity research into organisations, specifically teams. It has considered how teams affect factors such as goal orientation and the effect this has on creativity. In their research into twenty five R&D teams comprising one hundred and ninety eight employees within the pharmaceutical sector, Hirst, Van Knippenberg and Zhou (2009) found evidence to support componential theory, highlighting it as a useful framework for theoretical development. They built on this finding by examining the effect team context has on individual creativity.

The final theory is that of Ford (1996) whose Theory of Individual Creative Action in Multiple Social Domains added three contributions to build on Amabile’s (1983) and Woodman, Sawyer and Griffin’s (1993) work. Ford (1996) looked to integrate creativity and innovation research. His work describes the interaction between intentional and evolutionary change processes as a means for integrating the psychological and sociological approaches to exploring creative and conformist behaviour. He argued that creative action would not occur regardless of the favourable conditions as long as habitual actions remain more attractive. In essence, Ford (1996) argued that people have to choose to be creative and they will not do so unless they see a more attractive outcome than sticking to the status quo. He identified different social environments that individuals operate within which affect the choice between creative and routine actions. Ford (1996) defined creativity as comprising three elements:
person, field and domain. He saw the essence of creativity as being a product presented by an actor, with subjective judgements being made about the novelty and value of the product by external observers. These judgements are domain-specific and may change over time (Ford 1996, p. 1115). This theory has not been amended since this time. From the three theories addressed above it can be posited that it is the interplay between the individual, their motivations, group and organisational characteristics that produces creative output.

In their 2010 research into sixty five aerospace employees, Unsworth and Clegg (2010) found a number of issues with both componential theory and Ford’s (1996) work. Their research suggests that a vast range of variables may influence creativity and that the process by which these variables are assembled has not yet been accurately identified in the literature. Their research also found, in contrast to componential theory, that extrinsic rewards may be important in stimulating creativity as these rewards have the ability to increase the initial engagement.

In summary, whilst creativity research has emerged from a number of traditions, three theories have proved themselves to have some validity and these are being used and extended into organisational creativity research. It is clear that creativity is more than the initial phase of the innovation process, and creativity is closely linked to innovation (Anderson, N, Potocnik & Zhou 2014; He et al. 2013; Reitzschel, Nijstad & Stroebe 2010; Wang & Tsai 2014), especially to the specific form of creativity that generates a range of possible alternatives to a problem (Hammond et al. 2011). Workplace innovation includes creativity and extends this into the implementation of ideas.

Many creative individuals do not go on to innovate or create new ventures as they may have many ideas but do not have business-like follow through or the initiative to undertake the right kinds of effort to get their ideas heard and tried (Miron, Erez & Naveh 2004). It can therefore be suggested that innovation needs creativity but creativity does not always lead to innovation (Huhtala & Parzefall 2007, p. 300). This will be considered in the next section.

2.4.2 Innovation
It has been suggested that creative acts are the definitive episodes that distinguish successful innovation from less successful efforts (Ford 1996) and that innovation is important because it is a source of competitive advantage (Crossan & Apaydin 2010) that enables organisations to remain viable and effective (Kheng & Mahmood 2013).

Innovation has been variously defined (Anderson et al. 2004; Crossan & Apaydin 2010;
Hammond et al. 2011; Kheng & Mahmood 2013; Madrid-Guijarro, García-Pérez de Lema & Van Auken 2013; Patterson 2009; Scott & Bruce 1994; Somech & Drach-Zahavy 2013; Zhao, F. 2005) and these definitions often focus on a specific aspect or act as a substitute definition for creativity. For example diffusion of innovation has been the subject of much research (Robertson 1967; Rogers 2003) but it has been excluded from this research as it refers to the process that takes place after an innovation (as defined below) has taken place.

The broad definition of innovation proposed by Crossan and Apaydin (2010, p. 1155) is used here:

“Innovation is: production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and an outcome.”

This definition is used as it encompasses both revolutionary and incremental innovation and identifies innovation as more than a creative process by including application. It covers the scope of what was discovered in both the literature and the research. This definition also appears in a number of other authors and so appears to be a well-accepted definition of innovation (Edison, bin-Ali & Torkar 2013; Felin & Zenger 2014).

Within the broad scope of the definition above, innovation is generally planned rather than spontaneous. It is aimed at producing new ideas and behaviours (Damanpour & Schneider 2008) and appears to be a non-chance event influenced by strategic intent and a specific social function, carried out in an economic sphere, with a commercial focus (Fagerberg 2003a, p. 131). It has been suggested that the difference between creativity and innovation is more one of emphasis than substance (West 2002) with the difference being seen in the application of ideas (Miron, Erez & Naveh 2004).

A number of different typologies of innovation have been identified. The initial typology was based on innovation in certain spheres such as products, processes, markets, sources of supply or new ways to do business (Damanpour & Aravind 2012). Subsequent typologies have been seen on continuums such as: radical to incremental or administration to technology (Damanpour & Aravind 2012; Gilson & Madjar 2011; Miron, Erez & Naveh 2004; Zhao, F. 2005). These different typologies have been combined into a multi-dimensional model which suggests that innovation is a phenomenon that consists of these multiple dimensions operating simultaneously (Damanpour & Aravind 2012; Zhao 2005).
Recent applications of product innovation research have focussed on open innovation, that is, on “the purposive inflows and outflows of knowledge to accelerate innovation and expand markets for external use of innovation respectively” (Chesborough 2006, p. 1). This is seen as a critical topic in innovation management (Wynarczyk, Piperopoulos & McAdam 2013, p. 241) and whilst it originated in large high-tech organisations, it is now being used in a wide range of industries, including construction, transport, communication and services (Chesbrough & Crowther 2006; Lin, Tan & Geng 2013), as well as in SMEs (De Massis et al. 2013; Theyel 2013; Wynarczyk, Piperopoulos & McAdam 2013).

The extension of open innovation research into SMEs has also helped to address the lack of innovation research in this area. As stated earlier, much of the previous innovation research has been carried out in large organisations, with SMEs being the province of entrepreneurial literature. Innovation and entrepreneurship, however, are different and this focus has given insights into the factors that stimulate innovation in SMEs and the importance of the individual in the decision-making process (Theyel 2013).

Innovation is crucial for long-term economic growth (Archibugi, Filippetti & Frenz 2013) and is a fundamental differentiator of performance differences between firms (Bernstein & Singh 2006; Galanakis 2006) and from the previous discussion it can be seen that innovation is a process in its own right, but is only a step in the process leading to venture creation. Of course venture creation may not be necessary if the innovation is to be commercialised within an existing organisation, but many SMEs are started on the basis of a product or service innovation (Fagerberg 2003a). It can therefore be suggested that innovation is a specific function of both entrepreneurship and intrapreneurship (Drucker 2002, p. 62), in which the individual creates new ideas that are commercialised. However, a further step is possible if a new venture is created to commercialise the innovation.

### 2.4.3 Entrepreneurship

Entrepreneurship has been at the forefront of business research since the 1980s and is a dynamic field, although entrepreneurship has become a broad label used to refer to a range of research and its definition is often unclear (Gartner 2010; Shane & Venkataraman 2000). Definitions range from the broad to the narrow and encompass a multiplicity of approaches in many different traditions (Audretsch 2012). The seminal paper that first attempted to define entrepreneurship took a broad approach, defining it as:
The scholarly examination of how, by whom and with what effects opportunity to create future goods and services are discovered, evaluated and exploited (Shane & Venkataraman 2000, p. 218).

Shane and Venkataraman (2000) made it clear in their definition, that they believed entrepreneurship did not need to result in venture creation, allowing for the development of the field of intrapreneurship – that is, the exploitation of new ideas within an existing organisation (Antoncic & Hisrich 2003).

Entrepreneurship research has emerged from a number of traditions, which have examined it in particular contexts: entrepreneurship in an organisational context, entrepreneurship based on performance criteria and entrepreneurship as behaviour (Audretsch 2012). From an organisational perspective a number of criteria have been used to judge whether an organisation is entrepreneurial. These have included size, age, ownership status and legal status (Antoncic & Hisrich 2003; Kunkel 2001). These criteria have not been applied consistently, although a theme of the importance of the individual can be identified throughout. When looking at performance criteria, the literature puts an emphasis on outcomes, either through R&D spend, patents registered, or growth, measured through changes in employment or increases in sales and assets (Audretsch 2012). Outcomes need not be the actual development of a venture as entrepreneurial intentions have been studied, as evidenced by the proliferation of studies of nascent entrepreneurs (Caliendo, Fossen & Kritikos 2009; Carter et al. 2003; Edelman et al. 2010; Gartner 2012; Hechavarria, Renko & Matthews 2012). This approach does not differentiate between intrapreneurship and entrepreneurship and acknowledges that firms, or individuals can be innovative (Audretsch 2012). Finally, the behavioural view focuses on the individual’s ability to recognise, or create an opportunity and decide to exploit and commercialise it (McGee et al. 2009; Zhao, Seibert & Lumpkin 2010). This approach shows a neutrality of organisational context and applies a much more concentrated focus on the individual by considering the triggers for making entrepreneurial decisions (Gartner 2010).

Most contemporary thinking appears to agree that the individual is a vital actor in the entrepreneurship process (Ahmad 2010; Bruyat & Julien 2001; Collins, Hanges & Locke 2004; Cubico et al. 2010; Hechavarria, Renko & Matthews 2012; Jain 2011; Rauch & Frese 2007; Stewart & Roth 2007; Zhao 2005) and in terms of considering the individual two trends exist. One sees an entrepreneur as a person that creates and develops a new businesses of any kind; the other sees an entrepreneur as an innovator who changes the economy in one way or another (Bruyat & Julien 2001). The view of an entrepreneur as an innovator rather than as a small business owner has support (Collins, Hanges & Locke 2004; Zhao 2005).
however, the literature encompasses both traditions (Rauch & Frese 2007; Stewart & Roth 2007).

Shane and Venkataraman (2000, p. 218) asked “why and how some people and not others discover and exploit opportunities” and it has been suggested that the understanding of the entrepreneurial process will be incomplete unless there is an understanding of the individual involved (Collins, Hanges & Locke 2004). Indeed, a criticism of some of the approaches to entrepreneurial research that focus purely on the firm and the characteristics of entrepreneurial opportunity is that they ignore the role of human agency. Human agency is important as entrepreneurship depends on the decisions people make and as such there cannot always be a formulaic and predictable outcome (Bruyat & Julien 2001; Shane, Locke & Collins 2003).

A current strand of research that attempts to link innovation and entrepreneurship in the product development sphere is the interest in demand side approaches (Priem, Li & Carr 2011). The fifth generation models of the innovation process are clear on the need for customer interaction in the product development process, and this interaction is being extended into the sphere of entrepreneurship. Demand-driven factors serve as opportunity signals for the entrepreneur, either through direct signals from entrepreneur–consumer relationships, indirect signals from changing customer preferences, or through overt or latent demand for new products and services (Priem, Li & Carr 2011). In their research with sanitation entrepreneurs in India regarding the diffusion of toilets to the poorest households, Ramani, Ghazi and Duysters (2012) consider the latent demand for hygienic sanitation, and the development of appropriate and affordable solutions that can be commercialised. Sustainability also appears to be a driver of the development of demand-side entrepreneurship. An increased focus in the environmental impacts of resource use including energy and water has driven new developments in products and services for resource companies (Voigt 2012). This consideration of demand-side stimulation of innovation and entrepreneurship highlights the link between the two traditions and emphasises the role of the entrepreneur as an innovator rather than just as a business owner.

The literature suggests that creativity, innovation and entrepreneurship are closely related as creativity is a spark for innovation, which in turn is the source of entrepreneurship. Entrepreneurship allows innovation to flourish and helps realise its economic value and uses innovation to expand business scope and boost growth. Entrepreneurship, innovation and creativity are dynamic and holistic processes that are not confined to the initial stages of a new venture and are not limited to small companies as they occur in companies of different sizes (Zhao 2005, p. 34).
It is apparent that creativity, innovation and entrepreneurship have been studied in a number of different traditions such as psychology (Schoon & Duckworth 2012), and business (Gibson, Gibson & Zhau 2011). Each tradition has focussed on different parts or actors in the process and a coherent approach is difficult to identify. This lack of a coherent approach has resulted in different traditions having a focus on different elements, such as the individual, the organisation, the environment and the outcome.

The individual is a constant in research into each of the three areas of creativity, innovation and entrepreneurship, although each area assigns the individual a different level of importance. The individual appears to be least important in innovation research where much of the focus is on process. This is not surprising as much of the research has been carried out within organisations and the expected benefits of that research are insights into how to improve processes to provide better outcomes (Bernstein & Singh 2006; Bohringer & Maurer 2004; Marques & Monteiro-Barata 2006; Torokoff 2010). The individual appears to be more important within the sphere of creativity and the research that has been completed stresses the importance of the individual in creating new ideas (Amabile 1998; Gilson & Madjar 2011; Girteen 1998; Hirst, Van Knippenberg & Zhou 2009; Kozbelt, Begheuo & Runco 2010; Walter 2012; Yusuf 2009). Finally, the individual is the primary focus of entrepreneurial research. This has resulted in arguments and criticism of the way the individual has been studied, characterised and classified, and this is an evolving field of research with previous areas abandoned, revisited and updated as viewpoints change.

In summary, the literature is complicated and disparate. The study of creativity, innovation and entrepreneurship has been approached in different traditions with varying foci and the expectation of different outcomes. The temptation to focus on the specific is appealing as it has the advantage of “eating the elephant slice by slice”, but this has hindered the adoption of a holistic approach to understanding the individual within their environment and their organisation.

The next section considers the entrepreneur as an individual, and addresses the body of literature relating to the identified traits, attitudes and antecedents of individuals.

2.5 Traits, Attitudes and Antecedents
This section moves from the broader literature of creativity, innovation and entrepreneurship to consider the literature of individual level traits, attitudes and antecedents. It considers some of the identified creative, innovative and entrepreneurial traits, the criticisms of this
approach and subsequent developments before examining the impact of childhood and early career.

Initial research into entrepreneurs identified a range of traits and attributes that it was believed set entrepreneurs apart from non-entrepreneurs and managers (McClelland 1961; Schumpeter 1934). These traits included need for achievement, that is taking personal responsibility for finding solutions to problems, setting moderate achievement goals and taking calculated risks, and requiring concrete feedback on performance (McClelland 1961), locus of control, or how an individual perceives an event, whether within or beyond their personal control and understanding (Mueller & Thomas 2000), and risk taking propensity (Brockhaus 2002). Each trait will be considered in turn in this section. As these traits failed to fully explain entrepreneurial outcomes, later research started to concentrate on entrepreneurial behaviour rather than individual traits (Gartner 1988, 2010). As conceptual models have been developed it has been found that attributes explain about 50% of the variance in behaviour between entrepreneurs and managers, and intentions are important mediating variables (Drennan, Kennedy & Renfrow 2005). These intention models are well accepted in the literature and look to identify indirect factors that might influence the decision to start a business. These factors include the childhood environment including a difficult childhood, family background, the extent of a supportive or nurturing environment, and early career experiences (Drennan, Kennedy & Renfrow 2005). Consideration of these factors helps to build a richer picture of the entrepreneur and their motivations.

2.5.1 Entrepreneurial Traits and Attitudes

The use of personality traits in identifying entrepreneurs has had a long history, starting as far back as Schumpeter in 1934. This section reviews the literature in regards to the traits approach, identifying a number of the most common traits that have been researched in an attempt to understand entrepreneurial types. It briefly reviews psychological testing before discussing in detail three of the main traits: need for achievement, locus of control and risk.

The suggestion made in the traits literature is that a number of personal traits define entrepreneurs and are instrumental in motivating entrepreneurial behaviour (Drennan, Kennedy & Renfrow 2005; Zhao, Seibert & Lumpkin 2010). In the search for these traits, a number of attributes have been identified as having validity, but a multitude of other characteristics and attributes have also been associated with entrepreneurs. The research into entrepreneurial characteristics falls into two broad groups: those characteristics identified by psychological testing or lists of characteristics included in journal articles as additions to the main focus of the paper, with very little empirical proof (Gartner 1988, p. 57).
2.5.1.1 Psychological Testing
The concept behind the use of psychological testing is that it might be useful in identifying entrepreneurial individuals and establishing psychological differences between entrepreneurial types (Ahmad 2010; Caird 1993; Carland, Carland & Stewart 1996; Cromie 1987; Cubico et al. 2010; Douglas 2006; Hornaday & Aboud 1971; Johnson 1990; Mueller & Thomas 2000). This approach has been used to identify a number of traits and in studies of CEOs of SMEs and both senior and junior managers in larger organisations. The results reported from a range of psychological tests have confirmed that a number of traits appear to be inherent in entrepreneurial individuals (Ahmad 2010; Cubico et al. 2010). Psychological testing, however, has not been without its critics and whilst research and experimentation into traits was widespread in the 1970s and 80s, it reached a stage of saturation in the 90s. There has been little new research in this area in the last twenty years (Rahman & Rahman 2011) as it has been suggested that personality traits do not significantly influence behaviour (Stewart & Roth 2001) and that testing shows no consistent relationship between personality traits and entrepreneurship (Zhao, H., Seibert & Lumpkin 2010).

More recently traits research has been revisited with a number of meta-analyses (Collins, Hanges & Locke 2004; Jain 2011; Stewart & Roth 2001, 2007; Zhao, Seibert & Lumpkin 2010) suggesting that the lack of findings has been due to the lack of hypotheses and sampling errors. These meta-analyses have validated the previous research, which identified relationships between personality and entrepreneurial behaviour, and by examining a range of tests, and subjects, they have been able to overcome some of the criticisms of the traits approach.

The most recent revisiting of the research confirms that there are three strong personality traits that appear to be reflective of an entrepreneurial personality. These are need for achievement (also referred to as nAch), locus of control and the risk-taking propensity (Collins, Hanges & Locke 2004; Stewart & Roth 2001, 2007; Zhao, Seibert & Lumpkin 2010). Each of these traits will be considered in turn.

2.5.1.2 Need for Achievement
High need for achievement (nAch) was initially identified as a potential indicator of entrepreneurs by McClelland (1961). His research identified three traits which he claimed individuals with a high need for achievement demonstrated: taking personal responsibility for finding solutions to problems, setting moderate achievement goals and taking calculated risks, and requiring concrete feedback on performance (McClelland 1961). The hypothesis posited was that individuals with a high nAch would end up in business, as the business situation offered a complement to the individuals’ achievement motivation in terms of risk,
personal achievement and unambiguous feedback in terms of profits and specific accomplishments (McClelland 1961). Later research also identified that entrepreneurs with a high achievement motivation are characterised by: a preference for tasks involving objective risk; a tendency to work harder at tasks which required mental manipulation; and a desire to operate in a situation where they receive a sense of personal achievement. It was also identified that these individuals do not work harder under the influence of monetary reward (Amabile 1998; Prieto & Pérez-Santana 2014), perform better under conditions were they have positive and defined feedback, tend to think ahead and prefer working with experts over personal friends (Cromie & Johns 1983; Gurol & Atsan 2006; Littunen 2000).

More recent studies have identified that whilst \( nAch \) is an effective tool for differentiating business founders from the general population (Collins, Hanges & Locke 2004; Jain 2011; Shane, Locke & Collins 2003; Tuunanen 1997) the study of the need for achievement alone is not an adequate predictor of entrepreneurial action (Brockhaus 2002; Ogunleye & Osagu 2014; Tuunanen 1997; Yusof, Sandhu & Jain 2007) and a multi-dimensional approach is required (Gurol & Atsan 2006). For example, it has long been identified that there is an interaction between \( nAch \) and locus of control (Tuunanen 1997; Yusof, Sandhu & Jain 2007) and those with a low \( nAch \) but a high internal locus of control have a greater expectancy of starting a business than those who score low on both measures (Brockhaus 2002).

Within the literature there is a small subset of research regarding the need for recognition, the requirement for external recognition of achievements as part of an individual's' validation process (Carter et al. 2003; Jain 2011). Whilst this is generally mentioned in conjunction with \( nAch \), there is a limited amount of literature that examines whether personal recognition is a motivator for entrepreneurial activity. The literature is inconclusive, but it has been suggested that external recognition may be less important to entrepreneurs as they offer reasons for starting businesses that are less influenced by external validation from others (Carter et al. 2003). Finally, whilst there are conflicting results when using \( nAch \) as a predictive indicator of entrepreneurial action, there is evidence that there is an element of achievement motivation in both entrepreneurs and managers, and when linked with locus of control, a clearer picture of the entrepreneurial personality may emerge.

### 2.5.1.3 Locus of Control

Rotter (1966, p. 1) defines locus of control as whether an individual perceives an event as being within or beyond their personal control and understanding. An individual with an internal locus of control (ILOC) believes that they have influence over outcomes through personal ability, effort or skills. An individual with an external locus of control believes that forces outside their control determine the outcome of activity (Shane, Locke & Collins 2003).
Initial research into locus of control orientation yielded varying results and the usefulness of locus of control research has been treated with scepticism as it is difficult to prove a direct causation between locus of control and entrepreneurial behaviour (Rauch & Frese 2007). Studies of entrepreneurs in such disparate locations as Austria, Ireland and Finland, reported empirical evidence that individuals with a high internal locus of control are more likely to be successful entrepreneurs as they believe they are personally in control of their own destiny and that luck or fate have only a moderate influence on the outcome of events (Cromie & Johns 1983; Khan, Breitenecker & Schwarz 2014; Littunen & Storhammar 2000). As a result of this mindset, successful entrepreneurs are less likely to be focused on external events and will tend have a proactive rather than reactive attitude when faced with challenging environments (Caird 1993; Cromie & Johns 1983; Littunen & Storhammar 2000; Pandy & Tewary 1979; Shane, Locke & Collins 2003). In his longitudinal study, Brockhaus (2002) correlated the scores that he collected in his initial research, with businesses that were still in operation some years later and found that those that had survived were those where the owner had a higher internal locus of control than those who failed.

Other studies found that whilst the association between an internal locus of control and entrepreneurial behaviour has face validity (Cromie & Johns 1983; Mueller & Thomas 2000) it is not an effective differentiator between entrepreneurs and managers. Brockhaus and Nord (1979) reported that the scores on Rotters I-E Locus of Control scale did not differ between business owners and managers and in fact both were lower than reported in the original research by Rotter. However it was seen that the business owners did score higher that the general population, as reported by Rotter. This was validated by further studies that also reported little difference between the two groups in terms of their scores on Rotters I-E continuum and suggested that whilst an internal locus of control promotes activity aimed at affecting the outcome of events, this holds true for both entrepreneurs and managers (Babb & Babb 1992; Begley 1995; Begley & Boyd 1987; Brockhaus 2002; Hull, Bosley & Udell 1980). It may be suggested, therefore, that an internal locus of control may help differentiate successful entrepreneurs from non-successful entrepreneurs rather than between entrepreneurs and managers (Babb & Babb 1992; Brockhaus 2002).

As with nAch discussed previously, more recent meta-analyses of the traits literature have concluded that an internal locus of control is positively correlated to entrepreneurial behaviour (Jain 2011; Rauch & Frese 2007; Shane, Locke & Collins 2003; Zhao, Hills & Seibert 2005) and may have an influence on business success (Rauch & Frese 2007). This occurs through optimal use of resources and achievement of goals (Khan, Breitenecker & Schwarz 2014). The discrepancies in the reporting of previous studies have been more to do
with the categorisation of the participants, and when appropriate studies are compared, a positive correlation has been found (Shane, Locke & Collins 2003).

From the above discussion, it can be argued that internal beliefs may result in more active efforts to positively affect the results of the venture. This is in contrast to external beliefs where less than desirable outcomes are attributed to luck or fate and being beyond the control of the individual (Brockhaus 2002; Rauch & Frese 2000). It may also be suggested that if an individual does not believe that the outcome of a personal venture will be influenced by their personal effort, it is unlikely that that individual will risk exposure to the high possibilities of failure (Mueller & Thomas 2000, p. 56).

In summary, a revisiting of the literature relating to locus of control appears to have addressed some of the scepticism with which this trait had previously been treated and suggests a small but positive correlation between an internal locus of control and the emergence of entrepreneurs (Collins, Hanges & Locke 2004; Stewart & Roth 2007). Notwithstanding all the criticism of this approach there does appear to be an essence of something encapsulated within it; that is, entrepreneurs believe in their ability to influence events. Given the huge differences in the results of various studies it is likely that there are other variables moderating the results (Zhao, Seibert & Lumpkin 2010) and locus of control appears to be insufficient as a single explanatory factor of entrepreneurial behaviour. The most that can be stated is that an internal locus of control can be viewed as a prerequisite for action, as action depends on perception of control and an internal locus of control increases the potential for a nascent entrepreneur to take action (Mueller & Thomas 2000). Following on from the examination of the key personal traits identified in the literature, attitudes toward risk must now be considered.

### 2.5.1.4 Risk
The approach to risk has been highly associated with need for achievement (McClelland 1961) and refers to “the perceived probability of receiving the rewards associated with the success of the proposed situation which is required by an individual before he will subject himself to the consequences associated with failure” (Brockhaus 1980, p. 513). Risk taking has also long been identified as an element of entrepreneurial behaviour (Caird 1993; Carland et al. 1984; McClelland 1961; Miller 1983; Palmer 1971).

Risk taking can be defined in terms of financial wellbeing, career opportunities, family relations and psychological wellbeing (Brockhaus 1980; Carland, Carland & Stewart 1996; Cox & Jennings 1995; Krauss & Frese 2005; Littunen 2000; Moenkelmeyer, Hoegl & Weiss 2012; Nieuwenhuizen & Groenewald 2006; Palmer 1971; Tyszka et al. 2011) and it has been
found that an entrepreneurs’ approach to risk has three elements: the awareness of risk – perception; the attitude towards risk – preference; and tolerance of risk – propensity (Gilmore, Carson & O’Donnell 2004). Each of these will be discussed in turn.

A low perception of risk has been linked with those entrepreneurs who have a strong belief in their ability to succeed at any given task. These individuals think that they are better equipped to deal with risk than non-entrepreneurs (Douglas 2006). In addition, entrepreneurs appear to see situations much more optimistically than non-entrepreneurs and so perceive more opportunities and fewer threats within entrepreneurial circumstances (Douglas 2006; Gilmore, Carson & O'Donnell 2004; Howard-De La Mare 2009).

In an attempt to mitigate risk and reduce uncertainty, entrepreneurs may conduct information searches and employ relevant human capital capabilities, both general and specific. However, the amount of effort put into information searches may be limited if the perceived costs, length of time to complete or urgency to enter the market override the importance of knowledge (Douglas 2006). Indeed it has been suggested that entrepreneurs may well suffer from over confidence driven by lower levels of information search activity before entering an entrepreneurial venture and they may therefore fail to perceive the amount of risk that is actually present (Douglas 2006; Hechavarria, Renko & Matthews 2012; Howard-De La Mare 2009).

There is research that suggests a negative correlation between risk and start-up decisions (LeRoux, Pretorius & Millard 2006). This suggests that the higher the perception of risk, the less likely individuals are to start up a business. The risk may not be enterprise failure but rather, the level of the financial or other stakes that are demanded to create the venture (Jain 2011). This suggests that in many cases it is not the risk of failure but the size of the stake that is a barrier to entrepreneurship.

Risk perception, the awareness of risk within a situation (Douglas 2006) is a result of the knowledge level of the individual entrepreneur and as discussed this will be affected by self-confidence, the thoroughness of information searches and the stakes involved. It is therefore difficult to accurately judge the level of risk that an individual perceives unless it is viewed through the knowledge lens of the entrepreneur. Indeed activities may appear less risky to the entrepreneur than they would to a manager or non-entrepreneur, or indeed to the researcher, due to the factors outlined above (Tyszka et al. 2011). This suggests that it is important to assess the perception of risk from the point of view of the entrepreneur and for the researcher not to be influenced by their own values.
With regard to the second element of risk — risk preference, defined as “a general tendency or the general desire to pursue or avoid risk” (Barbosa, Gerhardt & Kickul 2007, p. 89), it has been suggested that in deciding to become an entrepreneur, an individual is employing a “utility maximising model of career choice” (Douglas 2006, p. 3) with their decision based on income, the perceived risk of self-employment, work ethic and prerequisites. Individual risk preferences encompass six elements: probability of success, probability of failure, incentive value of success, incentive value of avoiding failure, achievement motive and motive to avoid failure (Atkinson 1957, p. 632). It has been suggested that entrepreneurial performance should be the greatest when there is the greatest uncertainty about the outcome and whether the motive to achieve or the motive to avoid failure is strongest (Atkinson 1957; Brockhaus 1980, 2002; Moenkemeyer, Hoegl & Weiss 2012). The literature has indicated that if the achievement motive predominates, the individual will show a preference for intermediate risk, whereas if the motive to avoid failure is stronger, then the individual will avoid intermediate risk, preferring very easy or very risky ventures. An explanation for this dichotomy may be that the individuals are either only prepared to take very low risks or that they are able to cope with the failure of a speculative task without assuming personal blame (Brockhaus 1980). This finding contradicts the popular and intuitively reasonable perception that entrepreneurs are high risk takers (Caliendo, Fossen & Kritikos 2009).

An alternative view of risk preference, highlighted by more recent literature, has again found no support for a model of an entrepreneur with a high risk preference (Tyszka et al. 2011) with entrepreneurs being typified by a moderate risk preference (Jain 2011). The perception that they have a high risk preference may be explained by the fact that every day, as part of their entrepreneurial endeavours, entrepreneurs conduct activities that are perceived by researchers as high risk, and the sheer fact that they are entrepreneurial may make risk inevitable and unavoidable (Tyszka et al. 2011). It does appear, however, that risk preference does have an influencing role on entrepreneurial intention and also on risk propensity (Barbosa, Gerhardt & Kickul 2007).

Risk propensity is defined as “the perceived probability of receiving the rewards associated with the success of the proposed situation required by an individual before he will subject himself to the consequences associated with failure” (Brockhaus 1980, p. 513). When this element is considered, it appears to be a function of variations in the distribution of possible outcomes, likelihoods and values. The entrepreneur will weigh up the perceived level of risk involved in starting a venture and the perceived possibility of failure and assess the potential outcomes (Brockhaus 2002; Tyszka et al. 2011). The assessment of these outcomes is not always based on rational calculations and can be affected by an individual’s predispositions.
towards risk (Stewart & Roth 2007) and is mitigated by age, gender, business stage, cultural background or the nature of the business being operated (Newton & Shreeve 2002).

Three levels of risk-taking, these being low, moderate and high, can affect the decision about whether to start a business (Brockhaus 1980) and as discussed above, most research suggests that entrepreneurs are moderate risk takers (Antoncic & Hisrich 2003; Jain 2011). There is little research into failed businesses and therefore it is difficult to assess the risk profiles of these entrepreneurial, yet ultimately unsuccessful individuals (Stewart & Roth 2001).

The literature shows inconsistent evidence for a relationship between risk taking and success (Douglas 2006) with some studies identifying a correlation between business founders and risk taking when compared to non-founders (Begley & Boyd 1987; Carland et al. 1984; Gurol & Atsan 2006; Stewart & Roth 2001; Zhao, Seibert & Lumpkin 2010) and other studies failing to find a difference between entrepreneurs and managers (Begley 1995; Brockhaus 1980; LeRoux, Pretorius & Millard 2006; Shane, Locke & Collins 2003; Tyszka et al. 2011).

The discrepancies in the literature can be summarised in two opposing positions; the first is that entrepreneurs will take more risks than managers as the entrepreneurial function entails coping with a less structured set of possibilities and more risk-tolerant individuals self-select entrepreneurial careers. This suggests that it should be able to identify differences in risk taking behaviours between entrepreneurs and managers (Stewart & Roth 2001). The second position suggests that the focus is on achievement motivation and fear of failure or desire for success. Individuals with a high nAch set challenging goals of moderate difficulty and accomplish them through effort whilst taking responsibility for their decisions (Moenkemeyer, Hoegl & Weiss 2012). This position suggests both managers and entrepreneurs can be high in achievement motivation and therefore little difference should be expected in risk propensity between the two groups (Brockhaus 1980; LeRoux, Pretorius & Millard 2006; Shane, Locke & Collins 2003; Stewart & Roth 2001; Tyszka et al. 2011). Recent meta-analyses of the extant data have indicated that the inconsistency in these results is due to differences in both definitions and measurements (Zhao, Seibert & Lumpkin 2010). Zhao et al. (2010) reported that the risk propensity model relates only to entrepreneurial intentions and explains those studies that report a higher risk propensity.

In addition, in their qualitative review of previous studies, Rauch and Frese (2000) found that high risk taking is negatively associated with business success. This inconsistency may be explained by the fact that entrepreneurs change throughout their business lives; their risk taking orientation can be moderated through age, experience and type of business. They
may well become more risk averse as their venture becomes more established and the consequences of failure increase (Cox & Jennings 1995) or through previous failures because they learn from their mistakes (Politis 2005; Westhead, Ucbasaran & Wright 2005).

What can be concluded is that being entrepreneurial involves a measure of risk and entrepreneurs appear to take calculated risks that they perceive to be within the limits of their skills and abilities (Mazzarol 2007; Shane, Locke & Collins 2003). Taking calculated risks can actually reduce the probability of failure and a positive attitude towards risk taking could be seen to be mandatory in an environment where risks are inevitable. A positive orientation to risk may help the entrepreneur take on unavoidable and often sought-after risk (Krauss & Frese 2005). Although not empirically proven it has been suggested that entrepreneurs enjoy risk for its own sake as a form of mental stimulation (Cox & Jennings 1995). Indeed, it may be argued that the successful entrepreneur is one who can correctly interpret risk and determine policies, which minimise the risks involved in any situation (Palmer 1971, p. 38).

The perception of risk and the perceived ability of the individual to affect the result are crucial to decisions about whether to initiate new ventures. If an individual does not believe that the outcome of a personal venture will be influenced by personal effort, then that individual is unlikely to risk exposure to the high penalties of failure (Mueller & Thomas 2000). This suggests that the risk profile of an entrepreneur may be the outcome of a combination of the need for achievement and locus of control.

The three traits outlined above formed the basis of much of the research into entrepreneurial traits. The concepts of personality theory were borrowed from psychology and applied to entrepreneurship with great enthusiasm (Miao 2012). As identified in the above section, using a personality trait approach to identify entrepreneurs has not offered definitive proof of causation and has had its critics. The next section considers these criticisms and considers alternative models based around more recent models of entrepreneurial attitudes, behaviours and intentions.

2.5.2 Criticisms of the Traits Approach and Subsequent Developments
The differences between the research across the three areas of creativity, innovation and entrepreneurship have led to marked variations in approaches. This has resulted in whole streams of research, such as traits research, being abandoned for decades (Stewart & Roth 2001) before being revisited as a new generation of researchers emerges. The differences in methodology have also driven different outcomes. Detailed quantitative approaches to specific occurrences, dealt with in isolation and with a focus on prediction and replication,
have been frequent, and have led to justified criticisms that there has been too much emphasis on small parts of the whole.

As mentioned previously in the sections discussing need for achievement and locus of control, the traits and personality approach was severely criticised in the late 1980s by a number of researchers, who suggested that the literature did not support a generic definition of the entrepreneur (Zhao, Seibert & Lumpkin 2010). It was stated that most attempts to differentiate between the entrepreneur and the small business owner failed to discover any significant differentiating factors (Brockhaus 2002; Gartner 1985). Indeed, the apparent lack of a consistent relationship between personality traits and entrepreneurship almost led to an abandonment of this approach to identifying entrepreneurs (Zhao, Seibert & Lumpkin 2010). The following section will review the criticisms of the traits approach and identify subsequent approaches that have developed out of this criticism in the study of entrepreneurship.

2.5.2.1 Criticism
The criticism of the traits approach falls into three areas: the definition of the entrepreneur, the lack of empirical evidence that entrepreneurs are different from the general population and the notion that traits are unchanging and acquired at birth.

The definition of the entrepreneur appears to cause many of the issues, which arise when comparing the data and finding consistent results. A review of the literature shows that many and vague definitions of the entrepreneur have been used, or the term has not been defined at all (Gartner 1988, p. 48). A comparison of McClelland’s definition of a manager with decision rights (McClelland 1961) with the owner manager (Shane, Locke & Collins 2003) or the head of a successful business venture (Hornaday & Aboud 1971) or even the formal source of authority within a business (Mueller & Thomas 2000), show the diversity in definitions that have been used in entrepreneurial research. It may therefore be suggested that if researchers cannot decide on a common definition and few studies employ the same definition, this will lead to sample selections within studies that are not homogenous and comparable results will be very hard to find (Collins, Hanges & Locke 2004; Gartner 1988; Jain 2011).

The issue of definition leads to the second and understandable criticism of the traits approach, that there is limited empirical evidence to support the view that there is a set of characteristics that effectively defines the entrepreneur (Naffziger, Hornsby & Kuratko 1994). It has been posited that it is highly unlikely that there is an entrepreneurial “type” (Gartner 2010) and whilst it may be that the concepts of locus of control, risk taking and need for achievement maybe useful (Gartner 1985, 2010) the number of traits that are associated with
the entrepreneur has led to an ‘everyman’ definition that could be applied to almost anyone (Brockhaus 2002; Gartner 1988; Naffziger, Hornsby & Kuratko 1994). From the entrepreneurial literature, the following (not exhaustive) list can be found: the tolerance of uncertainty, persistence, independence, ownership, aggression, innovativeness, proactivity, long range thinking, high energy levels, need for autonomy, dominance, personal control, intrinsic work motivation, self-confidence, sense of urgency, good health, realism, emotional stability, attraction to the non-routine and a low need for status (Ahmad 2010; Cubico et al. 2010; Hechavarria, Renko & Matthews 2012; Yazdanseta, Tafreshi & Sharifi 2013). The creativity literature has found that a creative person has: superior creative ability, broad interests, an attraction to complexity, high energy, persistence, curiosity, intellectual honesty, independence of judgement, intuition, self-confidence, the ability to resolve anomalies and to accommodate opposite or conflicting personalities and a firm sense of self (Álvarez-Herranz, Valencia-De-Lara & Martínez-Ruiz 2011; Giacomini & Cook 2000; Gurol & Atsan 2006; Yusof, Sandhu & Jain 2007). Few if any of these have been proven empirically, but rather are observations of researchers based on their contact with these individuals and the approach has been rightly criticised (Gartner 1988, 2012). Although one of the main critics of the traits approach, William Gartner, has softened his approach in recent years by accepting that some aspects of the traits approach may be valid, he still expresses concern when a single trait is used to differentiate entrepreneurial individuals (Gartner 2010).

The lack of empirical evidence casts significant doubt on the explanatory power of personal characteristics in defining the entrepreneur and it has been suggested that conventional assessments of entrepreneurial motivation lack significance in the explanation of venture performance (Solymossy 1998). This is because a number of studies identified that entrepreneurial behaviour traits are normally distributed through the general population (Gartner 1985), thus suggesting that traits may not be the driver of behaviours and that there are other variables at play. Indeed the prediction of individual behaviour may be complicated by the relative strength of the individual’s personality orientation (Carland, Carland & Stewart 1996; Sexton & Bowman 1986).

The criticism of the traits approach, on the basis that many people in the general population possess the traits attributed to entrepreneurs, may be misleading as not all those predisposed to entrepreneurship become entrepreneurs and there are other push and pull factors that affect an individual’s decisions. It can therefore be suggested that entrepreneurial values, attitudes and perceptions are a precondition for entrepreneurial behaviour but it should not be assumed that if someone possesses these characteristics they will inevitably become an entrepreneur (Mumford & Gustafson 1988). This is summarised well by Solymossy (1998) when he states there is a question as to ‘whether entrepreneurs possess
unique and enduring personality characteristics or whether entrepreneurial individuals are different by virtue of their attitudes and behaviour implying a combination of dispositional orientation and sustained behaviour” (Solymossy 1998, p. 40). This is one of the areas that has been addressed by the subsequent models used to review entrepreneurial behaviour.

The final criticism levelled at the traits approach is the implied assumption that traits are acquired at birth or shortly afterwards and are immutable and unaffected by age, experience or circumstances (Gartner 1985; Moenkemeyer, Hoegl & Weiss 2012; Naftziger, Hornsby & Kuratko 1994). This criticism encompasses the frequent studies of nascent entrepreneurs, as the assumption is that the observable traits of these individuals will be the same throughout the entrepreneurial process (Gartner & Liao 2012). In contrast to the view that traits are non-malleable (Moenkemeyer, Hoegl & Weiss 2012), it has been suggested that nAch or an internal locus of control is not necessarily imprinted at birth (Gartner 2012) and it may be argued that these are acquired later through experience in the workplace, education, role models, parents, culture or the social setting. In addition attitudes may be context sensitive and subject to change by individual initiation or external factors (Solymossy 1998).

As discussed previously a number of meta-analyses of the literature have addressed some of the above criticisms, and more recent meta-analyses suggest that there is a difference between entrepreneurial intention and performance. This suggests that future research must be clear on the stage of the entrepreneurial process that is being investigated, as investigations into different stages of the process can account for the differences in results (Zhao, H., Seibert & Lumpkin 2010). In agreement with Gartner (2010), the meta-analyses suggest that a review of one or two traits is not appropriate, and that a broader approach should be taken (Collins, Hanges & Locke 2004; Jain 2011). As a result, alternative models have been developed which take into account traits, behaviours and the wider environment in which the entrepreneur is operating.

2.5.2.2 Alternative models
A suggestion emanating from the criticism of the traits approach is that rather than look at who the individual is, more attention should be paid to what they do (Gartner 1988, p. 63), in essence, a reorientation toward a behavioural and attitudinal approach to entrepreneurship. This approach is based on the premise that the diversity amongst entrepreneurs may be larger than the difference between entrepreneurs and non-entrepreneurs (Rauch & Frese 2000) and the fact that entrepreneurial behaviours are temporal. Early criticisms of the traits approach suggested that entrepreneurial behaviour ceased once venture formation is over (Gartner 1988) although this view has been challenged with a number of studies considering entrepreneurial behaviour in the process of venture growth. This more recent research
suggests that different traits may be appropriate at different stages of the entrepreneurial process (Drnovsek, Wincent & Cardon 2012; Markman, Balkin & Baron 2002).

To counter the criticisms outlined above, two concepts have received attention: entrepreneurial attitude orientation (EAO) and entrepreneurial self-efficacy (ESE) (Abdul-Mohsin, Abdul-Halim & Ahmad 2012; Carland, Carland & Stewart 1996; Drnovsek, Wincent & Cardon 2012; Krauss & Frese 2005; Lope Pihie & Bagheri 2011; Miao 2012; Rauch & Frese 2000; Robinson et al. 1991; Solymossy 1998). Both of these concepts incorporate the attitudinal and behavioural aspects of entrepreneurship whilst maintaining the positive elements of traits research with EAO being test-based and ESE being more subjective. It is acknowledged that EAO, a model which measures the entrepreneurial attitudes of individuals with a composite score based on measures from four attitude subscales comprising achievement in business, innovation in business, perceive personal control of business outcomes and perceived self esteem in business (Gibson et al. 2011 p1023; Harris and Gibson 2008, p569) is a factor in the consideration of entrepreneurship. It is not, however, elaborated in the literature review as it is a test-based concept and testing was not carried out as part of this research. ESE has a more subjective approach and appeared more relevant to the study.

2.5.2.3 Self-Efficacy
It has been suggested that an individual's level of motivation, affective state and actions are based more on what they believe than what is objectively true, and self-efficacy refers to the belief of the individual in their ability to develop and deliver activities that produce expected outcomes or facilitate the ability to control events (Bandura 1977b, 1977a; Chen, Greene & Crick 1998; LeRoux, Pretorius & Millard 2006). This does not mean that organising the action will automatically result in the required outcome, but rather that a high level of self-efficacy means the individual believes they have the power to produce results and will therefore be more likely to attempt to make things happen.

Self-efficacy can be confused with a number of other concepts including self-esteem and locus of control, but to do this is a mistake as the concepts are not the same (Bandura 1977b, 1977a; Boyd & Vozikis 1994; Chen, Greene & Crick 1998). Self-efficacy comprises judgements about personal capability whereas self-esteem involves judgements of self-worth, and an individual needs more than confidence in their ability to do well (Bandura 1977b, 1977a; Moenkemeyer, Hoegl & Weiss 2012). It is posited that perceived personal efficacy can predict the goals that people set for themselves and subsequently their performance, whereas self-esteem affects neither of these things (Bandura 1977b). In
relation to locus of control, the two concepts are measuring completely different phenomena; self-efficacy is a specific measure, measuring beliefs about whether one can produce certain actions, whereas locus of control is a more general measure, measuring beliefs about whether actions affect outcomes (Boyd & Vozikis 1994; Chen, Greene & Crick 1998). Outcomes arise from action and outcome expectancy is the belief that taking of action will produce the desired outcome (Moenkemeyer, Hoegl & Weiss 2012). However, self-efficacy only drives performance and not outcomes, so it is important not to miscast performance as an outcome (Bandura 1977b, 1977a; Boyd & Vozikis 1994; Chen, Greene & Crick 1998). In summary self-efficacy beliefs emphasise an assessment of capability as opposed to a concern with outcome expectations, in effect “I can do this?” rather than “if I do this what will happen?” (Boyd & Vozikis 1994, p. 68).

