DO PROGRAMS TO IMPROVE BUSINESS PERFORMANCE IN SMALL AND MEDIUM MANUFACTURING ENTERPRISE IMPROVE OPPORTUNITY RECOGNITION?

Judy Matthews: Qut, Brisbane, Australia Sam Bucolo: Queensland University Of Technology, Brisbane, Australia

Contact: Judy Matthews, QUT, Australian Centre for Entrepreneurship Research, GPO Box 2434, 4001 Brisbane, Australia, (T) 617 0400046823, (F) 617 31381313, Email: jh.matthews@qut.edu.au

Increasing awareness of the benefits of stimulating entrepreneurial behaviour in small and medium enterprises has fostered strong interest in innovation programs. Recently many western countries have invested in design innovation for better firm performance. This research presents some early findings from a study of companies which participated in an holistic approach to design innovation, where the outcomes include better business performance and better market positioning in global markets. Preliminary findings from in-depth semi-structured interviews indicate the importance of firm openness to new ways of working and developing new processes of strategic entrepreneurship. Implications for theory and practice are discussed.

INTRODUCTION

Governments in many countries have encouraged, developed or financed business programs to improve the entrepreneurial and innovation capacities and business performance of small and medium enterprises (Storey, 2003). Encouraging small and medium enterprises to be alert to opportunities in their products or markets has often been the focus of numerous training programs. Some programs specify new entrepreneurial ways of working, while others develop benchmarking processes or specifically target design based processes to encourage better ways of identifying opportunities and targeting their markets for products and services.

Companies which use design in their business perform better economically in the marketplace (Cox Review, 2005; Borja de Mozota, 2003; Dell'Era, Marchesi & Verganti, 2010: Moultrie & Livesey, 2009; Nussbaum, 2006). Research by the UK Design Council on the performance of firms and the impact of design on firms' performance found that over a ten year period of analysis, the benefits of effective use of design include an improved share price performance and therefore greater shareholder returns (UK Design Council, 2004). Furthermore, the World Competitive Forum's Global Competitive Report shows that without exception, all of the 24 countries ranked top for design appear in the top 25 countries in terms of competitiveness (Designium, 2008).

The aim of this research is to examine outcomes from design innovation program initiatives established to improve entrepreneurship and innovation in small and medium enterprises and to identify to what extent these programs lead to increased opportunity recognition, innovation activities and successful business performance. The purpose is to identify and understand how different forms of entrepreneurship and innovation intervention (from participation in design innovation at strategic and operational levels) influence entrepreneurship and innovation and enterprise development. Past research has to a large extent not examined the organisational level changes that occur through such approaches nor its effect on opportunity recognition, innovation, organisational strategy and organisational culture.

The research question we are investigating is: How do intervention programs targeted to increase entrepreneurship and innovation in small and medium enterprises improve opportunity recognition? This research examines and compares firms which participated in a design innovation program focused on using design to develop entrepreneurship and innovation. By studying the outcomes of firms' engagement with design innovation program we hope to identify the strengths and weaknesses of the program and provide findings to inform decisions and ongoing government policy.

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The design innovation program under discussion has been implemented for five years and has been deployed in more than 100 companies. In addition to the economic benefits these programs may offer, this study will provide additional insights into organisational changes which have resulted from undertaking these programs. Because of the relative newness of design innovation within the entrepreneurship literature, the amount of systematic, research-based knowledge about firms engaged with this approach is limited. Therefore, in this paper we present a brief summary of literature which discusses corporate entrepreneurship and a detailed analysis of firms in business programs.

This paper investigates an area of growing interest, firm level entrepreneurship, where established enterprises generate increasing economic value following design innovation intervention. Using exploratory in-depth semi-structured interviews and detailed thematic analysis, this paper extends our current knowledge of the characteristics and activities of established enterprises engaging in strategic entrepreneurship as a result of design innovation intervention programs.

BACKGROUND

Entrepreneurship literature has identified the importance of the entrepreneurial orientation of the firm (Dess & Lumpkin, 2005) around notions of autonomy, innovativeness, proactiveness, competitive aggressiveness and risk-taking. Strategic entrepreneurship or innovating in pursuit of competitive advantage (Morris, Kuratko & Covin, 2008) can include simultaneous opportunity seeking and advantage seeking behaviours (Ireland, Hitt and Sirmon 2003) and usually emphasises an opportunity-driven mindset. Strategic entrepreneurship has been described in terms of five possibilities: involving strategic renewal, sustained regeneration, domain redefinition, organisational rejuvenation and business model reconstruction (Morris et al., 2008: 88-93).

