



# Evaluating an Australian public policy organization's innovation capacity

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## Abstract

**Purpose** – The purpose of this paper is to provide explicit thinking about the organizational elements that support or hinder innovation in the government sector as it increasingly faces demand for innovative solutions to policy areas. The paper aims to present the development and findings of an evaluative case method conducted for an Australian state government department's organizational innovation program.

**Design/methodology/approach** – The evaluative case study was developed and conducted in two phases. First, an intellectual capital conceptual framework was applied to four independently sourced and discreet case organizations to represent multiple exemplars of innovation capacity building. These exemplars were suspended from their context in order to identify essential elements of the innovation capacity development process which in turn were then applied in phase two to the Department of Treasury and Finance (DTF), a Victorian (Australia) public policy organization.

**Findings** – The case raises critical distinctions between “innovation capability” and “innovation capacity”. The discussion offers insight into the process of developing innovation capacity for government policy organizations.

**Research limitations/implications** – The evaluation method incorporated a novel technique and trialed a phase development instrument for testing the embeddedness of organizational innovation. Both the technique and the instrument would benefit from further refinement, testing and development.

**Originality/value** – This paper develops work previously presented in O'Connor and Roos that considered the conceptual framework for using intellectual capital as an evaluation framework for organizational innovative capacity. It extends this work by piloting its application in a specific context and offers new insight into the organizational design issues of government organizations facing the challenge of producing innovative policy solutions.

**Keywords** Innovation, Public sector organizations, Intellectual capital, Government policy, Australia

**Paper type** Case study



## Introduction

Innovation is often claimed to be a cornerstone of competitiveness (Denton, 1999; Jägle, 1999; Johannessen *et al.*, 1999; Neely and Hii, 1998) and in some cases also profitability (Bose *et al.*, 2002; Roberts, 1999). The role of innovation in a firm's strategy is further said

to contribute to competitive advantage (Johannessen *et al.*, 2001), organizational performance (Yamin *et al.*, 1999) and market share (Robinson, 1990). Many more studies consider the role of technology and research and development as contributors to innovation (Aghion and Tirole, 1994; d'Aspremont *et al.*, 2000; Gans and Stern, 2003, Hull and Azumi, 1991; du Pre Gauntt, 2004) while others specifically target new product development (Jensen and Harmsen, 2001; Katila and Ahuja, 2002; Matusik, 2002; Romano, 1990; Shepherd and Ahmed, 2000). However studies, such as these, offer a narrow view when it comes to the consideration of public sector policy organizations, where often there is a deeper need to provide new solutions for an array of stakeholders (Hess and Adams, 2002; Yapp, 2005) and a need for creative government practices and promising solutions that address public concerns (Christopher, 2003). These perspectives place little emphasis on a commercial purpose for innovation and suggest the need for a targeted research agenda. Sadler (2000) suggested that despite stakeholder calls for public sector innovation and entrepreneurship, the literature on how to achieve it was at best scant.

Issues external to the public sector entity complicate the innovation process in public policy. For instance Barry (2002) raised the issue of multiple stakeholders and corporate control and Smith and Huntsman (1997) addressed concerns about different perspectives in value relationships. Further Shaffer and Hillman (2000) highlighted the increasing interests of the private sector in public policy and regulation. Tsoukas and Papoulias (2005) make the point that “non-conventional” organizations, typified by full or partial state ownership, need to be seen within the broader institutional context but most organization and strategy research adopts a narrow view of a self-contained economic unit. Therefore, embedding policy innovation capacity within the public sector, especially policy-making organizations, still appears to be a relatively green field and a complex area of investigation.

This is not to suggest a complete void of work on innovation within the public sector. For instance Borins (2000; 2001a; 2001b; 2002) has published extensively on the practices of innovation in the public sector by analyzing public administration innovation awards across the USA, Commonwealth and OECD countries. Farah (2005) has assembled a series of case studies on the innovation process from sub-national government programs in Brazil, while in the UK Mulgan and Albury (2003) have similarly compiled case studies. Other examples include studies on the influence of taxation policy on national levels of innovation (Rauscher, 2004) and the multiple policy determinants of regional and national innovation (Crespi, 2004). However these studies all tend to adopt a macro process-view of innovation with respect to adoption, diffusion and impact of new policy initiatives.