When self-efficacy is reviewed, it must be noted that it is a situation-specific concept (McGee et al. 2009) and as such different people with similar skills, or the same people in different circumstances, may perform differently depending on their level of self-efficacy (Bandura 1977b; Chen, Greene & Crick 1998). People with high self-efficacy may assess an environment as an opportunity, whilst those with lower self-efficacy levels may consider the same environment risky. In identical situations, those with high self-efficacy feel more able to cope and anticipate different outcomes than those with lower levels (Chen, Greene & Crick 1998; LeRoux, Pretorius & Millard 2006).

People with a strong belief in their capabilities in a specific set of circumstances “approach difficult tasks as challenges to be mastered rather than as threats to be avoided” (Bandura 1995, p. 11). Individuals with high self-efficacy tend to set challenging goals and maintain a strong commitment to them, invest high levels of effort, are task focussed, think strategically, attribute failure to insufficient effort and have a success orientation (Chen, Greene & Crick 1998; LeRoux, Pretorius & Millard 2006). These people can be characterised as ‘resolute strivers’ (Bandura 1977b, p. 42) who believe passionately in themselves and are willing to expend extraordinary effort and may suffer reversals in the pursuit of their vision. They are not deluded by tough odds but simply believe they have what it takes to overcome them.

The concept of self-efficacy has been portrayed as a distinct characteristic of entrepreneurs (Chen, Greene & Crick 1998) and has been widely used in entrepreneurial studies, as entrepreneurial self-efficacy (ESE). The definition of ESE is, as a person’s belief in their ability to successfully launch an entrepreneurial venture (Hechavarria, Renko & Matthews 2012; McGee et al. 2009). ESE has been empirically linked to entrepreneurial phenomena and is playing a larger role in the understanding of entrepreneurial motivation as it incorporates both personality and environmental factors (Chen, Greene & Crick 1998;
Self-efficacy is an appropriate concept to use in the study of entrepreneurship because of its nature, as its task specificity helps address the lack of specificity in previous entrepreneurial research. It also includes an assessment of the confidence an individual has in their ability to influence internal and external challenges and opportunities and as it is close to the choices and actions that entrepreneurs undertake, it can be used to predict and study entrepreneurs’ behavioural choices, persistence and effectiveness (Boyd & Vozikis 1994; Drnovsek, Wincent & Cardon 2012). Finally, the relationship between self-efficacy and behaviour is best demonstrated in challenging situations of risk and uncertainty, which is behaviour believed to typify entrepreneurs (Chen, Greene & Crick 1998; Drnovsek, Wincent & Cardon 2012).

Bandura (1977b) suggests that it is the attributes rather than the outcomes of performance that determine self-efficacy levels and it is this that makes it a better predictor of performance accomplishment than other measures. Indeed individuals with low self-efficacy may perform well but if they attribute this to external attributes such as luck or chance, they are less likely to attempt to make things happen (Chen, Greene & Crick 1998). Self-efficacy levels have an important effect in the context of entrepreneurship as they affect choices in behaviour (Chen, Greene & Crick 1998; LeRoux, Pretorius & Millard 2006).

Self-efficacy levels can be affected by formative experiences, as surviving these may foster in the individual the belief that they are capable of successfully behaving entrepreneurially as they have overcome hardship in the past. Starting a business is a purposive and intentional career choice and is influenced by contextual and dispositional factors, and self-efficacy forms a key component of more recent intentional models and appears to be an important variable in explaining and understanding the entrepreneurial intentions of individuals and how this translates into the desire to act upon these intentions (Boyd & Vozikis 1994; Chen, Greene & Crick 1998; Hechavarria, Renko & Matthews 2012; Townsend, Busenitz & Arthurs 2010). Indeed, the literature has identified that those with a high level of self-efficacy are more likely to become entrepreneurs and that measures of ESE were better predictors of career decision outcomes than other traditional measures such as locus of control (Chen, Greene & Crick 1998; Markman, Baron & Balkin 2005; Shane, Locke & Collins 2003; Tyszka et al. 2011).

Entrepreneurial Self-Efficacy has been used in the development of models of entrepreneurial intentions, which aim to go beyond descriptive research regarding context or characteristics by developing frameworks that focus on the conscious or intended actions of new venture
creation (Kickul et al. 2009; Laguna 2013; Markman, Balkin & Baron 2002). Studies of entrepreneurial intention have been used in the development of the Theory of Planned Behaviour which considers the relationships between the intention to perform, behaviour and the actual performance (Ajzen 1991; Ajzen & Fishbein 1980). The theory suggests that entrepreneurial intentions develop from the feasibility and desirability of entrepreneurial action and that intentions are the immediate antecedents of behaviour (Bullough, Renko & Myatt 2014; Izquierdo & Buelens 2010). This integration of ESE allows investigation into the propositions that “entrepreneurial intention will be stronger and the probability of entrepreneurial action will be higher when there is a high degree of self-efficacy stemming from enactive mastery, an entrepreneurial role model, social persuasion derived from social support and a high degree of goal setting and commitment” (Boyd & Vozikis 1994, p. 73).

There has been extensive research into the relation of ESE to entrepreneurial intentions and empirical research has shown that ESE is a strong predictor of intentionality (Boyd & Vozikis 1994; Kickul et al. 2009) with individuals with a higher ESE tending to have higher entrepreneurial intentions (Kickul et al. 2009).

This intention appears to be very important in the study of actual behaviours and the individuals who go on to start entrepreneurial ventures. It is suggested that ESE determines the perceptions of alternatives and options, and Markman, Balkin and Baron (2002) found evidence that in high-tech industries, inventors with a higher level of self-efficacy were more likely to choose to exploit their inventions by launching a new business. This contrasted with those with a lower level of self-efficacy who preferred to work for established companies. This finding has been quoted in later studies but there appears to be little further empirical evidence to test the validity of this position (Kickul et al. 2009; Laguna 2013).

In summary, the study of ESE adds a new dimension to the research into the characteristics of entrepreneurs, and addresses some of the challenges that have been made to the traditional traits approach. ESE provides a framework which develops many of the constructs previously discussed such as locus of control, need for achievement and risk and creates a structure by which some of the behaviours exhibited by entrepreneurs can be better understood and integrated with their pre-existing traits. It appears that high levels of ESE drive a positive view of the feasibility and desirability of starting a venture, which is enhanced by entrepreneurial exposure (Harris, Gibson & Mick 2009). Entrepreneurial behaviour appears to be a function of intentions and attitudes and ESE appears to have a major influence on entrepreneurial intentions (Lope Pihie & Bagheri 2011).

From the above discussion, it can be suggested that trait theory and the criticisms of it do not necessarily contradict each other. Rather, it appears there is a focus on different levels of
specificity and on the development of more complex models (Rauch & Frese 2000; Robinson et al. 1991) that combine trait theory’s broad classes of behaviour with Gartner’s (1985) requirement for a specific level of behaviour. In addition, the introduction of the construct of Entrepreneurial Self-Efficacy into entrepreneurial research has added depth to the traits approach and may be a better indicator of entrepreneurial intentions than previous trait models (Gibson, Gibson & Zhao 2011; Harris & Gibson 2008; Harris, Gibson & Mick 2009; Shariff & Saud 2009).

This section has considered the traits of the entrepreneur and has considered models that move this research from a pure traits approach to one that considers the attitudes and intentions of the entrepreneur and also the environments in which they operate. To develop these themes further, the following sections will consider the environment in which the entrepreneur develops, as this appears to have relevance to the development of the identified traits and ultimately the entrepreneurial intentions of individuals. As discussed in the criticism of the traits approach, traits appear to be malleable and can change with experience (Gartner 2012). An understanding of the childhood and early career experiences of entrepreneurs can, therefore, add insights into their entrepreneurial attitudes and intentions.

2.5.3 Childhood

As discussed previously entrepreneurial attitudes develop over time and their traits may be modified and enhanced through experience. It has been suggested that childhood environment can shape the development of future entrepreneurs (Cox & Jennings 1995; Drennan, Kennedy & Renfrow 2005; Mumford & Gustafson 1988; Palmer 1971) both through the environment in which they spend their formative years, and the shaping experiences that have an impact on their upbringing. This section will consider both of these elements in turn.

2.5.3.1 Childhood Environment

The literature suggests that entrepreneurial intention comprises, a positive view of the desirability and feasibility of starting an entrepreneurial venture, and the traits of a need for achievement; locus of control and risk profile. These can be traced to early childhood (Drennan, Kennedy & Renfrow 2005; Drennan & Saleh 2008; Newton & Shreeve 2002; Palmer 1971). The important factors appear to be the environment in which individuals are raised and the exposure they have to entrepreneurship.

Early literature suggests that supportive parents create a rich family environment, especially where parents set high standards and expectations coupled with an emotional involvement.
with the child’s activities. This environment has been identified as a breeding ground for innovative individuals (Mumford & Gustafson 1988; Palmer 1971). In addition these households often demonstrate the presence of a “Protestant work ethic”, and the development of independence and autonomy in childhood, which have been identified as key antecedents of entrepreneurs (Mumford & Gustafson 1988).

This research has been revisited more recently and suggests that the presence of a rich family environment where children are urged and expected to achieve outside of the home at an early age results in a higher achievement motivation than is the case of their counterparts who are urged to do so in later years or not at all (Drennan, Kennedy & Renfrow 2005; Drennan & Saleh 2008; Newton & Shreeve 2002). The research suggests that should a child receive early support, this may drive the further development of an internal locus of control and may be linked to self-reliance, which has been identified as an important entrepreneurial characteristic (Drennan, Kennedy & Renfrow 2005; Newton & Shreeve 2002; Rigby, Mueller & Partridge 2008). A study of a group of British entrepreneurs conducted by Newton and Shreeve (2002) found that most individuals that later went on to become entrepreneurs did have supportive parents, although they did find cases in which a non-supportive environment drove entrepreneurial behaviour through fear of failure from rejecting parents or lack of parental interest (Newton & Shreeve 2002).

The theme of the promotion and stimulation of intellectual abilities and values leads into a consideration of the importance of education and the levels of education attained by entrepreneurs. Education levels are often cited as important in the development of entrepreneurs (Álvarez-Herranz, Valencia-De-Lara & Martínez-Ruiz 2011; Naudé et al. 2008). A study of entrepreneurs across twenty-two countries conducted by Álvarez-Herranz, Valencia-De-Lara and Martínez-Ruiz (2011) suggests that education has an important association with entrepreneurship. However, Newton and Shreeve’s (2002) research found that there was no evidence that the achievement of advanced educational levels was important in the development entrepreneurs. Indeed their study of British entrepreneurs found that although a much higher than average percentage of participants had attended fee paying schools, which were assumed to offer better academic outcomes, their academic results were surprisingly poor, with twenty-two per cent having left school either before or at the age of sixteen, having achieved at most the equivalent of a high school certificate (Newton & Shreeve 2002). These findings are supported by Schoon and Duckworth (2012), who, in their study of entrepreneurial activity in 6000 British citizens, found that academic ability was negatively associated with entrepreneurial intention. They suggest that this is an outcome of boys who are doing less well at school having more realistic career plans, or of the school system stifling initiative and innovation and reinforcing traditional ways of thinking.
thus driving these types of personalities into alternatives as soon as they become available (Mumford & Gustafson 1988; Schoon & Duckworth 2012).

To illustrate the impact of childhood experiences, three recent case studies have been reviewed. These comprise Jyothi Reddy, an Indian/US HR and IT entrepreneur, Wee Kheng, a Chinese entrepreneur in Sarawak and Claude Blanchet, an entrepreneur from Quebec who became the first Director General of the Société de développement des cooperatives du Québec (Cooperative Development Corporation), founding President of the FTQ’s Fonds de solidarité (Quebec Federation of Labour Solidarity Fund) and Chief Executive Officer of the SGF (Société générale de financement du Québec, or General Investment Corporation of Québec) (Bhatnagar 2012; Filion & Chirita 2012; Lam 2012). Each of these case studies adopted a narrative approach, presenting the life experiences of the individuals and charting their rise from humble backgrounds to economic success in their chosen field.

Jyothi Reddy, an Indian national, created a multi-million-dollar recruitment software company in the US having overcome the challenges of being brought up in an orphanage, having limited access to education and having two children by the age of eighteen. She states that her experiences of poverty motivated her to create a small business to fund her education and she qualified as a teacher in India. On moving to the US, she again worked in manual roles, until she identified a niche in the market after having to travel to Mexico to obtain her visa stamp, to place immigrant labour with employers and facilitate the visa process (Bhatnagar 2012).

Wee Kheng Chiang was a Chinese immigrant to Sarawak, he was brought up in poverty as the son of a farmer. His father died when he was six and his mother raised him along with an older brother. He did not start his education until he was sixteen and one of his main accomplishments was to learn English. This enabled him to obtain a job as a clerk in a shipping firm. As with Jyothi Reddy, this experience enabled him to identify a niche in the market, in providing expat Chinese with a service to ship both people and cargo back to China, as the major shipping companies were focussed on shipping to Europe. Wee Kheng Chiang ended his life as one of the most prominent business leaders in Singapore, being known as the “Father of Philanthropy” and leaving a legacy that his family continued (Lam 2012).

Claude Blanchet was exposed to entrepreneurial activity from a young age, as his father ran a number of small businesses, such as a road-side food stall, a gas station and a family restaurant. These businesses, whilst having limited success, did not provide great wealth for
the family and the family took in boarders to make ends meet. The young Claude was a poor student but was interested in business and opened his first, a roadside gas station, at the age of fourteen. Although he wanted to leave school to pursue his business interests, he was persuaded by his father to stay on and he completed school, and gained an undergraduate degree before attending on of the first MBA courses in Québec. He worked with a number of larger organisations before becoming interested in social entrepreneurship and became the first Director General of the Société de développement des cooperatives du Québec (Cooperative Development Corporation), which fostered the development of cooperative initiatives. He returned to the entrepreneurship in the private sector founding a seed capital organisation that funded small businesses throughout Québec (Filion & Chirita 2012).

It is important to note, however, that such occurrences are not the sole province of the entrepreneur and it is not so much the experience but how the individual reacts to it that sets them apart from the rest of the population (Cox & Jennings 1995; Newton & Shreeve 2002). Indeed, the entrepreneurs who identified these experiences in their early childhood did not report a traumatic or dysfunctional childhood, but rather saw their childhood as happy (Cox & Jennings 1995). This may indicate that the early development of the individual’s ability to cope with adversity, risk and uncertainty increased self-reliance and the ability to see the positive in situations and that this enabled them to exploit opportunities in later life (Drennan, Kennedy & Renfrow 2005; Drennan & Saleh 2008; Newton & Shreeve 2002). Indeed, research by Drennan et al. (2005, 2008) of 2000 Australian university students reported that those who perceived their childhood to be challenging found starting a business more desirable than those who saw their childhood as less challenging. This may be because those individuals who had been forced to overcome mental and physical barriers and who had survived these experiences may have perceived that they had little to fear from new challenges. This in turn may lead to the development of enhanced self-esteem and the development of an internal locus of control and a more open risk profile (Drennan & Saleh 2008). In addition, those who have faced adversity in their early developmental stages appear to become more self-reliant and perceive the autonomy of self-employment as an appealing option and the challenge of starting a business, less daunting than those with less traumatic childhood experiences (Drennan, Kennedy & Renfrow 2005; Drennan & Saleh 2008).

The literature covering the childhood environment indicates that the combination of parental expectations, a relatively unstructured upbringing, and an environment promoting intellectual development coupled with parental role models provides a hot bed of innovative and entrepreneurial potential. It must be noted, however, that it is not the environment per se but
how the individual reacts to it that separates the entrepreneur from the non-entrepreneur. As stated by Woodman, Sawyer and Griffin (1993, p. 297) “antecedent conditions influence the personality and cognitive characteristics of the individual and to some extent probably determine the current situation in which the individual finds themselves”. From this, it can be posited that the childhood environment impacts on entrepreneurial traits, especially risk tolerance and self-efficacy and may drive entrepreneurial intentions.

### 2.5.4 Early Career Experiences

The shaping experiences of early childhood can also be enhanced by events in the early career of an individual. Overcoming of adversity in the early years of a career has been identified as an antecedent of entrepreneurship (Cox & Jennings 1995). Such experiences can include dealing with challenging assignments, or even complete financial failure, leading to the development of extreme resilience (Moenkemeyer, Hoegl & Weiss 2012). Mumford and Gustafson (1988) found that individuals initially exposed to a challenging work environment display better long-term performance than those that did not have these experiences (Mumford & Gustafson 1988). This research, coupled with the literature on childhood shaping experiences, may indicate that self-sufficiency in childhood developed through adverse conditions may lead to an individual being able to successfully cope with the challenges faced in entrepreneurship.

#### 2.5.4.1 Previous Experience

The literature indicates that experience has an impact on entrepreneurial performance. There is an observed phenomenon that entrepreneurs who are on their second or third venture creation activity often have more success than those on their initial start-up (Gartner 1985; Politis 2005). In the entrepreneurial context, entrepreneurial learning appears to be an iterative exponential process by which experience is transformed into knowledge (Politis 2005) and the performance of subsequent new ventures is affected by prior start-up experience, where the entrepreneur has learnt by doing and is less of a novice in the entrepreneurial sphere (Westhead, Ucbasaran & Wright 2005).

The outcome of previous entrepreneurial events, be it success or failure, will have an impact on how the entrepreneur moves forward with subsequent ventures (Politis 2005, 2008). A previously successful venture is likely to result in the replication of previous actions and the creation of a path for success in following ventures. Whilst this may prove a successful approach, if it is the only approach to an opportunity considered by the entrepreneur, it may lead to path dependence and a lack of flexibility (Politis 2008).
Failure, by way of contrast, appears to offer a much broader experience and could be considered a prerequisite for learning. Many successful entrepreneurs attribute their subsequent success to the learnings that they gained from previous business failures (Mumford & Gustafson 1988; Politis 2005). In this way failures can be seen as a crucial aspect of the experience base as they offer the entrepreneur the opportunity to identify and focus on why the failure occurred, and a mechanism to reduce uncertainty through experience. In this way, failures can have a positive influence on the knowledge base. It is failure that provides the opportunity for altering future behaviours and stimulates an exploratory search for new possibilities, if the entrepreneur sees the outcome of failure as the ability to obtain otherwise unavailable information. The scale of the failure will have some impact on this ability, as a moderate failure should provide the entrepreneur the opportunity to recover which may not be possible after a catastrophic failure (Politis 2005). This view has been tempered recently by Yamakawa, Peng and Deeds (2013) whose findings indicate that a greater number of previous failure experiences may not engender subsequent success (Yamakawa, Peng & Deeds 2013). Their research does suggest, however, that successful outcomes are possible if the individual avoids blaming the failure on external conditions or luck, is internally motivated, and has not failed too many times (Yamakawa, Peng & Deeds 2013).

A positive outcome following failure indicates a level of resilience in the individual and a limited amount of literature is available into the impact of failure on the resilience of the individuals involved and their future innovative functioning (Moenkemeyer, Hoegl & Weiss 2012). The research by Moenkemeyer, Hoegl and Weiss (2012) supports the previous studies, which suggest that early experiences shape later experiences and that the development of resilience depends on a history of prior experience and a mix of both success and failure is required. The most recent research links the development of this resilience with pre-existing attitudes, such as intrinsic motivation and a level of self-efficacy associated with a willingness to take responsibility for failure (Yamakawa, Peng & Deeds 2013). Indeed, it has been stated that success does not breed success and that rather, success follows failure (Moenkemeyer, Hoegl & Weiss 2012). It is possible that the experience of failure modifies entrepreneurial attitudes, especially risk preferences (Politis 2005; Westhead, Ucbasaran & Wright 2005) and can influence future entrepreneurial intentions.

In their study of innovation within a global hospitality company, Moenkemeyer, Hoegl and Weiss (2012, p. 634) suggest that there are six traits of an entrepreneur (a number of which have already been discussed) that are malleable through both success and failure. These are self-efficacy, outcome expectancy, optimism, hope, risk propensity and self-esteem.
Each of these are key determinants of innovative functioning and the development of resilience (Moenkemeyer, Hoegl & Weiss 2012). An awareness of these traits and an understanding that they can be changed by both success and failure indicates that it may not be possible to identify an entrepreneur by these characteristics alone. As the traits change over time, individuals may become more or less entrepreneurial depending on the sum of their experiences.

In summary, both success and failure appear to be important in the development of entrepreneurial knowledge and resilience, and whilst failure is often seen as a negative, the research suggests that positive outcomes can come from failure. Some researchers even go so far as to suggest that prior failure is a requirement of future success (Moenkemeyer, Hoegl & Weiss 2012). The experiences of success and failure appear to be more important than simply age and experience (Weber & Carlsen 2012; Weber & Schaper 2007).

2.5.5 Summary

From the above discussion, it is clear that whilst the traits approach has validity, it has been rightly criticised, and there is a need to move the focus away from pure traits research towards a more sophisticated approach that looks for commonalities in attitudes and behaviours. For whatever reason, the entrepreneur has the ability to see what others cannot and the more sophisticated approach of ESE appears to go some way to providing a more robust way of explaining the attitudes and behaviours of entrepreneurial individuals.

In building on the early traits research, ESE has combined that approach with an examination of the individual’s behaviours and attitudes, and of the environment in which they are operating, to give a richer picture of the individual and the way these attributes drive the feasibility and desirability of entrepreneurship (Harris, Gibson & Mick 2009). This combination approach is important as experiences and environment are important mediators of behaviour, and traits and attitudes are not permanent (Gartner 2012) and are affected by these other factors. The changes continue into adulthood with the stock of experience having a profound effect on the attitudes, behaviours and intentions of an individual, modifying them and their underlying traits on an ongoing basis. Indeed it has been suggested that becoming an entrepreneur can itself amount to a change, which is large enough to affect an individuals’ personal characteristics (Littunen 2000, p. 295).

Figure 2.2 shows identified linkages between the environmental factors that can help shape the entrepreneurial individual and the elements that contribute to those environmental factors to them.
The literature suggests that general traits can predict behaviour but only through mediating processes such as experience, motivations and personality changes, and that research should conceptualise an individual’s characteristics in terms of more specific attributes, rather than broad trait measures. A final observation that emerges from the literature is that the interactions between individuals, characteristics and their situations predict entrepreneurial intentions more effectively than one factor or trait alone (Rauch & Frese 2000, p. 117).

The traits, attitudes and behaviours of entrepreneurial individuals do not automatically result in innovative ideas or venture creation. Motivation is required before an individual can harness these traits and attitudes and take action. This will be considered in the next section.

2.6 Motivation for Innovation and Entrepreneurship
The literature on creativity, innovation and entrepreneurship has long considered the factors that drive innovation in an individual, organisation or country (Anderson, Neil et al. 2004; Bhaduri & Kumar 2011; Fagerberg 2003b, 2003a; Gilson & Madjar 2011; Mumford & Gustafson 1988; Palmer 1971; Ross, Mitchell & May 2012; Scott & Bruce 1994; Van der Ven 1986). A review of this literature has identified three main areas of research. This section will consider the motivations for innovation and entrepreneurship and will consider them from a micro, meso and macro perspectives – that is, at the levels of the individual, the firm and the environment. This section differentiates between innovation, entrepreneurship, and venture creation, as they are separate activities driven by different motivations.
2.6.1 Individual Motivations for Innovation and Entrepreneurship

2.6.1.1 Innovation
By starting with the individual, this section recognises the importance of the decision by an individual to address a perceived problem and thereby create a solution. This solution may be radical or incremental (Damanpour & Aravind 2012; Gilson & Madjar 2011; Miron, Erez & Naveh 2004; Zhao, F. 2005) but it gives the opportunity to change current practices and behaviours. To understand the drivers of this process it is important to understand the reasons for engaging in creative activity and the types of problem being responded to, as these factors will influence the type of creativity that occurs (Unsworth 2001). Intrinsic motivation theory suggests that there are two influencers, intrinsic and extrinsic motivations (Bhaduri & Kumar 2011; Gilson & Madjar 2011; Unsworth 2001).

Intrinsic motivation theory suggests that if an individual has a wish to be creative or achieve a specific goal state then they will more likely by driven by intrinsic motivations whereas if there is pressure for a solution they will have an extrinsic motivation (Gilson & Madjar 2011). The distinction between intrinsic and extrinsic motivations is important in determining the type of innovation produced. It has been suggested that intrinsic motivations such as duty, enjoyment, personal satisfaction, altruism and idea development will predicate a preference for problem-driven innovation resulting in radical innovation – that is, new technology, markets or applications (Henderson & Clark 1990).

In contrast, innovation that is solution driven and motivated through extrinsic motivations such as financial or other rewards, peer pressure, statutory requirements and work deadlines are more likely to produce incremental innovations, that is minor changes to products that exploit the potential of established designs (Bhaduri & Kumar 2011; Caird 1994; Gilson & Madjar 2011; Henderson & Clark 1990; Ross, Mitchell & May 2012). Whilst broad-based studies of individual motivations are limited, research on Indian entrepreneurs by Bhaduri and Kumar (2011) found that both extrinsic and intrinsic motivators were present throughout the three states of the innovation process, which they identified as idea generation, experimentation and application. Whilst intrinsic motivation was seen to decrease the closer to commercialisation the individual got, elements remained throughout the process and very few innovators were purely extrinsically motivated (Bhaduri & Kumar 2011).

The literature has identified some very personal reasons why individuals choose to innovate, especially in areas where they are not currently employed. These include the desire for independence and intellectual challenge (Sauermann & Cohen 2010). It has been suggested that innovators and entrepreneurs with an intrinsic motivation do not work harder under the
influence of monetary reward (Amabile 1998); rather, freedom and the desire to change the status quo were identified as more important motivations. However, this has been challenged with more recent research finding a link between income and innovation (Sauermann & Cohen 2010; Unsworth & Clegg 2010). The response to personal unmet needs and a frustration with current products and services can provide a powerful motivation to innovate and this may be coupled with a passion for a cause or interest and the sheer joy of experimenting and finding solutions (Sauermann & Cohen 2010). What is essential is having a detailed understanding of the problem space in order to have the competency to deliver a workable solution (Ross, Mitchell & May 2012).

2.6.1.2 Venture Creation
Two types of entrepreneur have been identified, characterised as push and pull entrepreneurs (Kirkwood 2009; Verheul et al. 2010), although this terminology has been replaced more recently with opportunity and necessity entrepreneurs (Giacomin et al. 2011). It is important to understand the difference between these two types of entrepreneurs as they have different socio-economic characteristics and different ways of managing, and often deliver different levels of performance. As a consequence, they each have a different impact on economic growth and job creation. They may also have different motivations (Verheul et al. 2010).

The motivation to move from creativity and innovation to venture creation again involves both intrinsic and extrinsic motivations. Opportunity entrepreneurs, that is those who choose to create a venture rather than those who are ‘forced’ to create one through economic necessity, appear to have extrinsic motivations and a number of these have been identified in the literature. These include market opportunities, social status, profit and financial success, recognition, independence and self realisation and are generally positive reasons (Giacomin et al. 2011; Kirkwood 2009; Verheul et al. 2010). It has been suggested that opportunity entrepreneurs are more prevalent than necessity entrepreneurs (Giacomin et al. 2011).

A tentative theme that has been identified as a reason to start a business is the ability to leave a legacy to family or children. Legacy is defined as the ability to provide future security for family members, specifically children through the provision of employment opportunities within a business. This theme is apparent in only one piece of research (Alstete 2002) and emerged as an unexpected finding in research with nascent entrepreneurs in the USA, where 18% of the participants cited legacy as a motivation for starting a business. They saw the ability to pass on a business as a benefit, as it would offer an advantage by enabling their children to have the opportunity to experience business in a hands-on way. It also offered
their children the opportunity to have an easier life as employment possibilities would be available in the family business (Alstete 2002).

The above discussion centres on the intrinsic motivations of opportunity entrepreneurs, but there is a group of entrepreneurs that are not opportunity driven. These are necessity driven entrepreneurs (Giacomin et al. 2011; Kirkwood 2009; Verheul et al. 2010) who have been ‘forced’ to create a venture owing to unemployment or other generally negative external circumstances (Verheul et al. 2010). These individuals tend to have motivations more similar to managers; that is they are motivated by job security and family time and their focus is on replacing a wage rather than developing an idea, as this may offer the only opportunity to maintain an expected standard of living (Tyszka et al. 2011). These are the least common type of entrepreneurs and their ventures tend to be less innovative than opportunity entrepreneurs due to their different motivations (Sauermann & Cohen 2010) and as such have been classified as low growth potential new venturing (Kunkel 2001).

Whilst there is literature regarding the motivations for venture creation, as discussed above, there have been few studies on the decision to grow the business and an understanding of when, in the view of the entrepreneur, the business has reached its appropriate size (Khan et al. 2009). Growth does not appear to be a principal objective of an entrepreneur and entrepreneurs may identify a size beyond which they do not wish to grow (Gilson & Madjar 2011). In a study by Hankinson, Bartlett and Ducheneaut (1997) of 800 established UK SMEs, the majority of participants reported that their businesses were large enough and had no desire to grow. The reason for this was cited as “the status quo is better than the unknown” (Hankinson, Bartlett & Ducheneaut 1997, p. 172). Whilst this point of view appears to be at odds with the risks taken by entrepreneurs when starting up a business, it must be remembered that many entrepreneurs rate themselves as moderate risk takers (Caird 1993; Jain 2011; McClelland 1961; Palmer 1971; Tyszka et al. 2011) and as discussed in Section 2.5.1.4, the link between risk taking and entrepreneurial performance is limited (Zhao, Seibert & Lumpkin 2010) so this is not surprising. With the paucity of literature, a gap exists in understanding what drives the continued growth of a business after the initial start-up phase and at what point businesses become big enough or even too big.

2.6.2 Organisational Motivations

In moving from the individual to the organisation, it is important to remember that not all innovators create new ventures. As discussed in Section 2.5.2.3 it has been suggested that in high tech industries those individuals with lower levels of entrepreneurial self-efficacy prefer to work for established companies (Markman, Balkin & Baron 2002, p. 154). This does
not mean that these individuals are not creative; rather, it means that they practice their creativity and innovation within an organisational environment.

The organisational environment and the role of research and development have received attention in the literature as facilitators of innovation (Zhao, F. 2005, p. 29). This is because organisational culture will influence the ability of an organisation to innovate and to exploit its innovations. The presence of an R&D department may provide a foundation to enable exploitation of innovative ideas, but the organisational structure and culture is more important in the development of the initial ideas (Cohen & Levinthal 1990; Slevin & Covin 1990). The concept of intrinsic versus extrinsic motivation discussed previously is also important in this context. In contrast to an entrepreneurial venture, an R&D department has a role that is determined by the corporate priorities of the organisation, and being employees, the individuals in R&D roles are more likely to be driven by extrinsic motivations such as time pressures, expectations and financial motivations. Therefore, they may be more likely to produce incremental rather than innovative innovations (Gilson & Madjar 2011). The dichotomy at play here is that these external demands may hinder creativity but drive innovation (West 2002).

Organisations need to create a culture that supports innovation and allows the individuals within it to drive innovation. These individuals have been defined as intrapreneurs, that is, those who develop a new venture within an existing organisation (Parker 2011; Sijde, Veenker & During 2013). The organisational climate will have an impact on the drivers of innovation as the higher the orientation towards creativity and innovative change, the more freedom appears to be given to individuals to function independently to create new ideas. It is not possible to force creativity, but it is possible to create an environment that encourages it (Bharadwaj & Menon 2000). Furthermore, the more a company’s employees are being supported with adequate resources, the more likely the company is to have a successful innovation program (Scott & Bruce 1994). Whilst intrapreneurship has been widely studied (Bosma, Stam & Wennekers 2010; Felicic, Rodrigues & Caldeirinha 2012; Gupta & Srivastava 2013; Parker 2011; Sijde, Veenker & During 2013), it has been suggested that the phenomenon itself is not widespread. In a review by the Global Entrepreneurship Monitor of 2008 of eleven countries only 5% of employees were found to be intrapreneurs (Bosma, Stam & Wennekers 2010) and intrapreneurship was more prevalent in larger companies in higher income countries (Bosma, Stam & Wennekers 2010; Sijde, Veenker & During 2013).

If an organisation is unable to provide a supportive environment for innovation, this may increase the prevalence of opportunity entrepreneurs. A lack of change and dissatisfaction with the status quo may drive opportunity entrepreneurs to look outside of the organisation to
create their own ventures (Kirkwood 2009). This dissatisfaction, coupled with a level of creativity has been the foundation for many SMEs.

As discussed above, entrepreneurs and intrapreneurs may have different motivations for innovation. However the environment can stimulate innovation and the macro environment and its impact on entrepreneurial motivations will be considered in the next section.

### 2.6.3 Environmental Motivations

The macro environment has proved a fertile area for research into innovation and entrepreneurship, as dramatic changes in the status quo can provide the catalyst for change (Mensch 1979). As Könnölä and Unruh (2007) identified, individuals and organisations are excellent at adapting to a changing environment; therefore the slow evolution of a situation often does not produce change. Van der Ven (1986) also identified the human problem of managing attention and the power of the status quo, evidenced by the fact that the more successful an organisation, the more difficult it is to trigger action. It is dissatisfaction that drives the search for improved conditions and it is disruptive events that are required to stimulate innovation (Könnölä & Unruh 2007). In a benign environment entrepreneurial actions may present an unacceptable risk (Slevin & Covin 1990). Therefore, if the environment is changing slowly, it is easier for the individual to adapt and not search for alternatives.

If the environment changes rapidly, for example due to a rapid change in the economic cycle, this can drive innovation. Mensch (1979) suggests that during periods of sustained growth there is support for the way that things are done and an increased resistance to innovation and innovative ventures. Innovation occurs as the business cycle moves into periods in which potential for growth is slowing, and slowing growth is followed by recession or depression. These circumstances tend to limit trust in the old and the resistance to new ideas weakens, which facilitates the emergence of new innovations, entrepreneurs and businesses (Mensch 1979). Mazzanti et al. (2011) have challenged these views more recently, especially the direct causation of Mensch (1979). Research conducted during and after the Global Financial Crisis (GFC) of 2008 suggests that, whilst innovation prior to the start of the GFC had a direct link to the success of those organisations, when the GFC hit, those firms in the process of radical innovation suffered more negative consequences from the GFC compared with those who were on a more stable path.

The economic environment can be artificially stimulated, often by governments demanding innovation (Bossink 2004). For example, the introduction of new regulations such as the
water efficiency standards brought into effect in the Australian plumbing industry (Commonwealth of Australia 2005) required products to use less water and that the efficiency levels of the products being purchased be publicised to the consumer. This has driven both company innovation and individual entrepreneurship through the process of developing new products that meet the newly created demand. Governments can also stimulate innovation through becoming an innovation-demanding client, or through the incentivisation of innovation through grants or other financial rewards (Cumming & Li 2013). Finally, the customers themselves can become powerful drivers of innovation by demanding new and improved products rather than waiting for companies to offer them (Bossink 2004). This offers opportunities for entrepreneurs if the consumers’ needs are unfulfilled.

Innovation is all very well, but ideas need to be brought to market, and the macro environment can stimulate both intrapreneurship and entrepreneurship. Structural factors, both institutional and cultural, in the macro environment have also been identified that promote or hinder innovation and entrepreneurship. These can include influences which affect the ease and acceptability of entrepreneurial activities (Dennis 2011; Tang 2010) including factors such as the availability of venture capital and favourable tax regimes (Cumming & Li 2013); having a uniform marketplace; having a marketplace large enough to sustain radical innovation; and relative freedom of action in business (Dunphy & Herbig 1994; Tang 2010). A favourable set of factors can provide a supportive environment and facilitate innovation and entrepreneurship whereas a non-supportive one can hinder it.

2.6.4 Summary
Innovation and entrepreneurship motivations exist at three levels, micro, meso and macro and each has an impact on the likelihood of innovative behaviour and the potential for an innovation to be exploited either by intrapreneurs within an organisation or entrepreneurs outside it. Innovation and entrepreneurship are separate activities, which appear to be driven by different motivations, both personal and organisational, and they are facilitated by the environment in which the business operates.

From an individual perspective, the drive to satisfy unmet needs appears to be important for the development of innovation (Ross, Mitchell & May 2012). This, along with push and pull factors and extrinsic and intrinsic motivations, drives the two different types of entrepreneurs in their desire to commercialise new ideas (Kirkwood 2009; Verheul et al. 2010). In addition, legacy and growth appear to be emergent themes that need further research (Alstete 2002; Gilson & Madjar 2011).
From an organisational perspective it appears that individuals with traits and attitudes that are different to those possessed by entrepreneurs are responsible for innovation within larger organisations (Gilson & Madjar 2011). Organisations need to provide a supportive environment, for example by funding for R&D, to provide conditions in which innovation can thrive.

Finally, the environment is of importance in the area of innovation as it is regarded as important for economic growth, for companies to innovate (Archibugi, Filippetti & Frenz 2013; Buddelmeyer, Jensen & Webster 2010; Könnölä & Unruh 2007). Therefore consideration has been paid to the external stimulants of innovation. The environment, in the form of governmental and other structural support, also appears to be important in entrepreneurial research (Cumming & Li 2013). Through changes in the economic cycle, government stimulation or structural support, the environment can help or hinder the development and commercialisation of new ideas.

To further understand the role of innovation within organisations, the following section will take a more in-depth look at organisational innovation and intrapreneurship. This will aid the understanding of the individuals involved in the process. It will also address their similarities or differences to entrepreneurs.

2.7 Organisational Innovation and Intrapreneurship

This section considers the conditions that promote organisational innovation as experienced by individuals who choose not to commercialise their innovation through venture creation. These individuals are employed within organisations and drive innovation for the benefit of that organisation. It has long been recognised that innovation is important for organisational effectiveness and it is employees’ innovative behaviour that enables organisations to succeed (Felicio, Rodrigues & Caldeirinha 2012; Parker 2011; Sijde, Veenker & During 2013; Yuan & Woodman 2010; Zhuang, Williamson & Carter 1999).

The conditions which favour innovation include identification of innovative individuals within the organisation (Camelo-Ordaz et al. 2012), the organisational culture and climate (Scott & Bruce 1994; Sijde, Veenker & During 2013), types of leadership that facilitate and promote innovation (Kheng & Mahmood 2013; Scott & Bruce 1994) and the promotion of group-based innovation (Peltokorpi & Hasu 2014; Somech & Drach-Zahavy 2013). This section also considers the implementation of innovation, in effect, intrapreneurship, and the skills required
to make this happen (Baer, M. 2012; Björkdahl & Börjesson 2011). Each of these conditions will be considered in turn.

2.7.1 Innovative People within Organisations
Intrapreneurs, that is those individuals that develop a new venture within an existing organisation to exploit a new opportunity or create economic value (Parker 2011) are different to entrepreneurs. The very act of innovating within an organisation means that they are making risky decisions with company resources, rather than their own. They are employees and therefore focussed on the benefits they can deliver for the company rather than having a purely external focus. Lastly, rather than creating tacit knowledge in a new venture, they have chosen to work within an organisation that already has its own policies, language, procedures and bureaucracy (Camelo-Ordaz et al. 2012). Intrapreneurs choose to remain in their organisations and as a result the environments in which they operate are different to the environments in which entrepreneurs operate.

The choices made by these individuals appear to be driven by their traits, and may also be affected by other motivations. The key trait that has emerged from the literature is the degree of risk aversion (Camelo-Ordaz et al. 2012). Whilst this trait is shared with entrepreneurs, intrapreneurship may appeal to those with a higher risk aversion as an established company can provide support and failure does not automatically result in loss of income. Risks for intrapreneurs are more to their reputations and careers than their finances, and this means that an individual may be more willing to take risks if they are part of an organisation (Martiarena 2013).

Intrapreneurs are driven by both risks and rewards. As discussed earlier, innovation is risky and the benefits and costs for employees are greater than simple enjoyment of the work task or expectation of success (Yuan & Woodman 2010). Individuals have a number of reasons to innovate such as benefits to their work, helping the organisation to achieve work goals, enhancing their reputation within the organisation, and rewards for such behaviour (Stobbeleir, Ashford & Buyens 2011). There are also reasons for an individual not to innovate which include image risk, perception by others and being in positions where they are not expected to innovate. These individuals will be motivated to innovate when the rewards outweigh the risks (Stobbeleir, Ashford & Buyens 2011; Yuan & Woodman 2010).

Intrapreneurs may perceive risk in a different way to entrepreneurs but this does not mean that they are passive players in the innovation process. Most intrapreneurs develop new products on their own initiative, rather than the innovation being driven by company
objectives. Over 50% of intrapreneurs have had to overcome internal resistance to an idea, and take personal risks to be involved in the new business activity (Bosma, Stam & Wennekers 2010). This indicates a level of belief in the project they are working on, and an ability to manage the environment to engender the required outcome (Zwemstra 2006)

2.7.2 Promoting Innovation and Intrapreneurship within the Organisation

The presence of innovative individuals will not by itself result in innovation and intrapreneurship. Some structural conditions need to be in place to facilitate what is the hard process of bringing new products and services to market. These conditions include a culture that promotes innovation and intrapreneurship, leadership, and processes for driving innovation such as conditions which favour group-based innovation.

2.7.2.1 Culture

The organisational environment is an important component of organisational innovation and intrapreneurship. Two main strands of research have emerged which are relevant to this. One examines the culture of the organisation and the other examines the challenges to innovation and intrapreneurship that are faced within organisations. This section will consider both areas.

The literature suggests that the climate of an organisation comprises recurrent patterns of behaviour, attitudes, feelings, hidden assumptions concerning organisational expectations for behaviour, and the outcomes of that behaviour (Crossan & Apaydin 2010; Naranjo-Valencia, Jiménez-Jiménez & Sanz-Valle 2011). This literature suggests that objectives and meanings shared by the individuals within an organisation go to make up the organisational culture (Björkdahl & Börjesson 2011; Kissi et al. 2009). Organisational culture has been considered the root cause of much organisational behaviour (Naranjo-Valencia, Jiménez-Jiménez & Sanz-Valle 2011) and as an intermediating variable that affects an organisation’s performance and results (Björkdahl & Börjesson 2011). The organisational culture affects decision-making, group problem solving, coordination and control and it is this culture that can channel and direct attention and activities towards innovation and intrapreneurship (Björkdahl & Börjesson 2011; Scott & Bruce 1994).

Innovative organisations with a creative culture have been found to be associated with ten qualities: challenge, freedom, idea support, trust and openness, dynamism and liveliness, playfulness and humour, debates, conflicts, risk taking and the time to think (Björkdahl & Börjesson 2011). A creative culture also requires innovative capabilities; that is, strategies for innovation, prioritisation, idea management, external linkages, implementation, systems and
decision rules, organisational context, and learning and analysis (Björkdahl & Börjesson 2011, p. 494; Naranjo-Valencia, Jiménez-Jiménez & Sanz-Valle 2011). Finally, innovative organisations have been identified as having a culture, which tolerates mistakes, encourages individuals to interact with external resources and moves quickly to capitalise on a changing market (Torokoff 2010).

In their study of Nordic forestry firms, Bjorkdahl et al. (2011) found that both a creative culture and innovative capabilities were required and it was the lack of innovative capabilities that had a greater effect on the ability of the firms researched to innovate. Whilst performance was not the focus of this research, the highest-performing firm was the one that scored highest on both creative culture and innovative capability measures.

Of course, not all organisations are innovative, and research into the barriers to innovation, has identified, firstly, the need for the management of attention to ensure good ideas are exploited and not lost (Scott & Bruce 1994; Van der Ven 1986). Indeed as Van der Ven (1986) identified, the more successful an organisation the more difficult it is to trigger action and to pay attention to new ideas as organisations are structured to preserve the status quo. Secondly, if innovative ideas are not consistent with the organisation’s objectives, they will be much less likely to be implemented, however beneficial they would be to the organisation’s performance (McAdam & McClelland 2002). The failure to identify and manage appropriate ideas (Reitzschel, Nijstad & Stroebe 2010) can be a barrier to innovation. Finally, an organisation’s management often creates an infrastructure that is not conducive to innovation, especially if innovation or change has previously been unsuccessful. After all, new ideas that are not perceived as useful or successful are not called innovation but are referred to as mistakes. As discussed previously, these barriers can have a secondary effect on the organisation, driving entrepreneurship rather than intrapreneurship, as frustrated individuals may leave an organisation to capitalise on an idea that was passed over (Kirkwood 2009).