Opportunity recognition is an important concept in entrepreneurship research and is widely considered to be a key step in the entrepreneurial process. Opportunity recognition has been defined as pattern recognition, a cognitive process, which is strongly influenced by active search for opportunities, alertness to opportunities and prior knowledge (Baron, 2006). Baron (2006) also suggests that entrepreneurs can learn to recognize emerging business opportunities. Hsieh, Nickerson & Zenger (2009) contend that opportunity recognition relates to problem-solving, and the exploration for solutions which can be either deliberate or indeliberate (Hsieh et al., 2009: 1272). There is general agreement that opportunity recognition is an active process (Lumpkin & Lichtenstein, 2005; Ucbasaran, Westhead, & Wright, 2009).

Design's contribution to firm performance. Design enhances the outcomes of numerous innovation activities, bringing benefits such as increased quality of goods and services, improved production flexibility and reduced material costs (Cox Review, 2005). Design is increasingly being viewed as a vital and important strategic business resource (Dell'Era, Marchesi and Verganti, 2010; Gemser and Leeders, 2000). Consequently companies worldwide look to design to help them innovate, differentiate and compete in the global marketplace. Design brings a different way of thinking and working, using constraints to generate novel solutions. The value of design is not just in new products or services, but through employing, skilfully managing and soundly implementing design throughout a company's business strategy (UK Design Council, 2004) – a design innovation approach.

Traditionally, the role design has played within companies has been confined to the manufacturing and production arena or as a styling afterthought. Design is increasingly being viewed as a vital and important strategic business resource (Dell'Era, Marchesi and Verganti, 2010) and consequently companies worldwide look to design to help them innovate, differentiate and compete in the global marketplace. The importance of design to firm level innovation (Bruce & Bessant, 2002; Utterback et al. 2006; Walsh, 1996) has been documented. "Design is crucial to innovation in that it is the domain of creativity where ideas are devised but also where the 'coupling' occurs between technical possibilities and market demands or opportunities" (Freeman, 1983, as cited in Walsh, 1996).

The value design brings is a different way of thinking, doing things and tackling problems from outside the box. In practice design is key to greater productivity, whether by way of higher-value products and services, better processes, more effective marketing, simpler structures or better use of people's skills (Fleetwood, 2005). Design is no longer a niche market luxury. It is the most persuasive priority for solving problems, ensuring long term sustainability and gaining competitive advantages (Smart State Council, 2008).

Recent initiatives in the Australian context indicate that the importance of design to company performance is beginning to be recognised. The Victoria Government has launched a four-year strategy to grow Victoria's design sector, with the purpose to strengthen capabilities in the design sector, through design education and awareness in industry of design capabilities (Design Victoria, 2010). The new Victorian Design Action Plan aims to build on the strengths of the previous initiatives to create or increase economic, social and environmental value in Victoria. The core objective is to convert Victoria's design capability into competitive advantage for industry (Victorian Design Action Plan, 2010).

A Design Capability Program has been newly established by the Queensland Government with a goal of making SMEs internationally competitive and sustainable *through design*, such that their success encourages other companies to follow their lead (Smart Council, 2010). The Design Capability Program aims to create a major mindset and capability shift in Queensland companies. The goal of this program is to improve design capability, so "Queensland companies will create high value, highly differentiated products, brands and services; lead markets by creating products and services that address emerging and latent market needs; improve price premiums and margins; and create and sustain competitive advantage and growth in international markets by competing on capabilities, not just products and brands; and on differentiation, not just price" (Smart Council, 2010).

This study investigates linkages between a design innovation program and improved business performance within a small number of firms using interviews and secondary data. Semi structured interviews were conducted to obtain insights from firms on their experiences with design innovation programs and their outcomes. The focus of this study is to develop a narrative of activities and changes in the company since completing the program, around areas identified in the literature. The interviews seek information on: firm engagement with the program; business processes and outcomes; changes in business strategy; and the use of design as a strategy process.