Other research has been more focused on the particular study of policy developments germane to an area of public-government concern. In the USA Glick (1992) and Hoefler and Kamoie (1994) have both published works examining the policy agenda-setting and innovation in the right-to-die debate while Sapat (2004) studied the adoption of environmental policy innovations through the network of state administration agencies. In Europe, a project called PUBLiN (Røste, 2004) is also studying innovation in the public sector with an emphasis on the health and social services sector, while in Australia, Marton and Phillips (2005) traced the bushfire fighting experiences of community, business and government bodies both during and after a bushfire event to highlight the deficiencies in policy-making practices in this area. Each of these studies places an emphasis on explanation and understanding of

the policy-making process in particular contexts to articulate the presence or absence of innovation in the process but have limited focus on the strategic design issues of policy-making organizations. Borins (2001) claimed that research on policy innovation at the organizational level in the public sector was notably absent.

With respect to government organizations specifically, one must consider the volume of works done on public research organizations. The direction of studies in this field have centered upon the process of commercialization activities and technology transfer (see for instance: Boyle, 2002; Gates, 2003; Hindle and Yencken, 2004; Molas-Gallart, 2001; Yencken, 2005). Technology has also been considered through its influence on service innovation in government administrations (Wyatt, 2000). This group of studies at least contribute partially to understanding innovation within the government organizational context however technology innovation differs sufficiently from policy innovation (Damanpour, 1996) to warrant further research specifically into policy organizations. Never-the-less a set of more or less useful formalised case studies do exist and one of the more relevant ones deals with the transformation of the Swedish national defence research establishment (FOA) under the leadership of its Director General, Bengt Anderberg (Roos *et al.*, 2005).

The Australian public sector policy system is currently being subjected to major reform that opens it to environmental influences and constant change (Halligan, 2005). This situation is typified by Marton and Phillips (2005) who attest that the characteristics of modern policy-making leading into the future will be “forward looking, outward looking, integrated and participatory, inclusive of the views, values, objectives and practices of all concerned parties and based on lessons systematically learned from ongoing experience,” (p. 81). With this backdrop the Australian and New Zealand School of Government (ANZSOG) has published twelve topics that feature on the future research agenda (Rhodes *et al.*, 2005). It can be noted that innovation in policy and its associated challenges are prominent in the agenda. This paper partly addresses this research gap by presenting an evaluation case of a state government department’s organizational innovation program and responds to a call by Yapp (2005) for explicit thinking about the organizational elements including culture that support or hinder innovation in public organizations.

### **Developing the case study design**

The Department of Treasury and Finance (DTF), a Victorian (Australia), state government department, had initiated a suite of programs across the organization designed to deliver internal organizational improvement to anticipate the modern demands on policy-makers outlined above. These integrated and interdependent program initiatives were collectively referred to as “Reaching Our Potential”. Innovation was included as one initiative, and others were; leadership development; re-visiting the business model; implementing a knowledge management system; improved stakeholder engagement strategies; and, a series of human resource strategic priorities aimed at driving a shift in organizational culture (Department of Treasury and Finance, 2002, pp. 6-8). The overall thrust was to provide: higher goals for organizational performance (Department of Treasury and Finance, 2002); a demonstrative increase of innovative ideas and policy options for specific problems or opportunities (Department of Treasury and Finance, 2003); and to achieve continual improvement in the department’s contribution to the government and the Victorian community.

Teece (2000) has aligned superior firm performance with innovation through “flows from the creation, ownership, protection and use of difficult-to-imitate knowledge assets.” This suggests the need to identify and manage these specific antecedent knowledge assets and this function is served well by an intellectual capital model or lens (Edvinsson and Malone, 1997). While many would not deny that strategic management of a firm's intangible assets is key to firm performance (Hurwitz *et al.* 2002), it appears that an organization's intellectual capital (IC) is still not often articulated and considered in a systematic and meaningful way that enables organizations to realize their goals (Daniels and Noordhuis, 2005). Perhaps one reason for this may be that the field is still young and as yet there is no accepted method of intellectual capital accounting (Stewart, 2001).

The difficulties facing managers with respect to measurement and accountability of intangibles has been explored in the context of Human Resource Management (HRM) by Bontis and Fitz-enz (2002), who claim that “it is perceived that they [HR managers] do not have the necessary expertise to carry out appropriate measurement and that many of the measures used lack precision and are too difficult,” (p. 245). Tidd (2001) specifically suggests that measuring innovation inputs and outputs is difficult and more so is establishing the relationship between measures and firm performance. He further claims that there is no single best measure of innovation. DTF, with a heavy endowment of knowledge workers, was therefore faced with a significant double-barrel problem of first identifying which intangible attributes contributed to innovation and superior performance and second, more specifically, identifying those attributes that would contribute to an innovative public policy organization, an area that was completely under researched. In addition they needed a relatively quick articulation of the progress of the innovation project in order to advance the organization closer to its goals and make the value of the investment in the innovation project transparent in the face of public scrutiny. The case study design incorporated an intellectual capital lens to assist in addressing these problems.