The literature suggests that organisational culture is vital to the development of innovation and intrapreneurship and ultimately organisational success. Culture is built up from the perceptions and behaviours of individuals, which reinforce or challenge the prevailing culture (Crossan & Apaydin 2010; Naranjo-Valencia, Jiménez-Jiménez & Sanz-Valle 2011). The behaviours of individuals can be modified by the culture in which they operate but can also be directly impacted by their relationships with their immediate managers. To build on the efficacy of culture as a stimulus for organisational innovation, management of innovative people is an important component of success.
2.7.2.2 Management of Innovative People

It can be seen from the above discussion that innovative people may need to be managed in a different way to other employees (Patterson 2009). As discussed previously, innovation is perceived as risky, and therefore organisations that support innovation and promote intrapreneurship need to be psychologically safe so that innovative individuals have less concern regarding image risks as innovation has a more desirable social image (Stobbeleir, Ashford & Buyens 2011). It has been suggested that an effective way to manage innovative people is to give them both freedom and responsibility, using situations as opportunities and giving them fluid roles, which give them the time and space to exercise their creative talents. Research by Prieto and Pérez-Santana (2014) suggests that HR practices that are ability- or opportunity-enhancing are related to innovative work behaviour and help foster a supportive culture. This research supports Amabile’s (1998) finding that motivation-enhancing practices, based on external motivations, do not foster innovative work behaviour. In addition, by understanding that creative groups are different, and creating teamwork based on ability match rather than skill groups, it appears that innovation will be more prevalent (King 1992; Patterson 2009). Finally, managers can lead by example and promote self-regulation and self-enhancement to encourage creative performance (Stobbeleir, Ashford & Buyens 2011).

2.7.2.3 Leadership

Different schools of research have different views about the role of leadership in promoting innovation and intrapreneurship (Elenkov & Manev 2005; Patterson 2009). Organisational ecology suggests that leadership has little effect on organisational performance because it is environmental forces that drive the evolution of organisations and organisations succeed or fail regardless of the actions taken by managers (Howell & Higgins 1990). Research into innovation, however, suggests that leadership plays a much more important role in the development of organisational success, and that top management has a positive influence on the outcomes of innovative processes within organisations (Elenkov & Manev 2005; Patterson 2009). From this research it can be posited that leadership has a direct impact on innovation and intrapreneurship. These approaches to leadership theory will be considered here, along with their impact on organisational innovation.

Leadership research in the sphere of innovation has concentrated on two main approaches, Leader-Member Exchange Theory and Full Range Leadership Theory. Within these approaches there has been a focus on transformational leadership. Whilst these continue to receive a lot of attention, a further theory of empowerment leadership is starting to emerge (Zhang & Bartol 2010).
Leader-Member Exchange Theory provides a four dimensional model of affect, contribution, loyalty and professional respect (Kheng & Mahmood 2013) and identifies how leaders develop different exchange relationships with their followers. The premise is that leaders develop high quality exchanges with some followers and it has been hypothesised that these relationships will stimulate group members to be more creative and innovative (Basu & Green 1997; Kheng & Mahmood 2013; Scott & Bruce 1994; Stata 1989; Tierney, Farmer & Graen 1999). Leader-Member Exchange (LMX) relationships appear to diminish the sense of risk and positively influence subordinates to raise new ideas. It has been suggested that LMX relationships drive confidence, and facilitate favourable task conditions and the development of skills and self-efficacy, which have been recognised as entrepreneurial prerequisites. In addition, reducing subordinates’ fears of negative evaluations plays an active part in promoting innovation and intrapreneurship within organisations (Kheng & Mahmood 2013).

In their 2008 review of the literature of leadership for innovation, Panuwatwanich, Stewart and Mohamed (2008) identified a number of leadership characteristics and behaviours that promote innovation. These comprise creativity and communicating vision, promoting new ideas, encouraging members through the provision of intellectual stimulation, engaging, consulting and mentoring team members. Each of these plays an important role in stimulating the creativity of subordinates (Kissi et al. 2009; Panuwatwanich, Stewart & Mohamed 2008). These behaviours have been characterised in the model of Full Range Leadership Theory (FRLT) (Antonakis, Avolio & Sivasubramaniam 2003), which suggests three types of leadership: transformational, transactional and laissez faire leadership, each of which has a different effect on innovation and intrapreneurship.

Transformational leadership is aimed at getting employees to identify with the purposes of the organisation and to share common goals that motivate them to do more for the organisation than they originally expected to do (Basu & Green 1997; Vaccaro et al. 2012). Transformational leadership has four dimensions: idealised influence, inspirational motivation, intellectual motivation and individualised consideration (Antonakis, Avolio & Sivasubramaniam 2003; Gumusluoglu & Ilsec 2009; Kissi et al. 2009; Vaccaro et al. 2012). Transformational leaders use these dimensions to meet the needs of their employees and to stimulate follower behaviour by transforming their personal values and self-concepts to move them to higher levels of need and aspiration and so raise their performance (Gumusluoglu & Ilsec 2009).

Research suggests that transformational leadership is positively related to organisational innovation (Basu & Green 1997; Elenkov & Manev 2005; Gumusluoglu & Ilsec 2009; Pieterse et al. 2010; Vaccaro et al. 2012). However, transformational leadership is only one
component of organisational innovation. As discussed earlier, to be truly effective, innovation requires organisational support to drive a perception that the organisation supports creativity and a belief that the organisation is open to change and is flexible (Gumusluoglu & Ilsec 2009).

A more recent hypothesis put forward by Zhang and Bartol (2010) suggests that, whilst LMX and transformational leadership have been well documented, there is a gap in the literature that can be filled by empowering leadership. Empowering leadership is “the process of implementation of conditions that enable sharing power with an employee by delineating the significance of the employees job, providing greater decision making authority, expressing confidence in the employees capabilities and removing hindrances to performance” (Zhang & Bartol 2010, p. 109). Zhang and Bartol (2010b) argue that empowering leadership increases the psychological empowerment of the individual and increases feelings of self-efficacy. This is important because the research suggests that this leads to a greater engagement in creative activities and an increased willingness to engage in the creative process.

2.7.2.4 Group Based Innovation

One of the strands of research that has emerged within the study of organisational innovation is based on the idea that creative ideas are much more likely to be produced by teams rather than individuals. Organisations are increasingly using teams to drive innovation (Hülsheger, Anderson & Salgado 2009; Miron-Spektor, Erez & Naveh 2011). A number of reasons have been suggested for the efficacy of teams and these include personal security and the harnessing of a wide skill set.

Innovation is risky and it has been suggested that individuals are more willing to take risks when they are operating in groups. This is because groups offer participant safety through collaboration and collective responsibility for ideas (Hülsheger, Anderson & Salgado 2009). Personal safety is promoted through teams operating in a non-threatening environment that allows the participants to be active in the decision making process (McAdam & McClelland 2002).

Research into group-based innovation has focussed on the factors that determine the success of group innovation and the factors that drive that success. The factors for success have been identified as team makeup, management and processes. In addition, it has been suggested that teams are more effective than individuals in organisational innovation owing to the ability to harness a wide variety of skills from the different participants (Hülsheger, Anderson & Salgado 2009). Miron-Spektor, Erez and Naveh (2011) identified three member types of creative teams: creatives, conformists and attention to detail members. They
identified that the mix of participants facilitates not only creative ideas but also the
development and implementation of those ideas. This mix of personality types, coupled with
personal safety, appears to facilitate the group ability to accomplish complex tasks (Somech
& Drach-Zahavy 2013; Wong, Tjosvold & Liu 2009). This is enhanced by the ability of the
group to communicate outside its boundaries to enhance the variety of perspectives
available to the it (West 2002).

As stated, teams can be highly effective at driving new innovation but they need to be well
organised and managed, especially if they are diverse and highly creative (McAdam &
McClelland 2002). A number of factors have been identified as promoting innovation in the
team environment. They include a democratic collaborative leadership, an organic structure,
the cohesiveness of team members, and group longevity with it being recognised that the
shorter the duration of the team, the more productive and effective it will be (Somech &
Drach-Zahavy 2013).

Team processes are essential for the delivery of creative ideas. A shared team objective
appears to enable a focus on the development of appropriate new ideas, and equal
participation in decision-making results in less resistance to change and a higher potential for
implementation (Somech & Drach-Zahavy 2013; Wong, Tjosvold & Liu 2009). Furthermore,
the effectiveness of a team may be facilitated through the communication of a vision at the
start of a project to give a clear direction on the outcomes required and for the environment
of the group to offer participant safety and the opportunity for excellence. In addition, as
discussed previously, the overall culture of the organisation must offer practical support for
innovation (Somech & Drach-Zahavy 2013; Wong, Tjosvold & Liu 2009) as the efforts of a
creative team may well be wasted if the opportunity to execute the innovations developed is
not available.

As can be seen from the above discussion, individuals, teams and leaders play an important
part in the promotion of innovation within organisations. However, if an organisation is to
receive the benefits of the innovation, it must be effectively implemented.

2.7.3 Implementation
Idea creation is only the first stage of the innovation process, and the intrapreneur has a
further role to play during the implementation stage (Baer 2012). For successful idea
implementation the intrapreneur needs not only the motivation and ability to drive the
innovation, but also the ability to gain support to overcome organisational barriers (Baer
2012) to bring the innovation to fruition. As discussed, this is often done at personal risk to
the intrapreneur (Bosma, Stam & Wennekers 2010). These barriers not only occur at the idea creation stage as discussed earlier, but also at the implementation stage. It has been seen that it is easier to create ideas that to implement them (Damanpour & Schneider 2008), with many ideas falling by the wayside. There are a number of reasons for this. One of the cited reasons for poor implementation of innovation is internal private disputes causing delays, as the idea has not garnered enough organisational support (Damanpour & Schneider 2008). This can be compounded by the innovation being seen as a challenge to the status quo within the organisation and facing opposition as a result. This suggests that opposition to ideas may sometimes be based not on their merit, but on organisational and personal prejudices (Baer, 2012).

Once an idea has been selected, the “paradox of innovation” (Miron-Spektor, Erez & Naveh 2011, p. 741) occurs in the move from innovation to implementation. This paradox refers to the contrast between the undemanding environment required for creativity and idea generation, and demanding environment in which implementation takes place. As discussed earlier, the ideal creative team is dominated by creatives with a limited number of process-driven individuals. This make-up is negatively associated with adherence to standards and processes, and this can hinder the effective implementation of innovation within the organisation.

There has been little research that divides the innovation process into two stages and examines the implementation stage specifically (Somech & Drach-Zahavy 2013). From the limited research in existence, it appears that teams can generate a large number of creative ideas, especially if their make-up is conducive to creativity and they are well managed. Innovation implementation, however, is more likely to occur if team objectives are clear and the team participates in the decision-making process (Somech & Drach-Zahavy 2013). As a moderating factor, the more the innovation matches the organisational imperatives (Klein & Sorra 1996; Scott & Bruce 1994), and the more the organisation is supportive of innovation and change (Björkdahl & Börjesson 2011), the more likely it is for implementation to occur.

2.7.4 Summary
Organisational innovation tends to be driven by intrapreneurs, who are creative individuals, working within a team structure. They are directly affected by the culture of the organisation in the way it supports innovation. In addition, the management and the leadership of an organisation are powerful influences on the performances of these individuals. Creating the idea is just the first stage in company innovation; ideas need to be implemented. Intrapreneurs play an important role in facilitating smooth implementation and overcoming
barriers to success, but it is those who operate within an environment supportive of innovation that appear to produce the best results.

2.8 Research Issues

As can be seen from the above discussion, the literature in the creativity-innovation-entrepreneurship arena is extensive. This section provides a summary of the literature and highlights the identified gaps. It then justifies the research by framing the research area.
### 2.8.1 Literature Summary

The following table summarises the literature included in the literature review, identifying the major research areas and the authors and key themes associated with them.

**Table 2.2: Literature review summary**

<table>
<thead>
<tr>
<th>Major Area</th>
<th>First Author and Year</th>
<th>Key Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity, Innovation &amp; Entrepreneurship</td>
<td>Scott, 1994</td>
<td>Definitions of creativity, innovation and entrepreneurship often interchangeable.</td>
</tr>
<tr>
<td>Creativity Theory</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Amabile, 2012</td>
<td>Componential theory of creativity.</td>
</tr>
<tr>
<td></td>
<td>Hirst, 2003, 2009</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Woodman 1993</td>
<td>Interactional framework of organisational creativity.</td>
</tr>
<tr>
<td></td>
<td>Ford 1996</td>
<td>Theory of individual creative action in multiple social domains.</td>
</tr>
<tr>
<td></td>
<td>Unsworth 2010</td>
<td>Issues with both Ford’s and Amabile’s theories as many variables affect creativity and the process with which these variable are assembled has not been established.</td>
</tr>
<tr>
<td>Creativity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anderson 2014</td>
<td>Creativity is linked to innovation but the barriers between the two are unclear.</td>
</tr>
<tr>
<td></td>
<td>Hammond 2011</td>
<td></td>
</tr>
<tr>
<td></td>
<td>He 2013</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hirst 2009</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reitzschel 2010</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wang 2014</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moneta 2010</td>
<td>Individual creativity.</td>
</tr>
<tr>
<td></td>
<td>Amabile 2003, 2012</td>
<td></td>
</tr>
<tr>
<td>Innovation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anderson 2004</td>
<td>Definitions of innovation are varied and often focus on specific aspects or are used interchangeably with creativity. The difference in the definitions of innovation and creativity appears to be one of emphasis not substance with the difference being in the application of ideas.</td>
</tr>
<tr>
<td></td>
<td>Crossan 2010</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hammond 2011</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kheng 2013</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Madrid-Guifarro 2013</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Miron 2004</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patterson 2009</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scott 1994</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Somech 2013</td>
<td></td>
</tr>
<tr>
<td></td>
<td>West 2002</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Zhao 2005</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Damapour 2008</td>
<td>Innovation is a non-chance event that is planned rather than spontaneous.</td>
</tr>
<tr>
<td></td>
<td>Fagaberg 2003a</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Damapour 2012</td>
<td>Typologies of innovation:</td>
</tr>
</tbody>
</table>
| Gilson 2011  
Miron 2004  
Zhao 2005 | Incremental to radical.  
Administrative to technological.  |
|---|---|
| Chesborough 2006  
De Massis 2013  
Lin 2013  
Thevel 2013  
Wynarczyk 2012 | Open innovation.  |
| Archibugi 2013  
Bernstein 2006  
Galakanych 2006 | Importance of innovation for economic growth and as a differentiator in organisational performance.  |
| **Entrepreneurship** | |
| Antoncic 2003  
Audretsch 2012  
Gartner 2010  
Shane 2000 | The definitions of entrepreneurship are unclear but it has become a broad label.  |
| Antoncic 2003  
Audretsch 2012  
Kunkel 2001  
McGee 2009  
Zhao 2010 | Lack of consistency in application of entrepreneurial criteria.  |
| Ahmad 2010  
Bruyat 2001  
Collins 2004  
Cubico 2010  
Hechevarria 2012  
Jain 2011  
Rauch 2007  
Shane 2000  
Stewart 2007  
Zhau 2005 | The importance of innovation in entrepreneurship.  |
| Priem 2011  
Ramani 2012  
Voigt 2012 | Demand side approaches to innovation and entrepreneurship in the product sphere.  |
| **Entrepreneurial Traits and Attitudes** | |
| McClelland 1961  
Schumpeter 1934  
Brockhaus 2002 | Initial research into specific traits such as Locus of Control, Need for Achievement and Risk.  |
| Drennan 2005  
Zhao 2010 | A number of personality traits define entrepreneurs and are instrumental in motivating entrepreneurial behaviour.  |
| **Traits Testing** | |
| Ahmad 2010  
Caird 1993  
Carland 1996  
Cromie 1987  
Cubico 2010 | Psychological testing useful in identifying entrepreneurial individuals and establishing psychological differences.  |
<table>
<thead>
<tr>
<th>Need for Achievement</th>
<th>Amabile 1998</th>
<th>Brockhaus 2002</th>
<th>Need for achievement is indicative of entrepreneurship but not sufficient on its own for a prediction of entrepreneurial action.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Brockhaus 2002</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Canter 2003</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collins 2004</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cromie 1983</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gurol 2006</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jain 2011</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Littunen 2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>McClelland 1961</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ogunkeye 2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prieto 2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tuannen 1997</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yusof 2007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locus of Control</td>
<td>Babb 1992</td>
<td></td>
<td>Varying results as to entrepreneurial prediction, but it is suggested that individuals with an internal locus of control have a greater belief in their ability to control their destiny and therefore are more likely to be successful entrepreneurs. They are less focussed on the external events. On its own, Locus of control is not an effective predictor of entrepreneurial behaviour.</td>
</tr>
<tr>
<td></td>
<td>Begley 1996, 1997</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brockhaus 2002</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Caird 1993</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cromie 1983</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hull 1986</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Khan 2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Littunen 2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mueller 2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nord 1979</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pandy 1979</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rauch 2007</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rotter 1966</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shane 2003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk Perception</td>
<td>Douglas 2006</td>
<td></td>
<td>Entrepreneurs show a strong belief in their entrepreneurial ability to succeed, and believe they are better equipped to deal with risk.</td>
</tr>
<tr>
<td></td>
<td>Howard 2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gilmore 2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jain 2011</td>
<td></td>
<td>Low risk perception drives entrepreneurship and venture creation.</td>
</tr>
<tr>
<td></td>
<td>LeRoux 2006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk Preference</td>
<td>Atkinson 1957</td>
<td></td>
<td>Risk preference is at its greatest where there is the greatest uncertainty about the outcome and the motivation to avoid failure is the strongest.</td>
</tr>
<tr>
<td></td>
<td>Brockhaus 1980, 2002</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moenkemeyer 2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brockaus 1980</td>
<td></td>
<td>Intermediate risk avoided, entrepreneurs favour high or low risk.</td>
</tr>
<tr>
<td></td>
<td>Caliendo 2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Barbossa 2007</td>
<td></td>
<td>No support for the model of an entrepreneur having a high risk preference, but risk preference has an effect on intentions.</td>
</tr>
<tr>
<td></td>
<td>Jain 2011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk Propensity</td>
<td>Tyszka 2011</td>
<td>Inconsistent evidence for a link between risk taking and success.</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
<td>---------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Stewart 2001</td>
<td>Entrepreneurs take more risks than managers and are more able to cope with risk taking.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stewart 2001</td>
<td>Entrepreneural individuals have a focus on achievement motivation and fear of failure therefore moderate risk taken. There is little difference between entrepreneurs and managers in this respect.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zhao 2010</td>
<td>The difference in results regarding risk preference are the result of differences in measurement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cox 2005</td>
<td>Risk taking is negatively associated with business success, especially in second or subsequent ventures owing to learning from previous mistakes and greater awareness of risk.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rauch 2000</td>
<td>Meta analyses show validity in the use of ILOC and Nach if the results are reconsidered under a clear hypothesis which can help eliminate sampling errors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Validity of Traits Approach</td>
<td>Collins 2004</td>
<td>Meta analyses show validity in the use of ILOC and Nach if the results are reconsidered under a clear hypothesis which can help eliminate sampling errors.</td>
<td></td>
</tr>
<tr>
<td>Criticisms of the Traits Approach</td>
<td>Collins 2004</td>
<td>Definitions unclear, making it difficult to understand what is meant by an entrepreneur.</td>
<td></td>
</tr>
<tr>
<td>Limited empirical evidence to support the idea of a set of characteristics that define an entrepreneur.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Chapter 2 – Literature Review

<table>
<thead>
<tr>
<th>Criticism of the concept that traits are acquired at birth and are unchanging.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Self Efficacy</th>
<th>Bandura 1977a, 1977b Chen 1998 Le Roux 2006</th>
<th>Individual’s level of motivation, effective state and actions are based on what they believe is true rather than what actually is.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandura 1977a, 1977b Boyd 1994 Chen 1988 Moenkemeyer 2012</td>
<td>Self-efficacy is a separate concept to self-esteem or locus of control.</td>
<td></td>
</tr>
<tr>
<td>Chen 1998 Hechavarria 2012 McGee 2009 Townsend 2010 Zhao 2005</td>
<td>Entrepreneurial self-efficacy is linked empirically to entrepreneurial phenomena and encompasses both personality and environmental factors.</td>
<td></td>
</tr>
<tr>
<td>Boyd 1994 Chen 1998 Drnovsek 2012 Kickul 2009 Laguna 2013 Markman 2005 Shane 2003 Tyszka 2011</td>
<td>Self efficacy is appropriate for the study of entrepreneurship as it is task specific, focuses on the ability of the individual to influence internal and external challenges, and close to choices and actions.</td>
<td></td>
</tr>
<tr>
<td>Boyd 1994 Chen 1998 Hechavarria 2012 Townsend 2010</td>
<td>Entrepreneurial self efficacy can be influenced by formative experiences.</td>
<td></td>
</tr>
</tbody>
</table>

### Childhood

<table>
<thead>
<tr>
<th>Childhood environment can promote a positive view of the desirability and feasibility of venture creation through the family environment, education levels, both high and low, and family business ownership.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schoon 2012</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>Mumford 1988</td>
</tr>
</tbody>
</table>

A shaping experience can drive resilience. These can be death, abandonment, poverty or insecurity. It is the reaction to the trauma that is important, not the trauma itself.

<table>
<thead>
<tr>
<th>Early career experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gartner 1985</td>
</tr>
<tr>
<td>Moenkemeyer 2012</td>
</tr>
<tr>
<td>Mumford 1988</td>
</tr>
<tr>
<td>Politis 2005, 2008</td>
</tr>
<tr>
<td>Westhead 2005</td>
</tr>
<tr>
<td>Yamakawa 2013</td>
</tr>
</tbody>
</table>

Previous experience has an impact on entrepreneurial performance, especially failure.

<table>
<thead>
<tr>
<th>Individual motivations for innovation and entrepreneurship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhaduri 2011</td>
</tr>
<tr>
<td>Gilson 2011</td>
</tr>
<tr>
<td>Henderson 1990</td>
</tr>
<tr>
<td>Amabile 1988</td>
</tr>
<tr>
<td>Sauerman 2010</td>
</tr>
</tbody>
</table>

Intrinsic motivation is more prevalent in radical innovators.

<table>
<thead>
<tr>
<th>Venture Creation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giacomin 2012</td>
</tr>
<tr>
<td>Kirkwood 2009</td>
</tr>
<tr>
<td>Kunkel 2001</td>
</tr>
<tr>
<td>Tyszka 2011</td>
</tr>
<tr>
<td>Verheul 2010</td>
</tr>
<tr>
<td>Alstete 2002</td>
</tr>
<tr>
<td>Gilson 2011</td>
</tr>
<tr>
<td>Hankinson 1997</td>
</tr>
<tr>
<td>Khan 2009</td>
</tr>
</tbody>
</table>

Venture creation is driven by opportunity or necessity.

<table>
<thead>
<tr>
<th>Venture Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alstete 2002</td>
</tr>
</tbody>
</table>

Venture creation driven by a desire to create a legacy for family.

<table>
<thead>
<tr>
<th>Organisation Motivations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bharadwaj 2000</td>
</tr>
<tr>
<td>Bosma 2010</td>
</tr>
<tr>
<td>Cohen 2009</td>
</tr>
<tr>
<td>Felicio 2012</td>
</tr>
<tr>
<td>Gilson 2011</td>
</tr>
<tr>
<td>Gupta 2013</td>
</tr>
<tr>
<td>Parker 2011</td>
</tr>
<tr>
<td>Scott 1994</td>
</tr>
<tr>
<td>Sijde 2012</td>
</tr>
<tr>
<td>Slevin 1990</td>
</tr>
</tbody>
</table>

Venture growth is not a principle objective of entrepreneurs.

<table>
<thead>
<tr>
<th>Organisational Motivations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bharadwaj 2000</td>
</tr>
<tr>
<td>Bosma 2010</td>
</tr>
<tr>
<td>Cohen 2009</td>
</tr>
<tr>
<td>Felicio 2012</td>
</tr>
<tr>
<td>Gilson 2011</td>
</tr>
<tr>
<td>Gupta 2013</td>
</tr>
<tr>
<td>Parker 2011</td>
</tr>
<tr>
<td>Scott 1994</td>
</tr>
<tr>
<td>Sijde 2012</td>
</tr>
<tr>
<td>Slevin 1990</td>
</tr>
</tbody>
</table>

The organisational environment facilitates innovation through the presence of an R&D department, a supportive culture and the development of intrinsic motivation.

<table>
<thead>
<tr>
<th>Environmental Motivations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bossink 2004</td>
</tr>
<tr>
<td>Cumming 2013</td>
</tr>
<tr>
<td>Dunphy 2004</td>
</tr>
<tr>
<td>Konnola 2007</td>
</tr>
<tr>
<td>Mazzanti 2011</td>
</tr>
<tr>
<td>Mensch 1979</td>
</tr>
<tr>
<td>Slevin 1990</td>
</tr>
</tbody>
</table>

The external environment can provide a catalyst for change and innovation.

Dramatic change to status quo.
Artificial stimulation by governments.
Government regimes.
<table>
<thead>
<tr>
<th>Section</th>
<th>Author(s)</th>
<th>Citation</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Innovative People Within Organisations</strong></td>
<td>Bosma 2010</td>
<td>Camelo-Ordez 2012</td>
<td>Martiaarena 2013</td>
</tr>
<tr>
<td></td>
<td>Stobbelier 2011</td>
<td>Yuan 2010</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Managing Innovative People</strong></td>
<td>Amabile 1998</td>
<td>Patterson 2009</td>
<td>Prieto 2014</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Intrapreneurs tend to be risk adverse but will take risks if necessary.</strong></td>
<td>Intrapreneurship driven by reputation and image enhancement and organisational expectations of innovation.</td>
<td>Structural conditions need to exist to drive innovation and intrapreneurship, including a supportive culture, innovation capabilities, tolerance of mistakes and the ability to move quickly.</td>
<td>Barriers to innovation within organisations include the lack of the ability to trigger action, not meeting organisational objectives, not recognising ideas and poor infrastructure for and management of innovation.</td>
</tr>
</tbody>
</table>
The paradox of innovation requires an undemanding environment for creativity and idea generation but this does not foster implementation as this needs structure and processes.
2.8.2 Literature Gaps
This literature review has provided an insight into the broad topic and the development of the research. In the context of a grounded theory study, the literature was revisited throughout the research process, after the initial review, and as the primary research developed, consistent revisiting was undertaken to identify extant literature on emerging themes (Glaser 1992; Glaser & Strauss 1967). This iterative review identified that even with the breadth of the literature available, gaps could be identified and the literature was sparse in a number of areas.

Whilst the literature provided insights into many facets of creativity, innovation and entrepreneurship, it did not seem to identify a generic theoretical framework or operational model that incorporated all facets of the process from the spark of creativity to the delivery of that idea through an existing or new venture. In addition, most experience-based studies have focused on a specific part of the subject rather than offering a holistic approach. For example, the consideration of the antecedents of entrepreneurs such as childhood or shaping experiences (Drennan, Kennedy & Renfrow 2005) gave a rich picture of these elements but did not continue this depth of understanding into an examination of the career choices made and outcomes attained by entrepreneurs.

A striking feature of the reviewed literature was the lack of research into the factors that affect the choices that are made within creativity, innovation and venture formation. Much of the previous research has focussed on already identified entrepreneurial individuals and conducting psychological testing to identify specific traits or characteristics that could be used as predictors for entrepreneurial behaviour (Collins, Hanges & Locke 2004; Stewart & Roth 2001, 2007; Zhao, Seibert & Lumpkin 2010). Few studies have looked at individuals who have proven to be innovative and then considered whether the traits and attributes seen in these individuals are the constant, and whether they have chosen to create a venture or to seek an employed position. The literature raises many questions as to how and why choices are made and whether a combination of many of the diverse and separate approaches would provide insights into the motivations for the entrepreneurial choices made regarding innovation exploitation and venture creation.

Finally, there appears to be lack of research into specific market segments. The Australian plumbing industry is dynamic in terms of product development and innovation and no previous research was found in this industry regarding product innovation and the development of entrepreneurial ventures. This is of interest to the researcher as she works within the industry and the insights gained could drive understanding of the process of
innovative product development and could affect improvements in performance in difficult economic circumstances.

In summary, the gaps that have been identified in the existing body of knowledge suggest that it is worthwhile to undertake an investigation into the creative, innovative and entrepreneurial activity taking place within the Australian plumbing industry as this could provide rich insights into factors that individuals and organisations consider, and actions that they undertake during the process of bringing new and innovative products to market. It is also regarded as appropriate to base the research on the direct personal experiences of entrepreneurs and intrapreneurs within this area and review whether the choices and experiences of the individuals involved have an impact on the level and type of innovative products and services that have been created. This research aims to address some of the identified knowledge gaps, with an emphasis on practical and managerial applications. It also seeks to provide a framework within which organisations and individuals can access learnings from their peers to consider ways to more effectively bring new and innovative products to the market through a holistic understanding of the activities and actions of the individuals within it.

2.8.3 Research Objectives and Questions

In reviewing the extant literature, the researcher found limited research that addresses how trade-based individuals’ progress through the continuum, which extends from creativity through innovation to entrepreneurship and the factors that influence this progress. Existing research has largely concentrated on the creativity or idea generation phase for ventures, or on the implementation stage, using different approaches and methods for each stage. In fact, the research has mainly focussed on very specific and discipline-based parts of the process, and has failed to consider the choices that were made throughout the process and the impact these choices had on the outcome.

From analysing the literature and following a detailed iterative process throughout the research, the researcher defined the research objectives of the study as:

1. What are the main motivations for innovation, and the exploitation of those innovations, by individuals within the Australian Plumbing Industry?
2. What are the important characteristics and experiences of innovative individuals?
3. How can the learnings from these motivations, characteristics and experiences be used to facilitate the development and exploitation of innovative products throughout the sector as a whole?
Given that this is a grounded study, the numerous iterations of the literature review raised the following exploratory questions:

1) How and why does innovation occur in the Australian plumbing industry?
2) What are the linkages between creativity, innovation and entrepreneurship?
3) What are the antecedents, characteristics and attributes demonstrated by individuals within large organisations and SMEs?
4) Do individuals exhibit the same behaviours and motivations regardless of the size and structure of the organisation in which they work?
5) Is there a model that can be developed to assist the understanding of the motivations of innovative people within the Australian plumbing industry?
6) Are there learnings that can be applied across the industry to foster innovation?

2.9 Conclusion and Summary

This chapter has provided a review of the literature pertinent to this study and has examined a number of approaches to the consideration of creative, innovative and entrepreneurial individuals. It initially considered the broad parent discipline of creativity, innovation and entrepreneurship and then continued to review the research into the traits, attitudes and antecedents of entrepreneurial individuals, considering the key traits and behaviours that have been identified as characterising entrepreneurs. It also considered criticisms of this approach and subsequent approaches, concluding that the more recently used methods to identify entrepreneurial individuals are valid.

The review then discussed the motivations for innovation for both entrepreneurs and individuals within organisations, identifying intrinsic and extrinsic motivations and then looking more widely to consider the macro, meso and micro environments that stimulate innovation, before considering the specific requirements of organisational innovation. Finally this chapter identified gaps in the literature and developed a number of research questions with the aim of addressing these gaps. It then identified the potential implications of this research.

The next chapter considers the research design that was used in this research. It includes justifications for methodology, data gathering strategies and analysis. Issues of validity, trustworthiness, rigour and ethics are also addressed.
3 Chapter Three – Methodology

3.1 Introduction
This study seeks to address gaps in the theory and knowledge relating to the understanding of how individuals within the Australian plumbing industry innovate and take these innovations to market, and it examines why they choose to do so in particular ways. It specifically addresses the following objectives:

1. What are the main motivations for innovation, and the exploitation of those innovations, by individuals within the Australian Plumbing Industry?
2. What are the important characteristics and experiences of innovative individuals?
3. How can the learnings from these motivations, characteristics and experiences be used to facilitate the development and exploitation of innovative products throughout the sector as a whole?

This chapter discusses the research paradigms, strategies and methodology used in this research and the reasons for their selection. It comprises seven sections; the introduction followed by Section 3.2, which outlines the research paradigms and strategies and Section 3.3, which is an overview of the research process. Section 3.4 considers the methods used for data analysis and theory building before Section 3.5 reviews the techniques and processes for ensuring quality and rigour. Finally, Section 3.6 outlines the ethical considerations and Section 3.7 outlines the limitations of the study.

3.2 Research Paradigms and Strategies
A number of research strategies are available to the researcher, and to select the most appropriate method for the study, the specific research questions must be used (Lincoln, Guba & Lynham 2011; Miles & Huberman 1990; Strauss & Corbin 1990). The researcher must address three elements of the enquiry to lead them to a conclusion about the research method and strategy (Creswell 2003; Lincoln, Guba & Lynham 2011). These are firstly the selection of a theoretical paradigm that best fits with the researcher’s philosophical assumptions about what and how they will learn (Neuman 2006), secondly, the selection of a strategy of enquiry and finally the selection of appropriate data collection and analysis methods. The completion of this process will drive the approach to research and the design of the research (Creswell 2003). How these steps were undertaken is outlined in the following section.
3.2.1 Research Paradigm Selection
A paradigm is the combination of epistemological, ontological and methodological premises which outline a “basic set of beliefs that guide action” (Guba 1990, p. 17). Four major interpretive paradigms form the basis of most qualitative research. These are positivist, post-positivist, constructivist–interpretivist, and critical theory (Denzin & Lincoln 2013). More recently, the participatory paradigm has been added to this list (Lincoln, Guba & Lynham 2011).

A review of the literature produced a number of possible options in terms of theoretical directions for this study, however it became evident that it was most appropriate to obtain data based on the experiences of the individuals concerned rather than use a method that relied on confirming or refuting an existing hypothesis. For this reason, a constructivist approach was selected as it facilitated the understanding of the experiences of the participants and allowed their voices to be heard.

3.2.2 Appropriate Data Collection Approach
After the selection of a constructivist paradigm, it was necessary to select an appropriate data collection method. From the above discussion it can be seen that the constructivist paradigm is qualitative in that it collects data that are richer and more subjective, and that it is concerned with generating theories, and produces results that cannot be generalised in the same way that quantitative results can. Constructivism uses inductive logic, with categories emerging from the participants rather than being identified up front by the researcher (Neuman 2006). Patterns and themes are discovered with findings emerging from the data through the analyst’s interaction with it. Qualitative research uses narratives to give the reader an understanding of the data and allows the researcher to investigate situations where little is known about what is going on. It explores complexities that could not be effectively considered by a quantitative approach (Creswell 2003; Patton 2002; Remenyi et al. 2002). The constructivist approach can offer a deeper and richer description of phenomena within a business context because it is more adaptable to multiple realities (Lincoln & Guba 1985). On this basis, it is argued that the most appropriate approach for the present study was qualitative as the research was narrowly focussed, aimed at investigating a limited population in a specific set of circumstances.

3.2.3 Selection of Methodology
With the selection of a qualitative approach to data collection, an appropriate methodology was required. Two options were considered that appeared to facilitate gaining an
understanding through the use of subject perspectives. These were a case study approach and grounded theory.

Case studies are the intensive analysis of individual units. Case studies are detailed and each unit of study is examined in depth (Flyvberg 2013). A case study has been defined as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context” (Yin 2003, p. 13). Case study research stresses developmental factors with cases developing over time. It focuses on relationships with the environment, with boundaries being drawn to specifically include and exclude factors. Yin (2003) suggests that a case study will use a variety of evidence such as documents, artefacts, interviews and observations, firmly centred in “how” questions. In most cases, case studies are not directly aimed at producing theory; rather they are used for exploring phenomena (Yin 2003).

Grounded theory is a qualitative approach that uses systematic and inductive guidelines for collecting and analysing data, which is grounded in fieldwork, so as to explain what has been observed. This approach allows the researcher to understand people’s experiences in as rigorous and detailed a manner as possible (Charmaz 2006; Creswell 2003; Neuman 2006; Patton 2002; Ryan & Bernard 2000; Strauss & Corbin 2000, 2008). It focuses on generating theory through an iterative process of data collection and analysis allowing the researcher to address problems in specific empirical worlds. Finally, grounded theory offers tools that take analysis beyond description and develops theory from successive conceptual analyses of empirical data (Charmaz 2013). According to Miles and Huberman (1994, pp. 62-64), if the research question is a ‘process’ question dealing with experience over time, grounded theory is the most appropriate approach with interviewing being the main method of data collection. As outlined previously, the research questions for this study are related to experiences and activity, which suggests that grounded theory is an appropriate research strategy.

The next sections describe how the research was undertaken. They explain the process and techniques used to create a better understanding of the emerging theory without the forcing of the data.

3.2.4 Grounded Theory

Grounded theory is described by Glaser and Strauss (1967) as the discovery of data that is systematically obtained and analysed. Generating a theory from the data means that most hypotheses and concepts not only come from the data but also are systematically worked out in relation to the data during the course of the research (Glaser & Strauss 1967, p. 6).
Grounded theory focuses on comparative analysis for the purpose of generating theory, which can be developed either for a substantive or empirical area or enquiry, or for a formal or conceptual area of enquiry. Furthermore, it focuses on the processes of generating theory rather than particular theoretical content. The emphasis is on the steps and procedures for connecting induction and deduction through constant comparative methods and developing theory. What distinguishes the discussion of theory in this method is the emphasis on inductive strategies of theory development (Patton 2002; Ryan & Bernard 2000). The adequacy of a theory generated by grounded theory cannot be separated from the process by which it is generated (Glaser & Strauss 1967). It can therefore be seen that the grounded theory approach is meant to build theory and not to test it (Patton 2002).

Grounded theory begins with a basic description of the situation, moves to conceptual ordering and then theorising. Through this process, analytic interpretations of data are developed that focuses further data collection, which is used in turn to inform and refine the theoretical analysis. The strategies of grounded theory include simultaneous collection and analysis of data, a three step data coding process, comparative methods, memo writing aimed at the construction of conceptual analyses, sampling to refine the researcher’s emerging theoretical ideas and finally integration into a theoretical framework (Charmaz 2006).

To evaluate the generated theory, Glaser and Strauss (1967) suggest four criteria: fit, work, relevance and modifiability. Firstly, theoretical categories must be developed from the analysis of the collected data and they must fit the data. Categories must explain the data they contain and must continue to do so if they are to be retained in the analysis. Secondly, a grounded theory must work. It must “provide a useful conceptual rendering and ordering of the data that explains the studied phenomenon” (Charmaz 2006, p. 511). Thirdly, it must be relevant. Its relevance depends on its offering an analytic explanation of actual problems and basic processes in the research setting. Finally, theory developed using the grounded theory method must be modifiable to account for variation, and so it must be durable and flexible. Emerging and existing categories must be able to be modified as conditions change or further data are collected and the categories must be able to expand to incorporate these changes until theoretical saturation is reached (Charmaz 2006; Glaser & Strauss 1967).

Whilst grounded theory has been widely accepted by many academics since it was first introduced in 1967, it has been criticised for several reasons (Charmaz 2006; Lincoln & Guba 1985). Firstly, it has been argued that grounded theory is inadequate because it is undetermined. That is, any set of given facts is always open to interpretation in an inductive method of data analysis and theory generation. This contrasts with a positivistic approach,
which uses deduction to come to the only conclusion possible. Secondly, it is argued that it is impossible to develop theories using a grounded theory approach because the raw data are only facts within the framework of some other theory, and therefore a theory can only discover itself (Lincoln & Guba 1985, p. 207). Finally, it is argued that tacit knowledge can and does come into play and the data on which grounded theory is based may emerge because of the researcher’s initial implicit assumption of their importance rather than because a specific theoretical formation brought them into focus (Thomas & James 2006). Whilst the above criticisms come from the positivist perspective, grounded theory has also been criticised from phenomenological and naturalistic perspectives (Charmaz 2006). It is argued that by even attempting to create a substantive theory, the method limits entry into the subject’s world and reduces the understanding of their experiences. It has been suggested that a grounded theory approach can also curtail the representation of both the social world and subjective experiences by relying on the viewer’s authority as the expert observer. The final criticism levelled at grounded theory is that it posits a set of objectivist procedures on which the analysis rests, removing the possibility of rich interpretation (Charmaz 2006).

Glaser and Strauss (1967) address criticisms of grounded theory, including those of impressionism, exploration and lack of system in their original publication. They stated that to ensure credibility there needs to be an understanding that the theoretical framework is an abstract presentation that uses emergent concepts that are both analytic and sensitising. They also recommend that the data be described so that the reader can hear the participants through the use of quotations, field notes and summaries of events. Finally, in the codified procedure for analysing the data, the research must show how the theory was obtained from the data by using the constant comparative method and by producing a clear and integrated theory. Glaser and Strauss (1967) also stated that to help the reader assess the credibility of the research, the researcher should try to involve the reader in the description of the events and should ensure the reader is able to assess the types of data presented by providing an explicit statement of the data used. The researcher should attempt to detail the similarities and differences between the groups or individuals studied and should provide a clear statement of the theory, including its limitations (Glaser & Strauss 1967).

Grounded theory was considered appropriate as it is predominantly used where minimal a priori research exists. It was selected as the most appropriate methodology as it best fits a piece of research where a broad theory is needed, because existing theories do not address the problem or the participants that are being studied or limited relevant theories exist. As the theory is “grounded” in the data, it provides a better explanation than “off the shelf” theories, as it fits the actual participants and works in the specific circumstances of the study.
(Cresswell 2012). It can be used to study new properties of existing phenomena that shape and are shaped by new conditions and consequences (Charmaz 2008).

In the course of this research, the process has been reviewed to address the elements of the method most frequently criticised. These are explained in the next section along with the activities, concepts, tools and techniques that were used in this study.

### 3.3 Research Process

#### 3.3.1 Introduction

The researcher set out to understand in as much detail as possible the phenomenon under consideration. The following summary of the process highlights the key techniques, tools and concepts used to ensure rigour. Figure 3.1 is a diagrammatic representation of the process used in the study.

![Diagram of research process](image)

**Figure 3.1 Diagrammatic representation of process used in the study.**

Source – developed for this study

The process outlined above summarises the various tools and techniques used in this study and to some extent the order in which they were used. However, as shown in Figure 3.1, grounded theory is an iterative, comparative, interactive and abductive process (Charmaz
2013) and some elements such as constant comparison, theoretical sensitivity and memoing occurred throughout the process. Therefore, although the following summary appears linear, the figure above indicates that the research took a non-linear approach, from the earliest data collection through to the final phase of theory development.

### 3.3.2 The Research Process

In the development of the research process, the initial step was to understand the impact that existing preconceptions could have on the research. To identify these and raise awareness of their potential impact, notes were made before the research commenced. These notes were referred to throughout the data collection and analysis stage to check whether preconceptions were colouring the collection or analysis.

Theoretical sampling was used for this study. Subjects were chosen based on the emerging concepts as the study progressed (Glaser & Strauss 1967; Patton 2002). In grounded theory research, the initial subjects are chosen from the most likely and accessible sources, but as categories are identified and developed, gaps will appear in the data and the researcher must return to the field to find further research subjects to fill these gaps (Charmaz 2006). Once the initial participants were identified, semi-structured, in-depth interviews were used as the main process by which data was collected. The interviews were conducted using a general interview guide (Patton 2002) with a set of issues to be explored, outlined by the researcher using a question sheet, but with the conversation being directed by the participant and the researcher only intervening to change the subject when the previous topic appeared exhausted. This technique was used to obtain as much rich data as possible whilst giving the research subjects a feeling of comfort, through the use of questioning so they were not expected to just ‘talk’ (Charmaz 2006). In addition, the literature was also used as a source of data, in an attempt to identify the emerging concepts in the literature or more often to identify gaps in the literature.

Data were collected and coded concurrently, allowing the next research subjects to be identified. This ensured that the data continued to drive the sampling process. It also ensured that the research subjects chosen had theoretical relevance for furthering the development of emerging categories (Glaser & Strauss 1967).

Coding of the data involved open, axial and selective coding. As themes became apparent, categories were defined and compared to other emergent categories, allowing core categories to emerge (Charmaz 2000; Glaser & Strauss 1967). The core categories became central and other categories were related to them (Strauss & Corbin 2000, 2008). As coding categories emerged these were linked to emergent theories using the constant comparative
method as outlined by Glaser (1978) to ask why, when, and under what conditions these themes occurred in the data.

Memo writing commenced prior to data collection as an initial way of recording the researcher’s preconceptions, and continued throughout the data collection, coding and analysis process (Charmaz 2006; Glaser 1978, 1992; Glaser & Strauss 1967; Miles & Huberman 1990; Patton 2002). This facilitated theory development through the recording of themes or concepts as they became apparent. It also facilitated the abstract consideration of links within the data.

Theoretical sensitivity was developed through the data collection and analysis process as the researcher remained aware of the subtleties of the data without trying to force the emerging theory (Glaser 1978; Strauss & Corbin 2008). Data collection continued until no new categories emerged and theoretical saturation was reached (Charmaz 2006; Glaser & Strauss 1967; Strauss & Corbin 2000, 2008). This is a core tenet of the grounded theory method.