Program information This design innovation program was established to increase export earnings by assisting companies to grow in international markets and improve their financial performance by the strategic use of design. To achieve this, a range of services were offered to assist businesses integrate design into all aspects of their operations. An audit of the design innovation firms involved in this program conducted in 2008, found that the fifty highest performing companies are 3.5% ahead of reaching the targeted goal of an extra \$500m in export revenue in five years, and seeing exports grow at 4.5 times GDP (Moultrie & Livesey, 2009). There is now some good evidence across five years of program that the results of their ambitious goals of improving expert performance through design as a crucial value-add to manufacturing, tourism and other export-facing industries.

The design innovation program being investigated consists of practical support and assistance to help companies apply design principles across their business. It was argued that properly applied, "design can give you a sustainable competitive advantage, help you command a price premium, gain market share and even reduce production costs. Design does not just mean the aesthetic, a finishing touch to make something look better. It's about design-led thinking – a more complex, collaborative and integrated approach to producing the very best products and services with a meaningful point of difference. Companies that are truly design-led have developed (and protected) valuable intellectual property that cannot be easily taken up by a competitor, unpicked and replicated. That is the value of great design thinking" (Fleetwood, 2005). The goal of this program was for companies to generate more export sales by selling better-designed products and services.

METHOD

Research Design To research the area of design innovation in small and medium enterprises (SME's) we used Edmondson & McManus's (2007) advice regarding field research and internal consistency between the research question, prior work, research design and theoretical contribution. We chose a research question which addresses issues of theoretical and practical significance to focus the study and narrow the topic area to a meaningful, manageable size, with a viable research project with a question that can be answered. Second we examined relevant literature, such as existing theoretical and empirical research papers that pertain to the topic of the current study, identifying unanswered questions, unexplored areas, relevant constructs, and areas of low agreement. Thirdly we identified the type of data to be collected, data collection tools and procedures, type of analysis planned.

An exploratory approach using semi-structured interviews is used to two different cases of entrepreneurship and innovation. The cases are selected based on existing documentation of well-recognised innovations. Each case is documented via in-depth interviews and the research participants invited to participate in a structured interview. Interviews were of 60 to 90 minutes duration. The interviews were recorded and transcribed for accuracy. The interview data is analysed using qualitative data techniques to identify themes such as expectations, barriers, processes, and outcomes of entrepreneurship and innovation intervention program with a particular focus on opportunity recognition.

Methodological fit, is a valued attribute of high-quality field research in organizations. "Methodological fit' refers to the internal consistency among the elements of a research project; such as the research question, prior research and literature, the research design and the theoretical contribution" (Edmondson & Mc Manus, 2007: 1156). Selection of sites for collecting data involved choosing two firms in distinct industry sectors, for maximal variation (Eisenhardt, 1989; Yin , 2003). The contribution we are seeking to make is to integrate prior streams of research to produce a new model, or refine understanding of a phenomenon. Congruent with this approach we are conducting an open-ended inquiry collecting initial open-ended data that need to be interpreted for meaning; using interviews, observations and collecting documents or other material from the field sites. We identify patterns I the responses and carry out content analysis of themes and coding for evidence of constructs. Our approach is to combine practical insights drawn from the findings to contribute to theory development (Edmondson & Mc Manus, 2007).

Sample Characteristics. The criteria for inclusion in the original design innovation program include the firm's ability to demonstrate the potential for design impact, a scale of operation likely for growth, export focus, potential scalability of operation, CEO and Board commitment and an open learning culture. These characteristics were hence the background characteristics of the firms we investigated and interviewed.

Justification of Case Selection. In order to gain insights from firms which engaged with the design innovation program, we choose two companies from different sectors, at different stages in their organisational life cycles. Both firms reported in this paper had been in existence for 60 years, they came from very different industry sectors and at different stages in the current business cycle. The first firm had recently undertaken a management buy-out and was on a path to regeneration and business model reconstruction, while the second firm was aware of needing strategic renewal and this was one of the drivers for their involvement with the design innovation program. Our interview questions with firms covered outcomes as well as aspirations, expectations, engagement and implementation and we asked firms to identify their expectations using open ended semi-structured interviews.

RESULTS

A summary of each firm is presented separately. Using documents and interview data we develop a narrative of each firm, interspersing our summary of the interviewee's comments with actual text from the interviewees in italics. Analysis is largely thematic based on responses to questions or additional comments in the semi-structured interviews. A summary of characteristic of both firms is also presented. To maintain anonymity we have given each firm an assumed name. The findings from two firms, AIRCO and aircraft development firm and COMCO a communications firm, are discussed.