#### *The intellectual capital lens*

Intellectual capital used as a lens or perspective on an organization can act as either a measurement tool for establishing intangible value or a strategic management tool for building and deploying knowledge (von Krogh *et al.* 2001; Pike *et al.* 2002). In application, an IC approach divides the “properties” of the organization into asset groups and, one method in particular emphasizes clusters of similar marginal utility behavior[1]. Adopting the work of Roos *et al.* (1997), and the further developments of Pike and Roos(2001) and Roos *et al.* (2005) these groups may be described as human, relational, organizational, physical and, monetary resources with the first three of these comprising the organizations intellectual capital.

Other grouping approaches have been used to distinguish an organization's assets and reference is often particularly made to the pioneering work of a Scandinavian financial services company, Skandia (refer Edvinsson and Malone, 1997, pp. 16-23 for a brief history). This system however has been criticized for lack of clarity in its distinction in asset classes which leads to overlaps (Leliaert *et al.* 2003; Stewart, 1997), and missing components of value creation (McElroy, 2002). It is not our intent in this work to explore the different means and methods of intellectual capital management and readers are referred to M'Pherson and Pike (2001) and Pike and Roos (2001; 2004a;

2004b) for more detailed elaboration of measurement routines and the need for distinction in asset behavior. We do intend however to use IC to elaborate the intangible elements of the organization and the distinctions made by the marginal utility behavior method does ensure capture of relevant information.

The marginal utility behavior IC lens has also been adopted by past authors such as Peppard and Rylander (2001) to illustrate the development and implementation of an organization's growth strategy. This work is consistent with our case, where it is not intended to collect information to perform an "econometric" type analysis of shareholder value – those interested in this problem can see for example Burgman and Roos, 2004 – but rather, the division of assets is considered a useful way of communicating the different forms of organizational intangibles to elicit a more complete disclosure of the stocks and flows of intangible innovation assets.

Ethiraj *et al.* (2005) make the claim that researchers in resource-based theory and strategy agree that resources and capabilities are both forms of assets that have rent-generating potential. Therefore it seems legitimate to utilize the econometric terminology of IC in the resource based strategy analysis adopted in our case to articulate the perceived change in assets experienced by DTF over the course of the innovation project. It can further be derived from this claim that there are two forms of assets; a resource asset and a capability asset. Capabilities are defined as "an *intermediate transformation ability* between resources (i.e. inputs) and objectives," (Dutta *et al.* 2005, italics added). Further, Amit and Schoemaker (1993) have shown that capabilities are evidenced by specific outcomes or desired ends. We contend then that capability is not merely represented by the transformative asset but rather it includes the resource assets to which the transformative ability is applied. Figure 1 expresses this relationship between resource and transformative assets, objectives of innovation and innovation capability diagrammatically (reproduced with permission from O'Connor and Roos, 2006).

In the context of DTF, the initiatives of the *Reaching Our Potential* program were aimed at both changes in the resource assets (through the development of the innovative and leadership abilities and the focus on the relationships of the organization) and the transformative assets (through the development of the business model, knowledge systems and culture). Figure 2 places the suite of initiatives in the context of the asset development strategy objectives.

Other research in the field of innovation has hinted at the distinctions between asset types without making the specific delineation. For instance Leifer *et al.* (2000) demonstrated how organizations acquire different radical innovation capability between early and mature stages of development. Their examination of process differences indicated a difference in capability but did not distinguish differences in types or capacities of resource and transformative assets. Capabilities and resources have also been examined from the perspective of human resource management

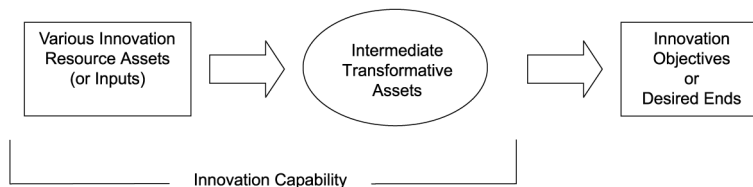


Figure 1.  
Asset and objectives  
relationship

addressing competitiveness (Ulrich and Lake, 1990; Ulrich, 1993), organizational change (Kerr and Ulrich, 1995), knowledge management, (Spanos and Prastacos, 2004). However, none of these examinations make clear distinctions between the types of resources and transformative assets at the fundamental level that is possible with an IC lens. Our interest was in the development of the distinct resource inputs and intermediate transformative assets that possess the capacity to deliver specific evidence of innovation capability. In effect these assets require an innovation capacity before they can produce evidence of an innovation capability.