Following the analysis of the data and the initial outlining of substantive theory, the participants were contacted to ensure that the descriptions used were adequate accounts of the phenomenon and that there were no important errors or omissions. This process also ensured fit, work, relevance and durability (Glaser & Strauss 1967). From here, the substantive theory was finalised. Figure 3.2 outlines the details of the iterative process that formed the basis of this research.
3.3.3 Selection of Sample Group

Neuman (2006) suggests that it is important to disclose details about the sample size and selection process when collecting data from a subset of the total population. There were a number of factors that influenced the sample size for this study. These were the underlying research methodology (grounded theory), the data collection method being used (semi-structured, face-to-face interviews) and the relatively limited size of the sample population.

In qualitative research, the intent is not to generalise a population but to develop a deep understanding of the themes that resonate with the participants (Cresswell 2012). So, unlike qualitative research where the aim is to select a sample from which generalisations can be made about an entire population, qualitative research intentionally selects individuals through a variety of sampling strategies. The aim of this sampling approach is to select participants who are "information rich" (Patton 1990, p. 169) to help the researcher develop a deep understanding of the phenomenon being studied.
One of the premises of grounded theory is that validity is not a function of data sample size. Instead, data saturation is achieved by the intensity of the interaction of the participants with the research, and obtaining sufficient data for the construction of theory. Contemporary grounded theorists (Charmaz 2006) suggest that concentrating on a few in-depth interviews can provide insights which together provide a complete picture of the area of interest. Furthermore, Charmaz (2006) suggests that the researcher should undertake a conscious participant selection based on the participants’ involvement in the area of interest. This selection technique involves the specific selection of participants based on certain criteria, in this case innovative individuals within the plumbing industry, rather than taking a random sample.

Theoretical sampling was the main sampling technique used during this study. Theoretical sampling is sampling on the basis of the emerging concepts with the aim being to explore “the dimensional range or varied conditions along which the properties of the concepts vary” (Strauss & Corbin 1990, p. 73). In the use of this process, the sample size depends on the information that is required, the purpose of the enquiry, what is at stake, what will be useful, what will have credibility, and what can be done with the available time and resources (Patton 2002, p. 154). To facilitate the theoretical sampling approach, purposive sampling was used to enable the selection of appropriate participants who were best placed to discuss the phenomenon under investigation (Ryan & Bernard 2000). Purposive sampling is a technique where the sample is selected based on the researcher’s judgements about the characteristics required of the sample members. Its purpose is to achieve representativeness and completeness of a sample set and to facilitate sequential sampling (Teddlie & Yu 2007).

Theoretical sampling is the joint collecting, coding and analysis of data. The process of data collection is controlled by the emerging theory with the initial decisions for theoretical collection of data based on general perspectives rather than a preconceived theoretical framework (Glaser & Strauss 1967, p. 45). Other than the initial sampling decisions, which were based on a general problem area, further data collection could not be planned in advance of the emerging theory, which led to an iterative process where data was consistently re-evaluated and participants were contacted more than once to fill gaps that emerged later in the research (Charmaz 2006). The basic question in theoretical sampling is which group or sub-group is considered next in the research process and for what theoretical purpose (Glaser & Strauss 1967). The basic criterion of theoretical sampling is that all samples used add to the generation of theory which itself is continually tailored to fit the data. In selecting a comparison group, the key question was to understand the theoretical relevance of the group for furthering the development of the emerging categories. The aim
was to identify and sample individuals that would identify and enrich the properties of the emerging categories and allow the elucidation and refinement of the variations, manifestations and meanings of concepts as they were found in the data gathered during the research (Patton 2002). Theoretical sampling supported the constant comparative method of analysis, a fundamental part of grounded theory. It also facilitated the systematic generation of theory using explicit coding and analytical procedures, and the researcher had to continually analyse the data to discover the appropriate next participant. This process was enhanced by a limited amount of ‘snowball sampling’ that asked a number of participants to identify others to be interviewed, which added depth to the investigation (Teddle & Yu 2007). Theoretical sampling helped the researcher to focus on specific categories and their properties by collecting pertinent data that elaborated and refined them (Charmaz 2006). It encouraged the researcher to follow up on analytic leads and improved the research by specifying the properties of categories, increasing precision, providing substance which enabled the researcher to move from description to analysis, grounded conclusions in data and explicated analytic links between and among categories (Charmaz 2006). By focusing on theoretical categories rather than a single empirical topic, it was possible to conduct sampling across a number of substantive areas.

It is argued that theoretical sampling helped define the properties of emerging categories and identified the contexts in which they were relevant. In addition, theoretical sampling specified the conditions under which categories arose, were maintained and varied. It also helped identify and define gaps between categories, and the conditions under which they were linked to other categories (Charmaz 2000). The resulting picture allowed an appropriate theory to be developed.

The sample for this study contained two types of participants: self-employed individuals working in their own small businesses and individuals responsible for product innovation working in larger corporate organisations. All worked in the plumbing industry in Australia. These two groups were identified as the prime sources for the types of participant that were required for the study. Use of the criteria, defined as shown in Table 3.5 allowed clear delimitation between the two groups under investigation. The Australian plumbing market was chosen to make access to participants easy and also to delimit the study and make the sample more accessible.
Table 3.1: Criteria for Sample Unit Selection

<table>
<thead>
<tr>
<th>Source: Developed for this study</th>
</tr>
</thead>
</table>

**Criteria for Sample Unit Selection**

A participant, defined as employed must meet the following criteria:

- Works in an organisation of over 25 employees with a turnover of more than $10 million per annum
- Is actively involved in the development of new products or services
- Has been involved in bringing a product or service to market in the previous two years

A participant, defined as self-employed must meet the following criteria:

1. Works in or own an organisation of less than 25 employees
2. Is the individual responsible for the initiation and development of new products and services
3. Has successfully brought a new product or service to market in the previous two years.

The selection of large companies with a turnover of $10m p.a. or more offered the opportunity to research companies with a significant research and development capability and offered the potential for there to be a pool of participants who were directly responsible for developing new products and bringing them to market as part of a formal role. These companies operated in more than one category within the product portfolio and therefore offered the most potential for having brought new products to market within the previous two years. The smaller, more entrepreneurial companies were selected on the basis of their size and the presence of a product designer and developer who was an integral part of the business, and often the owner. As of November 2011, there were ten companies that fulfilled the large organisation criteria and twelve that fulfilled the ‘entrepreneurial’ criteria. It is probable that more companies in the entrepreneurial category existed, although they had not had a level of success to make them viable participants for this study.

The participants were initially selected based on their employment in the target companies and their perceived willingness to participate in the study and share detailed personal information about their past and present work. Six employed and ten self-employed individuals agreed to be interviewed for this study and details of the organisations from which they came are included in Table 3.6 and their full profiles are included in Appendix 3.1. In addition to these participants, four potential participants from larger organisations, and two from SMEs were approached but declined to be interviewed.
Table 3.2: Companies and individuals selected for inclusion in the study.

Source: Developed for this study

<table>
<thead>
<tr>
<th>Company</th>
<th>Employees/Turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td>SME1</td>
<td>2 Employees</td>
</tr>
<tr>
<td>SME2</td>
<td>1 Employee</td>
</tr>
<tr>
<td>SME3</td>
<td>3 Employees</td>
</tr>
<tr>
<td>SME4</td>
<td>15 Employees</td>
</tr>
<tr>
<td>SME5</td>
<td>2 Employees</td>
</tr>
<tr>
<td>SME6</td>
<td>2 Employees</td>
</tr>
<tr>
<td>SME7</td>
<td>3 Employees</td>
</tr>
<tr>
<td>SME8</td>
<td>25 Employees</td>
</tr>
<tr>
<td>SME9</td>
<td>20 Employees</td>
</tr>
<tr>
<td>SME10</td>
<td>20 Employees</td>
</tr>
<tr>
<td>Larger organisation 1</td>
<td>$300m+</td>
</tr>
<tr>
<td>Larger organisation 2</td>
<td>$300m+</td>
</tr>
<tr>
<td>Larger organisation 3</td>
<td>$30m</td>
</tr>
<tr>
<td>Larger organisation 4</td>
<td>$30m</td>
</tr>
<tr>
<td>Larger organisation 5</td>
<td>$60m</td>
</tr>
<tr>
<td>Larger organisation 6</td>
<td>$50m</td>
</tr>
</tbody>
</table>

3.3.4 Methods of Data Collection

A number of potential sources of evidence were considered for this research. Of the methods available, a number, such as ethnographic research and focus groups, were considered, but these were rejected as inappropriate. The researcher had a deep familiarity with the plumbing industry and this made an ethnographic approach impractical as the researcher would be unable to undertake the role of a neutral observer. In addition, an ethnographic approach could have led to an overload of observations, thus providing a detailed narrative but little theoretical insight (Coffey & Atkinson 1996). The use of focus groups is compatible with a grounded theory approach (Charmaz 2006) but the focus of the research was on individual experience, and a discussion involving multiple individuals was unlikely to elicit the deep and personal responses that were required. In addition, as all of the participants competed in the same industry, the likelihood of them agreeing to participate in the presence of others was remote.

For this study, the researcher considered semi-structured interviews as the most appropriate approach to data gathering as it better met the needs of a grounded theory approach than the alternatives. Using a semi-structured approach, the interviewer developed a set of issues to be addressed with the option of developing ‘starter questions’ to kick off the discussions. The questions were open ended and focused on the research topics. This gave the researcher the opportunity to identify the key issues raised by the participant, rather than directing them by using a list of pre-set questions. The researcher was therefore able to probe the issues raised by the participants through a series of subsequent and unplanned
questions, which developed in scope as each participant was interviewed and new categories and themes developed.

The advantage of this process for this particular study was that it allowed the testing of questions and issues that developed during the course of the study whilst still ensuring that basic lines of enquiry were pursued. It also allowed the researcher to engage in a conversation within a particular subject area, and to follow developing threads using a conversational style. In addition, the process allowed the development of questions in a “spontaneous way, appropriate to the tone of the conversation while maintaining the focus on a particular subject that had been predetermined” (Patton 2002, p. 343).

The literature was used as a source of data to provide understanding of the current view of the area under investigation and to highlight the areas in which the literature was lacking or absent. A number of uses exist for literature in a grounded theory study. Firstly, the literature can stimulate theoretical sensitivity by allowing the researcher to immerse themselves in the area of research before entering the field, identifying concepts that can then be cross-checked against the collected data. Secondly, the literature can be used as an additional source of data if it contains quoted material from interviews and field notes (Strauss & Corbin 1990). Unfortunately for this study, there was a dearth of this kind of material. Thirdly, the literature can help in the development of the interview questions and guide the initial part of the information collection process. Fourthly, the literature can help direct the sampling process by suggesting potential targets and areas in which to uncover phenomena important to the development of the emerging theory. Finally, the literature can be used to validate and explain the findings, although care must be taken to balance the initial research with ‘validation’ so as not to force the data and negate the grounded theory approach (Glaser 1978, 1992; Strauss & Corbin 2008).

3.3.5 Interview Framework and Questions
Having selected interviews as the most appropriate method of data collection, and to adhere to the interviewing framework espoused by grounded theory (Charmaz 2006), the researcher drew on Patton (2002) to provide a framework around which to develop the interview structure. The table below identifies the elements that were used to structure the questions.
Table 3.3: Qualitative interviewing question options.

<table>
<thead>
<tr>
<th>Kind of Question</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience/Behaviour</td>
<td>What a person does or has done</td>
</tr>
<tr>
<td></td>
<td>Aim to elicit behaviour, experiences, actions and activities that would have</td>
</tr>
<tr>
<td></td>
<td>been observable had the observer been present</td>
</tr>
<tr>
<td>Opinion/Values</td>
<td>Opinions, judgements and values</td>
</tr>
<tr>
<td></td>
<td>Understanding the cognitive and interpretive processes of people</td>
</tr>
<tr>
<td></td>
<td>What people think about some experience or issue</td>
</tr>
<tr>
<td></td>
<td>Information about goals, intentions desires and expectations</td>
</tr>
<tr>
<td>Feelings</td>
<td>Aim to elicit emotions</td>
</tr>
<tr>
<td></td>
<td>Responses to experiences and thoughts</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Inquire about factual information -- what the participant knows</td>
</tr>
<tr>
<td>Sensory</td>
<td>What is seen, heard, touched, tasted and smelled</td>
</tr>
<tr>
<td></td>
<td>Enter into the sensory apparatus of the participant</td>
</tr>
<tr>
<td>Background/demographic</td>
<td>Age, education, occupation, etc.</td>
</tr>
<tr>
<td></td>
<td>Locate the participant in relation to other people</td>
</tr>
<tr>
<td></td>
<td>Open-ended questioning elicits participants’ world view</td>
</tr>
</tbody>
</table>

The optimal form of interview format was considered to be one that was planned and organised. This ensured a consistent approach across each interview, thereby ensuring that common topics were addressed, which aided comparative analysis throughout the data collection and analysis process. The nature of the interviews, however, being semi-structured, allowed the participant to drive the interview into areas of relevance, preventing ‘forcing’ of the data (Glaser 1978) and ensuring that the participants’ attitudes, perceptions and values remained at the heart of the interview.

The interviews were designed to be in-depth (Patton 2002) to allow the researcher to build rapport with the participant and to allow them to offer the rich insights which the researcher was seeking. The aim of the structure was to enable the participants to “tell their story” in a relatively free manner, by not constraining them by a script or the rigid approach of a question and answer process (Charmaz 2006). In addition, it was necessary to facilitate an iterative approach to the interviews, where participants could revisit points previously made as they reflected on their answers and subsequent questions. This approach recognised that the participants were unlikely to have participated in a similar process previously and needed the freedom to return to topics that they may never have considered before.

3.3.6 Interview Planner and Informed Consent Form

The development of the interview questions was determined by the need to meet the ethical requirements of Southern Cross University’s ethics committee. The requirements relate to data collection for research where there is minimal risk to participants. Secondly the approach needed to provide a structure from which the researcher could elicit the rich data that was required, and finally it needed to provide a structure around the scope of the topic without inhibiting the ability for the participants to add data and themes that were novel and of importance to them.
The actual wording of the questions was loose and flexible (Patton 2002). The interview outline gave more of a guide to the topics rather than specific questions, and the development of the outline became an iterative process. A pilot interview was carried out which confirmed the questions and the flow of the interview elicited the type of responses required and facilitated the opening up of a broad dialogue. As the interviews progressed, new themes were included as they emerged from previous participants, and themes that failed to resonate were removed from subsequent interviews. This adhered to the precepts of grounded theory by discovering themes grounded in the experiences of the participants (Charmaz 2006; Glaser 1992; Glaser & Strauss 1967; Strauss & Corbin 1990, 2000).

An interview planner was developed to assist in the interview process by ensuring that they progressed as planned. The planner was utilised along with the informed consent form to ensure that each participant was informed and comfortable with his or her participation in the study. Using the informed consent form ensured that issues such as confidentiality were addressed at the beginning of the interviews. The interview planner itself was based on the overview of questions submitted as part of the ethics proposal and it outlined the areas of interest in the study. This planner contained broad questions to stimulate discussions and to ensure topics of interest were covered, but it was not adhered to rigidly if the conversation moved away from the core topics onto emergent theme and ideas, or if the themes from the interview planner that were being explored did not yield useful information. The interview planner is shown in Appendix 3.4 and the informed consent form in Appendix 3.3.

3.3.7 Contact with Participants
After the initial identification of potential participants, each individual was contacted by email to ask them about their willingness to participate in the study. Most of the initial participants were known to the researcher through her position as a senior manager in a large trans-Tasman plumbing merchant based in Australia. The credibility of the researcher was enhanced through her long-standing position within the company and her membership of the key industry body. Initial introductions were gained from colleagues when the participant was not personally known to the researcher, with recommendations from them to the potential participants.

To follow up on these initial introductions, emails explaining the study were sent to twenty-two potential participants. This email contained an overview of the study and informed consent forms. This information was followed up by individual telephone calls were a response had not been received within a week. Sixteen interviews were organised in this way. A sample of the information sheet and informed consent form are attached in Appendices 3.2 and 3.3.
Interviews were held in person or in two instances via Skype. They were organised either at the offices of the researcher or the participant at a time and date convenient to the individual. In most cases the appointment was arranged directly between the researcher and the participant. In some cases, when participants were revisited at a later stage in the research process to check information, or follow up on new categories or gaps in the data, further conversations were conducted on the telephone and by email, so as not to overly inconvenience the participant and take up too much of their time.

### 3.3.8 The Interview Process

The interview process was flexible and adapted to aid information discovery. The structure was loose enough to enable modification in both questioning techniques and topics covered to provide the required rich context. This process took time, with each interview lasting between one and one-and-a-half hours.

As the interviews progressed, the semi-structured approach allowed interactions to remain focussed whilst allowing individual perspectives and experiences to emerge. Initially, a specific question was asked to give the participant a place to start. Following this, an attempt was made to encourage the participant to talk widely without being asked any further specific questions. This process was facilitated by the use follow-up questions to deepen the response in areas of interest. Probing questions were also used to encourage participants to think about their experiences and add context to them, and also helped the researcher to make choices about which area of the data to ask further questions about and what to take forward into subsequent interviews. As the interviews progressed, the probes became more tailored and specific to the categories and themes of interest.

The final stages of the interview involved inviting the participant to offer a short summary of the topics discussed to ensure clarity and helped to researcher understand the most important points in the mind of the participant. On a number of occasions the summarising process also helped identify other issues that had not previously been raised. At the conclusion of the interview, participants were thanked for their participation and the processes for data checking and confidentiality were revisited. Each participant was also asked at this stage if they would like a copy of the completed study. Immediately after each interview, notes were made to record the thoughts and impressions of the researcher and other issues of interest highlighted during the interview.

The strength of this approach was that it was flexible and allowed emergent themes to be
explored in depth and other themes identified in previous interviews to be raised and discarded if no further data was forthcoming. Using this process allowed the participants to talk rather than be interviewed, which ensured that they were comfortable with the process and made the interviews more fluid and wide ranging. Any biases and preconceptions that the researcher inevitably brought to the study were addressed through the flexibility of the approach, which allowed the participant to guide the course of the interview, after the initial broad question was asked. This allowed the participant to talk about the issues that they regarded as most important and relevant to the topic.

After the interviews, each participant was contacted by email, thanking them for their participation, reiterating the confidentiality aspects of the research and reminding them of the researcher’s contact information in case they had any comments or concerns. Full transcripts were not sent to each participant, although, as stated in Section 3.4.6, a short report discussing the initial conclusions was sent to all participants. Seven participants responded and confirmed that the emergent themes had captured their experiences.

### 3.3.9 Recording and Transcribing Interviews

The researcher recorded each interview. In the informed consent sheet and again at the commencement of each interview, the participants were asked if they would agree to the interview being recorded and were reminded that the recorder could be turned off at any point and, if required, a copy of the transcript could be provided to them. All participants agreed to the request to record their interview. Each recording was transcribed and, to ensure anonymity and confidentiality, the transcripts did not contain any individual or company names. Instead, codes were allocated to the participants and companies, and these were assigned and detailed in a code book which was kept separately from the transcripts and recordings. Companies were identified as ‘Company A’, ‘Company B’ and so on, with participants being identified as Participant A and so on. Interviews were transcribed verbatim so no information or context was removed and following transcription the recordings were stored in a location accessible only to the researcher. In addition to the recordings, brief notes were taken during the interviews, to prompt further questioning and to record impressions and some details in case any of the recordings were faulty.

This section has detailed the process undertaken during the research to collect data. The next section details the process undertaken to analyse the data. It includes a review of theoretical sensitivity, coding, memos, saturation, member checks and theory formation.
3.4 Data Analysis and Theory Building

At the heart of grounded theory is the constant use of a comparative method. This is inductive category coding which comprises the simultaneous comparison of “all social incidents observed where theory generation begins with the analysis of initial observations and undergoes continuous refinement throughout data collection and analysis” (Lincoln & Guba 1985, p. 335). Analysis begins with coding and takes form with memos that develop ideas and themes. This section identifies the three types of coding used: initial/open coding, axial coding and selective coding. It details the procedures used. It also explains how memos were used and the search for negative cases to ensure the development of a rich substantive theory.

3.4.1 Theoretical Sensitivity

Theoretical sensitivity refers to a researcher’s knowledge, understanding and skill. Theoretical sensitivity fosters the generation of categories and properties and includes the ability to associate them with hypotheses according to emergent theoretical codes (Glaser 1992). Researchers come to the research situation with “varying degrees of sensitivity depending on previous reading and experience with or relevant to an area” (Strauss & Corbin 1990, p. 41), but those who remain theoretically sensitive will have an awareness of the subtleties of the data. Theoretical sensitivity can also be developed further during the research process as the researcher is exposed to more data. It enables the development of theory that is grounded, conceptually dense and well integrated, and makes it possible to do this more quickly than if sensitivity were lacking (Strauss & Corbin 2000, 2008).

Strauss and Corbin (1990) identified four areas for enhancing theoretical sensitivity: the literature, professional experience, personal experience and the analysis process. For this study, theoretical sensitivity was enhanced by a close consideration of the literature, which provided background information, and sensitised the researcher to the way the phenomena under consideration were understood and interpreted by others. In addition professional and personal experience was used as the researcher had experience in one area under study, that of product development in larger organisations. Care was taken not to assume that the experiences of the participants were always similar to those of the researcher and also to ensure that familiarity with the situation did not ‘block’ the researcher from seeing things that had become routine to her. Finally, the analytical process itself promoted theoretical sensitivity, for as the researcher interacted with the data, using the constant comparative method, time was taken to step back to discover what was actually happening and an attitude of reflection was used to ensure alternative interpretations were considered.
3.4.2 The Constant Comparative Method
The constant comparative method is often described as the heart of the grounded theory approach. Its purpose is to “generate theory systematically by using explicit coding and analytic procedures” (Glaser & Strauss 1967, p. 102). There are four stages in the process: comparing the incidents that are applicable to each category; integrating the categories and their properties; determining a theory; and finally writing the theory. The comparison of incidents whilst coding data helps generate the theoretical properties of a category, and two kinds of categories emerge: researcher constructed categories driven by explanations of phenomena, and abstract categories, which are labels abstracted from the language of the research situation. In the second stage, constant comparison changes from the comparison of incident with incident, to a comparison of incidents with the properties of the emerging categories (Glaser & Strauss 1967, p. 105). From here, theory starts to solidify as major modifications become fewer and changes are mainly clarifying logic and taking out non-relevant properties. This drives two major requirements of theory: parsimony of variables and formulation, and scope where there is a close correspondence of theory and data. Finally when the researcher is convinced that the analytic framework forms a substantive theory, the work is ready for publication (Glaser & Strauss 1967).

In this study, the constant comparative method was used throughout the process. Categories and theoretical strands began to emerge at an early stage and these were further developed, verified or discarded through the use of this method. By the end of the study, the researcher was convinced that a substantive theory existed, and had considered those responses that did not directly match the emerging theory. These were characterised as negative cases. Further sampling was carried out and no further responses to match the identified negative cases were forthcoming.

3.4.3 Coding Procedures
The main purpose of coding is to bring order to the data (Neuman 2006) and in grounded theory, coding provides the pivotal link between collecting the data and developing the emergent theory. Coding helps define what is happening in the data and enables the researcher to grapple with its meaning (Charmaz 2006). The code itself is an abbreviation or symbol applied to a segment of wording in order to classify it and it becomes a category, deriving from either research questions, hypotheses or important themes (Miles & Huberman 1990). Codes also become retrieval or organisational devices to allow quick spotting and clustering of segments relating to the research questions or hypotheses (Miles & Huberman 1990; Neuman 2006). A codebook was used to record codes, including a detailed description of each code and examples of real text. The use of a code book removed the need to revisit
actual data and made the comparison of codes and their refinement a much easier task (Ryan & Bernard 2000).

The literature suggests a number of ways and types of coding. Strauss and Corbin (1990) identify three types of coding, these being open, axial and selective, whereas Charmaz (1998) adds dimensional coding. In this study, open axial and selective coding were used.

3.4.3.1 Open Coding
Open coding refers to the process of naming and categorising phenomena through close examination of the data. This is normally completed through line-by-line reading and identifying potential themes through real examples from the text (Ryan & Bernard 2000). The process involves sticking closely to the data and using codes that reflect action. Initial codes are provisional and comparative but are grounded in the data (Charmaz 2006) and they can be descriptive, interpretative or explanatory (Miles & Huberman 1990).

In this study, initial line-by-line coding was undertaken. This was time consuming but generated many initial categories, which were further defined as the research continued and also helped to drive the theoretical sampling. Codes and categories were developed both from the research questions and ‘in vivo’ using the participants’ own language and thereby preserving meaning and utilising terms understood by the participants (Charmaz 2006; Miles & Huberman 1990). Through this process, over one hundred and ten codes were generated and recorded in detail in the researcher’s codebook. This codebook was kept to hand during the coding process to assist in the development of abbreviations for codes and to ensure consistency. It also helped prevent duplication of codes and categories through the ability to reference previously developed codes. These codes are outlined in Appendix 3.5. As the research progressed, through the use of the constant comparative method, the identified codes were developed into themes and reorganised, sorted combined and discarded as appropriate. The advantages of using this type of coding were that it ensured that the study had relevance with an analytic framework that interpreted what was happening and it helped create relationships between implicit processes and the visible experiences.

3.4.3.2 Axial Coding
Axial coding is the second coding process. It reassembles the data in new ways, making connections between categories and sub-categories including the conditions that give rise to a category, its context, the social interactions through which it is handled, and its consequences (Charmaz 2006, p. 515). Through this process categories often subsume several codes and turn description into contextual analysis by specifying the properties
analytically (Charmaz 2000).

In this study, the researcher began with an organised set of the initial codes and preliminary concepts and started to focus on the coded themes. The primary aim of this activity was to review the initial codes and organise the ideas and themes, identifying the key concepts. This activity was facilitated by the researcher asking questions about “causes and consequences, conditions and interactions and strategies and processes” (Neuman 2006, p. 463). This process stimulated new thinking about the linkages between concepts and themes and raised new questions. It also identified themes that could be dropped. Ultimately it reinforced the connections between the evidence and the identified concepts. These themes are outlined in Appendix 3.6.

3.4.3.3 Selective Coding
The final pass through the data was made to selectively code it. The purpose of selective coding is to scan the data to look for cases that illustrate themes, to make comparisons and contrasts, and also to delimit a category to one core variable and coding to only those variables that relate to the core variable (Glaser & Holton 2004, p. 55). This process was started after well-developed concepts had emerged and the analysis was organised around nineteen core generalisations and ideas. This process was guided by the themes and concepts that had emerged and allowed the researcher to reorganise and elaborate on six specific themes that are outlined in Appendix 3.7.

3.4.4 Memos
The writing of memos links the initial coding and the first draft of the analysis. The process of memo writing drives analytical thinking and identifies leads, assumptions and actions. Its aim is also to give a researcher clarity in thinking and confidence in their ability to analyse data (Charmaz 2000). Memos allow discussion of thoughts and ideas as they emerge from the coding. As soon as an idea comes to mind during the coding process, the researcher should stop coding and write a memo, with the aim of uncovering the properties of the category, as the knowledge of the properties makes it possible for the researcher to write rules for the assignment of incidents to categories (Lofland & Lofland 2006). To allow clarity, each theme or concept should have a separate memo and these should be added to in each coding pass.

In this study, memo writing prompted early analysis and facilitated engagement throughout the coding process. It identified certain categories that stood out and took form as theoretical categories. The early memos that were written were informal and unofficial. They recorded
what was happening in the data and helped to direct further data collection. They answered questions as to what was happening in the data, what participants were saying and doing, and what connections could be made and which needed checking. An example of this type of memo is included in Appendix 3.8.

Later memos were more advanced, describing how categories emerged and identifying the beliefs and assumptions that supported them. Memos were used to identify what categories looked like from a variety of standpoints and facilitated comparisons between categories as demonstrated in Appendix 3.9. To ensure memos were useful, each was titled and dated and included short quotes and phrases to ground them in the data. As individual memos started to share ideas and themes they were combined and as they grew more advanced they also helped to indicate when a category had become saturated.

3.4.5 Data Saturation
Many lower-level categories emerged quickly during the early phases of the data collection, but as theoretical sampling increased the depth of focus, categories folded into one another with higher-level categories emerging later in the study. As these categories developed, theoretical saturation had to be achieved before further data collection was considered unnecessary. Data saturation occurs where no new data is being found to develop the properties of the category (Charmaz 2006; Glaser 1992). Validity is not necessarily based on sample size. Rather, robustness comes from theoretical saturation during data analysis when the data becomes repetitive and adds little value to the analysis (Charmaz 2006; Glaser 1992). This occurs when new insights, concepts and categories are no longer forthcoming.

Theoretical saturation is one of the tenants of grounded theory and is a judgement that there is no need to collect further data (Dey 2007). As Charmaz (2008) and Morse (1994) both indicate, the researcher may claim saturation without being able to prove it and, in the postscript of Strauss and Corbin (2008 p136), they stated:

… In reality, if one looked long and hard enough, one would always find additional properties or dimensions. There always is that potential for the “new” to emerge. Saturation is more a matter of reaching the point in the research where collecting additional data seems counter productive; the “new” that is uncovered does not add that much more to the explanation at this time. Or as is sometimes the situation, the researcher runs out of time, or money or both.

Data saturation for some categories began to occur around the tenth interview, but owing to the differing employment statuses of participants and the order in which they were interviewed, the data collection process continued to ensure robustness across both
segments. The final two interviews were completed with an employed and a self-employed individual. This served to confirm that data saturation had been reached.

All categories needed to be saturated in this way until the core categories were clear and theoretical sufficiency had been reached (Charmaz 2006). If this had not occurred then the developed theory would have been inadequate (Strauss & Corbin 2008). It was in the theory development stage that core categories became evident through the boundaries of the theory and theoretical saturation delimited the category list (Glaser & Strauss 1967).

3.4.6 Member Check
As the data analysis was coming to a conclusion, a short report discussing the preliminary findings was sent to all participants. The aim of this process was to check that the analysis resonated with them, that it provided an accurate description of the phenomena that had been identified and that there were no substantive omissions (Lincoln & Guba 1985; Miles & Huberman 1990; Patton 2002; Ryan & Bernard 2000). The report summarised the findings under the main category headings and the participants were asked for their feedback and comments on the report and the findings it contained. Only seven of the participants took the opportunity to provide comments. These confirmed that the outcomes had captured the experiences that were shared during the course of the research.

3.4.7 Substantive and Formal Theory
Glaser and Strauss (1967) identified two types of theory: substantive and formal. Substantive theory is developed for a substantive or empirical area of inquiry, grounded in research in a specific area such as a particular type of industry. Substantive theory does not attempt to explain phenomena outside of its area of inquiry. Formal theory is developed for a formal or conceptual area of inquiry, and can be applied across a range of situations. It is a product of longitudinal research across a range of situations and locations. Both substantive and formal theory exist “on identifiable levels of generality and differ only in terms of degree” but it is recommended that grounded theory analysis should focus on one or the other (Glaser & Strauss 1967, p. 33).

This study, like many grounded theory studies, aims to develop substantive theory. This theory can then be used by subsequent researchers to help generate new grounded formal theory. As multiple theories are often needed to explain various phenomena, the substantive theory generated can be combined with other substantive and formal areas of inquiry to build a more inclusive formal theory.
As a result of the techniques and processes described in this chapter, nineteen broad headings were identified in the first coding pass, as outlined in Appendix 3.6 and developed into six groups that represented categories that provided building blocks for theory building. The categories were subjected to how and why questioning which led to the development of tentative themes and connections. These themes and connections were visualised in the form of schematic drawings. An example of a schematic drawing is shown in Appendix 3.10. These drawings were then revisited to find linkages between the categories to form one substantive explanatory model. The categories, themes and linkages that emerged are discussed in greater depth in Chapters 4 and 5.

Throughout the data analysis process the researcher was aware of the requirement for rigour in the process, in order to counter potential criticisms of qualitative research. The next section outlines the conflicts identified in the literature and the appropriate methods for ensuring rigour and the processes that were undertaken in this study. It details the process used to collect and analyse the data according to the established methodology of grounded theory.

### 3.5 Rigour

In his initial development of grounded theory and in his subsequent books, Glaser (1967, 1978, 1992) identified four criteria for determining the reliability and validity of grounded theory: fit, work, relevance and modifiability. He further stated that the tests for credibility in studies using grounded theory were a demonstration of the understanding of the theoretical framework, a description of the data so the readers can ‘hear’ the participants, and a codified procedure for analysing the data. To judge credibility the reader must be caught up in the rich description of the phenomenon, must be able to assess the types of data used and must have access to an explicit statement of the data used. In addition the researcher needs to detail the similarities and differences between the groups or individuals studied. There needs to be a clear statement of the theory and it must be delimited (Glaser & Strauss 1967).

In the subsequent development of grounded theory into a less positivistic methodology, and with the inclusion of a constructivist perspective, considerations of dependability, authenticity and triangulation were seen as measures of research ‘quality’ with credibility being driven by rigorous research methods and a philosophical belief in the value of qualitative inquiry (Patton 2002, p. 552). Rigour is assured through generating and assessing rival conclusions, and using inductive and logical methods to identify other ways of organising the data. Rigour is also boosted by the search for negative cases, which provide the opportunity for new learning in information evaluations. Triangulation is also recommended to increase the
quality of the research as triangulation adds to the rigour of a finding by showing that independent measures of it agree or do not contradict it (Miles & Huberman 1990; Patton 2002). This has been developed further by the constructionist approach which identifies credibility, originality, resonance and usefulness as the key criteria for considering grounded theory studies (Charmaz 2006).

Later considerations of grounded theory have in some ways resulted in it becoming another technique in qualitative research (Glaser 1992) and so the tests for rigour have taken on the characteristics of those generally applied to this kind of research. It is suggested that qualitative research does not meet the conventional criteria for judging research, so acceptable alternatives must be found and their use defended (Ritchie et al. 2003). These characteristic comprise trustworthiness (Glaser & Strauss 1967), truth value, applicability (Robson 2002), consistency and neutrality (Lincoln & Guba 1985). The criteria of trustworthiness comprise many of the elements previously discussed, such as credibility, negative case analysis and member checks. In addition it is suggested that transferability, dependability, and confirmability achieved through the use of an audit trail and process should also be used to demonstrate the quality of the research.

The lack of validity and reliability are often raised as criticisms of qualitative research and a number of methods have been proposed to address these. The question of validity is one of is what is being measured actually what was intended to be measured (Roberts & Priest 2006; Stenbacka 2001). Sykes (1991) addresses this by making a distinction between validity and generalisability. He states that validity is ensured by the presence of “good” data, which is generated through the interaction of the researcher and the respondent, and therefore validity is achieved through the use of non forcing interviews (Stenbacka 2001). In addition, member checks and statements of researcher biases and experiences can be used to determine internal validity (Mays & Pope 1995; Merriam 1995) and external validity can be assured through the use of thick description, that is, the use of the participants’ own words (Merriam 1995).

Reliability is the ability to produce the same results again (Roberts & Priest 2006). It has been argued that reliability has little place in qualitative research (Stenbacka 2001), but it needs to be addressed to answer the criticisms levelled against it. Techniques suggested include an audit trail for the research so subsequent researchers can reconstruct the research process, and peer examination of the data to check analyses and conclusions (Merriam 1995). Finally, the consistency of the research process can also help to support the reliability of the findings (McKinnon 1988).
During this study, the criteria used for ensuring rigour came from the literature focused on grounded theory. The researcher felt it was important to have a codified procedure for analysing the data so the conceptual development of the study was carefully documented to ensure that the grounded theory process was being followed, and to ensure that sufficient evidence existed for other researchers to reconstruct the process by which the conclusions in this study were reached. Participants were carefully selected according to theoretical sampling techniques with their positions within the targeted groups and their willingness to share information being the main criteria in their selection.

Data collection processes have been described in some detail to provide a clear audit trail. As discussed previously all data were collected and transcribed by the researcher and the constant comparative method was followed through the process of memoing. Theoretical sampling and the active search for negative cases also helped identify when saturation was achieved.

Biases and preconceptions were addressed early in the piece through the use of self-reflective notes and these were referred to at various stages through the study to guard against these biases influencing data collection and ‘forcing’ the emerging theory. In addition interviewing techniques were used that encouraged the participants to raise issues of importance to them rather than being influenced by the researcher. Probing questions used were developed during the course of the interviews based on what had been raised rather than using a predetermined list.

Contextual relevance was achieved by carefully describing the group within which the study was conducted. Company size and organisation were described and these guidelines were adhered to throughout the study. Validity was developed through the reporting of the findings using the participants’ words and through the use of non-forcing interviews. The findings were also discussed in depth with the research supervisor to check the analysis and conclusions that were being drawn. Finally, triangulation through the use of a comprehensive member check helped to develop the validity of the research.

To ensure the validity of this research, rigour and credibility were enhanced through the use of ethical practices throughout. The ethical issues addressed in this study have been described in various ways in this chapter and are summarised briefly in the next section.

3.6 Ethical Considerations

When conducting research, researchers have a duty of care to respect the rights, needs
values and desires of the participants (Creswell 2003). It is for this reason that all research requires approval by the ethics committee of the institution from which the research is generated. In this study the key ethical issues that were faced were informed consent, privacy and confidentiality, protection from harm and the consequences of participation. These are addressed individually below.

3.6.1 Informed Consent
The principle of informed consent requires that participation of individuals in a study is voluntary and that it is based on disclosure of full and accurate information about the nature of the research being undertaken prior to their agreement to participate. This information should be communicated to the participants in language that they understand and the option of withdrawal at any time must be clearly stated.

In this study, an informed consent form and an information sheet were provided to all participants prior to the study. Each participant signed the informed consent form and retained a copy. This form detailed consent issues including the agreement to participate based on the provision of information regarding the study, the agreement of the participant to be interviewed and for the interview to be recorded, the ability of the participant to withdraw at any time, privacy and confidentiality issues and the approval of the ethics committee for the research.

A separate information sheet was also provided to all participants and formed part of the informed consent process. This information sheet was provided concurrently with the informed consent form and provided brief details of the research objectives, the process to be undertaken, the responsibilities of the researcher and the participant, the potential risks to the participant, confidentiality and privacy issues, research results, participant consent and information for further inquiries. It also detailed the ethics approval number (ECN-11-087) and provided contact details, which the participant could use if they had any concerns about the ethics of the study. Copies of the information sheet and informed consent form are shown in Appendices 3.2 and 3.3.

During the research, it became apparent that one participant was unable to use the written documentation. Both the information sheet and informed consent form were read to the participant by an independent third party. The participant then indicated his willingness to participate by ticking the appropriate boxes and signing the informed consent form.
3.6.2 Privacy and Confidentiality
Codes of ethics for researchers detail the requirement that participants must remain anonymous and that their identities and that of the organisations in which they work must remain confidential (Creswell 2003). In this study, the identities of those who participated were known only to the researcher and in any documentation produced, including transcripts, aliases (e.g. Participant O and Participant S, Company A and Company B) have been used. These aliases were detailed in a separate code book which was kept apart from the recordings and transcripts and no identifying names or organisation details were transcribed from the tapes.

Interviews were recorded only after receiving consent from the participants via the informed consent form. Participants were informed that the recordings would remain in the possession of the researcher who would transcribe them personally and tapes would then be stored securely and erased at the conclusion of seven years as required by the ethics committee of the university.

3.6.3 Protection from Harm and the Consequences of Participation
It is a requirement of all research that participants are protected from physical, emotional or any other kind of harm. The sum of the potential benefits to a participant and the importance of the knowledge gained should outweigh the risk of harm involved. It is the researcher’s responsibility to reflect on the possible consequences, not only for those taking part, but for the study population as a whole (Creswell 2003).

This study involved the participants taking part in an interview lasting about one hour at a time and location convenient to the participant. Participants were free to withdraw from the study at any point. This ability to withdraw was explained to them both verbally and in writing through the information sheet and the informed consent form.

3.6.4 Researcher Knowledge and Bias
The researcher has worked within the Australian plumbing industry for the last eight years in a product development and marketing role, and therefore brings considerable knowledge to the study, but also a potential for bias to the interview process. Two sources of bias can exist: the effect of the researcher on the sample and the effect of the sample on the researcher (Miles & Huberman 1990) and steps need to be taken to counteract these effects. The researcher took steps to minimise the effects of any potential bias by recording and clarifying, in personal notes, initial assumptions and preconceptions, and by referring and adding to these throughout the study. The use of a participant validation process were further
tools used to minimise bias (Miles & Huberman 1990).

As outlined throughout this chapter, the research was conducted in a robust and ethical manner to the best of the researcher’s ability. As with all research, this study has its limitations. The following section deals with those limitations.

3.7 Limitations
Any study must identify and acknowledge its limitations so that the reader understands the context of the research and so that any findings are appropriately qualified. In this study there are two main limitations: generalisation and bias. This study has been designed to produce a substantive theory which can offer powerful explanations for a topic area because it is tailored to the topic and incorporates rich detail from specific settings, processes or events (Neuman 2006). However, this means that it is often difficult to transfer the results from one site or group of individuals to another. It may also be the case that substantive theory is so specific that it may not be possible to apply findings from the same organisation to itself at a different time. At best, the researcher can only supply information about the studied site or group that may make it possible for others to make a judgement of the transferability of the information to some other site. Such a judgement cannot be made by the initial researcher but only by those seeking to apply the findings at a later date (Lincoln & Guba 1985). In this study, the findings cannot be generalised to firms outside of the plumbing market, or to companies based outside of Australia. The substantive theory developed may be used by subsequent researchers to test its application in these areas but this study and its conclusions make no comment about this.

Whilst the research set reached sixteen of the twenty-two individuals identified who met the criteria outlined in the methodology, it must be acknowledged that this is a small number of participants. The plumbing industry is small and is dominated by a number of large organisations, which made the number of available participants limited. This by no means negates the validity of this study as the level of innovation and change that these individuals have driven in the market is substantial. The limited number of participants in this research means that generalisations as to the applicability of the research findings, outside of this group cannot be made. Further empirical testing of the findings and grounded theory would be required to form conclusions regarding its applicability to other individuals or industries.

The small number of participants can be seen as a limitation of this research, although one of the premises of grounded theory is that validity is not a function of data sample size. Instead, data saturation is achieved by the intensity of the interaction of the participants with the
research, and obtaining sufficient data for the construction of theory (Charmaz 2006). To validate the small sample size, the search string “Grounded Theory” was entered into the Southern Cross Journal search engine and produced twenty seven results between 2011 and 2014. Each of these were reviewed for participant numbers and using the current sample size of sixteen as the mid point 48% (13 articles) had sample sizes less than sixteen, and 52% (fourteen articles) had sample sizes above 16. There was one outlier with a sample size of 130, although, of the remaining twenty six articles, the maximum sample size was thirty. This result suggests that a small sample size is a normal characteristic of grounded theory research.

Understanding the limitations of this study is important to understanding the context within which the research findings were made. Outlining the limitations does not take relevance away from the study. Rather, it provides a richer contextual description and grounds the research in the data.

3.8 Conclusion
This chapter has explained the research paradigm that the researcher applied, and it has explained why grounded theory was chosen for this study. It also described the tools and techniques used in the sampling, data collection and analysis processes before addressing questions of rigour, ethics and the limitations of the study. The next chapter details the results of the data analysis.
4 Chapter Four – Results

This research interviewed a number of individuals within the Australian plumbing industry who had developed innovative products and brought them to market. Its aim was to understand the choices that they had made in respect of their careers and innovation development. It also aimed to identify the drivers of those choices through a consideration of their upbringing traits and motivations.

This chapter presents the emergent themes and the relational themes and linkages between them to build an initial model of the connections discovered in the creation of a substantive theory. Each section utilises the rich detail gained from the participants during the interview process to illustrate how these themes are apparent to them in the context of their experience. In the initial open coding, one hundred and twelve codes and ninety one different themes were identified and through the process of selective coding these were reduced to five core themes, each of which will be addressed in turn. In addition it identified a seemingly unrelated theme, which is briefly reviewed.

This chapter is structured as follows. Section 4.1 discusses the participants’ childhood environments and their early careers, including early shaping experiences. Section 4.2 reviews the presence of personality traits. Section 4.3 examines the individuals’ attitudes to risk. The motivations for innovation and commercialisation are considered in Section 4.4 with the end of the business cycle being considered in Section 4.5 where the development, and exit or continuation of entrepreneurial venture is considered. The specific circumstances of employed participants are considered in Section 4.6 before the findings are summarised in Section 4.7.

4.1 Childhood and Early Career Experiences

This section will consider the childhood and early career experiences of the participants. This includes the environment in which they grew up and the occurrence of any early shaping experiences in either childhood or early career. The intention is to understand the effect this had on the career choices of the participants. The following analysis attempts to bring these strands together to provide an understanding of the impact these experiences had on the participants.
4.1.1 Childhood Environment

Three themes emerged that are related to childhood environment: a strong parental influence, self-employed parents and educational achievement. Fourteen of the sixteen participants identified a strong parental influence as having had a major influence on their attitude and character formation. In the majority of cases it was perceived as a positive influence as exemplified by Participant M who said:

“My father was the biggest influence on my moves in the early part of my career. One of his great sayings was ‘what if’. What if, he would say, and don’t let it be you, the one that played it safe.”