AIRCO manufactures aircraft and is focused on the commercial rather than the leisure market. The firm was established 60 years ago and is strongly export market focused with more than 98 % of products in international sales. Following a period of some uncertainty a management buyout took place and a new CEO was appointed in 2007. This change in leadership began a series of changes in the company including "engagement with lean manufacturing, design management programs and manufacturing programs". "These programs brought some stability and direction to the company".

The changes which occurred in AIRCO after and during their engagement with the design innovation program include a more focused market strategy with better positioning of the company in its existing market and better targeting of capability in new markets; new organisational structure creating new positions with stronger links to customers; revised brand and marketing material and a change in the organisational culture from compliance to stronger customer focus. Each of the changes will be discussed separately.

AIRCO is a successful firm with "a strong technical and engineering focus with investment in research and development". AIRCO's strong "technical engineering focused and driven and high investment in R&D had placed them at a leading edge in their market". AIRCO was focused on mass production, and was "not a sales culture. Everything was customised". AIRCO claimed to be "compliance driven and often over-servicing customers".

AIRCO's product definitions were now developed from close interaction with customers under strategic design briefs. These briefs were shaped by a new Fleet Manager Role (someone who listens to the customer and does not want to do R&D), and new Roving Regional Engineers – as part of service and strategy to sell product (keep planes flying and generating income).

Changing the organisational culture. AIRCO believed that "*Getting the culture right was critical* – *being able to move from a compliance / technical engineering / customisation company to one which focused on key activities, knew it's position and had a strategy to strengthen this position*".

AIRCO contend that innovation must come from the company culture. AIRCO state that the design program *helped shape ideas but not provide a final solution to fixing culture / strategy*. Their changes AIRCO maintain that the changes in their firm *cannot be attributed to one program*, but rather to their engagement with a number of programs.

AIRCO knew "the fundamentals of customer design, However the company understood they needed to get operations right before focusing on customer design, and that timing was critical. For AIRCO, "Design Integration was a consultancy model, and it helped shape our ideas. Through this program the company developed the 'change'. The external program did not provide a solution."

AIRCO consider that the term design is overused. AIRCO were familiar with customer centred design, but this was not their problem – this is why they went for design integration auditor. AIRCO's "goal was not to design a better product, but to understand what they were designing". "I wouldn't say that "the design innovation program" has led to an increase in the use of external design agencies per se. We already had a relationship with a design agency and they helped implement our rebranding and collateral redesign".

It's not as if we have just woken up to the benefits of 'design' (if you can use that word) and realised that there are people out there that can help us. We will continue to use a combination of external and internal resources – "the design innovation program" has given us the insight to pull those resources together in a coherent and consistent way across all parts of our business."

Challenges for AIRCO. AIRCO contends that the company required a "Culture shift inside the organisation to move from compliance / engineering excellence to more customer focused". To achieve this change, AIRCO used "the consultants' reputation, report and recommendations and focused on the champions inside company rather than making everyone happy".

COMCO is a communication solutions business with a staff of 800 and a turnover of \$200million. COMCO was a family business heritage with a 60 year history. COMCO is proud of its technical excellence and its functional capability with a focus on incremental innovation had moved to shareholder ownership. COMCO's aspirational goals are to *move from product focused radio communications business to more services and solutions focused communications business.*

"Our aspirations are "to become innovative to make a real difference to our customers". Our focus has often been technical should have more insight into customers' needs. The design audit which led to a set of recommendations that COMCO investigated.

COMCO contend that participating in the design innovation program was valuable through *external confirmation that the areas to look at were really the areas to look at.* COMCO had a strong user perspective and a general feeling that change is needed "*We had been treading water for about seven or eight years*".

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COMCO's had good technical development and success in business sector, but to a large extent did not know who their customer was. Related to the technical excellence of the firm, COMCO had some problems with product development and deciding who is the customer? Who is the product for? "We had a reactive responsive approach to design and a pirate's approach to sales opportunities" "Without structure we chased opportunities".

One of COMCO's expectations in participation with the design program was the recognition of the retired founder and firm senior management that the company was flat and stale and that change was needed. The need for change desire for change became one of the drivers for new ways of working.