Not all parental influence was positive. Two of the participants identified their fathers as negative influences; and this appeared to have had a galvanising effect. For example Participant I stated:

“My parents were very strict. I did an apprenticeship with my father as it gave me the ability to prove to him that I am able to do something with myself and I was running my father’s business by the time I was 19.”

The remaining two participants did not identify a strong parental influence. However, they shared a similar view of their parents, describing them as conservative and risk averse and as having a limited influence on their career choices. The results suggest that parental influence played an important part in motivating the participants to achieve. Some individuals had positive experiences and some had negative experiences but in all cases the experiences motivated the participants in positive ways. What is interesting, however, was that this influence did not play an important role in the career choice to be self-employed or employed.

The researcher expected to identify a high level of entrepreneurial activity amongst the parents of those who chose to be self-employed. However, the findings did not support this. Only four of the sixteen participants had self-employed parents. Three of these participants chose a self-employed career, and one did not. Participant GG attributed his choice not to become self-employed to the experience of his father:

“Going into business is always a bit daunting for me as my father sold everything up and bought a pub in the bush …. He lost a lot of money, which makes me very reluctant”. The remaining seven participants who became self-employed did not have self-employed parents.
The third aspect of the childhood environment that was discussed was the education level reached by the individual participants. The research identified a contrast in educational achievement between those individuals who became employed and those who started their own businesses. At the point of leaving school, the academic achievement of the self-employed participants was considerably lower than those who went on to become employed by organisations, with the highest level in the self-employed cohort being a Higher School Certificate. Participant T summed up the attitude to school when he stated:

“I wasn’t one that applied myself at school, so whilst I wasn’t getting terrible grades, I knew I was going to be out at the end of Year 10. As soon as I could be out of school I wanted to be out of school.”

The level of education was not a reflection of the individuals’ capacity to learn, or of their intellectual capability, as three members of this group subsequently went on to higher education as a mature students. They did so to achieve a required outcome.

“I was a plumbing contractor and I really wanted a qualification. I found that there was a lot of academic snobbery in the building industry and as a plumber no one really listened to you. The ones they listened to had letters behind their names.” (Participant C)

The education levels of those who became employed were much higher, with only one of the six not achieving a bachelor’s degree and one achieving a PhD. Their intellectual capacity appears to have been directed differently from the self-employed individuals and this is reflected in their more ‘academic’ or technical approach to their innovations. They saw the issues to be solved as intellectual challenges rather than as opportunities to make money or create a venture.

The three self-employed participants who went onto further study did so to support their technical professions. It is of interest that for one participant the stated aim for acquiring a later qualification was that it would give him the authority when talking to other qualified professionals in the construction industry, so he would not be treated as the ‘tradie’. This indicates that even successful self-employed individuals perceive the need to “prove” their expertise to non-trade based experts through formal qualifications.
From the above summary, it can be seen that fourteen of the sixteen participants reported a strong parental influence, although this does not appear to be a differentiator for career choices. Parental business ownership was not identified as a major influence on career choice. Two participants who went on to start a venture stated that their father influenced their career choice, but this was not a consistent finding. Of the themes identified, only education appeared to be a predictor of career choice. It appears that a shaping experience in childhood, or at the start of the career, may have had more influence on personal development and subsequently career choice.

4.1.2 Early Childhood and Early Career Shaping Experience

When discussing the occurrence of an early shaping experience in the lives of the participants, ten of the sixteen participants identified an episode that they considered traumatic or that profoundly affected their upbringing. These occurrences ranged from the death of a close family member to a severe economic setback. In many cases the experience changed the lives of the participants, often burdening them with responsibility at an early age. Indeed as Participant R stated after the death of his father:

“You become the man of the household. A lot of reliance falls on your shoulders, so you man up and do what you have got to do.”

Whilst these experiences appear very dramatic, six of the participants did not appear to acknowledge that they were any way out of the ordinary and indeed often underplayed the significance of these experiences. Participants C and M did not acknowledge any effect of these experiences and although the remaining four acknowledged an effect, they stated that they did not dislike their childhood and said they had had a very normal upbringing. They did acknowledge, however, that the ability to overcome adversity served them well in their future endeavours, saying that this had encouraged them become self-employed and had influenced their attitudes and expectations, appearing to make them more goal focussed.

“Without question [the family bankruptcy] has defined my life. It has made me very driven to be successful. I need to win at all the things I do. I don’t participate in things, I compete. I can’t play sport just to enjoy playing sport. I have to win.” (Participant G)
The remaining four participants who had experienced a traumatic event, reported different reactions. These individuals appeared to become more introspective and risk averse. Participant GG sums up this reaction by stating:

“I got [very sick] when I was nineteen and that gave me a completely new perspective on things in general. I had time to reflect and it made me much more cautious.”

It is suggested that this contrasting reaction was evidence of a lack of resilience and contributed to the subsequent development of a more conservative risk profile (Moenkemeyer, Hoegl & Weiss 2012), which may have influenced the future career choices of the individuals.

It certainly appears that there was a distinctly different reaction to these episodes between the individuals that went on to became self-employed and those who chose an employed route, with the latter individuals becoming more risk averse, in contrast to the self-employed participants who, when faced with a challenge or early responsibility, developed a determination to succeed and an ability to cope with risk and uncertainty (Drennan, Kennedy & Renfrow 2005). It is also possible to detect, through the tone of the responses rather than the actual responses given that this group developed enhanced levels of self-efficacy by overcoming these challenges (Drennan, Kennedy & Renfrow 2005). The apparent links between these experiences and self-efficacy and risk are discussed in Section 4.2. Of the six participants who did not report a traumatic childhood event, four identified another kind of trauma – an early career setback and this will be discussed below. The final two participants reported a childhood free of major trauma.

When career experiences were examined, thirteen of the sixteen participants identified a setback in their early career, especially in regards to financial setbacks. For example, Participant T explained:

“I ended up taking a hell of a lot of debt from people just refusing to pay large amounts of money, hundreds of thousands and I have honoured all of those debts and it has taken a lot of hard work and borrowings and what not to come back to line ball.”
It is evident that for those who chose a self-employed career, overcoming these challenges was the foundation for the success of subsequent businesses. This affected the way they were shaped and developed, especially with regard to risk perception and preference.

“We have kept very low overheads and everyone who works for me is a sub-contractor. I always remember in the plumbing company it cost me $250 an hour just to have the doors open, before I even employed an plumber and I didn’t want to have those overheads again.” (Participant C)

In contrast, the career setbacks faced by the employed participants were more limited. Many of these participants struggled to identify any major setbacks in their careers and most identified product failures as the only significant occurrences.

“There was one product and there was a failure with it. It taught me a lot, as it was terrible. It was a material failure. Something you couldn’t foresee but the consequences of the changes and the decisions I had to make to fix it taught me a lot. I was under a lot of pressure.” (Participant S)

This appeared to make Participant S more risk averse and drove a need for safety in future activities.

Self-employed participants that identified a career setback were better able to articulate the significance this had, as opposed to the early shaping experiences. It was as though a business setback was seen acceptable and could be learned from, whereas the shaping experience was something to be overcome and managed (Cox & Jennings 1995). Nine of the ten self-employed participants identified a setback in their early careers that had a dramatic effect on their attitudes and perspectives on business. These ranged from large financial losses to the complete collapse of a business. These experiences were cited as learning experiences that allowed different choices to be made in later businesses. Indeed, in the case of the individuals who suffered catastrophic setbacks, this did not prevent them from trying again but it did change their approach. In some cases, such as with Participant C, as seen above, the catastrophic setback changed attitudes to debt and future businesses were built to be being self-sufficient and debt free. All of the individuals
who suffered a severe setback acknowledged that this was an important part of their development and had helped make them more successful in later ventures.

In contrast, the employed participants who identified career setbacks did not appear to identify these as having a dramatic impact, however seriously they were perceived at the time. The setbacks tended to be more technical in nature and at no time was their employment or income at risk. Thus whilst there were perceived setbacks for these individuals, the issues appeared to be more intellectual than commercial, as they had no financial stake in the outcome and the desire to solve the issue was more a matter of personal pride.

It must be noted, however, that these setbacks may have helped these individuals to develop resilience in the face of failures (Moenkemeyer, Hoegl & Weiss 2012; Yamakawa, Peng & Deeds 2013) as each individual went on to create ground-breaking innovations. Of the six qualities of resilience that are malleable through both success and failure (self-efficacy, outcome expectancy, optimism, hope, risk propensity and self-esteem) risk propensity appeared to be the most malleable (Moenkemeyer, Hoegl & Weiss 2012). The malleability appears to involve becoming more rather than less risk averse. The development of self-efficacy was highlighted, as it developed during the participants’ early shaping experiences, and this may have allowed them overcome these setbacks and go on to either create ground-breaking innovations for their employers or create successful ventures on their own. This is discussed further in Section 4.2.3.

Of the three individuals who did not experience a career setback, the self-employed individual did identify a significant shaping experience in their early childhood, which was the death of a family member, which may have built resilience, as discussed earlier. The final two participants who did not identify a career setback did not identify an early shaping experience either. Both of these individuals chose an employed career path, and it appears that the need for resilience, or the ability to overcome setbacks, were not important features of their formative years. This lack of resilience building may have influenced their choice of career path (Drennan, Kennedy & Renfrow 2005; Drennan & Saleh 2008).

Childhood environment including a shaping experience appears to play a role in the development of the individuals in this study in terms of their self-efficacy and risk profile. It appears that it may drive resilience and affect the motivation of the
individuals concerned to succeed, both for personal reasons and to provide for their family. Parental influences, either positive or negative, also appeared to increase the personal relevance of these individuals, whilst higher education levels suggested an attitude of conformity. The identified linkages are illustrated in Figure 4.1 below.

In a similar way, career setbacks appear to have influenced the participants in different ways. In this study, individuals in the self-employed cohort had experienced the most severe setbacks, and this appeared to drive resilience and a tolerance for risk. The setbacks identified by the employed participants tended to be of a more technical nature. It appears that these setbacks did to some extent increase their resilience but this was coupled with an increased aversion to risk. The suggested effects of the identified career setbacks are illustrated in Figure 4.2 below.
The second objective of this research was to understand the experiences of innovative individuals. From the findings outlined above, it can be seen that experiences in childhood and in the early careers affected almost all of the participants; however, understanding their experiences did not shed light on their subsequent career paths as much as gaining an understanding of their reactions to those experiences. It must be acknowledged that both the experiences and the reaction of the participants to them is potentially influenced by recollection over a period of time and are highly personal perceptions of the participant. Whilst there may appear to be a relationship between traumatic events that occurred in childhood or early career and subsequent career choices, to ensure an adequate analysis, further interviews would be required with a wider range of people associated with the individual. This would allow the validation of the recollections and perceptions that were reported by the participants.

Early experiences and setbacks appear to have had a dramatic effect on the majority of individuals in this study, particularly on the way they have approached their subsequent businesses. These experiences and setbacks appear to have had direct impacts on risk profiles and the development of resilience, but the outcomes appear to be different for different individuals. Indeed, where levels of resilience and risk tolerance were not developed in childhood or early career, this may have influenced some individuals to choose what they perceived to be a safer career path. The literature suggests that these choices may be a result of the personalities and traits of the individuals and it is to these we will now turn (Drennan, Kennedy & Renfrow 2005).

4.2 Personality Traits
When discussing personality with the participants, a range of traits emerged. This section considers the evidence regarding the need for achievement and recognition, locus of control and perceived levels of self-efficacy. This study is not a piece of psychological research and no psychological tests were used. Rather, the results were inferred from the statements of the participants during the semi-structured interviews.
4.2.1 Need for Achievement and Recognition

During the interviews, the researcher and the participants discussed the indicators of a need for achievement as identified by McClelland (1961). McClelland’s indicators include: taking personal responsibility for problem solving; setting moderate goals; taking calculated risks; and requiring concrete feedback in the form of data on profits, turnover or other specific performance measures. There was some discussion of problem solving and goal setting. It was clear that participants did value recognition of their achievements, but the kinds of recognition they valued were different.

“For me it [recognition] is all internal. I have no requirement for anybody else to recognise the things that I have achieved. For me it is 100% internal.” (Participant G)

“I like being known as the inventor but it is not essential. I like a pat on the back like anyone does but I see awards as an absolute waste of time. It makes not a scrap of commercial difference.” (Participant C)

“External recognition is a great reward and is truly a testimony for your efforts. I love to know others appreciate what I do”. (Participant T)

All of the participants expressed a need for recognition and this ranged from the need for external recognition through awards or other overt demonstrations of success, through to an internal feeling of satisfaction.

The need for feedback manifested itself in a high need for recognition. However the type of recognition that the participants needed differed between the employed and self-employed cohorts. Most self-employed participants were uncomfortable with public recognition and did not welcome it. They preferred an internal sense of recognition, whereas the employed participants appreciated external recognition.

There is very little literature concerning external and internal need for recognition (Jain 2011), but the results showed that there was a slightly higher need for internal recognition amongst the self-employed participants suggesting that entrepreneurs did not rank external validation as a major motivator.

A second interesting result presented itself from the self-employed participants. Three of the ten self-employed participants reported a need for external recognition. It is posited that this might be a reflection of the age and experience of the participants, with the older, more experienced entrepreneurs requiring less external
validation than their younger counterparts. There seemed to be some evidence for this, as two of the three participants who valued external recognition were the two youngest of the self-employed participants. It may therefore be suggested that age and experience may lessen the need for external approval.

It is difficult to assess whether need for recognition is a significant factor in the career choices of the participants. What is notable is that five of the six employed individuals identified a need for external recognition whereas seven of the ten self-employed individuals identified a need for internal recognition. It seems preferences regarding internal and external recognition may be a reflection of levels of resilience and self-confidence. This warrants further research.

4.2.2 Locus of Control

During the research, participants discussed who was responsible for their success. The participants differed in how they defined success, but they had all achieved a level of commercial success for their product innovations, either through their own businesses or through the organisations that employed them.

Thirteen of the sixteen participants had a sense of personal responsibility for both success and failure. This sense of responsibility appeared to be very strong, as demonstrated by Participant G who stated:

“I am a fairly driven kind of person. I want to achieve lots of things in all parts of my life and it’s like all things in life, if you want something desperately I think everybody could achieve all the things they want. They just have to do what is necessary to achieve that.”

and

“If there is a major issue in the business it belongs to me.”

and by Participant GG who said:

“I am [responsible for my success] through sheer guts and determination, really wanting to prove something to myself – that I can do it.”
However, there was a willingness to credit others for the success, especially within small businesses:

“I had a good sales manager. We were a good team. He was very good at selling and I was good at the technical side. We worked really well as a team and that certainly made the company successful.” (Participant C)

Three participants did not appear to share this belief in their own personal responsibility. This is shown by participants L and S:

“We brought out a range of accessories and we thought we would do something with colour. I never agreed with it and I didn’t like it personally and it was a complete failure.” (Participant L)

“The company will back a new innovative concept and put in a lot of money and all the firepower that it needs and the market support to go with it. So I just input and take that and I just take that and use it to develop innovations and good things.” (Participant S)

It is interesting to note that these latter individuals had all chosen an employed career path.

It can be seen from the anecdotal responses that the self-employed participants were more likely to take credit for their successes and failures. Taking responsibility for both success and failure did not mean that the external events were ignored. Rather, macro and micro external events were acknowledged but it was accepted that they were beyond the individual’s control, and it was up to the individual to make the best of the circumstances presented and forge a path to success regardless of those circumstances. It appears to be this sense of responsibility, closely linked to self-efficacy, which will be discussed in the next section, that gave these individuals the motivation to start a venture in adverse circumstances, or to restart failed businesses and make them a success.

Taking personal responsibility for success also did not negate the influence significant others had on the participants’ success and in a number of cases they were happy to acknowledge this. Credit was given to colleagues, previous bosses
and employees, for assisting the individual in their overall success. However the overwhelming theme was of personal responsibility.

Three of the employed participants offered an interesting contrast: they credited their companies with their success. The language used by these individuals is very different to that of the other participants. They made references to luck and fate being important and said that the success they achieved could not have been possible without substantial support. It appears that participants who had had a relatively incident-free childhood and career were much less likely to exhibit a direct sense of responsibility for their personal performance, and they were more likely to attribute 'their' success to others. Moreover, the employed participants who had to strive to overcome early shaping experiences were more likely to express a sense of responsibility for their success.

The results of this research appear to show a wide variation in locus of control between the different types of participants. Characteristics of an internal locus of control were found in the employed participants and characteristics of an external locus of control were found amongst the self-employed participants. These characteristics, however, did not appear to be the main influence on career choice as another trail appeared to play an important role and this will be discussed in the next section.

4.2.3 Self-Efficacy

In this analysis, self-efficacy has been included as a trait, as this is where it tends to be grouped in the literature (Hechavarria, Renko & Matthews 2012; McGee et al. 2009; Townsend, Busenitz & Arthurs 2010; Zhao, Hills & Seibert 2005). However, it is a more complex construct that can develop over time as the result of prior experiences (Bandura 1977b, 1977a; Zhao, Hills & Seibert 2005). The previous discussion suggests a level of resilience is evident within the psyche of ten of the sixteen participants, and it is suggested that this resilience was developed through shaping experiences, as described in Section 4.1. This resilience has been found to be associated with self-efficacy which is defined as the belief of the individual in their ability to develop and deliver activities that produce expected outcomes or facilitate the ability to control events (Bandura 1977b, 1977a; Chen, Greene & Crick 1998; LeRoux, Pretorius & Millard 2006). This is different from locus of control as it is a
judgement about personal capability rather than self-worth (Moenkemeyer, Hoegl & Weiss 2012).

Evidence of the judgement regarding personal capability is demonstrated in the bald statement of Participant J:

“I could never see failure, I never have.”

And when Participant G looked back at his childhood experiences, he expressed a high level of self-efficacy:

“My elder siblings went to the best schools in the country and when it was my turn there was no money for that so I had to win a scholarship to go to the best school so that is what I did.”

The main evidence for a high level of self-efficacy, however, comes from the work environment. Participants T, R and I were asked to find a solution for an issue that was causing functional problems in a number of construction projects. They backed themselves to find a solution that was effective and easy to implement, investing their own time and money to develop the product. They were given a very specific set of circumstances and had the belief in their capacity to develop a solution that had evaded all of the other attempts to solve the problem.

One of the participants indicated that levels of self-efficacy change over time. Participant C is close to retirement age and has recently sold his business to a large corporation. His thought process was:

“I don’t have the time to make it back, whereas twenty years ago you would think, well if something goes wrong I will just get it back.”

What is of interest is that all of the participants quoted in this section had chosen self-employed careers. Of the remaining six participants, three did not mention any of the factors that suggest self-efficacy and the remaining three showed evidence of a low level of self-efficacy.
“I didn’t believe I had much chance of getting in [to his university course] as competition was so high, so I applied to be a surveyor instead.” (Participant S)

However, when this participant developed some industry-changing innovations, he was prepared to back himself in the face of a great deal of scepticism:

“So the non-believers threw stones at us and came up with other options. None of it was really successful. The guys on the standards committee said no there is no way we are going to do it that way so I said, OK well we are and we went off and did it and the rest didn’t and none of them are here anymore!”

This research suggests that there may be higher levels of self-efficacy among the self-employed participants than their employed peers. As suggested earlier, this may be a reflection of their formative experiences (Chen, Greene & Crick 1998; LeRoux, Pretorius & Millard 2006), which were often profound. This contrasts with some of the employed participants who had lower levels of self-efficacy and appeared less likely to even attempt to make things happen. This does not appear to negate the abilities and performances of the employed participants, as they too have come up with industry-changing ideas, yet it appears that what they were risking was their self-worth rather than their financial survival, and they appeared to be able to take risks at others’ expense. This suggests that they may not have the passionate self-belief, which appears to be required to risk everything for the sake of an idea. What is interesting is the two of the employed individuals who created industry changing ideas demonstrated a change in self-efficacy levels from low to high as their experience and longevity at their employer increased. (Bandura 1977b, 1977a; LeRoux, Pretorius & Millard 2006; Moenkemeyer, Hoegl & Weiss 2012)(Bandura 1977b; Moenkemeyer, Hoegl & Weiss 2012)

Of interest is the fact that there appears to be a possible relationship between the individuals who demonstrated an internal locus of control and those with high self-efficacy. This appears to indicate that self-efficacy and locus of control, whilst apparently related, identify two different aspects of an individual’s personality. It appears from this research that self-efficacy is a distinct trait from locus of control (Bandura 1977b, 1977a; Boyd & Vozikis 1994; Chen, Greene & Crick 1998). There appears to be some linkage between an internal locus of control and a high level of self-efficacy amongst the self-employed individuals, but this relationship was not
evident in the employed participants. This may mean that it is not appropriate to use the same criteria to assess employed individuals and self-employed individuals and compare them, as there may be different drivers affecting these individuals. Indeed ‘resolute strivers’ (Bandura 1977b, p. 42) who believe passionately in themselves and are willing to expend extraordinary effort can be observed across both groups (Chen, Greene & Crick 1998).


The identification of the main traits of innovative individuals, and whether they differed between the self employed and employed participants, was one of the main objectives of the research. From the findings, it can be suggested that, whilst some traits previously identified as entrepreneurial such as need for achievement and locus of control, appeared to be present, the most prominent trait was self efficacy. It can be suggested that developing self-efficacy appears to be one of the most important elements in relation to the career choices made by the participants. Self-efficacy appears to have had a direct effect on the participants’ approaches to risk taking. The next section looks at how the culmination of formative experience, shaped by and shaping traits and attitudes, has led to attitudes and behaviours regarding risk.

4.3 Risk
Risk emerged as a strong theme for all participants. This theme can be divided into three areas: the awareness of risk, attitude to risk exposure and the tolerance of risk taking behaviour (Gilmore, Carson & O'Donnell 2004). Each area is discussed below.

4.3.1 Awareness of Risk (Perception)
A range of views in regards to the perception of risk emerged in this study. Six of the participants had a low perception of risk, and they recognised this on reflection.

Participant T said:

“I didn’t realise at some stages how exposed I was.”

They also demonstrated behaviour that suggested lack of planning:
“I have never been a numbers man where you calculate everything to the nth degree … you make a decision and you get on with it and you make it work.” (Participant O)

This appears to have had a bearing on their career choices as all six chose self-employment. These participants simply had an idea and a desire to turn it into a business. This behaviour reflects the results in regards to self-efficacy, which showed that participants with a firm belief in their own ability to perform in specific circumstances relied on this belief rather than on planning. The views of the participants with low perceptions of risk are summarised by Participant I, who said:

“The people who stay with a corporate instead of going out on their own are probably more educated, so they know they are safe where they are. If you know the dangers you will think twice.

The remaining ten participants had a high perception of risk and of these individuals, four chose a self-employed route and six became employed. Of those who chose self-employment, three were in a second or subsequent venture and their previous businesses had failed, which appeared to have tempered their perception of risk. As Participant R stated:

“We know how much time and money it costs to get it [a product] to that point and we haven’t got the financial backing to throw another couple of hundred thousand dollars to bring another idea from our heads into reality.”

The six participants who had a high perception of risk and chose an employed career path appeared to adopt much more of a planned strategy and a concern for failure during innovation. Participant K stated:

“I take opportunities but I am not reckless. I look for a good opportunity that [the company] can manage and can do well so the risk is managed.”

It is suggested that this is a reflection of the risk of possible harm to their image and reputation should they experience an innovation failure, and of their levels of self-efficacy as discussed in the previous section.
As stated, in the group of participants that had a high perception of risk, there were both self-employed and employed individuals. However, their approaches to managing risk differed dramatically as illustrated by the views of participants C and B:

“I was aware of the risks of my own business from the start but preferred being able to control and manage the risk myself. I feel more in control this way rather than as an employee.” (Participant C)

“I like the security thing [of being employed]. I rate that as quite important because also once you start a family, if you don’t have that security, things can go pear shaped fairly quickly.” (Participant B)

It can be seen that there is some evidence that participants who started a venture did so with a low level of perceived risk, although this was not true of all self-employed participants. Four entrepreneurs reported that they had always had a high perception of risk and managed this in their approach to venture creation. In contrast, all of the participants who chose an employed route had a high perception of risk and this influenced their career choices and also their behaviour in the workplace.

A level of overconfidence, coupled with limited knowledge of risk, was seen in some of the self-employed individuals, with six having a low perception of risk (Douglas 2006). This low perception of risk on the part of most of the self-employed individuals was in direct contrast to the employed individuals who were much more aware of the risks and potential downsides to their activity. The above analysis illustrates individuals have different attitudes towards the perception of risk, and different ways of managing risk. This is discussed in the next section.

4.3.2 Risk Attitude (Preference)

The participants’ risk preferences were inversely related to their risk perceptions. The individuals who had a high-risk awareness demonstrated a low risk preference and vice versa. In the six instances where the participants had a low perception of risk, this was coupled with a greater ability to cope with, and a greater preference for, situations that may have been considered as high risk by non-entrepreneurs.
These individuals appear to have had a limited expectation of failure. For example, Participant O stated that:

“There was never an issue about the risk of losing everything. I never really considered that as an option … so you don’t look on it as a risk, you just look at it as a cost of what you have got to do to move forward.” (Participant O)

This attitude appears to have driven a higher preference for risk, as after all, as Participant M stated: “He who dares wins!”

Risk preference does appear to be tempered by experience and age. A number of participants had started businesses previously, often as self-employed plumbers, and had had failures, which tempered their risk preferences in later businesses. In the case of Participant C, the failure was dramatic, and to manage this he became more risk averse and developed strategies to control risk.

“I got taken for a quarter of a million and this made me more risk averse than I used to be. It has shaped the way I built this business for sure. That is why we are still here [at home] rather than renting out a premises.” (Participant C)

When the time came to commercialise their product ideas, the participants who had already experienced failure seemed to be more aware of the risks and the consequences of failure.

It is of interest to note that ten of the sixteen participants had a low risk preference, and of these four went on to self-employed careers, suggesting a high preference for risk is not necessarily a prerequisite for self-employment. All six that chose an employed career path appeared reluctant to take risks even with other people’s money. This is highlighted by participant GG, who said:

“I suppose I will take a risk in business … But if it is someone else’s, [money] although I would be responsible for trying to make it work. I know I would feel terrible if it didn’t work.”
In a similar way to the individuals who demonstrated a high preference for risk, the development of a low preference for risk may have been affected by an early shaping experience or a company failure. Such an experience was described by Participant GG who was impacted not only by a severe childhood illness, which:

“made me cautious of risk taking and putting myself under stress. It taught me to say no.”

but also by the experience of his father’s failed business.

“Like a lot of partnerships it went sour and that caused a lot of heartache to my dad and it cost him a lot of money and I don’t forget that.”

Participant TT summed up his attitude to risk by stating, “It is better to finish up with a band aid on the knee rather than your leg in a cast!” demonstrating the cautious approach to risk taking taken by individuals with low risk preferences.

There is a contrast between the participants who identified high and low risk preferences. Those who reported themselves as having a high risk preference, and who also chose a self-employed career path, stated that risk was part and parcel of being an entrepreneur. What is interesting is that the individuals reporting a high-risk preference also reported high levels of self-efficacy and therefore may have been better equipped to deal with the uncertainty that high levels of risk brings (Chen, Greene & Crick 1998; Drnovsek, Wincent & Cardon 2012).

Those reporting a low risk preference and a high risk perception had often suffered previous business failures or career setbacks, and this appeared to have tempered their attitudes towards risk. For those individuals who chose an employed career path, there was a level of perceived responsibility for the success of the organisation that they worked for, and they did not appear to want to take chances with their reputations or resources. Their preferences for risk did differ somewhat between their professional and private lives, with some individuals prepared to take more risk in their sporting pursuits. However they clearly demonstrated a low risk preference in their professional lives. These results suggest that different participants had different beliefs, different views on the probability of success and failure, and different values
(Tyszka et al. 2011). It also suggests a link between risk preference and self-efficacy, with their risk profile developing from their level of self-efficacy. Among the self-employed individuals it was clear that risk preference could change over time and it was preference rather than propensity that changed with circumstances (Politis 2005; Westhead, Ucbasaran & Wright 2005).

It can be seen from the above there are two clear levels of risk preference. Like risk perception, risk preference can change over time, and experiences can make individuals more risk averse. Perception and preference, however, are simply attitudes towards risk. It is important to consider the actual behaviours of the individuals to understand risk in total, and tolerance of risk will now be addressed.

4.3.3 Tolerance of Risk (Propensity)

The final element of risk identified in the research is risk propensity, or the willingness to behave in a risky manner. The results of this research presented some interesting contrasts. Ten of the sixteen participants identified themselves as having a high perception of, and low preference for, risk. However four of these went on to demonstrate apparent high-risk behaviours, as did the six who had expressed a high tolerance for risk. The choices that would likely be regarded as high risk by the majority of the population, were not held to be risky at all by these participants. Foremost amongst these was mortgaging the family house, which nine of these ten participants had done and the one who had not would have been very willing to do so. These participants appeared to feel justified in their high propensity for risk due to their high levels of self-efficacy.

“I put everything on the line. I had a mortgage on the house but there was never any issue about losing everything. I never considered that this was an option.” (Participant G)

This confidence was built from:

“The ability to go out and get another job and I have always had faith in my ability to get out there and do something.” (Participant O)

Indeed Participant I knew:
"My personal insurance was my hands. I could always go back on the tools. But I knew it was going to be a successful business, bigger than Ben Hur."

This propensity for risk, however, was tempered where possible with mitigation strategies:

"When I started this business I didn’t want any debt. I wanted to be in a situation [that] if my capital ran out I would go and get another job but eventually we needed capital so I ended up having to remortgage the house." (Participant C)

The distinguishing feature of the ten participants that demonstrated a high propensity for risk, regardless of their perception or preference, was that they all chose a self-employed career path.

These findings are in direct contrast with the remaining six participants, who chose an employed route and reported that in terms of their risk propensity:

"I wouldn’t put my house on the line for a brilliant idea." (Participant B)

These results suggest that the differences in risk perception and risk preferences identified earlier were not reflected in the risk propensity of the individuals that chose a self-employed career path. Regardless of their risk perceptions and preferences, all of them acted in a high-risk way, according to their own judgements. In all cases except one, the family home had been put at risk to support the business. However, although they all accepted that this was a risky activity, the participants believed that it was only a temporary state that would be rectified as the business improved and they were all proved right. In contrast, for those individuals who chose an employed career path, their risk perceptions and preferences exactly matched their propensity.

It was in the areas of risk propensity where the differences between the self-employed and employed individuals were clearest. The self-employed individuals had a high risk propensity which they appeared to consider to be within the reasonable limits of their skills and abilities (Mazzarol 2007; Shane, Locke & Collins 2003; Stewart & Roth 2007) and they all had a positive orientation towards risk (Krauss & Frese 2005).
As can be seen there are two risk profiles for the self-employed participants: one had low risk perception, high preference and high propensity and the other had high perception, low preference and high propensity. The employed participants, on the other hand, had a single profile. They all had high risk perception, low preference and low propensity. What is interesting is that whatever the perception and preference of the self-employed individuals, their propensity for risk was high.

Based on the above analysis and to address the second objective of the research, the model shown in Figure 4.3 highlights the different risk profiles that are demonstrated by the different groups and the ultimate risk behaviour. It identifies how the self-employed individuals may change their risk perceptions and preferences over time with experience, but regardless of this, they are unlikely to change their overall levels of risk propensity, unless there is a change in their level of self-efficacy. This suggests that risk profiles may not be a trait but an outcome of a combination of prior occurrences that have shaped and been shaped by self-efficacy and confidence.

**Figure 0.3: Model of risk profiles**

Source: Developed for this study

In addition to the personality themes that emerged from the participants, a further theme emerged regarding the motivations that drove the individuals to innovate.
4.4 Motivation for Innovation and Commercialisation

The different levels of self-efficacy and differing risk profiles of the participants may have had an influence on the reasons for developing innovations and subsequently commercialising them. This section considers both of these areas. In addition it considers some of the themes identified in the literature as well as novel themes identified in this study.

4.4.1 Innovative Idea Development

When discussing idea development the participants had a variety of experiences.

“There was that person whose mother had slipped on soap suds coming up through the laundry and broken her hip. She asked if we could fix it as she had had plumbers telling her she had to chop up the concrete slab. We put one of our makeshift [products] in and said that’s all done. I was chuffed about that one.” (Participant T)

or

“It’s all about making it easier for the plumber. I just change something and make it a bit quicker to put in or a little bit simpler.” (Participant J)

and

“It’s what I do – it is what I am paid for.” (Participant S)

The identified motivations can be classified as either intrinsic or extrinsic. Twelve of the sixteen participants had intrinsic motivations with a stimulus appearing to be the mental challenge of product development. When discussing this element Participant S summed up the feelings of these individuals when he said:

“It’s about breaking new ground and doing different things, to reengineer the toilet to get it to work like it does … the performance for the standards hasn’t changed so we have managed to come down in flush volume but maintain the performance that was within the standards that were there 30 years ago.” (Participant S)

A second intrinsic motivation was the desire to find a “better way” of delivering an outcome through product development.
“It was difficult to adjust the shower to get a stable temperature so I tried to design something to take care of the pressure difference.” (Participant C)

The theme of “a better way” was identified by eight of the participants, with all but one of the eight having chosen a self-employed route.

Of the participants, eight identified intrinsic motivations as their primary focus and four identified it as a secondary focus. Of the eight that identified intrinsic motivations as their primary reason for innovating, all chose a self-employed career path and developed radical innovations. The four who identified it as a secondary motivator had chosen an employed career path but had demonstrated a change in motivation over time. These participants had extended tenure at their employing organisations and over time, whilst innovation was an expected part of the role or was expected of them due to their reputation, an internal motivation became apparent over time. It was either a desire to meet a technical challenge or a desire to find a “better way” of doing something. These four individuals produced radical innovations within their organisations, and in one case the individual changed the way the industry operated.

Extrinsic motivations were evident in ten of the sixteen participants and ranged from

“I innovate to maintain profitability for the company” (Participant TT)

to

“I have a reputation for being able to provide solutions so I would let myself down if I didn’t occasionally come up with something that is a bit of a game changer.” (Participant B)

All six of the employed participants expressed extrinsic motivations, but only four of the ten self-employed individuals did so. In these cases the motivation was financial. Over time three of the self-employed participants moved from an intrinsic to an extrinsic motivation for innovation. This coincided with their move from a self-employed role to an employed role and appeared to be a reflection of their changed circumstances and was also reflected in lower levels of job satisfaction and less radical innovations.

“I don’t get [the same level of satisfaction]. They are running my business now and it is not the same company any more. It’s very disjointed and not
The first objective of this research was to identify the motivations for innovation by the participants of the study. The research indicated that individuals who expressed an intrinsic motivation for innovation produced radical innovations. The intrinsic reason did not need to be their primary motivator but it needed to be present. Those participants who expressed purely extrinsic motivations produced incremental innovations. The motivations of employed and self-employed participants were not significantly different but intrinsic motivation appeared to be a stronger motivation for the self-employed participants. The customer focus implied in the desire to find a “better way” of providing a solution was seen in both self-employed and employed participants but it was a weaker motivation for the employed participants. The employed individuals appeared to be motivated more by adherence to standards and their internal motivation was more likely to be the technical challenge of meeting those standards.

### 4.4.2 Reasons to Commercialise

The motivations for creativity and innovation were similar across the participants, although some of the participants went on to commercialise their innovations personally whilst others delivered their innovations through their employer. When talking about the motivation to commercialise, the responses were varied and a number of themes appeared.

“I am looking forward to buying back my freedom. I have always said that once the business gets to the point where it is self-run and I am comfortable with not having to be here … that will be my exit strategy, the time to leave.” (Participant I)

or

“I am single and I haven’t got kids so for me it’s just a matter of building a base, you know, of substantial wealth, not all investment-based but I don’t have to be plumbing for the rest of my life.” (Participant R)

For a number of participants, the desire for extrinsic rewards was a much stronger motivation when choosing whether or not to commercialise their ideas. The four younger self-employed individuals identified the pursuit of financial freedom as a reason to commercialise whereas the six employed individuals valued the income
they received from their employment as their extrinsic reward. These different choices appear to be a reflection of the individual participants’ risk profiles, with the employed individuals making lower risk choices to satisfy their extrinsic needs and their self-employed counterparts making the opposite choice.

Intrinsic motivations were also identified as reasons for commercialisation.

“The need to prove myself influenced me.” (Participant T)

“We were having such a good report and feedback coming from the guys who were using it. I thought well this is just too good to be true. It is too good just to hang onto it for myself. I should share this.” (Participant I)

“Very early in the piece when both my kids were infants I said to my wife, in the event that my kids drop out of school or they hate school, or they don’t do well and are out of work, I am going to build a safety net for them. So if they crash and fall we will catch them.” (Participant I)

In the case of seven of the ten self-employed individuals, the participant’s need to prove themselves was evident and appeared to be driven by the previous failure of the business and an intrinsic desire for success. As discussed earlier, six of the participants had had major business failures, which is consistent with suggestion that business failure promotes resilience (Moenkemeyer, Hoegl & Weiss 2012) and self-efficacy (Zhao, H., Hills & Seibert 2005) giving the individual the motivation to start again.

A second motivator for commercialisation relates back to the “better way” reason for developing the creative idea and was described by a number of participants as contributing to “the greater good.” This is the desire to commercialise the idea because it is considered so good that it needs to be commercialised for the benefit of the population as a whole.

A final motivation for commercialisation was encapsulated as the ability to provide a legacy in the form of a business to leave to children. Five of the ten self-employed
individuals identified this as a motivation. This applied especially those that were earlier in their career and had young children, or planned to have them.

Interestingly, four of the remaining five self-employed participants had children of working age who were employed in the business, although:

“I didn’t plan to have the children join the business but they wanted to join and that is great. The thought of a legacy came later as the children were interested.” (Participant G)

There was only one self-employed individual that did not cite legacy as a motivator:

“There is no one to pass it on to. I have one daughter and that is all and she is in HR.” (Participant C)

What can be seen from the results above is that four of the businesses were newly established and the individuals concerned had young children. In these cases the thought of being able to provide employment and security for the children appeared to be important. For longer-established businesses this was not considered to be an initial motivator, although most of these individuals had their children working for them. The involvement of their children in the business was an unexpected outcome that occurred after the business was established rather than a planned occurrence. These results may be characteristic of recently started ventures where the individuals are still close to their reasons for starting the business. They may indicate why the participants put in the time and effort required and why they choose to spend the necessary time away from their families. In contrast, participants who had been running their businesses for twenty years or more did not always recall their initial motivations. The identified motivations for leaving a legacy are shown below in Figure 4.4.

![Figure 0.4: Outcomes of legacy considerations](image_url)
The three themes of financial motivation, proving oneself and legacy, resonated strongly with the ten participants who had made self-employed choices. Strong themes emerged from the remaining six participants as to why they had not, and were highly unlikely to, commercialise their innovations themselves. One of the strongest themes to emerge was summed up by Participant S:

"My current role offers sufficient challenge and gives me the freedom and the financial support to back ideas."

In addition, owing to his risk profile, Participant TT stated:

“I am paid well enough here and I have been here a long time. I also get the opportunity to try things. If I was on my own I would need to be sure I had a sure-fire winner.”

And a further theme was identified, that of available resources.

“Specialising creatively in my field allowed me to be assisted by the significant resources within the company and to gain direct access to production and testing laboratories at a scale that would be difficult if I set up on my own.” (Participant S)

The employed individuals provide an interesting contrast to the self-employed individuals. They appeared to be as creative as their self-employed counterparts and their motivations to create did not differ dramatically from them. What was different was the way they chose to satisfy those motivations.

In many cases the participants were senior figures in their businesses and were well rewarded for their efforts. This provided them with the extrinsic motivations discussed earlier. The expressed need for security is consistent with these individuals being more risk aware and less risk tolerant than their self-employed counterparts. They also identified the support they received for their innovative developments, in both resources and managerial support, which allowed creative freedom. This catered for their intrinsic motivations, which would be unlikely to be satisfied through venture creation due to their levels of risk propensity and self-efficacy.
In addressing the first objective of the research, to identify the motivations for the commercialisation of innovative ideas, the decision about whether to commercialise appeared to be a function of risk profiles and self-efficacy rather than differences in intrinsic and extrinsic motivations (Markman, Baron & Balkin 2005). Both extrinsic and intrinsic motivations existed for both those who chose to commercialise and those who did not. How they differed was in the way they chose to satisfy them. What is clear is that the employed participants were just as driven by intrinsic motivations as their self-employed counterparts, and both employed and self-employed participants were able to produce radical innovations.

In choosing to commercialise themselves rather than through a larger organisation, ten of the sixteen participants created a new venture. However, venture creation is only the start of the entrepreneurial process and during the discussions regarding legacy, a theme emerged regarding the lifecycle of the venture and this will be discussed in the next section.

4.5 Business Growth and Exit

A strong theme that emerged when talking to the self-employed individuals was how the business grew and the reactions to this.

“The plumbing business had got too big to manage so I got out and did something else.” (Participant C)

Six of the self-employed individuals found the businesses they created became too large which resulted in more time being spent managing than innovating.

“It got to the stage where you were employing people to manage people and the business was getting out of control. It was getting too big to manage. I needed managers and that is not what I like and we weren’t making more money, we were making less.” (Participant N)

In the instances where this occurred, the participants needed to find strategies to manage the situation. These strategies ranged from selling the business to creating “a very strong management team that supplements my expertise to manage the growth that we have achieved.” (Participant O)
Three of the ten self-employed individuals made the decision to sell their businesses, either because the opportunity arose through an unsolicited approach, as in the case of Participant N, or as an overt decision in the cases of Participants T and C. The companies to whom they sold subsequently employed the participants. This had interesting repercussions, which will be discussed in Chapter 5.

In a number of cases, this was not the first time a business run by the participant had become too large. In their previous business experiences, Participants O, I, T and C had reached a point where a business had become too big to manage. They had responded by dismantling these businesses. In each case the businesses had been actively reduced in size, either by using subcontractors to replace employees, or by reducing the client base to take on only smaller jobs.

A third alternative to manage growth was used by Participants I, O and P who, in later businesses, developed management structures to deal with the ongoing growth of their businesses, freeing themselves up to continue to focus on product innovation which was what had initially drawn them into the business. This process of developing management structures not only facilitated the ongoing growth of the business but also offered opportunities for their children, as discussed in Section 4.4.2.

From the above discussion, it can be seen that whilst the self-employed individuals were very focussed on the setting up of the business, subsequent growth and a personal exit plan were not part of the planning process. Of the ten self-employed individuals interviewed, there was no evidence that any had planned for growth. For three of the more established businesses, their way of managing business growth was to bring in external expertise or to introduce family members, allowing the participant to concentrate on his area of expertise. For another three businesses, the choice was made to sell and for the four more recently established businesses, the participants were more concerned with continuing to operate and the focus was on cash flow and making a living rather than having a long-term plan for growth or exit. There was, however, some indication of an expectation that the business would have longevity, as evidenced in the thoughts around leaving a legacy.

The decisions made regarding the ongoing management of the size of businesses are shown in Figure 4.5 below.
As discussed in Sections 4.2.3 and 4.3.3, self-efficacy levels and risk profiles can change over time and this can have an effect on the decisions taken when the business is perceived as too large. For the three participants who chose to sell, two were towards the end of their careers and as Participant C stated:

"Now I don't have the time to make it back whereas twenty years ago you would think, well if something goes wrong I will just get it back."

As identified in the above section, the participants shared similar motivations to innovate and there were strong reasons for the individuals who chose to commercialise and equally strong reasons for those who did not. Those who chose not to commercialise their ideas operated in a very specific environment and this will be considered in the next section.

### 4.6 Employed Participants and Organisational Innovation

Whilst the experiences and personality traits of the self-employed and employed individuals have been compared and contrasted in previous sections, a discussion of the employed individuals would be incomplete without an examination of how they were managed in the organisations which employed them. This section considers the feedback of nine employed individuals, six that were employed and three who moved from self-employment to employment. A range of themes specific to these individuals emerged. These related to the challenges of working in an organisation and comprised the management of innovative people, the use of group innovation,
leadership, the innovative culture, the climate of the organisation and the implementation of innovation.

4.6.1 Management of Innovative People

Innovation has been recognised as one of the key drivers of organisational success (Bernstein & Singh 2006; Galanakis 2006) and to promote this organisations need innovative people. As with the self-employed individuals, employed innovators have special characteristics and need to be managed differently from the majority of the organisations' workforce. When discussing their management the participants reported that:

"After a while I got a brief, to just have a crack at whatever you think is reasonable. I now have a very free role and [my manager] asks for my advice on most things." (Participant B)

They attributed their success to the autonomy provided by the organisations in which they worked. This included the ability to work on 'pet projects' that were not part of the R&D program but that the individual believed would add value.

This autonomy added value to the organisation as it facilitated "work on greenfield stuff and they rely on me to give some sort of direction on where we would go. Anything that is a bit out there I am asked for a view on whether we should get involved, and if we do how we do it." (Participant B)

However, this level of trust was not built overnight:

"Now they are constantly pushing for the next step. Over the years where I used to say this is what we should be doing and they would say 'go away, we can't do that, it would be a disaster for a whole lot of reasons', but now they are really pushing for the next innovation." (Participant S)

The keys to effective management of these individuals appears to be autonomy and expectations of innovation whilst operating in a safe environment. The participants are generally comfortable with the way they are managed and as they have proved their worth over time, they have been given the autonomy and resources to develop
their innovations. It is important to note that the six employed individuals interviewed had an extended tenure at their organisations and so had had the time to develop their reputations within the organisation. This appears to have driven an expectation of innovation and a reputation for being creative and being a ‘go to’ person. In contrast, the three self-employed-turned-employed participants found the innovation process stifling, slow and frustrating, especially the process of being managed and being expected to innovate.

These three participants provide an interesting contrast. It was apparent that it was necessary to manage them and the acquired business in a specific way.

“They put in a [company] guy in as general manager and that turned to crap so I stepped in for a year. They had already lost some key people [from the business] and you can’t replace those types of people without training them in-house. Now I don’t report to anyone – well the CEO basically, so they are pretty good to me that way.” (Participant N)

This suggests that the transition into an employed role is difficult and require a different form of management. This includes very little actual management. Acquisition has been used as an innovation strategy, but there are problems with the integration of the acquired businesses, especially where the founder is retained as the driver of innovation. These individuals appear to require a different form of management from the acquiring company and none of the participants reported this as being done effectively.

(Fagerberg 2003a; Glynn 1996; Scott & Bruce 1994; Yuan & Woodman 2010)

4.6.2 Group Innovation

The creation of groups has been recognised as an effective way to manage innovation within organisations and this was reflected by four of the employed participants (Hülsheger, Anderson & Salgado 2009; Miron-Spektor, Erez & Naveh 2011). Participants L, K, G, and M utilised cross-functional groups, comprising members from sales operations, marketing and R&D who shared ideas and worked through the risks and benefits of each idea before selecting those for implementation. Indeed Participant K used groups to keep his creative team engaged by giving them extra projects outside their day-to-day work.
Of the other five participants, one had experimented with group innovation within the organisation but

“We have tried the engagement of a broader group of people only to find that they speak from a niche perspective rather than a broader perspective. You finish up not being able to gain consensus because their needs would be localised. So the collaborative approach hasn’t worked as well for us as a consensus of one or two.” (Participant TT)

However, he was not averse to using outside help and did make use of external expertise in innovation development.

The remaining four did not mention the use of group innovation. Two were the managers of large R&D departments and group innovation may have been a given part of their work flow so it was not mentioned and the final two were previously self-employed individuals who were used to working alone.

4.6.3 Leadership

Participants were asked about the characteristics of their managers. Leadership as a theme did not emerge strongly, although one participant said:

“The way he managed people was to empower them and to motivate them. It didn’t feel like I really had a boss. He was always into sport as the captain and the coach and I guess he put that into business. It was a brilliant place to work.” (Participant M)

The approach suggests some evidence of transformational leadership, which was also reflected by two other participants who described their leaders as visionary and motivational.

However, not all participants had positive views of their leaders:

“We had an R&D manager here for many years and it wasn’t true R&D. It was sort of product improvement. He hadn’t worked out what my role was and that it was fundamental to how the department worked so I was pretty much sidelined.” (Participant B)
This may be evidence of a negative LMX relationship where the relationship between the participant and his manager was extremely poor (Basu & Green 1997; Kheng & Mahmood 2013; Tierney, Farmer & Graen 1999). This appeared to have damaged the innovation process and resulted in a withdrawal for a period of time in which the participant did not make an active contribution to the R&D department.

The remaining five participants did not mention leadership, which suggests it did not play an important part in their innovation process. The lack of leadership as a theme may support the organisational ecology approach which suggests that leadership has little effect on organisational performance (Elenkov & Manev 2005). However, it is more likely that most of these were either leaders in their own right, and the transformational leaders of those teams, or, in the case of the previous self-employed individuals, were used to working alone and were not in need of leadership. Of the limited themes that appeared, transformational leadership appeared to have the most relevance as the leadership traits that were mentioned were creativity, communicating vision, promoting new ideas, encouraging members through the provision of intellectual stimulation and mentoring (Howell & Higgins 1990; Kissi et al. 2009; Pieterse et al. 2010).

4.6.4 Innovative Culture

Some of the organisations in which the employed participants worked showed characteristics of an innovative culture. When asked about the organisational support Participant TT stated:

“The organisation is supportive of innovation and that is expressed in terms of increase in staffing levels and an increase in the diversity of skill sets we have.”

This was indicative of the attitudes of six of the nine participants. It was apparent, however, that support could change over time, especially with a change of management. In relation to a breakthrough innovation Participant M stated:

“I think if the old owners were running the business they would have spent the money but the board now wouldn’t spend the $150,000 needed, not unless it was a guaranteed winner these days.”
This suggests that the creative climate is not a permanent state, but one that can be directly affected by senior management and their decisions.

A second cultural theme emerged and is illustrated by Participant L, who said:

“We haven’t had too many failures and where one has been identified we are always keen to cut the cord but this does not stop us innovating – you have to develop and try new things.” (Participant L)

Four of the six participants, who had always worked for organisations, had experienced a product failure but had been given the opportunity to either fix it or move on without the organisation pulling back from future innovation. This suggests that the organisations in which the participants were working were demonstrating a creative culture as they were prepared to continue to back their employees even after a product failure and these failures did not result in a reduction of investment for innovation.

In this study, the creative culture of the organisation was measured through the perceptions of the participants and one participant in particular did not feel his organisation had a creative culture:

“I think sometimes [the organisation] takes the easy way. They want solutions that meet [standards] and some of the products that meet standards are rubbish.” (Participant B)

This attitude affected the individual’s motivation to innovate, yet this organisation is the market leader in its field, and it must therefore be recognised that creative culture occurs at two levels, that of the individual and the organisation and these may not align (Björkdahl & Börjesson 2011).

Five of the nine organisations were perceived by the participants to be supportive of innovation, as evidenced through the provision of resources, or the protection of those resources during difficult economic times (Scott & Bruce 1994). It was clear that they valued the continuation of innovation even when competitors were pulling back, as it could produce a commercial advantage when the market improved. What
was of interest is that a change of management could quickly affect the support for innovation and innovative culture in an organisation.

Innovation was also supported by the tolerance of mistakes and product failures (Torokoff 2010). Four of the nine organisations had a product failure and what appeared to be important in these innovative organisations was that poor ideas were cut loose quickly and that this did not affect the management or status of the innovator behind the idea. This study also suggests that tolerance of mistakes and the ability to move to capture a changing market is important. This was evidenced through the abandonment of ideas that were clearly not working and the ability to recycle ideas as market conditions changed, as will be shown in the next section.

4.6.5 Innovation Implementation
The commercialisation of innovations created by the employed participants had varying levels of success. Participant M demonstrated a passion for his innovation:

“I fought and fought for the idea. I was one out against the sales guys. I knew I was right but to overcome the resistance I had to deliver my idea at the same price as the original. The MD gave me support to do it and the sales tripled in eighteen months.”

Three of the employed participants were not only creative but had the ability to mobilise support for their innovations within their organisations. They also had an overwhelming belief in their products and their ability to produce desirable outcomes, which allowed them to drive their ideas through to implementation. This ability to mobilise support may have been due to their personal skills and to their roles, for example as heads of R&D or heads of design. It may also have been that because of the skills they possessed, they were held in high esteem and were therefore able to garner support.

In two organisations, whilst the idea generation and innovation process was good, the implementation of ideas was poor. For example Participant B stated

“The original idea was [the product] was frost tolerant but the business marketed it at as frost proof and it was getting sold into areas that went down to minus five, so the product failed.”
This lack of effective implementation suggests that the innovative people in these two organisations did not have the skills or influence within the business to control the implementation of the idea, or to drive their ideas through to fruition.

Another inhibitor of effective implementation was the lack of the ability to align the ideas to the corporate objectives.

“I had this one idea but the business wasn’t ready to go as far as I wanted to go so I was going too far. They could see where I was coming from but said they weren’t going to do it. In time the market moved and it became so obvious and eventually we did it.” (Participant S)

This illustrates that, owing to a lack of strategic fit, good ideas were not always implemented immediately but could be of use later on. The organisations in which this happened managed the idea generation process effectively, thus making sure these ideas were captured and recycled at a later date.

The three individuals whose businesses had been acquired expressed frustration with the speed of innovation implementation following the acquisition. Participant N said

“I couldn’t do what they do – it’s just too slow. Trying to get a new product or change anything can take years. Some of the products I have been working on are nowhere near. It has been two to three years and they are still saying ‘yes we might get that on the market soon’.

This again suggests that the employment of business founders following acquisition can lead to mismatched expectations which may impact the success of the acquisition in terms of the creation development and exploitation of further radical innovation.

All of the nine permanently employed participants had developed innovative products for their organisations, and from the above analysis it can be seen that the implementation of their innovations was not always straightforward. The most successful innovation implementation occurred where the participant demonstrated a degree of networking ability and a strong ability to garner support for ideas as well
having a reputation for innovation (Baer 2012). In some cases it was apparent that a lack of resources and effort hindered innovation, regardless of the merit of the idea. The results of this study appear to suggest that when individuals passionately believe in their innovation or are able to 'sell' the vision, commercialisation is an easier process.

Alignment with organisational goals appeared to be another important factor in promoting the successful implementation of innovation (McAdam & McClelland 2002). This because, when the generated ideas did not have a strategic fit with the organisation, they were not implemented or were left dormant until such a time as they were required. What must be noted is that these organisations had an effective idea management process which enabled them to recycle these ideas years later as the market and organisational focus changed (Björkdahl & Börjesson 2011; Flynn et al. 2003).

The tension between using acquisition as an innovation process and the slow pace of the resulting innovation was reported by Participant N and C. This suggests that the use of this strategy requires careful consideration to ensure its effectiveness. It also suggests that a specific management process outside of the usual R&D structure may be appropriate to ensure the required results.

When talking to the employed participants, a number of unique themes emerge and these were reflected in the behaviours and actions of the individuals who chose this path. The appropriate management of these individuals appeared to be crucial to the innovation process. The provision of a supportive climate that offered safety was an important as part of this. A number of ways of driving innovation were identified, but when it came to the effective implementation of innovation, it was the strength and reputation of the individual that was the crucial element in securing its success.

4.7 Summary

From the themes outlined in this chapter, it can be suggested that the childhood environment, coupled with experiences in childhood or early career, appeared to have a large influence in the participants in this study. The participants’ differing reactions to these experiences appear to have led to their differing levels of self-efficacy and differing risk profiles. These, in turn, appear to have had an effect on the career choices of different participants. The desire to innovate and then to
commercialise their innovations, were shared by all participants. However, based on their levels of self-efficacy and their risk profiles, the participants made different choices regarding the path to commercialisation.

The iterative process of coding, review and analysis resulted in the emergence of a core theme: the centrality of the effect of risk and self-efficacy on the choices made by the participants. There were two elements to this: how the profiles were formed and the impact that this had on the individuals’ choices. Gaps were found in the literature in regards of the reasons for the choices made by innovative individuals in terms of career path and the effect that the levels of self-efficacy and risk had. The findings did not support the proposition that self-employed individuals are more likely than employed individuals to produce radical innovations. With respect to venture growth and exit, as well as a decision to move from one career path to another, the literature had very little to add. What is also clear is that much of the work on personality traits does not explain the behaviour of the individuals in this study.

From an organisational perspective, the core theme that emerged was the contrast between the individuals that had always been employed and those that moved from self-employment into employment. The research concurred with finding in the literature that a ‘safe’ environment and a supportive climate were important to the development and commercialisation of innovation. However, for those who moved into employment from self-employment, these themes were less important. In addition leadership was not a strong theme, possibly because the participants were either senior managers with a long tenure, or were previously self-employed and were used to managing themselves and felt frustrated when they were being ‘managed’.

It is apparent that the implementation of innovations is not always straightforward. Organisational support is required and to drive effective innovation implementation, individuals need the ability to garner that support. Finally, it appears that some organisations in the study used acquisition as an innovation strategy but its success appears to be hampered by the slow process of commercialisation in these larger enterprises, as compared with the speed to market of the smaller acquired business.

The above summary reflects the main findings that have emerged from the research. Chapter 5 will discuss the results that emerged from the research and a substantive
model linking the themes together will be proposed in Chapter 6. This chapter will also discuss the importance of this research for practice within the plumbing industry.
Chapter Five – Discussion and Conclusions

This chapter discusses the results of this study. Section 5.1 outlines the major findings that emerged from the research and the extent to which these findings are identified in the literature. Section 5.2 discusses the emergent categorisation of the participants.

5.1 Conclusions of the Research Issues

This section reviews the major findings of the research in terms of the key themes that emerged. It also reviews the differences between the findings of this research and the themes identified in the literature before concluding with a review of the novel themes that were identified. Six major findings are identified from the themes outlined in Chapter 4. Each will be reviewed in turn below.

5.1.1 Major Findings

5.1.1.1 Childhood and Early Career

The study identified childhood and early career as important in shaping the personalities of the participants. A supportive childhood environment, parental self-employment and education were identified as important in the development of the individual. In addition, a shaping experience in childhood or earlier career was a feature of the participants’ narrative.

This research supports the finding in the literature that a strong parental influence has an impact on achievement motivation (Drennan, Kennedy & Renfrow 2005; Drennan & Saleh 2008; Newton & Shreeve 2002), although there is no evidence from this study to suggest that parental influences has any effect on career choices. According to past studies, parental support contributes to the development of an internal locus of control, but these studies have not used control groups to examine whether parental support is a unique identifier of an internal locus of control (Drennan, Kennedy & Renfrow 2005; Jayawarna, Rouse & Kitching 2013; Newton & Shreeve 2002; Rigby, Mueller & Partridge 2008).

The literature also suggests that parental self-employment results in the intergenerational transfer of values and behaviours (Drennan, Kennedy & Renfrow
and role modelling (Schoon & Duckworth 2012). In this research, however, the lack of exposure to parental self-employment was marked, suggesting that the individuals who chose to become self-employed were not motivated to create ventures through the experiences of their parents. Indeed, the opposite occurred for one participant, which offers limited support for the finding in the literature into the effect of entrepreneurial failure (Mungai & Velamuri 2011), thus suggesting that parental self-employment can be a demotivating factor (Bagheri, Akmalah & Pihe 2010).

When reviewing the effect of education on the participants the results suggest that those who went into trade-based employment did not perceive a formal education as important, and the lower levels of education did not appear to impact their later entrepreneurial success. This research supports the arguments promoted by Schoon and Duckworth (2012) and Newton and Shreeve (2002), who suggest that academic ability and achievement is negatively associated with entrepreneurial intention. It is possible that the findings also reflect the trade-based nature of the sample and of the industry researched, and the fact that the age of the participants meant that when they attended school, attending university was not as widespread as it is in now. A trade profession was seen as an attractive alternative to school by most of the participants who later chose a self-employed career. Indeed, Participant T stated, “I wasn't much good at school anyway, it didn't interest me” and the experience of working in a small business may have contributed to their self-confidence in becoming self-employed.

A shaping experience in childhood or a career setback were all noted features of the experiences of the majority of participants. It is suggested that rather than the event itself, it was the reaction to it that was significant. When participants saw the occurrence as just another challenge to be overcome, they appeared to be more likely to choose self-employment. This may be because the individuals who successfully overcame such challenges used them to shape their behaviours and attitudes and started building their resilience, self-efficacy and sense of what they were capable of. In addition these experiences helped shape the levels of risk that the individual was comfortable with. The research also suggests that those who could not identify a shaping experience in childhood or their early career, and those who reacted negatively to shaping experiences, were much more likely to demonstrate a low level of self-efficacy and a conservative risk profile.
All of the self-employed participants identified a dramatic early shaping experience or early career setback and this appeared to motivate them to achieve. For the employed individuals, similar occurrences appeared to make them more risk averse, although they did appear to drive an element of resilience. The majority of these individuals did not identify a shaping experience and subsequently demonstrated the lowest levels of self-efficacy and the lowest risk profiles, as shown in Table 5.1.

Table 5.1: The linkages between shaping experiences and level of self-efficacy and career choice

<table>
<thead>
<tr>
<th>Participant</th>
<th>Early Shaping Experience or Career Setback</th>
<th>Level of Self-efficacy</th>
<th>Career Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant T</td>
<td>Large business debt</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant R</td>
<td>Death of parent at young age</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant J</td>
<td>Illiterate</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant G</td>
<td>Family Bankruptcy</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant O</td>
<td>Large business debt</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant I</td>
<td>Overly protective parents/car accident</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant P</td>
<td>Business failure</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant M</td>
<td>Death of close relative</td>
<td>High-Low</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant N</td>
<td>Business failure</td>
<td>High-Low</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant C</td>
<td>Serious childhood disease</td>
<td>High-Low</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant GG</td>
<td>Serious childhood disease</td>
<td>Low</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant L</td>
<td>Death of parent at young age</td>
<td>Low</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant S</td>
<td></td>
<td>Low-High</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant K</td>
<td>Death of parent at young age</td>
<td>Low</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant B</td>
<td>Father Autistic</td>
<td>Low</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant TT</td>
<td></td>
<td>Low-High</td>
<td>Employed</td>
</tr>
</tbody>
</table>

The literature suggests that an early shaping experience or career setback could influence career choices through the development resilience allowing a greater capacity to cope with risk and a greater belief in the ability of the individual to affect their circumstances (Cox & Jennings 1995; Drennan, Kennedy & Renfrow 2005; Drennan & Saleh 2008; Mumford & Gustafson 1988; Newton & Shreeve 2002). This appeared to be the case with this research, although, in contrast to the literature, these early experiences did not necessarily drive the development of resilience.
(Drennan, Kennedy & Renfrow 2005; Drennan & Saleh 2008; Newton & Shreeve 2002), as a number of participants identified that the shaping experience made them more cautious and risk averse.

The research does support the literature that indicates that self-employed individuals who are on their second or third venture have more success than those on their initial venture (Gartner 1985; Politis 2005, 2008). Most of these participants identified a major setback, which they transformed into knowledge, and this affected the performance of subsequent ventures (Politis 2005; Westhead, Ucbasaran & Wright 2005; Yamakawa, Peng & Deeds 2013). In the case of this research, this stock of experience became a crucial part of their experience base, thus offering the opportunity to pinpoint the reasons for failure and change the way subsequent ventures were managed (Reuber & Fischer 1999; Yamakawa, Peng & Deeds 2013).

In summary, this research suggests that the experiences of childhood and early career play a role in the development of self-efficacy and the formation of attitudes to risk and ultimately this has an impact on career choice. It must be recognised that this is only one part of the process of career development, and pre-existing personality traits may have influenced the reactions to these experiences.

5.1.1.2 Personality

The results of the present study suggest that personality traits per se are of limited use for explaining the character and choices of the individuals in this research. The traits of the participants appear too vague and one-dimensional to explain the views and career choices. There are, however, elements at play that influence the development of stronger themes that are more relevant in understanding these individuals. These are self-efficacy and risk. What is apparent is that a combination of two pre-existing personality traits may have a limited influence on the development of self-efficacy. The identification of an internal locus of control appears to have a relationship with higher levels of self-efficacy and an external locus of control appears to have a relationship with lower levels of self-efficacy. The relationship between the need for recognition and self-efficacy would need further research to identify if it exists, but participants who had no need for outward recognition of success appeared to demonstrated higher levels of self-efficacy.
Whilst it was expected to be a strong theme, the results do not indicate that the self-employed individuals had a high nAch as suggested by McClelland (1961). None of the participants expressed opinions or offered evidence of goal setting or problem solving responsibility, and so did not appear to display the attributes of individuals with high nAch. Although the literature does not suggest that individuals with a low need for achievement will not be successful as entrepreneurs, it is suggested by Johnson (1990) that those with a high nAch are more likely to end up in the business world as success in business is likely to satisfy their individual need for achievement. The findings of this study do not support this supposition, as need for achievement does not appear to play a role in the choices of the participants. This study is therefore consistent with the more recent studies (Brockhaus 2002; Ogunleye & Osagu 2014; Yusof, Sandhu & Jain 2007), which suggest that nAch is not a robust predictor of entrepreneurial behaviour as this trait was noticeably absent for all participants in this study.

In relation to locus of control, these findings are consistent with a large body of the existing literature, which suggests that entrepreneurial individuals will have a high internal locus of control (Jain 2011; Rauch & Frese 2007; Shane, Locke & Collins 2003; Zhao, H., Hills & Seibert 2005). The lack of consistency in the level of locus of control within and between the participant groups is consistent with the most recent literature which suggests that locus of control is not the best measure for differentiating between entrepreneurs and managers, but may be a better measure for differentiating between successful and unsuccessful entrepreneurs (Rauch & Frese 2007). The literature does suggest a small positive relationship between an internal locus of control and the emergence of entrepreneurs (Collins, Hanges & Locke 2004; Stewart & Roth 2007) and this does appear to be reflected in this research, although another characteristic, that of self-efficacy, appeared to play a more important role.

When the findings related to self-efficacy were compared with the literature, it appeared that there was a distinct relationship between this research and previous studies. There was ample evidence of the self-employed individuals backing themselves to perform and execute courses of action to deliver outcomes or exercise control (Bandura 1977b, 1977a; LeRoux, Pretorius & Millard 2006; Moenkmeyer, Hoegl & Weiss 2012). This is evident not only from the specific instances discussed in Chapter 4, but also from the tone of the language used by these individuals throughout the interviews. Issues and challenges were faced with a positive outlook.
and described in unemotional terms. It can be suggested that the ‘I can’ attitude meant that these individuals were more likely to pursue challenging goals and have an orientation towards success (Bandura 1977b; Moenkemeyer, Hoegl & Weiss 2012). This was evident in the number of successful businesses that have been born out of nothing more than a great idea to fix an immediate problem and a fundamental belief that it was possible to make a living from the idea.

The literature suggests that self-efficacy is not an inherent trait but develops through a range of experiences and can be enhanced through training and development (Bandura 1977a; McGee et al. 2009; Zhao, Hills & Seibert 2005). In this study, a number of individuals demonstrated that their level of self-efficacy could be different in different circumstances, and that it could be influenced by age and experience. This can explain why Participant S, the unsure student who was planning to be a surveyor, felt comfortable challenging the establishment and the accepted wisdom of the industry to produce a breakthrough innovation. It may also explain why Participant C had absolute confidence in his ability to build a new business from scratch on the back of his innovation twenty years ago, but would not back himself to do it again now. The experiences of both the self-employed and employed individuals demonstrates that a positive experience, such as previous success with a business or a negative experience, such as an innovation failure, can affect future actions, thought processes and self-efficacy levels.

It has been suggested in the literature that self-efficacy is an effective predictor of entrepreneurship and that it is therefore appropriate to use self-efficacy in the study of entrepreneurship (Moenkemeyer, Hoegl & Weiss 2012; Shane, Locke & Collins 2003; Tyszka et al. 2011). In this research, however, equally high levels of self-efficacy were observed in some of the employed individuals, which suggests that the very nature of the measurement of self-efficacy with regard to a specific set of circumstances is not in itself a predictor of entrepreneurship (Bandura 1977b). There is evidence from this research, that an individuals' ability to believe passionately in themselves does affect choices in behaviour, as those individuals with this trait appeared more able to cope with challenging situations of risk and uncertainty and were more likely to choose self-employment (Izquierdo & Buelens 2010; Kickul et al. 2009).
This research found that the traditional measures of nAch and locus of control are not effective indicators of career choice in terms of the commercialisation of innovation. That said, there does appear to be a relationship between the need for recognition and locus of control on one hand, and the level of self-efficacy on the other as shown in Table 5.2 below. It can be concluded that these personality traits may influence the reaction to the early experiences discussed above, and so contribute to the development of self-efficacy. There appears to be a link between self-efficacy and career choice, suggesting that self-efficacy may be the most important characteristic. This research chooses not to identify self-efficacy as a trait, seeing it instead as an approach to life. This is because self-efficacy is malleable and changes over time and is constantly influenced by the experiences of the individual.

Table 5.2: The links between need for recognition, locus of control and self-efficacy, and career choice

Source: Developed for this study

<table>
<thead>
<tr>
<th>Participant</th>
<th>Locus of Control</th>
<th>Need for Recognition</th>
<th>Level of Self-efficacy</th>
<th>Career Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant T</td>
<td>Internal</td>
<td>External</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant R</td>
<td>Internal</td>
<td>Internal</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant J</td>
<td>Internal</td>
<td>External</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant G</td>
<td>Internal</td>
<td>Internal</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant O</td>
<td>Internal</td>
<td>Internal</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant I</td>
<td>External</td>
<td>External</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant P</td>
<td>Internal</td>
<td>Internal</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant M</td>
<td>Internal</td>
<td>Internal</td>
<td>High-Low</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant N</td>
<td>Internal</td>
<td>Internal</td>
<td>High-Low</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant C</td>
<td>Internal</td>
<td>Internal</td>
<td>High-Low</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant GG</td>
<td>Internal</td>
<td>External</td>
<td>Low</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant L</td>
<td>External</td>
<td>External</td>
<td>Low</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant S</td>
<td>External</td>
<td>Internal</td>
<td>Low-High</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant K</td>
<td>External</td>
<td>External</td>
<td>Low</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant B</td>
<td>External</td>
<td>External</td>
<td>Low</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant TT</td>
<td>Internal</td>
<td>External</td>
<td>Low-High</td>
<td>Employed</td>
</tr>
</tbody>
</table>

5.1.1.3 Risk

As shown above, the research did not find that nAch or internal locus of control were determinants of career choice for either type of individual, although the research does appear to demonstrate that responses to risk are influenced by previous experience and are impacted by levels of self-efficacy. This research identified two
risk profiles for the self-employed participants: low perception high preference and high propensity; and high perception, low preference and high propensity. The research identifies a single and clear risk profile for the employed participants: high perception, low preference and low propensity. The research found that regardless of perception and preference, risk propensity was high in self-employed individuals and this suggests that as each of these individuals demonstrated a high level of self-efficacy, this contributed to their risk propensity profile. It also suggests that the low risk propensity levels of the self-employed participants is reflective of the lower levels of self-efficacy demonstrated by these individuals.

The risk perception of those who chose a self-employed route changed over time. This was explained by the acquisition of experience and learning from previous business failures and the development of their stock of experience, which affected future performance and intentions (Carland, Carland & Stewart 1996; Politis 2005; Westhead, Ucbasaran & Wright 2005). This supports findings in the literature that in a start-up situation, risk awareness may be low, but as the business becomes more established or as more information is gathered, risk perception tends to increase (Politis 2005; Westhead, Ucbasaran & Wright 2005; Zhao, Seibert & Lumpkin 2010). This research suggests that it is the development of self-efficacy and the growing awareness of the individual's skills and abilities that is behind this change.

The low perception of risk on the part of most of the self-employed individuals was in direct contrast to the employed individuals who were much more aware of the risks and potential downsides to their activity. This is consistent with the difference in attitude reflected in the work of Begley (1995), Guro and Atsan (2006) and Stewart and Roth (2001), all of whom found that managers unlike business founders tended to have high risk perceptions. High risk perception may also have been reflective of the reputation damage that the employed individuals may have faced in the event of an innovation failure (Yuan & Woodman 2010).

The findings of the research challenges the body of research that found no support for the model of the entrepreneur with a high risk preference (Tyszka et al. 2011). Instead, the findings agreed with the literature that saw entrepreneurs as having a moderate risk preference (Jain 2011). The six participants who had a low risk perception indicated a high risk preference indicating greater support for the perception of entrepreneurs as high risk takers (Caliendo, Fossen & Kritikos 2009).
In addition, the self-employed participants saw risk as part and parcel of being an entrepreneur. This view supports the literature that suggests that entrepreneurial risk is inevitable and unavoidable (Tyszka et al. 2011).

The findings in regards to risk propensity support the literature which suggest that individuals with high self-efficacy feel that they are better equipped to deal with risk and uncertainty (Douglas 2006). In this research, there was some evidence that risk propensity was mitigated by age or business stage (Newton & Shreeve 2002). Mitigations of perception and preference were seen, but when risk needed to be taken, regardless of any mitigating factors, the risky activity was undertaken. Unlike some previous studies, this research did not highlight a moderate propensity for risk (Caird 1993; Jain 2011; McClelland 1961; Palmer 1971), instead it highlighted that these individuals were willing to take large risks if required.

As suggested earlier, a number of the constructs that emerged through the research such as the early shaping experiences and career setbacks, coupled with pre-existing personality traits, appear to contribute to the level of self-efficacy and to the different levels of propensity for risk demonstrated by the participants. These links are shown in Table 5.3 below.
Table 5.3: Linkages between shaping experiences, personality and the development of self-efficacy and risk profiles

Source: Developed for this study

<table>
<thead>
<tr>
<th>Participant</th>
<th>Early Shaping Experience or Career Setback</th>
<th>LOC</th>
<th>Level of Self-efficacy</th>
<th>Risk Perception</th>
<th>Risk Preference</th>
<th>Risk Propensity</th>
<th>Career Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant T</td>
<td>Large business debt</td>
<td>Internal</td>
<td>High</td>
<td>Low-High</td>
<td>High-Low</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant R</td>
<td>Death of parent at young age</td>
<td>Internal</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>High-Low</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant J</td>
<td>Illiterate</td>
<td>Internal</td>
<td>High</td>
<td>Low-High</td>
<td>High-Low</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant G</td>
<td>Family Bankruptcy</td>
<td>Internal</td>
<td>High</td>
<td>Low-High</td>
<td>High-Low</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant O</td>
<td>Large business debt</td>
<td>Internal</td>
<td>High</td>
<td>Low</td>
<td>High-Low</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant I</td>
<td>Overly protective parents/car accident</td>
<td>External</td>
<td>High</td>
<td>Low</td>
<td>High-Low</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant P</td>
<td>Business failure</td>
<td>Internal</td>
<td>High</td>
<td>High-Low</td>
<td>Low</td>
<td>High-Low</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant M</td>
<td>Death of close relative</td>
<td>Internal</td>
<td>High-Low</td>
<td>Low</td>
<td>High-Low</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant N</td>
<td>Business failure</td>
<td>Internal</td>
<td>High-Low</td>
<td>High-Low</td>
<td>High-Low</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant C</td>
<td>Serious childhood disease</td>
<td>Internal</td>
<td>High-Low</td>
<td>High</td>
<td>Low-Low</td>
<td>High</td>
<td>Self Employed</td>
</tr>
<tr>
<td>Participant GG</td>
<td>Serious childhood disease</td>
<td>Internal</td>
<td>Low</td>
<td>High-Low</td>
<td>Low-Low</td>
<td>Low</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant L</td>
<td>Death of parent at young age</td>
<td>External</td>
<td>Low</td>
<td>High-Low</td>
<td>Low-Low</td>
<td>Low</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant S</td>
<td></td>
<td>External</td>
<td>Low-High</td>
<td>High-Low</td>
<td>Low-Low</td>
<td>Low</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant K</td>
<td></td>
<td>External</td>
<td>Low</td>
<td>High-Low</td>
<td>Low-Low</td>
<td>Low</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant B</td>
<td></td>
<td>External</td>
<td>Low</td>
<td>High-Low</td>
<td>Low-Low</td>
<td>Low</td>
<td>Employed</td>
</tr>
<tr>
<td>Participant TT</td>
<td></td>
<td>Internal</td>
<td>Low-High</td>
<td>High-Low</td>
<td>Low-Low</td>
<td>Low</td>
<td>Employed</td>
</tr>
</tbody>
</table>
The table above does not show a perfect match, but indicates a significant relationship between early shaping experiences and locus of control on one hand and self-efficacy levels on the other. In addition there appears to be a strong relationship between self-efficacy and risk profile, suggesting that self-efficacy levels have a major influence on risk profiles. This suggests that rather than seeing risk profile and self-efficacy as traits, they appear to be outcomes driven by experiences, filtered through personality, which then appear to have an influence on career choice.

The combination of self-efficacy and risk forges a powerful basis foundation for individuals’ characters. This combination appears to affect their behaviours and the choices they make and therefore has a profound impact on their career direction. It is important to understand that self-efficacy and risk profiles develop over time and the experiences of the individual can drive the choices made at various points in the individual’s career. This suggests, therefore that as self-efficacy and risk profiles change, so can career choices.

5.1.1.4 Motivations
The development of self-efficacy and risk profiles is an ongoing process that determines attitudes and influences career decisions. Motivations are also important, as they appear to influence the type of innovation that is produced and, in combination with self-efficacy and risk, they influence decisions about how to commercialise innovations.

The results of this research support the finding in the literature that entrepreneurial individuals are more likely to be motivated by intrinsic factors and those who are employed are more likely to be motivated by extrinsic factors (Bhaduri & Kumar 2011; Caird 1994; Gilson & Madjar 2011; Henderson & Clark 1990; Ross, Mitchell & May 2012). The difference in this research was that, over time, the employed participants appeared to develop more intrinsic motivations for innovation and, with a change in circumstances; intrinsically motivated individuals could become extrinsically motivated. These themes of intrinsic motivation developing over time, or moving from intrinsic to extrinsic motivation as a result of a change in circumstances, did not emerge from the literature into motivation.
The strong requirement for financial reward seen from many participants is an interesting result and contrasts with the literature, which suggests that individuals do not work harder under the influence of monetary rewards (Amabile 1998; Dunphy & Herbig 1994; Van der Ven 1986). This may be explained by the research undertaken by Bhaduri and Kumar (2011) which found that intrinsic motivations decreased and extrinsic motivation increased the closer the individual got to commercialisation.

In terms of the motivation for innovation, both intrinsic and extrinsic themes were identified and as a result, both incremental and radical innovations were developed. The two main intrinsic motivations for innovation development were the desire for a technical challenge and discovering a ‘better way’ of doing things. The presence of these internal motivations appeared to drive radical innovation. The extrinsic motivations identified were summarised as “it’s my job” or a financial motive to innovate. These drove incremental innovation. What is of interest is that this division occurred regardless of career choice and did not appear to be affected by self-efficacy levels and risk profiles.

This research supports the literature suggesting that there is a link between the type of motivation and the type of innovation produced (Bhaduri & Kumar 2011; Caird 1994; Gilson & Madjar 2011; Henderson & Clark 1990; Ross, Mitchell & May 2012). In all cases, radical innovations were found in those that were intrinsically motivated and incremental innovation was found in those who were extrinsically motivated. This connection between motivations and innovation type was spread across all the participants, suggesting that the type of motivation did not play a key role in the career choices made by the individuals.

Motivations did link with self-efficacy levels and risk profiles in the choice of how to commercialise innovations. The two options identified were either to commercialise within an existing organisation in an employed capacity, or to commercialise through venture creation. Those initially choosing an employed career path generally had more extrinsic motivations and expectations of their organisations such as financial security, the ability of the organisation to offer them a sufficient challenge and the required resources to commercialise their idea. Those who chose a self-employed career path identified more intrinsic motivations for wanting to commercialise their innovation. These motivations were identified as the need to prove oneself, the idea that the commercialisation of the idea was for “the greater good” and the desire to create a legacy for family.
There is very limited literature regarding legacy as a motivation for starting a business, although in the single identified study, which was with nascent entrepreneurs, 18% of the participants cited legacy as a motivation for starting a business and, similar to the current research, this was driven by the desire to provide employment for their children in the future and making their lives easier (Alstete 2002).

The difference in motivations suggests that the order of the process of developing and exploiting ideas is different for different individuals. Those individuals who chose a self-employed route appeared to have an idea and the intrinsic motivation for exploitation, whereas those who chose an employed route appeared to have the capacity for innovative ideas but met their extrinsic motivations first and did not enter an organisation with the immediate intention of commercialising an idea. Indeed, these individuals often initially produced incremental innovations before moving on to more radical innovations later in their careers. This is an important finding as it suggests that radical innovation will not be immediate for many employed individuals and this has implications for their management.

This finding indicates that both intrinsic and extrinsic motivations are seen in both self-employed and employed individuals, and that whilst employed people tend to have more extrinsic motivations, these can change over time. When the security, challenge and resources available within an employed position meet the extrinsic needs of the individual, and when the organisation respects the creativity of the individual, the individual is then able to produce radical innovations. In such cases, the employees are driven by the same internal motivations identified by the self-employed individuals.

It may be the combination of motivation, relationships with risk and self-efficacy profiles that determine the initial career choices made by innovators, but it is only motivations that determine the type of innovation. Regardless of the risk and self-efficacy profiles the desire to find a “better way” was a strong theme from all individuals that produced radical innovations. This was the case regardless of whether they did so in large organisations or within their own ventures. The difference between innovators in large organisations and those running their own ventures was in the way the innovation was brought to market with employed individuals finding themselves secure employment before they started to innovate.
whereas the self-employed individuals developed the idea before establishing a venture to commercialise it and create income.

The literature suggests that those with a lower level of risk tolerance and self-efficacy are more likely to choose an employed career path (Markman, Baron & Balkin 2005). This was reflected in the employed participants in this study who chose career paths that offered the flexibility to innovate (Scott & Bruce 1994) and an environment that encouraged creativity (Bharadwaj & Menon 2000). These elements enabled these individuals to satisfy their desires for challenging, secure positions where they have the resource needed to create innovative products.

The final conclusion that can be drawn in terms of motivation is that motivations can change in response to changes in the environment. Three of the self-employed participants chose to exit their business. Often this exit occurred through selling to a larger company, which led to the individuals subsequently being employed by the purchasing business. This change in environment appeared to have a profound effect on the individuals and resulted in the innovations produced being much less radical. The participants suggested that this was because of the environment they were now working in.

This finding suggests that, if a previously self-employed individual is to be employed by a larger organisation, and there is an expectation they will produce radical innovations, a different management process and environment will be required. This environment needs to replicate the previous environment of the smaller business, including a tolerance of failure and the ability to take risk. It also needs to be free of inhibitors to innovation such as management through external motivations. It appears that to retain radical innovation in these circumstances, an appeal to the intrinsic motivations of the individual must be preserved and replicated.

5.1.1.5 Business Growth and Exit

In terms of the growth of ventures created to exploit innovation, this research indicated that growth and long-term planning was not a feature of the process. The initial desire to create a venture to commercialise an idea, driven by the motivations outlined above, was the main focus and little planning took place thereafter. It appears that all effort is focussed on the initial venture and the product that it has been created to commercialise, and no attention is given to a long-term plan.
conclusion that can be drawn is that, due to the levels of self-efficacy and risk of the venture creators, little consideration is given to the business itself, as they believe either it will not fail, or that if it does, they will be able to start another business.

This lack of planning appears to result in a lack of understanding of what success looks like and the research suggests that self-employed individuals only recognise that the business is too large or has outgrown them when it becomes uncomfortable and they are no longer involved in the activities from which they derived enjoyment. This situation inhibits innovation and results in the founder deciding to dismantle the business or manage it in a new way, which allows them to return to their original motivations for creating the venture.

There is very little literature covering business growth and exit. The results from this study support the limited literature, which states that growth does not appear to be a principal objective of entrepreneurs (Gilson & Madjar 2011). As demonstrated above, there is little indication that business size is planned and no evidence to suggest that any of the participants had identified a size to which they wished to grow their business (Kunkel 2001). Participant N, however, did state that his motivation early on was to make the same wage as he did when working for someone else, and that if he achieved that he would be satisfied. None of the participants suggested that their business was “large enough” and that they had no desire to grow further, as was suggested in a study of SMEs in eleven countries by Hankinson et al. (1997). It appears that the perception that the business is too big is an individual one that occurs when the size or the management of the business becomes unpleasant or overwhelming. This can happen at different times for different individuals or it may not occur at all. If it does, it is managed through sale, downsizing or the introduction of outside help.

The three options taken by individuals in these circumstances are: to sell the business and become an employee; to create a management structure to manage and continue to grow whilst freeing up the founder to continue with the innovation process; or to dismantle the business. It appears that those individuals whose risk profile changes substantially, moving them towards a more risk-averse approach, and those whose self-efficacy reduces, make the decision to sell. By way of contrast, those who undergo less dramatic changes choose to continue the business, albeit with a new management structure in place.
5.1.1.6 Organisational Innovation

It is apparent from this research that organisations do not innovate, people do. It is therefore essential that innovative individuals are managed appropriately and differently to most other employees. Even though employees have different motivations to self-employed individuals, there are specific requirements that need to be met, especially if radical innovation is required.

The findings of this research support the literature regarding expectations of innovation and reputation, as the majority of participants expressed a clear expectation that innovation would be part of their role and claimed that they were overtly concerned with their reputation and image (Yuan & Woodman 2010). To get the best out of the innovative individuals, it appears that the need for autonomy has been recognised and, in line with the literature, this appears to have had a positive impact on innovation (Fagerberg 2003b; Glynn 1996; Scott & Bruce 1994; Yuan & Woodman 2010). The participants were given the freedom, time and space to innovate in an environment that was psychologically safe and low risk (Stobbeleir, Ashford & Buyens 2011). However this safe environment did not meet the needs of the previously self-employed individuals who did not share the same need for safety and security. The research identified a gap in the literature regarding the management of individuals who join an organisation through business acquisition.

Group innovation played an important part in the innovation process for a limited number organisations, which is reflected in the literature which suggests that groups are the most effective source of new innovations (Hülsheger, Anderson & Salgado 2009; Miron-Spektor, Erez & Naveh 2011). Group innovation insulated the individuals from using the group to provide a level of personal safety (Hülsheger, Anderson & Salgado 2009; McAdam & McClelland 2002) and the groups appear to have had a diverse make-up, with members having different backgrounds and skill sets (West 2002). It is of interest that there was an active rejection of group-based innovation by one individual. This may have been because the group he was in contained a mismatch of creative, conformist and attention-to-detail members (Miron-Spektor, Erez & Naveh 2011) and because the participant was not used to group innovation.

In line with the literature, the creative culture of the organisations in this research did appear to occur a two levels (Björkdahl & Börjesson 2011). It is clear that Participant
B did not believe there was a creative culture at his organisation and this affected his commitment, problem solving, motivation and creativity (Isaksen & Kaufmann 1990).

This research suggests that if there is a requirement for radical innovation within an organisation, the motivations of the individuals who drive this innovation will be intrinsic. There is a basic set of extrinsic motivations, which need to be fulfilled, and once they are, intrinsic motivations can come to the fore. These motivations are personal rather than organisational. The basic needs that must to be satisfied are security, personal challenge and resources, and to meet these needs, a safe environment has to be created for them to innovate within. If these extrinsic motivations are satisfied then the intrinsic motivations can be developed. Intrinsic motivations offer a challenge for management as they require an environment, culture and management system that are tolerant of failure and provide the freedom to experiment (Stobbeleir, Ashford & Buyens 2011). The research suggests that the individuals who had the greatest autonomy produced the most radical innovations, but this is often the most difficult environment to provide. It is interesting to note that the research indicated a level of risk aversion existed even when it was other peoples’ money that was being risked. Therefore, these individuals need to be reassured and supported through the innovation and commercialisation process to ensure the most productive outcomes.

It is apparent from the research that firms use business acquisitions, such as the purchase of small innovative ventures, as a process for driving innovation. This often results in the integration of previously self-employed people into the purchasing organisation. It appears from the research that this approach often yields poor results. The individuals in charge of the small ventures appear to have made the choice to sell the business, and to become employed, to enable them to avoid the stress of running a business and return to innovation and product development. The issue that arises is that they are now being expected to do this on demand and in a very different environment to the one they previously operated in. The research suggests that to manage these individuals, there must be a recognition that motivations between employed and self-employed individuals are very different, and that their experiences are also different. Therefore, if a large organisation buys a business in order to gain its innovative capabilities, it needs to be managed carefully so as not to lose its culture. Indeed if the business employs the business founder, to ensure the level of innovation is maintained, it needs to operate within an
environment similar to the one it had before to ensure that the founders' intrinsic motivations are maintained and radical innovation is produced.

5.1.1.7 Summary
The review of the identified themes indicates that the two main drivers influencing the choice between self-employment and employment are self-efficacy and risk profiles and that these two drivers develop and change over time and between environments. The motivation to produce radical innovation is intrinsic and is apparent in both self-employed and employed individuals. The difference is that, for employed individuals, the extrinsic needs must be satisfied before intrinsic motivations come to the fore and radical innovation emerges, whereas self-employed individuals use their intrinsic motivations for both innovation and venture creation.

Self-employed individuals may find that their business becomes too large to manage. They may respond by dismantling the business, selling it or developing a new management structure. Should the business be sold and the individual become employed within purchasing organisation, to drive the level of innovation, an appropriate environment must be created that replicates their previous company. Likewise, employed innovative individuals also have specific requirements that need to be considered to ensure the best is gained from these individuals. An appropriate environment needs to be created, but this may be different from that required by a previously self-employed innovator.