COMCO was open to the opportunity of engaging with external advisors and "subsidised brand development". COMCO described their business as *stable with functional and technical expertise, yet opportunistic to take advantage of programs on offer*"; "if cool we should do that". COMCO described the design program as a "*support net rather than a driver*" that assisted the company to set out a program of goals, objectives. *Reflecting on the organisation's, vision, mission, current strategy, and design philosophy was a useful step in progressing* COMCO's focus.

Organisational culture change. COMCO commented on the importance of changing the culture of the company. One of the outcomes of engagement with the design innovation program was a cultural shift in understanding of innovation and brand; the importance of everybody's role, and the essential of a clear marketing message and position. Previously for COMCO, *innovation was a function or a department that was not integrated into the company business*. By structuring around three vertical markets, from products to clear solutions focused, COMCO know who their customers are in each segment.

When COMCO began its involvement with the design program, it already had an understanding of design and design's contribution to styling and product development as well as to delivering value to customers. COMCO argued that restructuring their product/service combination around 3 vertical channels lead to more focus and depth of expertise. Further, COMCO stated that "engagement with the design program changed their understanding of design within the company. Previously "design was a department where they made external housings (industrial design). It is now seen as a companywide process to deliver value and make a difference to customers.

Outcomes from design innovation. COMCO contends that the design innovation program did not drive change but should be considered supporting the change. *Design innovation program was one of many activities which included reading papers, mentoring (did not realise there was one program). Design program was like a consultancy as it provided external confirmation of known challenges.* Team articulated and help prioritise activities, but at a high level. At times, COMCO *felt the (design innovation) program focused on too much on understanding end user.*

COMCO thought that all changes in their company cannot be attributed only to their involvement with the design innovation program and COMCO and at times the program's focus on product design may have limited the potential benefits of the program. COMCO identified some clear benefits such as better understanding of branding. *The company has moved from understating of brand as a logo to representing values of company at all customer touch points.*

COMCO contend that Leadership and Culture is critical – it needs to start from this point. The company has a flat culture and it was not clear of direction from senior management. Over past few years these are the activities that they have focused on. COMCO did not feel organisational structure was important rather that "the key is to empower all staff to make change through culture".

COMCO liked the flexibility of choosing which consultants to work with. This firm has a history of working with external companies and will continue this practice. However COMCO claim their expectations of such firms have increased since undertaking the design program.

Change management program. COMCO contends that *their involvement in the design program led to a cultural shift in thinking about company and services it provided.* Following the engagement and learning with the design innovation program, COMCO implemented a significant change management program in their company, which focused on *the empowerment of employees to understand company*

business and make improvements at every level. This enabled people to step up. This multi-level change process began at the individual, then team and then whole organisation (in process)".

DISCUSSION

Both firms have strong technological competence and good performance in their separate industries. Both firms open to the opportunity of working on their business, and the opportunity to reflect on the strengths and weaknesses of their business as a way to look for improvements. Both firms welcomed external advisors to work with them, and the subsidised government assistance as a chance to gain some new perspectives. Both firms mentioned that such support was only one part in a longer involvement with programs.

The firms had different approaches to opportunities. For example AIRCO claimed that in the past they were too responsive to customer demands and responded to too many diverse demands and need to be more selective about what ere opportunities. One outcome from involvement with innovation programs was a clearer understanding of the value proposition they could offer and the subsequent targeting of their capability to customers who were within their target markets. This focused approach lead to developing even stronger competence in a well-defined geographical arena and to seek out opportunities in this market. In terms of opportunity recognition, AIRCO were now clearer about which opportunities to respond to and how to create new opportunities for their firm and became more focused in terms of developing its strategic advantage.

COMCO was already successful in the field and had recognised the need for "strategic renewal", and focused on segmenting their market into different channels. One of the outcomes COMCO discussed was the involvement of all the staff in improving the business. COMCO stated they would continue to use non financial targets to measure their performance in the marketplace.

Other outcomes from involvement with the design innovation program is the ongoing relationship with the provider of programs, and their continued willingness to engage with other 'improvement' programs and ongoing involvement in a network of CEO's with similar interests.