5.1.2 Gaps in the Literature
This section summarises the research in terms of emergent themes and their relation to the literature. In particular, it focuses on identifying the differences between this research and the existing literature. Nine distinct differences were found and each will be reviewed in turn.

The literature suggests that parental support has an influence on achievement motivation and therefore on the development of entrepreneurial activity (Drennan, Kennedy & Renfrow 2005; Drennan & Saleh 2008; Newton & Shreeve 2002). This research supports the suggestion that many participants had experienced a rich family environment but found no evidence that this had an influence on career choice, as fourteen of the sixteen participants identified parental influence as a significant factor in their early experiences but there was no apparent relationship
between these reported results and later self-employment. Eight of the participants became self-employed and five became employed which suggests that parental influence is not an identifier of career choice.

In this study, a second element relating to the environment also differed from the findings in the existing body of knowledge. Having parents who are self-employed has been identified as a driver of self-employment because it instils in children an appreciation of both the desirability and feasibility of this route (Drennan, Kennedy & Renfrow 2005; Gartner 1988; Naffziger, Hornsby & Kuratko 1994; Ohe & Ohe 2006; Palmer 1971; Schoon & Duckworth 2012). However, this research did not find a prevalence of self-employed parents, with only four of the sixteen participants reporting this, and where it did exist it was not cited as a major reason for venture creation. Indeed, in one case it was cited as a disincentive, and the participant actively chose to be employed rather than self-employed on account of his father’s experience.

The literature suggests that an early shaping experience could influence career choices (Cox & Jennings 1995; Mumford & Gustafson 1988; Newton & Shreeve 2002) and this was the case with this research. However, in contrast to the literature, in this research these early experiences did not necessarily drive the development of resilience (Drennan, Kennedy & Renfrow 2005; Drennan & Saleh 2008; Newton & Shreeve 2002). This research suggests that it is not the experience per se that helped develop resilience and self-efficacy, but the reaction to the experience, influenced in a limited way by existing personality traits. Those who reacted positively to the shaping experience appeared to develop higher levels of resilience whereas those who reacted negatively appeared to develop limited resilience.

In terms of the effect of personality traits on career, this research did not identify a strong relationship between personality traits and career choices. The self-employed participants did not identify Need for achievement as a trait that they recognised. There was a difference in the need for recognition between the self-employed and employed participants, which may be reflected in their career choices. This is in contrast to the literature, which reported that a high need for achievement is an indicator of entrepreneurial behaviour (Johnson 1990; McClelland 1961), and that a need for recognition is not an indicator of entrepreneurial behaviour (Carter et al. 2003). There was a high incidence of internal locus of control. The literature suggests that this is indicative of the emergence of entrepreneurial activity (Collins, Hanges &
Locke 2004; Stewart & Roth 2007). Whilst there appeared to be a small relationship between high levels of locus of control and self-employment, it was not a robust predictor and self-efficacy was a better measure of career choice.

In terms of risk, two differences were found from the literature. The literature suggests that risk profiles would be influenced by age or business stage (Politis 2005; Westhead, Ucbasaran & Wright 2005) and that high risk taking was negatively associated with business success (Rauch & Frese 2000). This study supported these findings for risk perception and risk preference, but a contrast appeared in the level of risk propensity as, in spite of their risk perception and risk preference, the self-employed participants demonstrated high levels of risk propensity, regardless of their age or experience. In addition, this high propensity for risk was in contrast to much of the literature (Brockhaus 1980; Jain 2011; Tyszka et al. 2011), which suggests a moderate risk propensity would be more likely in entrepreneurial individuals.

The literature suggests that intrinsic motivation drives radical innovation (Gilson & Madjar 2011; Henderson & Clark 1990) and that employed individuals are less likely to be driven by intrinsic motivation as they are driven more by extrinsic motivations such as financial rewards, peer pressure, statutory requirements and deadlines, which are part and parcel of the employed environment (Bhaduri & Kumar 2011; Caird 1994; Gilson & Madjar 2011; Henderson & Clark 1990; Ross, Mitchell & May 2012). This research found was that whilst intrinsic motivation does drive radical innovation, this occurs regardless of employment status with self-employed individuals just as likely to be motivated by extrinsic motivations as employed individuals. This study found that when their extrinsic needs were satisfied, employed individuals were then motivated intrinsically and produced radical innovations.

The literature also suggested that where innovation is driven by intrinsic motivations monetary reward does not motivate individuals to work harder, or to be more creative (Amabile 1998). This research found that monetary reward was an underlying motivator for all employed participants and even amongst self-employed participants who demonstrated mainly intrinsic motivations, monetary rewards were important in the commercialisation stage.

The final difference from the literature was in respect of the planning that occurred following venture creation. The literature suggests that small businesses identify a size beyond which they do not want to grow, often as a form of risk mitigation
strategy (Gilson & Madjar 2011; Hankinson, Bartlett & Ducheneaut 1997). In contrast a number of businesses studied in this research identified a stage when the business had grown too large, which often came as a realisation after the fact. This then forced active steps to be taken to manage this reality.
The differences between the study findings and the literature are summarised in the table below.

Table 5.4: Identified gaps in the literature

<table>
<thead>
<tr>
<th>Literature</th>
<th>Identified Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental influence supports entrepreneurial activity</td>
<td>Not supported – strong parental influence was reported by both entrepreneurs and non-entrepreneurs.</td>
</tr>
<tr>
<td>Parental self-employment encourages later self-employment</td>
<td>Not supported – parental self-employment not prevalent and actively discouraged one participant.</td>
</tr>
<tr>
<td>A shaping experience builds resilience</td>
<td>The reaction to a shaping experience drives resilience if addressed positively.</td>
</tr>
<tr>
<td>Need for achievement is an identifier of entrepreneurial behaviour</td>
<td>Need for achievement not identified by self-employed participants. Need for recognition showed a slight resonance.</td>
</tr>
<tr>
<td>High locus of control predicts entrepreneurial activity</td>
<td>A slight relationship was found but better predictors were found.</td>
</tr>
<tr>
<td>Risk profiles will be mitigated by age and experience</td>
<td>Risk perception and preference are affected by age and experience, but risk propensity appears to be unaffected.</td>
</tr>
<tr>
<td>Intrinsic motivation drives radical innovation and extrinsic motivation drives incremental innovation and extrinsic motivation is more prevalent amongst employed individuals</td>
<td>Intrinsic motivation drives radical innovation regardless of employment status.</td>
</tr>
<tr>
<td>Monetary reward does not drive creativity</td>
<td>Monetary reward is a motivator for all employed participants. For self-employed participants this applies particularly in the commercialisation stage.</td>
</tr>
<tr>
<td>Small businesses identify a size beyond which they do not want to grow as a form of risk mitigation</td>
<td>Small businesses grow until they become too large to manage and active steps then need to be taken to address the issue.</td>
</tr>
</tbody>
</table>
These differences add to the body of knowledge by challenging the existing literature and identifying alternatives to current thinking, and by suggesting that the theory can be further developed when considering the reasons for actions and decisions, especially regarding career choice.

5.1.4 Novel Themes

In addition to the gaps in the literature identified in the course of the research, a number of novel themes were also identified.

The first is the link between risk and self-efficacy. Much research in this field has linked a range of personality traits with the emergence of entrepreneurs (Drennan, Kennedy & Renfrow 2005; Schumpeter 1934; Zhao, H., Seibert & Lumpkin 2010) and some studies have created a ‘big five’ list of traits that drive entrepreneurial behaviour (Rauch & Frese 2007). In addition previous studies have identified self-efficacy as an entrepreneurial trait (Chen, Greene & Crick 1998; Drnovsek, Wincent & Cardon 2012). In contrast this research suggests that self-efficacy is not so much a personality trait, but an attitude that develops over time and that this, linked with risk profile, is a much more effective predictor of career choice than personality traits alone. Indeed, a risk profile is not something to be identified in entrepreneurs, but an integral part of an individual’s make-up which needs to be coupled with self-efficacy to drive career choice.

A second novel theme is that the order of innovation depends on the decisions made regarding innovation commercialisation. Those individuals who choose to create a venture are likely to have developed an idea and are looking for ways to commercialise it, whereas those individuals who choose an employed career path, will develop innovation later when they are within an organisation that can exploit it. It appears that all participants in this study had an inherent creative ability in terms of personal characteristics, processes, cognitive factors and competencies, but the ability to take ideas through the innovation process was a function of their motivations. Those individuals whose primary motivation is intrinsic followed a process of idea generation followed by venture creation, whereas those that are extrinsically motivated followed a process of employment followed by satisfaction of extrinsic motivations and the emergence of intrinsic motivations followed by idea creation and commercialisation through the employer organisation.
A third theme is that motivations can change over time, and with a change in environment. This research identified a move from extrinsic to intrinsic motivations, for employed individuals when their extrinsic motivations had been satisfied. It also identified that people who previously had intrinsic motivations can lose this motivation with a change of environment, specifically when they move to an employed role and are faced with external pressures. This also led to a change in the type of innovation they produced, from radical to incremental.

The fourth novel theme was the identification of a new motivation for venture creation. Legacy, that is, the desire to leave a business or inheritance for descendants, emerged as a strong theme. The only previous identification of legacy as a theme appeared in Alstete (2002) who studied nascent entrepreneurs and found legacy to be a slight motivation. This theme appeared to be much stronger amongst participants who were involved in the research, with legacy being a consideration for 50% of the self-employed participants.

The “in vivo” themes (Charmaz 2006) of “a better way” and “the greater good” as motivations for innovation and their commercialisation are also not seen in the literature. The need to improve a current products and processes is a constant theme, and the sense of altruism, that the innovation is too good to keep to themselves and needs to be commercialised to make it available to other people, appears to be a novel motivation from this research.

5.1.5 Summary
This section has considered the major themes that emerged from the research. In doing so a number of gaps in the literature were identified, along with a number of novel themes that emerged from the responses of the participants. The next section identifies an unexpected finding that emerged from the research.

5.2 Emergence of Three Participant Groups
The research recruited a range of participants, through snowball sampling, who had produced innovations within the Australian plumbing industry. The participants for the research were initially identified as those who had created a new business venture, defined as self-employed, and employed individuals who had created innovative products whilst working within large organisations in the industry.
It became apparent early in the research that the self-employed individuals were better defined as entrepreneurial as they had all created substantial ventures. They were opportunity rather than necessity entrepreneurs (Giacomin et al. 2011) one of whose motivations for creating their ventures was to bring their innovations to the market for “the greater good”. The employed individuals were more appropriately described as employed innovators, as although they had chosen an employed career, their raison d’être was the creation of new products and services. Indeed, a number of these individuals had created market-changing innovations.

What also emerged was an unexpected third group of individuals. These individuals have been identified as the “crossover” group. This was a small sample of three of the sixteen participants, who had sold their businesses to larger organisations and subsequently became employed by the purchasing organisation.

The emergence of this group is important for a number of reasons. The first is that it validates the findings of the effects of self-efficacy and risk profiles. Both high and low risk and high and low self-efficacy profiles are seen in these individuals at different times and the motivations, behaviours and decisions of the individuals differ depending on the profile at the time. The change in risk profile appears to be the outcome of experience, and the change in self-efficacy appears to be driven by the time to retirement. This validates the suggestion outlined in Table 5.3 on page 163 that career experiences coupled with early shaping experiences are greater influences on risk and self-efficacy profiles than personality traits.

Secondly, in terms of bringing innovation to the market, this finding was important as it suggests that purchasing innovation expertise may not be the most appropriate strategy for larger organisations. Each member of the crossover group had produced a radical innovation as a small business owner and as a consequence of them selling their businesses, both the new technology and the expertise of its creator had been purchased. The change in environment for the innovator brought about a change in their motivations and also a sense of frustration with the management and processes of the new company. The environment in which they were operating appeared to be unsuitable for the innovators and they subsequently failed to produce further radical innovations. This has a dramatic impact on the success of the acquisition in terms of its ability to produce radical innovation.
Finally, the emergence of this crossover group enabled an analysis of decisions made later in the innovation and exploitation process, when the business had become fully established. Although unanticipated, it allowed further analysis of potential outcomes for innovative individuals, especially the changes in their motivations, and consequently the changes in the types of innovations they produced. This has important implications for the management of innovative people, especially those who have worked in an entrepreneurial business. It also has implications for how best to manage the integration of previous business owners into a larger organisation in ways that ensure the desired outcomes are achieved.
6 Conclusions and Recommendations

From the results discussed in Chapter 4 and the major findings outlined in Chapter 5, Chapter 6 will consider the tentative conclusions that can be drawn from these findings. Sections 6.2 to 6.5 will discuss the implications for theory and how the research addressed the aims, objectives and research questions. It will also discuss the contribution that the findings can make to the existing body of knowledge, particularly in terms of advancing best practice in the development of innovative products within the Australian plumbing industry. The limitations of this study are discussed in Section 6.6 and Section 6.7 outlines the study’s implications for research methods. Possible opportunities for future research are discussed in Section 6.8 and the conclusion to the thesis is presented in Section 6.9.

6.1 Summary of Findings

From the results discussed in Chapter 4 and the major findings outlined in Chapter 5, a number of suggestions can be made. These relate to the profiles of the individuals, their motivations, and their management. Each will be addressed in turn.

The first suggestion is that a combination of self-efficacy levels and risk is an important determinant of the decision about how to commercialise an innovative idea. The characteristics of each group are driven by a number of pre-existing factors and are influenced by the individuals’ past experiences and the environment in which they grew up. Those with the highest self-efficacy levels were the most likely to commercialise their ideas themselves. In addition, whilst there is a range of risk perception and preference profiles, entrepreneurs were found to have a high-risk propensity. Risk-averse individuals, when deciding on their careers, will see employment in an existing company as highly attractive.

The second suggestion is that creative individuals are driven by both extrinsic and intrinsic motivations to innovate, regardless of their career choices. The initial motivation to innovate is driven by extrinsic or intrinsic factors that are not related to self-efficacy and risk profiles. There is, however, a second decision, which is how to commercialise, and this is directly linked to a combination risk and self-efficacy profiles and motivations. The desire to commercialise can drive a different innovation process. For entrepreneurs, the innovation comes first and later on there is a
decision made to commercialise it. For employed innovators, the career decision comes first and they then find a creative role. It is only after they are employed and their extrinsic motivations are satisfied, that the ideas flow.

A third suggestion is that the most radical innovations are driven by intrinsic motivations. These motivations are not apparent in all self-employed individuals, with some content to develop incremental ideas and earn an income in from these. For employed individuals, those who are internally motivated will not act on these until their external motivations are satisfied, leading to more radical innovations occurring later in their careers.

The fourth conclusion is that the environment plays an important role in the development of innovation, and changes in environment can affect motivations and levels of innovation. This is exemplified by the experience of the crossover group who had a track record of radical innovation, but were unable to replicate this after moving to an employed role. They attributed this change to the change in environment and their dissatisfaction within it.

The fifth suggestion is that, even when legacy is a motivation for venture creation, the focus is on the commercialisation of the innovation rather than the longevity of the organisation. If the venture is successful it can outgrow the founder, leading to the need for a management structure, active size reduction, or a sale of the business due to dissatisfaction with the environment. This can have either a positive or negative consequence for the founder. The management route can provide employment opportunities for family and create the desired legacy. The sale of the business can remove the ability to leave a legacy if the children are too young to move into the business. The decision to sell provides opportunities for larger organisations to pick up small, fast moving businesses, but the decision to sell is likely to be ad hoc and requires a larger business to move fast to secure the acquisition.

The sixth suggestion is that venture creators have a different profile to employed innovators and should be managed in a specific way. Should a small innovative business be purchased, it is unlikely that the new environment will be appropriate for the crossover innovator, and the purchasing organisation is at risk of losing the innovative spark that made the acquisition of the small business appealing.
A final suggestion is that creativity, innovation and entrepreneurship are parts of a whole. Whilst it is possible to consider them in isolation, a richer picture will be gained if they are considered together. Very recent literature reviews have suggested the consideration of creativity and innovation within organisations as integral parts of the same process (Anderson, Potocnik & Zhou 2014). The current study suggests, when considering the individual, extending the process to encompass creativity, innovation and entrepreneurship to give a full picture.

Following on from these suggestions, a number of learnings have been identified. The motivations to innovate and to commercialise innovations are highly personal. Therefore it will be almost impossible to identify entrepreneurs, employed innovators or crossovers at a nascent stage. This suggests that to drive radical innovation within the industry a range of opportunities need to be available for venture creation, employment and sale, to cater for the three types of individuals identified.

The fact that there appear to be two decisions made, one to develop an innovation and then another to commercialise it, means that identifying creative people will not necessarily produce innovation. The individual needs to make the decision to commercialise it and the route by which they will do so. This means organisations need to nurture the risk-averse innovators by providing safety and security, and the industry needs to provide the conditions for small businesses to flourish.

To drive radical innovation, which is important for both SMEs and larger organisations in their efforts to maintain a competitive market position, it is important to understand and satisfy the individual innovators’ intrinsic motivations. In addition, to ensure that larger organisations drive radical innovation, they need to satisfy the extrinsic motivations of their creative people before internal motivations can come to the fore. Finally, a change in environment can affect motivations and so change the level of innovation produced. Therefore the purchase of a small innovative company by a larger organisation with a distinct corporate culture may not lead to a successful outcome.

6.2 Implications for Theory
This section will consider the implications of this research for the existing theory related to the research area. This section discusses the implications on the research areas, discussed in Chapter 2, of creativity, innovation and entrepreneurship in the
Australian plumbing industry. It will then consider the contribution this research has made to the body of knowledge, including the presentation of a substantive model to explain the identified linkages, the decision points, and the motivation for those decisions. This research provides an integrated model that successfully identifies the drivers of decision-making in the innovation process. It addresses both the decision to innovate and the decision about how to commercialise the innovation.

By using a grounded theory approach, a substantive theory can be developed for an empirical area of inquiry, based on the research into that specific area. This type of theory differs from formal theory, which is developed for a conceptual area of enquiry and can be applied across a range of situations and locations (Glaser & Strauss 1967). This study focussed on the development of a substantive theory that deals with the decision-making of innovative individuals in the Australian plumbing industry.

6.2.1 Initial Modelling of the Findings

This section considers the linkages between the identified themes in Section 5.1 and presents these in the form of a model. The model will consider each of the themes in turn with the aim of crystallising the key drivers in the development of innovative individuals and explaining how their individual motivations shape the decisions that they make, and the type of innovations they produce.

It became apparent from the research that there was a relationship between two personality traits and the levels of self-efficacy that were indicated by the participants of this study. Only one of these was a ‘traditional’ trait: locus of control. The second was the need for recognition, which from the literature appears to be a subset of need for achievement, although this connection is based on limited research (Carter et al. 2003; Jain 2011). The present research indicated that those with an internal need for recognition and an internal locus of control were more likely to have a higher level of self-efficacy than those who needed external recognition of achievement and appeared to have an external locus of control. As illustrated in Table 5.2 on page 164, this was not universal but was significant enough to suggest a relationship. Figure 6.1 below outlines the links between these two traits and levels of self-efficacy.
Figure 6.1: Model of linkages between Need for Recognition, Locus of Control and Self-Efficacy

Source: Developed for this study

It appears that the presence of these traits may have had a limited impact on the reactions of the participants to their childhood experiences. The presence of an internal locus of control and an internal need for recognition suggests that shaping experiences can build resilience and self-efficacy. In contrast, those with an external need for recognition and an external locus of control are less likely to build resilience and self-efficacy as a result of challenging experiences.

Some distinct linkages emerged between childhood and early career and the development of levels of self-efficacy and risk profiles. It was not the occurrence per se but the reaction to it that helped develop the individual’s personality. In those who faced significant difficulties in a positive way, their response, influenced by their identified personality traits, drove the development of higher levels of self-efficacy than those who had a negative response or who did not face any difficulties. It is also apparent that level of education had an impact, with higher levels of education appearing to be associated with conformity and a safer career path. In addition, parental influence appeared to have an impact on the development of the individual, with parental support driving attitude and character, generally but not always in a positive manner. Figure 6.2 identifies these linkages.
In summary, it is suggested that the combination of an early shaping experience and career setbacks resulted in increased self-efficacy and increased risk profile. Both of these outcomes developed over time, so it is suggested that the risk and self-efficacy profiles were mediated by reaction to experiences, parental influence and education. In addition, whilst the shaping experience occurred once, career experiences were ongoing and therefore there was a constant development through the ongoing experiences of the individual throughout their business life. This suggests that risk and self-efficacy profiles can and do change over time. These linkages are outlined in Figure 6.3 below.

Figure 6.3: Summary of the linkages between childhood, career, traits and environment on the development of self-efficacy and risk profiles.

Source: Developed for this study

Whilst both self-efficacy and risk profiles are built from prior experiences, self-efficacy itself has an impact on the risk profile of the individual. The research identified that
whilst individuals with different levels of self-efficacy could share similar risk perceptions and preferences, there was a strong link between levels of self-efficacy and risk propensity. The research found that those with a high level of self-efficacy had a high level of risk propensity and vice versa. Of interest is that the different levels of risk perception and risk preference for the individuals with a high risk propensity, did not affect the outcome in terms of propensity, but those with a higher risk perception did attempt to mitigate risk. Participants with low self-efficacy had a low risk propensity and tended to reject risk. The identified linkages are shown in Figure 6.4 below.

![Figure 6.4: Model of linkages between self-efficacy and risk](image)

Source: Developed for this study

Two types of motivation were examined: the motivation to innovate and the motivation to commercialise innovations. The development of innovative ideas was driven by both intrinsic and extrinsic motivations. The most obvious extrinsic motivation was financial reward, either through direct commercialisation or employment. Intrinsic motivations varied but it is clear that individuals that were more motivated by extrinsic motivations such as monetary gain or because innovation was their job, produced incremental innovations, and those that had intrinsic motivations, such as the desire to find a “better way” of doing things, produced radical innovations. The presence of extrinsic and intrinsic motivations was not confined to a particular group, but was present across both entrepreneur and employed innovators. It was apparent that these motivations could change over time and with changes to the environment, with extrinsically motivated individuals changing to intrinsic and vice versa. This was evidenced in the employed group who, once their extrinsic motivations were satisfied, changed to more intrinsic motivations and so they started to produce much more radical innovations. Changes to motivations were also seen in the crossover group. Following the sale of their businesses, and the subsequent
changes to their environment, members of this group moved from radical to incremental innovation. The model of these motivations is shown below in Figure 6.5.

**Motivations for Innovation**

- Extrinsic
- Intrinsic

**Outcomes of Innovation**

- Incremental
- Radical

**Figure 6.5: A model of motivations and the innovation outcomes**

Source: Developed for this study

Both extrinsic and intrinsic motivations to innovate were found within both the entrepreneurs and employed innovators and did not appear to be affected level of self-efficacy and risk profile. This was not the case when choosing to commercialise innovations.

The motivation to commercialise innovations either directly or through employment with an organisation appears to have been driven directly by self-efficacy levels and risk profiles. Specific motivations, mainly intrinsic, but with extrinsic elements, were found in individuals with high levels of self-efficacy and a high propensity for risk, and these individuals chose to commercialise their innovations through venture creation. In contrast, those individuals with low levels of self-efficacy and a high risk perception, low risk preference and low propensity for risk, both developed and commercialised their innovations through their employers. Individuals with a high self-efficacy and risk profile were generally intrinsically motivated, although the extrinsic motivation of financial return was evident. The intrinsic motivations were both personal and altruistic, and included the participant’s desire to prove to themselves that they could achieve, or to provide a legacy for their family. In addition, there was a broader motivation, which influenced the decision to commercialise: the perception that the commercialisation of the innovation was for the “greater good”.

Again, it was apparent that, for some individuals, self-efficacy and subsequently risk profiles changed over time. The change was to a more ‘conservative’ profile, and occurred through experience and as retirement approached. This change appeared
to be a catalyst for the emergence of the crossover group. As retirement approached and there was no longer “time to make it all back” (Participant C). Risk profiles changed and decisions were made to sell the business to a larger organisation and commercialise innovation using their resources.

Figure 6.6 below illustrates the links and motivations that influenced the commercialisation decision.

![Diagram](image)

**Figure 6.6: Model of the linkages between self-efficacy, risk, and motivations and commercialisation decisions**

Source: Developed for this study

The development of the models above has helped to identify the individual linkages within the different themes identified in the research. These form the basis of the substantive model discussed in Section 6.2.2.

### 6.2.2 Substantive Model

Following on from the initial links between the themes that were identified in Section 6.2.1 a substantive model to explain the linkages in their totality has been developed. This combines the findings to create a visual representation of the processes that
develop participants’ individual profiles, the motivations that drive innovation and the outcomes of these profiles and motivations in regards to career choice and range of innovation. The substantive model is shown below in Figure 6.7. The model shows a complex series of events that determines the process by which an innovative individual chooses an appropriate career route, and the motivations that drive the level of innovation developed.

The substantive model shows that career decisions are a combination of experiences, both formative and ongoing, which drive self-efficacy and risk profiles. These experiences are modified to a limited degree by pre-existing personality traits, parental influences and education levels. These characteristics can change over time when a decision is made by creative people, based on their profile, to create a venture or choose to be employed.

The actual innovation comes into play at different times for the different groups. For entrepreneurs, the venture creation decision is often made after the innovation is conceived, whereas for employed innovators, innovation follows the career decision. The decisions taken are also motivated by intrinsic and extrinsic factors. The motivations that influence venture creation are generally more intrinsic, and are related to the innovation. For the individuals that chose the employed route, their motivations were initially extrinsic, and the satisfaction of these motivations created the environment in which the individual produced more radical innovations.

It is apparent from the research that both self-efficacy level and risk profiles can change over time. The emergence of the third group of crossover innovators illustrates this change. Changes are apparent in motivations from intrinsic to extrinsic and this changed the participants’ decisions regarding both their career paths and their levels of innovation. What is also demonstrated in the model is that regardless of the career choice of the individual, extrinsic motivations tend to be associated with incremental innovations and intrinsic motivations tend to be associated with radical innovations.
Figure 6.7: Substantive model of antecedents, profiles, motivations and outcomes of innovators within the Australian plumbing industry

Source: Developed for this study
From the substantive model, the following six propositions emerged:

1. Self-efficacy levels and risk profiles develop from a combination of childhood experiences filtered through personal traits, parental influence and education and are mediated by career experiences.
2. Levels of self-efficacy and risk profiles influence the choice to commercialise innovation within an organisation or through venture creation.
3. Levels of self-efficacy and risk profiles can change over time and with a change in circumstances.
4. Intrinsic motivations drive radical innovation and extrinsic motivation drives incremental innovation, but neither type of motivation is exclusive to either entrepreneurs or employed innovators.
5. Individuals with intrinsic motivation innovate first and then commercialise. Those with extrinsic motivation seek to satisfy those external motivations before innovation is developed.
6. Intrinsic and extrinsic motivations are not static and can change over time and with a change of circumstances.

This model and the associated propositions, derived from the collected data, provides insights that could be considered by organisations. It could assist in identifying ways to improve best practice, especially in the management of innovative people within the organisation. In addition it could aid the integration of acquisitions into the larger business, especially when the founder continues to be employed.

### 6.3 Implications for Creativity, Innovation and Entrepreneurship

There are elements of this research that are important to the development of the broader theory relating to creativity, innovation and entrepreneurship. These include individual elements that differ from the current theory in the separate traditions and also the suggestion of combining the three elements of creativity, innovation and entrepreneurship into a continuum. Each of these will be discussed in turn.

#### 6.3.1 Individual Theoretical Elements

The findings from the present study differed from some of those in the literature. These differences were identified in Sections 5.1.3 and 5.1.4. Conclusions were drawn from these differences and each will be considered in turn, along with their potential implications.
This research raises a question regarding the importance of personality traits in the identification of entrepreneurs. This has been a contentious issue over many decades (Brockhaus 2002; Gartner 1985, 1988, 2010; Zhao, Seibert & Lumpkin 2010). A recent resurgence in interest put the focus back onto the identification of entrepreneurs at a nascent stage, although the present study suggests that traits offer limited predictive capabilities, and they are too broad and vague to offer value in understanding which individuals go on to become entrepreneurs.

Self-efficacy and risk profile appear to be the key differentiators for understanding the career choices of innovative people and how they change over time. Both self-efficacy and risk profiles are developed over time through the environment and experiences and form a powerful basis for choices made regarding whether to create a venture or undertake innovation as an employee. The environment is an ongoing developer of self-efficacy and changes to the environment can change levels of self-efficacy. Changes in self-efficacy over time may lead to changes in risk profiles and as a result, risk mitigation strategies may change. This suggests that, rather than studying self-efficacy and risk profiles as static constructs, there is a need for longitudinal studies to understand the circumstances under which changes occur and the effect this has on decision-making.

Much of the research into risk has considered the three elements of risk: perception, preference and propensity (Barbosa, Gerhardt & Kickul 2007; Douglas 2006; Gilmore, Carson & O’Donnell 2004; Tyszka et al. 2011), which suggests that there are distinct profiles and that low risk perception and high risk propensity indicate a high risk profile; and high risk perception and low risk preference suggest a low risk profile. This research demonstrates that this does not hold true for some types of individual, as, regardless of their risk perception and risk preference, the entrepreneurs in this study tend to have a high propensity for risk. It also suggests that this may be because these entrepreneurial individuals have higher levels of self-efficacy than their employed counterparts and entrepreneurship is inherently risky. This research suggests as a result, whilst it is important to understand risk perception and risk preference in entrepreneurial individuals, it appears they may always take risks and therefore risk perception and risk preferences may not be not drivers of decision-making. It is also important to understand that for these entrepreneurial individuals risk propensity, driven by changes in self-efficacy, can change over time and will lead to different decisions being made in different circumstances.
The research found that the employed innovators and entrepreneurs appear to share similar motivations to innovate but the decision to commercialise appears to be tempered by the risk profile and self-efficacy levels of the individual. It is important in the development of innovation theory to understand that there are two decisions in the development of innovation: the decision to innovate and then the decision to commercialise. It is this second decision that moves an individual from the realm of innovator to entrepreneur. This does not mean that the innovation will not be commercialised; it just means that there will be a different route to market.

The current innovation literature suggests that employed innovators are motivated by external demands and therefore will produce incremental innovation (Bhaduri & Kumar 2011; Caird 1994; Gilson & Madjar 2011; Henderson & Clark 1990; Ross, Mitchell & May 2012), whereas radical innovation is more likely from entrepreneurs. This research suggests that whilst this may be true in some circumstances, there are a number of limitations with this view. The first is that the entrepreneurs in this study were just as likely as employed innovators to produce incremental innovations if they are motivated by extrinsic motivations, which a number of them are. In addition, when the employed innovators’ extrinsic motivations were met, a number also showed intrinsic motivations and so were able to produce radical innovations.

This research found that the entrepreneurs who participated in the research do not appear to be a ‘type’ that can be defined through static measurements of personality, character or traits. The entrepreneurs appear to change over time and changes to circumstances, stage of life or environment may change their risk profiles and self-efficacy levels and therefore their motivation and behaviour. This suggests that these entrepreneurs may not always be entrepreneurs and can move between employed and entrepreneurial roles. This is demonstrated by the emergence of the crossover group.

Finally, the research found that a number of intrinsic motivations exist that have not previously been identified in the literature. Legacy, and the in vivo themes of “the greater good” and “a better way” were identified in the research as motivations for innovation. This suggests that a range of motivations exist that have not previously been identified. These may be specific to industries or innovation type but it suggests that the motivations for innovation are not fully understood. It also suggests that in
the case of legacy, a motivation outside of innovation may be strong enough to drive an individual to venture creation.

As the above elements differ from the existing theory, further research is required to test the validity of these findings in the broader environment. Suggestions for further research are included in Section 6.8. This includes a model of a combined theory of creativity, innovation and entrepreneurship.

6.3.2 Combined Theory

Section 6.1 suggests that, rather than seeing creativity, innovation and entrepreneurship as separate disciplines, there is value in the creation of a combined model to drive the understanding of the process that begins with creativity and ends with entrepreneurship. This research suggests that whilst creativity, innovation and entrepreneurship can be studied in isolation, there is a much richer picture to be gained by understanding the linkages between these three processes. This allows a full appreciation of the choices made in terms of career development and broadens the understanding of why some creative ideas do not result in innovation or entrepreneurship.

The model, shown in Figure 6.8 below, is a synthesis of the findings regarding the career paths of individuals. It can be seen that the path from creativity to entrepreneurship is a staged one and that whilst there are many creative people, there are particular requirements or motivators that allow an individual to take their creative idea through to innovation and finally to entrepreneurship. That process requires a number of characteristics at each stage and the combination of the experiences, mediating factors and motivations illustrated in the substantive model facilitates the transition through these stages. The model identifies three exit opportunities. This research concentrates on those individuals who have moved through the creativity stage and have a will to act. However, some exit at an employed innovator stage and fewer at the entrepreneur stage.
This section has considered the implications of this research on existing theory through the discussion of the differences between the findings of this research and the findings in the literature. It has also identified opportunities for further research to confirm these findings in a broader environment. This section has also discussed the impact of combining the three existing theoretical disciplines into a broader theory for a richer picture of innovative individuals and the paths they take. The next section will consider how the research addressed the aims, objectives and questions posed at the start of the research process.

6.4 How the Research Addressed the Aims, Objectives and Research Questions

The aim of this research was to investigate whether the experiences, characteristics and motivations of innovative individuals affected their propensity to innovate, how radical the innovation was and whether these elements had an effect on how the innovation was commercialised. The study had the objectives of discovering the motivations for innovation and their exploitation, the characteristics and experiences of these innovative individuals and whether the learnings from these individuals could
be used to facilitate the development and exploitation of innovative products throughout the Australian Plumbing Industry. To understand this, six questions were developed:

1) How and why does innovation occur in the Australian plumbing industry?
2) What are the linkages between creativity, innovation and entrepreneurship?
3) What are the antecedents, characteristics and attributes of individuals within large organisations and SMEs?
4) Do individuals exhibit the same behaviours and motivations regardless of the size and structure of the organisations in which they work?
5) Is there a model that can be developed to assist the understanding of the motivations of innovative people within the Australian plumbing industry?
6) Are there learnings that can be applied across the industry to foster innovation?

The research has addressed the aims, objectives and questions by identifying sixteen innovative individual from the Australian Plumbing Industry that were responsible for a range of product innovations ranging from industry changing radical technology through to incremental improvements of technical products. The research found that innovation is generated intrinsically through individuals believing there is a “better way” to meet a need or solve a problem, and whilst the intrinsic motivations exist inherently in entrepreneurs, it develops over time for employed innovators. It also found that there appears to be a continuum between creativity, innovation and entrepreneurship with individuals exiting at different stages if the prerequisite to move between stages was not present in that individual. In the case of the move from creativity to innovation, the prerequisite was identified as a will to act, and from innovation to entrepreneurship, the desire to create a venture.

The history of each individual was explored and a number of themes emerged that appeared to influence the individual’s career path. These included childhood and early career experiences, as well as the level of self-efficacy apparent in each individual. As this is a small study, generalisations cannot be made and further research would be required to validate the reported influences that the childhood and career experiences had on the individual, although from the perspective of the participants, their reactions to these events had an effect on their approach to business and specifically risk.
It was apparent from the research that entrepreneurs and employed innovators could share the same motivations to innovate, and that the most radical innovation came when individuals were intrinsically motivated, regardless of their employment status. It did appear that intrinsic motivation took longer to develop in employed innovators and was only possible when external motivations, such as security and the availability of resources were met. It was also apparent through the emergence of the crossover group that motivations could change over time and with a change in circumstances, and a previously intrinsically motivated individual could lose their motivation through being placed in an unfamiliar environment, such as in the aftermath of an acquisition.

A substantive model was developed to illustrate the linkages identified during the research, which will need further empirical research to validate. It suggests that, if the industry requires radical innovation, it needs to facilitate venture creation and management by helping entrepreneurs identify and mitigate risk, and provide business planning services, thereby freeing up the entrepreneurs to be able to innovate. For organisations, the research identified that their innovative employees need their external motivations to be satisfied before they can create radical innovation, and the early identification of these could help fast track innovation. It also identified that acquisition may not be an effective innovation strategy unless processes exist to maintain the entrepreneurial feel of the business, to maintain the motivation of the principal and facilitate the continuation of his innovative capacity.

### 6.5 Implication for Policy and Practice

This research has a number of major implications for the practice of innovation and its commercialisation within the Australian plumbing industry, which is going through a period of radical change in terms of the requirement for water efficient products. This section will consider these implications, which are drawn from the findings discussed in Chapter 5 and the conclusions presented in the sections above. It will consider these from the perspective of the venture creators and then organisations, with a focus on the crossover group.

#### 6.5.1 Implications for Entrepreneurs

With respect to entrepreneurs, the main implications for policy and practice come from the ability to plan businesses to mitigate risk. Businesses are often unplanned
and involve high levels of risk. Better business planning could mitigate risk for those entrepreneurs who are not comfortable with risk taking but are compelled to do it. As discussed in the major findings, many of the entrepreneurs in this research did not readily take high risks although they found themselves doing so to maintain and grow their businesses. These findings suggest that, if industry-based support was available to enable longer term business planning, strategies could be put in place to mitigate risk throughout the growth phases of businesses. It should be noted that this may not be an appropriate option for those individuals with a low risk perception and high risk preference, as they appear to be the kind of individuals that learn best from failure. It can be suggested that if those resources were available, the failures may be less serious and the industry could see a smoother stream of radical innovations entering the market. This longer-term business planning could also increase the number of innovations that reach the market as the thought process in venture creation moves from the focus on a single innovation to a sustainable long-term business. In addition, the overt recognition of legacy as a motivator can assist with the planning process as the entrepreneur focuses on more than just commercialising the current innovation. The long-term desire to have a business to pass on, or to bring family members into, seems to offer the opportunity to drive the disciplines of business planning.

A planned exit from a business when it becomes too large to manage can facilitate the orderly transfer of innovation and expertise within the industry to prevent its loss. It appears that there is a large amount of radical innovation being developed and commercialised through small plumbing businesses. Over time, some of these small businesses go on to become larger and more sustainable, but a number become unsustainable for the founder and this can either precipitate a sale or a conscious dismantling of the business. This can result in innovative people exiting the industry and the loss of innovative new products and services. With a planned approach to business exit, partnerships and potential purchasers can be identified well in advance and a smooth transition of innovation can be maintained.

### 6.5.2 Implications for Organisations

With respect to organisations, the implications for policy and practice are focused on the management of employed innovators. This includes the integration of small businesses into larger organisations. The management of innovative people within organisations, to ensure the development of radical innovations, requires the
satisfaction of their extrinsic motivations to enable their intrinsic motivations to come to the fore.

Employed innovators are generally risk averse and have lower levels of self-efficacy than their entrepreneurial counterparts. This is reflected in their career choices. As shown in the research, this does not mean that they are incapable of radical innovation. Rather, it just means that their extrinsic motivations need to be satisfied if they are to become motivated to undertake radical innovations. This satisfaction usually occurs over a period of time and organisations need to consider how to speed up this process. One way of achieving this may be through the use of proven innovators as industry experts to teach and nurture innovation within the organisation, and thereby building levels of self-efficacy in the employed innovators.

In addition, organisations need to find ways of stimulating internal motivations to drive radical innovation. This could be done through the development of a distinct management culture within design and R&D departments that remove some of the external pressure on innovators. It was clear from some of the employed innovators that when they had proved themselves, they were left alone to ‘create’. Organisations need to examine whether this style of management can be promoted to facilitate the faster development of individuals. The development of autonomous innovation may be an option for larger businesses, either through the funding of innovative ideas that are developed at arm’s length, or through the creation of a separate internal innovation department that has the freedom to experiment and fail, whilst still providing employees the security of guaranteed employment and the resources to develop innovations.

This research has shown that radical innovation is eminently possible within larger organisation and therefore organisations should expect more of their employed innovators. However, to drive the best outcomes, trust and support is vital to promote the satisfaction of extrinsic motivations. An appreciation of the intrinsic motivations that drive radical innovation is important for managers to ensure that these are also promoted and supported within the organisational environment. One option that emerges is for organisations that understand the management and development of innovative people to develop them internally rather than recruiting them. This allows the management of motivations over time and may produce an individual who can drive a stream of radical innovations and who understands the ways in which the organisation provides support and resources. Although it was not overtly seen in this
research, there is a drawback to this approach if it is not managed carefully. If an innovative individual is developed in this way but their innovation is not then supported throughout the rest of the business, their self-efficacy may have been built to such an extent that they move organisations or even move into an entrepreneurial role in their own venture.

The integration of acquired businesses is fraught with difficulties and if not managed effectively can lead to the loss of the innovative spark, which made the business attractive in the first place. The unanticipated finding of the research was the presence of a crossover group, who moved from entrepreneurial ventures into a larger corporate organisation. What was evident was that this process was difficult to manage and often resulted in the disillusionment of the entrepreneur, and a loss of creativity in the purchased venture. The research indicates that the transition from entrepreneur to employee is difficult for the former founder and they may become frustrated with rules and procedures that they are not used to. The pressure to perform and the change in environment affects their motivations to innovate and they start producing incremental innovations, if they produce anything at all. The implications for larger organisations is that the acquisition process needs to be very carefully planned and there needs to be an acceptance that the culture and management of the existing R&D department may not be appropriate if innovative outcomes are required from the acquisition. The suggestion that emerges from the research is that, if an organisation acquires a smaller company, it needs to find a way to leave the previous freedoms in place, whilst removing the management responsibilities of the founder, thereby allowing them to revert to the innovative focus that drove them to found the business in the first place.

6.6 Delimitations and Limitations
The delimitations of this research are discussed in Section 1.7 and the limitations regarding the methodology are discussed in Chapter 3. Further limitations were identified during the course of the research. These occurred in four areas: sample size, single industry and country focus, focus on a single type of innovation and potential researcher subjectivity. Each will be considered in turn.

Whilst the research set reached sixteen of the twenty-two individuals identified who met the criteria for sample unit selection, it must be acknowledged that this is a small number of participants. The industry is small and is dominated by a number of large
organisations, which made the number of available participants limited. This by no means negates the validity of this study as the level of innovation and change that these individuals have driven in the market is substantial. To overcome this potential limitation, a comprehensive member check of the findings was undertaken to ensure that the themes and conclusions resonated with the participants and were an accurate reflection of their thoughts and feelings.

The second identified limitation was that of the restriction of the research to one industry. The industry chosen has some very specific characteristics: it is trade based, has predominantly very large or very small organisations, is highly regulated and has a limited amount of competition from foreign entrants. In addition, the restriction of the research to a single country is also a limitation. Australia is governed by very strict standards, which provide a high barrier to entry. This may influence and encourage local innovation, which may not be a feature of activity in less regulated industries or countries. This may have had an impact on the results, which make their applicability to other industries of limited value. As stated in the literature regarding grounded theory (Glaser & Strauss 1967), in the development of a substantive theory, it is often difficult to generalise or transfer the results from one group to another and it is subsequent researchers who decide whether there is applicability in other areas. This judgement cannot be made in the initial research but only by those seeking to apply the findings at a later stage (Lincoln & Guba 1985).

The third identified limitation was related to the type of innovation that was considered. The participants were identified through their level of product innovation. As stated in the literature, innovation can take the form of products, methods or systems that add novelty and can be commercialised (Crossan & Apaydin 2010). This and this research only considers the product element.

Finally, the potential subjectivity of the researcher was a limitation due to her closeness to the subject material. This potential for bias is acknowledged and such acknowledgement assists in maintaining the integrity of the research. To address this limitation, care was taken to ensure that any conclusions drawn from this research were based solely on the findings from Chapter 5 and the comprehensive member check described earlier ensured the conclusions were seen as valid by the participants. None of the identified limitations detracts from the research or the validity of the findings or the potential implications for the policy and practice of the promotion of innovation within the plumbing industry in Australia.
6.7 Implications for Methodology

There are a number of implications for methodology that resulted from this study. These relate to research methods, timescales and the methodology chosen. The most significant discovery from this study was the ability of semi-structured interviews to elicit the information that formed the basis of the findings and implications of this research. This, together with other factors such as the face-to-face element of most of the interviews and the process of note taking during the interviews and the immediate transcription of the interview tapes, provided considerable momentum in the subsequent analysis. This immediacy in managing the collected data facilitated the iterative process of analysis and enabled each new theme that was discovered to be added into the next interview and kept or discarded depending on whether it was validated or negated.

There was a related learning in regard to the timeframe for the data collection process. The timescale of eighteen months proved to be too long and resulted in much revisiting of the previously collected data to ensure that the researcher was in touch with the data before the following interview. The lengthy timescale for data collection was a function of the physical location of many of the participants and their limited availability. Technology was used in two instances towards the end of the data collection phase, in an attempt to speed up the process, but this proved sub-optimal as there was a lack of a personal connection when using Skype, which led to these interviews containing less detail that the others.