SUMMARY OBSERVATIONS FROM FIRMS

- Both firms saw the design innovation program part of a suite of services which is offered by government. A single intervention could not be linked to specific company changes.
- Both firms found 'design' as a term to be is too limiting. Both firms found that the design audit and focusing on design philosophy helped to move their understanding of design from a product to customer focused activity, real value / challenge is highlighting the organisational culture shift in doing this.
- The design innovation program is a seen as a partner rather than service provider. The external consultants stay external once intervention is completed.
- Both firms valued their involvement with the program and the opportunity to obtain assistance with subsidised design services such as branding
- Both companies are aware of challenges. They saw the design innovation not as revealing something new, but as helping to articulate and prioritise challenges and actions. It helped show the need for a revised vision, but company had to do the hard work around the culture, which was supported by program team.
- For both firms, it seems the first stage in engaging with the design program was getting a revised company strategy / position from technical to solutions with a clear understanding of customers. Design was not seen as driver to do this, however it was seen as reinforcing the message once position is articulated.
- Both firms believed their understanding of the value of brand was enhanced
- Role of design was valued to grow market segments through customer engagement and ensuring fit to strategy.
- Both companies that participated in the program have demonstrated economic growth, but these performance outcomes cannot be attributed specifically to a single program

CONCLUSIONS

In this exploratory research we investigated successful firms which had engaged in programs involving design innovation as a factor in their business improvement. These firms met relatively stringent criteria to participate in the design innovation program, and would seem to be likely candidates to benefit from closer audit and challenge.

Both firms engaged in better analysis of their strategic intent, both in identifying the nature of their business and their current and potential customers. This focus shaped their awareness of what opportunities to respond to, which opportunities to ignore and which opportunities they might need to create or where their future business might be found (Baron, 2006). Some of these opportunities were developed by active problem solving for themselves or their customers, sometimes purposefully and sometimes apparently serendipitously, supporting Hsieh et al.'s (2009) previous findings. Both firms engaged in multiple programs which lead to active involvement with opportunity recognition (Lumpkin & Lichtenstein, 2005; Ucbasaran, Westhead, & Wright, 2009).

Both firms demonstrated an entrepreneurial orientation in their engagement with government subsidized programs, including design innovation in terms of proactiveness innovativeness and competitive aggressiveness. Both undertook strategic entrepreneurship or innovating in pursuit of competitive advantage seeking both opportunity and ways to improve their competitive advantage (Ireland, Hitt & Sirmon 2003). COMCO described the processes of strategic renewal while AIRCO substantially redefined its domain of geographic operation and a new business model.

These findings are the preliminary results from the study of two firms that had been involved in design innovation program, which was one of a suite of government subsidised programs to improve business effectiveness. This study is the first step in defining and developing an understanding of firms and the outcomes from involvement in a design innovation program. Further investigation of more diverse firms which participated in this design innovation program with further fine grained analysis is predicted to develop a more nuanced picture of this important cohort. Furthermore, we seek to develop some theoretical implications and provide practical advice for governments regarding desing innovation programs.

This exploratory study has some recognised limitations related to the size of the sample and the choice of firms, which had participated in government programs around notions of design innovation. The study is an early investigation of some important phenomena which have previously received attention in specialist studies of award winning firms (Whyte, Salter & Gann, 2005), but with few exceptions (Mutanen, 2008), have not been studied in any detail on a larger scale.

Whilst acknowledging the preliminary nature of these findings, this study can provide feedback on the interview protocol and suggestions for refinement. The study also presents some early indicators from initial analysis, suggests areas for fine tuning the current project as well as suggestions for further research.

IMPLICATIONS FOR THEORY AND PRACTICE

Studies of corporate entrepreneurship and its contributions to firm's survival and prosperity are often linked to large companies such as IBM and Proctor and Gamble. Yet medium sized firms also undertake processes to stimulate their business to become more entrepreneurial and focused on opportunities, to better target their products and services, processes and positioning in markets to improve business performance.

These preliminary findings from a small study support the patterns of corporate entrepreneurship already well articulated with larger firms. Small and medium enterprises also are open to opportunities need to recognise and respond to positive initiatives, create different pathways and evaluate their success. This may be within an existing market or through the creation of potential new markets. Further studies of programs or initiatives which encourage entrepreneurship and opportunity recognition are anticipated.

FUTURE RESEARCH

Findings from this pilot study will be used to inform a larger longitudinal study of Australian small and medium companies which undertake design innovation programs. The research will have important outcomes for small and medium enterprises that are considering participating in programs designed to encourage entrepreneurship and innovation. The findings will also have implications for the designers of intervention programs, intermediaries involved in the application of these programs and policy developers.

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