The extended timescale, however, did have a positive effect on the integrity of the research as it allowed time for the iterative process of revisiting the literature to look for support or evidence for the emerging themes. The literature review was carried out before, during and after the data collection and this iterative approach facilitated the emergence of a number of novel themes through the identification of literature gaps. Returning to the thesis after periods of inactivity facilitated insights and provided strength to the analysis and progressed it from description to analysis.

The use of grounded theory, as outlined by Strauss and Corbin (1990), was confirmed as the most appropriate methodology for this research. Its aim was to explore the thoughts and experiences of the participants which made this methodology appropriate. Through the personal interaction between the researcher and the participants, in-depth insights were gained.
In summary, the implications for methodology are the appropriateness of semi-structured interviews on a face-to-face basis as they facilitated the rich insights that were gained. In addition, the personal and immediate transcription of recordings facilitated the analysis of the data and the periods of inactivity facilitated the integrative process of comparing the data to the literature and drove a deeper level of analysis. Finally, the use of grounded theory proved an appropriate methodology for the type of research undertaken.

6.8 Opportunities for Further Research
This study provides a number of possible avenues for future research, which are discussed below. The first section relates to possible research areas. The second to alternative research methodologies that could be applied to the subject area.

6.8.1 Possible Research Areas
A number of novel themes were identified in the course of the research that require further investigation. These include:

1. A substantive model to explain the drivers of career choices of employed innovators, entrepreneurs and crossovers is proposed in Figure 6.7 and is followed by six propositions. To assess the validity of the model and the propositions, empirical testing of all of these propositions will be required.

2. An empirical study into the impact that motivations rather than personality have on career choice.

In this study, motivations appeared to be a stronger predictor of career choice than personality. A research design could be developed to more accurately capture motivations and contrast these with personality traits measured through specific instruments for to deliver an assessment of their relative importance.

3. The impact of legacy on the decision to start a business.

This research would investigate the desire to leave a legacy as a motivator for venture creation and weigh this up against other motivating factors. The research would need to be targeted at new or nascent entrepreneurs, and could be in the form
of a longitudinal study to see how far this motivation was carried throughout the life of the business and whether a legacy was indeed created.

4. Testing the applicability and implications of the findings in other industries.

The findings of this research are grounded in a specific industry; that is, the plumbing industry. Further credibility could be given to the findings through the expansion of the research into similar trade-based industries, where a larger research set is available. It could be further tested through an expansion into non-trade based areas, to examine whether the findings were equally applicable to alternative products and services.

5. Testing the findings and implications of this research in industries that include a higher proportion of female participants.

As can be seen from the research set, the participants in this study were all male. This is a reflection of the industry where women are severely under-represented. The testing of the findings of this research in an alternative industry that has a broad representation of female innovators in both SMEs and larger organisations would add depth to the research by investigating whether the findings can be replicated across gender.

6. Testing the findings and implications of this research in alternative geographies.

An avenue of study would be to replicate this exploratory study in a different country. As stated previously, the Australian market and the plumbing industry have a number of unique features including the standards and technical issues that have shaped the market and have led to a polarisation of organisations into small entrepreneurial businesses and large market-dominant businesses. The extension of this study into a larger market would test the applicability of the findings in a less regulated market.

7. Testing the findings for their generalisability outside of the specific area of research, for example, in broader management practice.

This research would consider the extent to which the findings and implications of this study have broader management applications, especially in respect to the
management of previously entrepreneurial individuals who have moved into an employed role.

8. Studies of the managers of employed innovators and crossovers to ascertain different management requirements.

This research could examine the management practices within organisations that have bought small businesses and subsequently employed crossover individuals to understand the success of these acquisitions and the different management techniques used to manage these individuals. It could also contrast these techniques with those used to manage employed innovators.

9. Testing the practical suggestions in the practice and policy section.

A final possible area of research could be the testing of the suggestions discussed in Section 6.5 for their effectiveness and applicability.

6.8.2 Possible Research Methodologies
As this research was conducted using qualitative methods and was approached from a constructivist paradigm, an opportunity exists to add validity to these findings through the development of positivist quantitative studies, to provide empirical evidence for the exploratory findings.

Such studies could comprise:
1. The qualitative validation of the level of early shaping experiences in a wider range of entrepreneurs and employed innovators.

2. The qualitative assessment of the differences in self-efficacy levels amongst entrepreneurs and employed innovators using tests. This could be expanded to measure the change in self-efficacy levels of individuals that moved between entrepreneurial and employed organisations.

3. A study to investigate empirically the link between self-efficacy/ risk profile and behaviour and the changes that occur over time. This would test whether the link existed and the direction of the influence. If it was a longitudinal study it could
track participants over a period of time to identify the drivers of change and the impact this had on decision making.

As this was an exploratory study, conducted using qualitative methods, there is a large scope for further research in both areas and methods, as has been outlined above. Further research building on the findings of this study would add to the validity and applicability of the current findings.

6.9 Conclusion

Innovation within the Australian plumbing market is important for the future sustainability of the industry. The industry faces the challenge of increasing imports, both from cheaper producers in countries such as China and from global suppliers looking for new markets. The sustainability of the local industry relies on innovation in maintaining the barriers to entry into the Australian market. This study was designed to gain an insight into the process of innovation and aid understanding of the individuals that produce that innovation. It aimed to identify a range of individuals that had produced both radical and incremental product innovations, and to understand the pathways and decisions that had led them to choose either an entrepreneurial or employed career path. It also aimed to enhance policy and practice within the industry to improve the stream of innovation through the insights from the research. Finally, it also aimed to fill gaps in knowledge by addressing the dearth of research in this industry and by considering the creativity-to-entrepreneurship process as a whole.

This study was a deep review in a narrow field, which aimed to fully understand the motivations of a particular set of individuals who had direct relevance to one specific industry. The aim was to identify and approach all of the product innovators within the industry, and interview them to gain rich data pertaining to the process of innovation creation and exploitation. In that, it was very successful. The research took the data and synthesised it, producing a substantive model to explain the linkages in the choices made by individuals in bringing creative ideas to commercialisation. The core of the study was taking the learnings from the experiences of the participants and understanding the specifics on their choices. The primary source of the data for the research was the participants themselves and this was the basis for all findings, themes and models.
The data was gathered using face-to-face interviews steeped in the direct experiences of the participants. The data suggests a range of learnings for the industry, especially larger organisations, in respect of the integration of innovative ventures into larger businesses whilst maintaining their creative spark, and the nurturing and management of innovative individuals within the organisation.

The research both confirmed and challenged findings in the existing literature. It suggested a greater focus on self-efficacy and risk in the understanding of the decisions that innovative individuals make when considering career choices and it suggested less focus on personality traits. It also brought a clear focus onto the motivations for innovation and commercialisation and the identification of a two-stage process. The understanding of this is key in the nurturing of innovation within the industry.

This study found that innovation within the Australian plumbing industry is healthy in terms of its innovation levels, but organisations could gain a great deal of benefit from this study. Of particular importance are the learnings regarding the effective integration of innovation acquisitions and the most appropriate way of developing and managing creative and innovative people within organisations, especially recognising the difference between long-term employed innovators and ex-entrepreneurs who have been recently employed.
References


---- 2014, *Options to ensure that plumbing and drainage products are fit for purpose. A regulation impact statement for consultation*, Australian Government, States and Territories of Australia, Canberra.


Atkinson, J 1957, 'Motivational determinants of risk taking behaviour ', *Psychological Review*, vol. 64, no. 6, pp. 359-72.


Baer, M 2012, 'Putting creativity to work: the implementation of creative ideas in organisations', *Academy of Management Journal*, vol. 55, no. 5, pp. 1102-19.


References


Caird, S 1993, 'What do psychological tests suggest about entrepreneurs?', *Journal of Managerial Psychology*, vol. 8, no. 6, pp. 11-21.

---- 1994, 'How important is the innovator for the commercial success of innovative products in SMEs?', *Technovation*, vol. 14, no. 2, pp. 71-83.


Drennan, J & Saleh, M 2008, Dynamics of entrepreneurship intentions of MBA students: an asian developing country perspective, Queensland University of Technology, Brisbane.


---- 2003b, Innovation: a guide to the literature, Centre for Technology, Innovation and Culture, Oslo.


Filion, L & Chirita, M 2012, 'Claude Blanchet, entrepreneur, intrapreneur and public sector manager: Supporting the development of Québec', Journal of
Enterprising Communities, People and Places in the Global Economy, vol. 6, no. 4, pp. 369-82.


Flyvberg, B 2013, 'Case studies', in NK Denzin & YS Lincoln (eds), Strategies of qualitative inquiry, 4th edn, Sage, Thousand Oaks CA.


---- 1988, "'Who is the entrepreneur?' Is the wrong question', American Journal of Small Business, vol. 12, no. 4, pp. 11-32.


Gibson, LG, Gibson, RA & Zhao, S 2011, Factors affecting entrepreneurial attitudes of American and Chinese business students USASBE, Hilton Head Island SC.


He, W, Cho, V, Qi, C, Xu, X & Lu, F 2013, Linking knowledge sharing and employee creativity: decomposing knowledge mode and improving the measure of tacit knowledge sharing, Pacific Asia Conference on Information Systems, Jeju Island Korea.


HIA 2014, Kitchens and bathrooms: past growth and future propsects 2013/14, HIA Economics Group, Campbell.


IBISWorld 2015, Plumbing services in Australia: market research report, Sydney.


Izquierdo, E & Buelens, M 2010, Competing models of entrepreneurial intentions: the influence of entrepreneurial self self-efficacy and attitudes, ESPAE-Graduate School of Management. Escuela Superior Politécnica del Litoral.


Khan, M, Breitenecker, RJ & Schwarz, E 2014, 'Entrepreneurial team locus of control: diversity and trust', *Management Decision*, vol. 52, no. 6, pp. 3-6.


Mensch, G 1979, Stalemate in technology, Ballinger, Cambridge MA.

Merriam, S 1995, 'What can you tell from an N of 1?: issues of validity and reliability in qualitative research', PAACE Journal of Lifelong Learning, vol. 4, pp. 50-60.


Miles, MB & Huberman, AM 1990, Qualitative data analysis: a sourcebook of new methods, 2nd edn, Sage, California.


Morse, J 1994, 'Emerging from the data: cognitive processes of analysis in qualitative research', in J Morse (ed.), *Critical Issues in Qualitative Research Methods*, Sage, Thousand OAKs, pp. 23-41.


Mumford, MD & Gustafson, SB 1988, 'Creativity syndrome: integration, application and innovation', *Psychological Bulletin*, vol. 103, no. 1, pp. 27-43.

Mungai, E & Velamuri, SR 2011, 'Parental entrepreneurial role model influence on male offspring: is it always positive and when does it occur?', *Entrepreneurship Theory and Practice*, vol. 35, no. 2, pp. 337-57.


Pandy, J & Tewary, N 1979, 'Locus of control and achievement values of entrepreneurs', *Journal of Occupational Psychology*, vol. 52, no. 2, pp. 107-11.


Parker, S 2011, 'Intrapreneurship or entrepreneurship', *Journal of Business Venturing*, vol. 26, no. 1, pp. 19-34.


Rauch, A & Frese, M 2000, 'Psychological approaches to entrepreneurial success: a general model and an overview of findings.', in CL Cooper & IT Robertson


Shariff, MNM & Saud, MB 2009, 'An attitude approach to the prediction of entrepreneurship on students at institution of higher learning in Malaysia', International Journal of Business and Management, vol. 4, no. 4, pp. 129-35.


Solymossy, E 1998, 'Entrepreneurial dimensions: the relationship of individual, venture and environmental factors to success', Case Western Reserve University.


Wang, C-J & Tsai, C-Y 2014, 'Managing innovation and creativity in organisations: an empirical study of service industries in Taiwan', *Service Business*, vol. 8, no. 2, pp. 313-35.


Yin, RK 2003, *Case study research design and methods*, 3rd edn, Sage, Thousand Oaks CA.


Zwemstra, J 2006, 'Differentiating between entrepreneurs and intrapreneurs: a competancy approach', Erasmus University
Appendices

Appendix 2.1. List of 16 journals initially accessed for literature review

1. Academy of Management Journal
2. Academy of Management Review
3. Creativity and Innovation Management
4. Entrepreneurship Theory and Practice
5. European Journal of Work and Organisational Psychology
6. International Journal of Entrepreneurial Behaviour and Research
8. Journal of Applied Psychology
10. Journal of Management
11. Journal of Organisational Behaviour
14. Management Decision
15. Management Science
16. Small Business Economics
Appendix 3.1. Demographic Data of Participants

Sixteen self-employed and employed individuals were interviewed during the course of the research. The characteristics of these participants are summarised in the table below.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Sex</th>
<th>Age</th>
<th>Employed/ Self Employed</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>Male</td>
<td>50+</td>
<td>Self Employed</td>
<td>School certificate (16)</td>
</tr>
<tr>
<td>R</td>
<td>Male</td>
<td>30-40</td>
<td>Self Employed</td>
<td>School Certificate (18)</td>
</tr>
<tr>
<td>J</td>
<td>Male</td>
<td>30-40</td>
<td>Self Employed</td>
<td>School Leaver (16)</td>
</tr>
<tr>
<td>G</td>
<td>Male</td>
<td>51</td>
<td>Employed</td>
<td>Conservatorium Graduate</td>
</tr>
<tr>
<td>GG</td>
<td>Male</td>
<td>61</td>
<td>Self Employed</td>
<td>B Business (mature student)</td>
</tr>
<tr>
<td>O</td>
<td>Male</td>
<td>68</td>
<td>Self Employed</td>
<td>Grade 7 (14)</td>
</tr>
<tr>
<td>I</td>
<td>Male</td>
<td>46</td>
<td>Self Employed</td>
<td>Year 11 (16)</td>
</tr>
<tr>
<td>L</td>
<td>Male</td>
<td>45</td>
<td>Employed</td>
<td>Year 12 (18)</td>
</tr>
<tr>
<td>S</td>
<td>Male</td>
<td>53</td>
<td>Employed</td>
<td>PhD</td>
</tr>
<tr>
<td>M</td>
<td>Male</td>
<td>44</td>
<td>Self Employed then Employed</td>
<td>Year 11 (16)</td>
</tr>
<tr>
<td>K</td>
<td>Male</td>
<td>40</td>
<td>Employed</td>
<td>Diploma in Design</td>
</tr>
<tr>
<td>N</td>
<td>Male</td>
<td>48</td>
<td>Self Employed then Employed</td>
<td>Trade Certificate</td>
</tr>
<tr>
<td>P</td>
<td>Male</td>
<td>62</td>
<td>Self Employed</td>
<td>Commerce Degree (Mature Student)</td>
</tr>
<tr>
<td>TT</td>
<td>Male</td>
<td>50</td>
<td>Employed</td>
<td>Teaching Degree, B Business &amp; Marketing</td>
</tr>
<tr>
<td>C</td>
<td>Male</td>
<td>61</td>
<td>Self Employed then Employed</td>
<td>B Applied Science (Mature Student)</td>
</tr>
</tbody>
</table>
Appendices

Appendix 3.2. Information Sheet

An Exploratory Study of the Antecedents, Characteristics and Drivers of Innovators within the Australian Plumbing Industry

My name is Peta Fray and I am a Doctor of Business Administration candidate at Southern Cross University. As part of my doctoral studies I am conducting research on innovation and innovators within the Australian Plumbing Industry. The supervisor of this research is Dr Margo Poole of the Graduate College of Management at Southern Cross University (see below for contact details).

The plumbing industry in Australia has increased dramatically over the past few years driven by the competitive nature of the industry and the environmental pressures that are being faced through the process of climate change.

The purpose of this study is to gain an understanding of the antecedents, characteristics and drivers of individual innovators within the industry, across all sectors and all sizes of organisations.

In particular this research aims to investigate:
- Whether the antecedents of individual innovators are common across the two identified populations.
- Whether members of the two groups share similar characteristics in terms of their personalities and attributes.
- Whether similar drivers of innovation can be seen in individuals working in their own businesses and those working for a large organisation.

You are invited to take part in this research by agreeing to participate in an interview, the details of which are provided below.

Interview Procedures

The interview will mainly consist of open questions and will focus on three key topics:
- The factors that drive your desire to innovate
- The factors in your upbringing or career history that have facilitated your innovation activities
- Your behavioural characteristics

Each interview will take approximately 90 minutes of your time should you agree to participate and will take place in your office or any other venue dependent on what is most suitable for you. It may be necessary to have a follow up meeting to review your responses but this may be done via the telephone. Participation is purely voluntary and no financial remuneration or incentive will be offered for taking part in this research. There are no travel expenses, nor are there any costs associated with participation in this research. There is no cost to you apart from your time.
Responsibilities of the Researcher

It is our duty to make sure that any information given by you is protected. Your name and other identifying information will not be attached to data collected. Your name will only be used to facilitate an appointment for the interview. Any identifying information will be destroyed after your participation in the study.

As an interviewee you will be asked to sign an informed consent form, in which you give your permission that the information collected in the interview may be used in the study, without identifying you or your organisation’s name. All signed consent forms will be held in safe storage at the University for a period of five years before being destroyed. You are free to withdraw your consent and to discontinue participation at any time however, we would appreciate you letting us know your decision.

Responsibilities of the Participant and Possible Risks

The only requirement of you as part of this research should you agree to participate, is a commitment of time and a willingness to share your opinions and experience about the research topic. There are no foreseeable risks or discomfort involved for you in this research.

Research Results

The results of this study may be published in a peer-reviewed journal and presented at conferences but no individual identification will be reported. All research material will be retained securely and confidentially by the university for seven years.

Participant’s Consent

To participate in this study you will need to complete the attached consent form and return it to the researcher. Please sign it and scan the signed copy and return it to the email on the form.

Inquiries

This form is yours to keep for future reference. If you have any questions, we expect you to ask us. If you have any additional questions at any time please ask:

Researcher
Peta Fray
Graduate College of Management
Southern Cross University
Locked Bag 71
Virginia Business Centre
QLD 4014

Email: peta.fray.10@scu.edu.au
Phone: 07 3260 9714

Supervisor
Dr Margo Poole
Graduate College of Management
Southern Cross University
PO Box 157
Lismore NSW 2480

Email: mp@pi.com.au

Feedback

All participants may receive a summary of the results of this research. If you would like to receive this, please indicate this on the attached consent form and the results will be emailed to you.

The ethical aspects of this study have been approved by the Southern Cross University Human Research Ethics Committee. The Approval Number is ECN-11-
087. If you have concerns about the **ethical conduct** of the research or the researchers, the following procedure should occur. Write to the following:
Ethics Complaints Officer and Secretary
HREC
Southern Cross University
PO Box 157
Lismore, NSW, 2480
Email: ethics.lismore@scu.edu.au

All information is confidential and will be handled as soon as possible.
Appendix 3.3. Informed Consent Sheet

Title of research project:
An Exploratory Study of the Antecedents, Characteristics and Drivers of Innovators Within the Australian Plumbing Industry

Name of researcher: Peta Fray

Tick the box that applies, sign and date and email to the researcher

I agree to take part in the Southern Cross University research project specified above

Yes ☐ No ☐

I understand the information about my participation in the research project, which has been provided to me by the researchers.

Yes ☐ No ☐

I agree to be interviewed by the researcher.

Yes ☐ No ☐

I agree to allow the interview to be audio-taped.

Yes ☐ No ☐

I agree to make myself available for further interview if required.

Yes ☐ No ☐

I understand that my participation is voluntary.

Yes ☐ No ☐

I understand that I can cease my participation at any time.

Yes ☐ No ☐

I understand that my participation in this research is anonymous.

Yes ☐ No ☐

I understand that any information that may identify me, will be de-identified at the time of analysis of any data.

Yes ☐ No ☐

I understand that no identifying information will be disclosed or published

Yes ☐ No ☐

I understand that all information gathered in this research is confidential and will be kept securely and confidentially for 7 years at the University.

Yes ☐ No ☐

I am aware that I can contact the researchers at any time with any queries. Their contact details are provided to me.

Yes ☐ No ☐

I understand that this research project has been approved by the SCU Human Research Ethics Committee

Yes ☐ No ☐

Participants name:

_____________________________________________________________________________________

Participants signature:

_____________________________________________________________________________________

Appendices
Date: ______________________

☐ Please tick this box and provide your email or mail address below if you wish to receive a summary of the results:

Email: __________________________________________________________________

Return to:
Peta Fray
peta fray.10@scu.edu.au
Locked Bag 71
Virginia Business Centre
Queensland 4014
Australia
Appendix 3.4. Interview Planner

Interviewee

Date

Interview Planner

Research Project – An exploratory study of the Antecedents, Characteristics and Drivers of Innovations within the Australian Plumbing Industry

Instructions to Interviewees

Confirmation of details on information sheet
Interview procedure
Confidentiality and Anonymity
Time commitment
Publication and retention of data
Consent
   Tape recording
   Ability to withdraw
   Follow up contact

Indicative Questions for Research Project

Interviews will be of a semi structured nature and will be guided by the participant so not all of the following areas may be covered.

Hobbies & Sports
   What sports did you play as a child/young adult – to what standard and how successful were you?
   What hobbies do you have now or have had in the past?

Shaping Experiences
   Did you experience a shaping experience in your formative years?
   How did this affect you?

Early career
   Describe and explain any major setbacks you experienced in earlier career
   Can you identify a mentor from this time?

Control
   Who do you believe is responsible for any success you have had?

Risk
   Explain your attitude towards risk – do you perceive yourself as a risk taker?

Achievement
What does achievement mean to you? Is it an important aspect of your life?

Motivations
What gets you out of bed every morning?

Sources of ideas
For the products that you design – where does the inspiration come from? Internal or external motivations?

Competencies
What competencies do you believe you have?

If within a company

Leadership
Do you have a good relationship with your immediate superiors and are they supportive of your activity? How do you like to be managed?

Mentors
Can you identify a mentor in your current role, either within or outside your organisation?

Company environment
Does your organisation offer a supportive environment for new product development and innovation in the area in which you work?

If started own business
Why did you leave your last employer? How long have you been working for yourself? How active are you in new product development? Would you consider returning to work for a larger organisation – why? What have you been able to achieve in your own business that you were unable to within an organisation?

Themes and Probe Questions
### Appendix 3.5. Initial Codes

<table>
<thead>
<tr>
<th>Number</th>
<th>Code</th>
<th>Description</th>
<th>Typical Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Youth Sport</td>
<td>Involvement in sport into adolescence</td>
<td>I played soccer and basketball until I was 16.</td>
</tr>
<tr>
<td>2</td>
<td>Prior business ownership</td>
<td>The ownership of a business before the development and commercialisation of an innovative product idea</td>
<td>My business starter in about 1987 and basically I just started out on my own from changing tap washers to the small jobs.</td>
</tr>
<tr>
<td>3</td>
<td>Apprentice</td>
<td>Undertook an apprenticeship rather than further/higher education</td>
<td>I enrolled in university but didn’t like the process of enrolling so I did my apprenticeship as a plumber.</td>
</tr>
<tr>
<td>4</td>
<td>Employment status</td>
<td>Employed by a company or owns and runs own business</td>
<td>I was shocking at school but I could study so I was just a lazy bugger to be honest.</td>
</tr>
<tr>
<td>5</td>
<td>Education</td>
<td>Level of education and academic aspirations</td>
<td>I couldn’t achieve the outcomes I wanted. It looked like it would be a long winded process.</td>
</tr>
<tr>
<td>6</td>
<td>Impatience</td>
<td>Impatience with process/barriers to getting things done</td>
<td>My father passed away at a young age.</td>
</tr>
<tr>
<td>7</td>
<td>Early shaping experience</td>
<td>Experience/trauma/barrier to be overcome in childhood</td>
<td>Once you start something you have to finish it.</td>
</tr>
<tr>
<td>8</td>
<td>Goal Focused</td>
<td>Taking opportunities that offer visible progress and outcomes</td>
<td>I needed an income so I quickly made the decision to become a tiler.</td>
</tr>
<tr>
<td>9</td>
<td>Security/Self reliance</td>
<td>Being able to provide for self and family</td>
<td>I was the man of the house. I was the oldest in the family and I had a</td>
</tr>
<tr>
<td>10</td>
<td>Family influence</td>
<td>The influence of immediate family in expectations of behaviour, performance, support or experience</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Failure motivation</td>
<td>Monetary motivation</td>
<td>Self confidence</td>
</tr>
<tr>
<td>---</td>
<td>-------------------</td>
<td>-------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>11</td>
<td>Fear of failure, or of getting left behind</td>
<td>Choosing a career or profession based on potential income</td>
<td>Belief in self to achieve</td>
</tr>
<tr>
<td>12</td>
<td>Nobody likes failure.</td>
<td>A motivation to have money and succeed and be comfortable in life.</td>
<td>I don't have anything to trust because I back my own ability.</td>
</tr>
<tr>
<td>20</td>
<td>Personal Integrity</td>
<td>Being able to live with yourself and doing what is right</td>
<td>I was embarrassed when the company went bust. We had to still deal with these people.</td>
</tr>
<tr>
<td>21</td>
<td>Risk awareness</td>
<td>Being aware, or not, of how exposed you are</td>
<td>You don’t look at it as risk, just a cost to move forward.</td>
</tr>
<tr>
<td>22</td>
<td>Career setback</td>
<td>Occurrence or obstacle that needed to be overcome</td>
<td>He hadn’t worked out my role was fundamental to how the department worked so I got sidelined.</td>
</tr>
<tr>
<td>23</td>
<td>ILOC</td>
<td>Internal locus of control – personal responsibility for success or failure</td>
<td>If you want something desperately in life you can achieve it.</td>
</tr>
<tr>
<td>24</td>
<td>“Sacrificing”</td>
<td>Participants description of requirement of success</td>
<td>I can’t go to uni and enjoy myself too much.</td>
</tr>
<tr>
<td>25</td>
<td>Future success</td>
<td>Work now for future rewards</td>
<td>It has been difficult because I am very family oriented and it has been at the expense of family time.</td>
</tr>
<tr>
<td>26</td>
<td>Self-worth</td>
<td>Feeling that comes from achievement of goals</td>
<td>I have no requirement for anybody else to recognise what I have achieved.</td>
</tr>
<tr>
<td>27</td>
<td>Work ethic</td>
<td>Ability to self-motivate to “put in the hours” to get the job done</td>
<td>The first job took 3 days and it should have taken 5 but I was determined to finish it by Monday.</td>
</tr>
<tr>
<td>28</td>
<td>People skills</td>
<td>Ability to read and get on well with people</td>
<td>Treat ‘em nice. If you try to hit them across the head with a</td>
</tr>
<tr>
<td>Appendix</td>
<td>Description</td>
<td>Reason for the Description</td>
<td>Example</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>-----------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>29</td>
<td>Innovation from solution</td>
<td>Finding a solution to an issue presented</td>
<td>Shower bases kept failing and I was called on to find a solution.</td>
</tr>
<tr>
<td>30</td>
<td>Using experts</td>
<td>Use of experts for advice in areas outside skill set</td>
<td>The business had outgrown my ability and I had enough darn sense to realise it.</td>
</tr>
<tr>
<td>31</td>
<td>Naivety</td>
<td>Lack of awareness of requirements to bring a product to market or to run a business</td>
<td>I was totally oblivious to the need for Australian standards.</td>
</tr>
<tr>
<td>32</td>
<td>Passion</td>
<td>Complete believe in the product and its application</td>
<td>I love what I do.</td>
</tr>
<tr>
<td>33</td>
<td>“Greater good”</td>
<td>The need to take a product to market because it is needed</td>
<td>This is too good to hang onto for myself.</td>
</tr>
<tr>
<td>34</td>
<td>Financial motivation</td>
<td>Opportunity for greater earnings in the future</td>
<td>If I set it up now, I can achieve a comfortable life.</td>
</tr>
<tr>
<td>35</td>
<td>Helping others</td>
<td>The ability to deliver a cost effective solution to people who need it</td>
<td>The lady who slipped over and broke her hip. We went in and fixed it.</td>
</tr>
<tr>
<td>36</td>
<td>Solution focus</td>
<td>Requirement and drive to get the product technically right</td>
<td>I would pull it apart and find out why it didn’t work.</td>
</tr>
<tr>
<td>37</td>
<td>Self-critical</td>
<td>Critical of own behaviour, current or previous</td>
<td>I was lazy when it came to education.</td>
</tr>
<tr>
<td>38</td>
<td>Overcome adversity</td>
<td>Desire to success due to a requirement to overcome adversity</td>
<td>In ‘87 we lost about $2.5 million. So we have made a lot of money but we have also had a few speed bumps.</td>
</tr>
<tr>
<td>39</td>
<td>Positive attitude</td>
<td>Seeing the good in people and situations</td>
<td>I would always look at the good things in a person.</td>
</tr>
<tr>
<td>40</td>
<td>Desire to succeed</td>
<td>Need for success and</td>
<td>I wake up in</td>
</tr>
<tr>
<td>Appendix</td>
<td>Description</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Low barrier to entry</td>
<td>Easy market to access</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Steady progress</td>
<td>One project at a time – can be managed and afforded</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>Challenge</td>
<td>The ‘academic’ challenge of product creation, development and success</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Humility</td>
<td>Understanding that not everything is known and they are fallible</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Anger</td>
<td>Anger and frustration at things that are wrong</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Creativity</td>
<td>Evidence of creativity outside the work environment</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>Early career aspirations</td>
<td>What the participant actually wanted to do at an early age</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>‘Forced change’</td>
<td>Forced changes in career due to economic or other circumstances</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>OPM</td>
<td>Attitudes to risking other people’s money</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>Pride</td>
<td>Pride in achievement</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Dream</td>
<td>Belief that something will change outside of their control</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Supportive management</td>
<td>Management support for activity and actions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>52 Incremental improvement</td>
<td>Developing products through small improvements rather than through large change</td>
<td>They have backed me.</td>
</tr>
<tr>
<td>---</td>
<td>---------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td></td>
<td>53 Proactivity</td>
<td>Ability to see what needs to be done and doing it</td>
<td>I was the one who went to management and said we can't keep doing what we are doing</td>
</tr>
<tr>
<td></td>
<td>54 Lack of focus</td>
<td>Distraction of other things within the business or outside it</td>
<td>Then this came along and we got all excited so the core business lost focus.</td>
</tr>
<tr>
<td></td>
<td>55 Sibling</td>
<td>How many and where do they fit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>56 Freedom (1)</td>
<td>Doing things to attain ‘freedom’ at some point</td>
<td>In every business there is an exit strategy.</td>
</tr>
<tr>
<td></td>
<td>57 Freedom (2)</td>
<td>Freedom given by company to experiment</td>
<td>It's a unique business in that they haven't downsized R&amp;D in the retrenchments so they can understand the importance of R&amp;D.</td>
</tr>
<tr>
<td></td>
<td>58 Proof</td>
<td>Proving to someone that the participant can achieve and succeed</td>
<td>I guess I just had to process that it could be done.</td>
</tr>
<tr>
<td></td>
<td>59 “No brainer”</td>
<td>The solution is obvious</td>
<td>The solution was a no brainer.</td>
</tr>
<tr>
<td></td>
<td>60 Self Sufficiency</td>
<td>Not beholden to anyone</td>
<td>How great would it be to manufacture your own products yourself.</td>
</tr>
<tr>
<td></td>
<td>61 Redundancy</td>
<td>Making oneself unnecessary to the business</td>
<td>An enterprise that works well without you.</td>
</tr>
<tr>
<td></td>
<td>62 Boredom</td>
<td>A motivation to move from one</td>
<td>Every day is a</td>
</tr>
<tr>
<td>Appendices</td>
<td>Idea to the next challenge. There needs to be a new thing coming up every day.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>63 “Letting go”</td>
<td>The ability to walk away from a business You know when it is time to stand down when you start to worry about everything and you haven’t got the answers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>64 Legacy</td>
<td>The need to leave something behind Now I have a business I can drag my son into.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65 Responsibility</td>
<td>To family and employees They have worked for me for many years.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66 Hands on</td>
<td>Being in touch with the business and making things happen I do all the design and ensure it works then hand it onto the engineers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>67 Research</td>
<td>Understanding the market before entering I did a lot of research into [the product].</td>
<td></td>
<td></td>
</tr>
<tr>
<td>68 Early responsibility</td>
<td>Responsibility at an early age I became the man of the house at 16.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>69 Strong parent</td>
<td>Driven by a strong parent My dad said he who dares wins.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70 Peer pressure</td>
<td>Affected by the behaviours of close peers I was encouraged to start the business by a group of customers and friends.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>71 Embraces change</td>
<td>Happy to experience change I like always doing different things.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>72 Group innovation</td>
<td>Using groups to drive innovation within a company I would raise ideas and the team would go through them to work out what would work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73 “Better way”</td>
<td>There must be a better way of doing things That would be a better way to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Num</td>
<td>Topic</td>
<td>Description</td>
<td>Example</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>74</td>
<td>Challenge to innovation</td>
<td>Internal or external challenges that prevent innovation</td>
<td>They didn’t have the money to put into products.</td>
</tr>
<tr>
<td>75</td>
<td>New market identification</td>
<td>Taking products to new markets and making them fit</td>
<td>We needed it for the new market in transportable homes.</td>
</tr>
<tr>
<td>76</td>
<td>Early identification</td>
<td>Early identification of market changes</td>
<td>I noticed my nephew was getting taller and the shower screen was too short.</td>
</tr>
<tr>
<td>77</td>
<td>Adaptation</td>
<td>Adaptation of old product for new uses</td>
<td>I got a picture of a product from Europe and changed it to meet Australian requirements.</td>
</tr>
<tr>
<td>78</td>
<td>Acceptance of failure</td>
<td>Company acceptance of failure</td>
<td>They were tolerable with the mistake.</td>
</tr>
<tr>
<td>79</td>
<td>Failure</td>
<td>The ability for the individual to accept failure and move on</td>
<td>I tried hard but I just couldn’t get it to work.</td>
</tr>
<tr>
<td>80</td>
<td>Speed to market</td>
<td>Relative speed of large companies vs. small companies</td>
<td>Not a lot of urgency.</td>
</tr>
<tr>
<td>81</td>
<td>“Safety net”</td>
<td>Employment provides safety and security</td>
<td>It’s too risky for me to go out on my own.</td>
</tr>
<tr>
<td>82</td>
<td>Dissatisfaction</td>
<td>Dissatisfied with the status quo</td>
<td>If [] were still running the business they would have invested the $150k but not now.</td>
</tr>
<tr>
<td>83</td>
<td>Point of difference</td>
<td>Using innovation to create a commercial point of difference</td>
<td>If we don’t do it someone else will.</td>
</tr>
<tr>
<td>84</td>
<td>Constant innovation</td>
<td>Stream of ideas</td>
<td>I always have ideas.</td>
</tr>
<tr>
<td>85</td>
<td>Recognition of the need for Innovation</td>
<td>Company pushing for innovations</td>
<td>Now they are constantly pushing me for the next step.</td>
</tr>
<tr>
<td>86</td>
<td>Persistence</td>
<td>Need to persevere to get a product developed</td>
<td>When it becomes obvious, you keep pushing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td>Revolutionary innovation</td>
<td>Market changing innovation</td>
<td>and eventually you will get it.</td>
</tr>
<tr>
<td>88</td>
<td>Respect</td>
<td>Respect earned from employer through past performance</td>
<td>I do all the advanced stuff. That is what the company wants me to do now.</td>
</tr>
<tr>
<td>89</td>
<td>Strategic focus</td>
<td>Transition from thinking about today to the future</td>
<td>We identified way back that the supply chain had a lot of clients and we needed to satisfy them all.</td>
</tr>
<tr>
<td>90</td>
<td>Commercial awareness</td>
<td>Knows what products will work in the market</td>
<td>We came to you because you give us all the answers.</td>
</tr>
<tr>
<td>91</td>
<td>Mistakes</td>
<td>Learn from mistakes and improve process</td>
<td>We hit a brick wall so we changed.</td>
</tr>
<tr>
<td>92</td>
<td>Meets needs</td>
<td>Current role meets personal needs</td>
<td>If I went out on my own I could only work on one thing at a time not lots.</td>
</tr>
<tr>
<td>93</td>
<td>Comfort with being isolated</td>
<td>Unique within a business and comfortable to be so</td>
<td>I do a lot of thinking stuff now but I am not really involved in the day to day stuff.</td>
</tr>
<tr>
<td>94</td>
<td>Funding</td>
<td>Funding of project as a reason not to start own business</td>
<td>The company will back a new initiative and put in a lot of money. I couldn’t do that.</td>
</tr>
<tr>
<td>95</td>
<td>Regret</td>
<td>Regret for decisions made or not made in the past</td>
<td>We could have done things differently.</td>
</tr>
<tr>
<td>96</td>
<td>Customer focus</td>
<td>Product not only needs to work but needs to be purchased by the customer and meet their needs</td>
<td>We created a footrest in the shower for women to use when shaving their legs.</td>
</tr>
<tr>
<td>97</td>
<td>Vision</td>
<td>Always had a long term plan</td>
<td>I was always planning on</td>
</tr>
<tr>
<td>Page</td>
<td>Limiting growth</td>
<td>Holding back company growth</td>
<td>I had no aspirations to grow.</td>
</tr>
<tr>
<td>------</td>
<td>-----------------</td>
<td>-----------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>98</td>
<td>Limiting growth</td>
<td>Holding back company growth</td>
<td>I had no aspirations to grow.</td>
</tr>
<tr>
<td>99</td>
<td>Satisfaction</td>
<td>To reach a point where the business is big enough to support lifestyle but not too big to manage</td>
<td>I was happy to turnover $2-$3 million.</td>
</tr>
<tr>
<td>100</td>
<td>&quot;Too big&quot;</td>
<td>Point where business becomes too big to manage</td>
<td>We started to make less money with 40 people than we did with 20.</td>
</tr>
<tr>
<td>101</td>
<td>Underperformance</td>
<td>Letting go and the company not performing as well as it should</td>
<td>You worry that you're not driving and it goes bad.</td>
</tr>
<tr>
<td>102</td>
<td>Reputation</td>
<td>Personal reputation in the industry</td>
<td>Innovation is now expected of me.</td>
</tr>
<tr>
<td>103</td>
<td>Team work</td>
<td>Enjoys working in a team and celebrates the success of all</td>
<td>You are not going anywhere on your own.</td>
</tr>
<tr>
<td>104</td>
<td>&quot;What does innovation look like&quot;</td>
<td>Innovation has to look new as well as be new</td>
<td>I can't give that an award as it looks like a standard product.</td>
</tr>
<tr>
<td>105</td>
<td>Customer insights</td>
<td>Understanding customer requirements and developing products to meet these</td>
<td>What is the process in the cooking space.</td>
</tr>
<tr>
<td>106</td>
<td>Niche innovation</td>
<td>Carving out a place in the market through exploiting changes driven by regulation or other causes</td>
<td>We were looking at areas in product and market development that would be underpinned by legislative drivers.</td>
</tr>
<tr>
<td>107</td>
<td>Service plus product</td>
<td>Offering a complete package rather than just technical expertise or a product</td>
<td>Delivered a system that was the product and ongoing monitoring.</td>
</tr>
<tr>
<td>108</td>
<td>Process innovation</td>
<td>Changing processes to create a USP</td>
<td>It's not the design of the product, it is how the actual company experience is.</td>
</tr>
<tr>
<td>109</td>
<td>Informality</td>
<td>Doing business without fixed agreements</td>
<td>I never had any formal relationship with them.</td>
</tr>
<tr>
<td>-----</td>
<td>-------------</td>
<td>----------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>110</td>
<td>Combining technology</td>
<td>Combing existing technology to improve products</td>
<td>When you put the tow together it makes it better.</td>
</tr>
<tr>
<td>111</td>
<td>Integration</td>
<td>What companies need to do to embrace entrepreneurs within their businesses</td>
<td>Don’t put in their people. Leave the business alone.</td>
</tr>
<tr>
<td>112</td>
<td>Age</td>
<td>The age of the participants</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix 3.6. Initial Themes

<table>
<thead>
<tr>
<th>Number</th>
<th>Theme</th>
<th>Initial Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Locus of Control</td>
<td>Locus of control, Respect, Dream</td>
</tr>
<tr>
<td>2</td>
<td>Need for Achievement</td>
<td>Self-worth, Need for achievement, Desire to succeed, Reputation</td>
</tr>
<tr>
<td>3</td>
<td>Inhibitors to innovation</td>
<td>Reasons for failure, Challenge to innovation, Lack of focus, Under performance</td>
</tr>
<tr>
<td>4</td>
<td>Process of Innovation</td>
<td>Steady progress, Incremental improvement, Adaptation, Constant innovation, Combining technology, Early identification of market changes, Speed to market, New market identification, Commercial awareness, Customer insights, Group innovation</td>
</tr>
<tr>
<td>5</td>
<td>Information</td>
<td>Age, Prior business experience, Apprentice, Education, Siblings, Youth Sport, Employment Status</td>
</tr>
<tr>
<td>Appendix</td>
<td>Section</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>Appendix</td>
<td>7 Attributes</td>
<td>Strategic focus, Creativity, Hands on</td>
</tr>
<tr>
<td>Appendix</td>
<td>8 Skills</td>
<td>Support organisation, Using experts, People skills, Management style, Learn from mistakes, Customer focus, Teamwork</td>
</tr>
<tr>
<td>Appendix</td>
<td>9 Characteristics</td>
<td>Pride, Positive attitude, Personal integrity, Goal focussed, Self confidence, Pragmatism, Sacrificing, Work ethic, Self-critical, Passion, Humility, Proactivity, Embraces change, Accepts failure, Persistence, Regret, Responsibility, Comfortable with being isolated</td>
</tr>
<tr>
<td>Appendix</td>
<td>10 Family</td>
<td>Strong parent, Family influence, Legacy</td>
</tr>
<tr>
<td>Appendix</td>
<td>11 Decisions</td>
<td>Limiting growth, Too big, Letting go</td>
</tr>
<tr>
<td>Appendix</td>
<td>12 Conclusions</td>
<td>Integration</td>
</tr>
<tr>
<td>Appendix</td>
<td>13 Environmental aspects</td>
<td>Supportive management, Acceptance of failure, Point of difference, Recognition of the need for innovation, Low barrier to entry, Research</td>
</tr>
<tr>
<td>Appendix</td>
<td>14 Mentors</td>
<td>Mentor</td>
</tr>
<tr>
<td>Appendix</td>
<td>15 Vision</td>
<td>Early career aspiration, Vision</td>
</tr>
<tr>
<td>Appendix</td>
<td>16 Innovation</td>
<td>Innovation from solution, Solution focus, No Brainer, Revolutionary innovation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
| 17 | Trust | Informality  
|   |   | Trust |
| 18 | Risk | Risk attitude  
|   |   | Risk awareness  
|   |   | Naivety  
|   |   | Other People’s money  
|   |   | Tolerance  
|   |   | Self confidence |
| 19 | Shaping Experience | Early Shaping experience  
|   |   | Overcoming adversity  
|   |   | Career setback  
|   |   | Forced change  
|   |   | Early responsibility |
### Appendix 3.7. Final themes

<table>
<thead>
<tr>
<th>Number</th>
<th>Theme</th>
<th>Initial Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Childhood and early career experiences</td>
<td>Shaping experience</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Family</td>
</tr>
<tr>
<td>2</td>
<td>Personality traits</td>
<td>Locus of control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Need for achievement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Characteristics</td>
</tr>
<tr>
<td>3</td>
<td>Risk</td>
<td>Risk</td>
</tr>
<tr>
<td>4</td>
<td>Motivations</td>
<td>Motivations</td>
</tr>
<tr>
<td>5</td>
<td>Business growth and exit</td>
<td>Decisions</td>
</tr>
<tr>
<td>6</td>
<td>Organisational Innovation</td>
<td>Environmental aspects</td>
</tr>
</tbody>
</table>
Appendices

Appendix 3.8. An example of an early memo: Development of risk profiles

Q: Is there a link between self-efficacy and risk taking. Are things considered low risk by self-employed individuals because the self-confidence exists to recover from adversity and regain what is lost?

PO: I always have the ability to go out and get another job. I have always had faith in my ability to get out there and do something.
PG: "would not do anything that put the family at risk"

Q: Is there a lack of awareness of risk for some and not others?
PT: “I didn’t realise at some stages how exposed I was”
PTT: " I always try and quantify what is at stake so that if it doesn’t work we know what we are going to spend and maybe lose”

Q: Does an early career setback affect attitude to risk
PP: “My initial business went under due to industrial action form suppliers and this influences my approach to business in the future.”
PG: Affected by fathers experience of business failure which convinced him never to go into business
Appendix 3.9. An example of a later memo derived from Appendix 3.8

**Risk Profiles**

- Self efficacy
- Previous experience
  - Naivety
  - Awareness
  - Previous experience
  - Attitude
  - Previous failures
    - Risky activity not risky
    - Risk mitigation
    - Tolerance
    - No risks taken
Appendix 3.10. An example of initial theoretical framework derived from data analysis: Analysis of career choice process