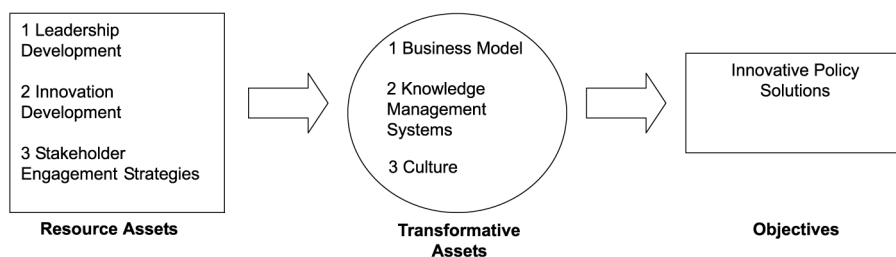
### *The evaluation proposition*

Some authors have suggested that organizational innovativeness is more accurately represented as a backward looking measure. Over time multiple innovations could be considered as known outcomes and these could be measured for effectiveness and efficiency through analyzing the expense of resources (Damanpour, 1991; Ethiraj *et al.* 2005; Ridder *et al.* 2005). However at the time the evaluation was required for DTF, the desired objective was known (i.e. a record of excellence in policy innovation), but was not measurable due to the relatively early stage of the innovation project. Therefore testing for effectiveness and/or efficiency to determine capability was not feasible and this suggested that an alternative means of evaluating the innovativeness of the resources and transformative assets was required; in affect there was a need for a forward looking measure.

In our view, a low potential of innovation capability would also exhibit relatively little evidence of innovation capacity in the resource and transformative assets. That is, there would be relatively little observable innovation skills and attitudes and it would be unlikely that the organization would have developed organizational transformational assets such as systems and processes to stimulate and manage innovation. At higher levels of innovation capability resource assets such as an innovative workforce and collaborative relationships would be more clearly evidenced to present the potential to transform ideas into practical innovation outcomes. Similarly the transformative assets of physical space allocations and a supportive innovation culture would be plainly evident as ideas are allowed to bubble up through the organization.

The evaluation proposition therefore that guided the evaluative framework was stated as:

An increase in innovative capacity of an organization will be evidenced through the growth and change in utility of the resource and transformative asset groups.



**Figure 2.**  
DTF development  
initiatives at the resource  
and capability levels

This proposition presented a challenge in that the resource and transformative assets for innovation needed to be articulated. Cohen and Levinthal (1990) earlier recognized absorptive capacity as one dimension of an organization's innovative capabilities based upon the recognition of value in external information, assimilation and application toward a commercial end. This was later developed further by authors such as Zahra and Gerard (2002); however neither identified the resource assets that contributed to this capacity and both focused on the process level representing the capability. Other authors such as Romijn and Albaladejo (2000) and Palmberg (2002), went part way to distinguishing inputs to innovative capability through internal and external sources however still fell short of making specific distinctions between resource and transformative assets. Therefore we turned to the literature to explore the nature of each of the asset groups that may represent an innovative capacity in order to ascertain a means of response to the evaluation proposition.

*Innovation capacity: resource and transformative assets*

This discussion adopts the marginal utility behavior asset groups as a starting point and seeks to explain some of the specific characteristics of the asset groupings with respect to innovation. As we speak of innovation we intend here to make clear that we also consider actions, and specifically entrepreneurial actions – sometimes referred to as intrapreneurial actions – in established organizations (Pinchot and Pellman, 1999). If innovation were only considered from the perspective of new ideas it would fail to be of interest to most management teams, as it is the creation of value through the enacting of new ideas that makes innovation, as a strategy, attractive (Hindle, 2002; Yamin and O'Connor, 2004).

For our purposes, from the perspective of IC, both human and relational assets are also defined specifically as resource assets as they retain a distinguishing feature with respect to ownership. Unlike the organizational, physical and monetary assets, human and relational assets can not be owned or controlled (to a large extent) by the organization; ownership and control is shared. Therefore, these two forms of assets form a supply or resource to the organization that potentially “fuels” the latent capacity of the transformative assets. The organizational, physical and monetary assets can be owned and controlled to a large extent by the organization and importantly these three initially resource assets when combined form the composite “transformative asset”, essentially the engine that transforms the resources to meet specific objectives. The relationship between innovation and each of the resource and transformative asset groups is now considered.

*Human resource assets.* Roos *et al.* (1997) consider human assets to have three components; competence, attitude and intellectual agility. They further divide competence into skills and knowledge. In our case skills and knowledge reflected the innovation competences held with the department. Some authors have attempted to make a distinction between innovations that are technical (new technologies, products and services), and administrative (new procedures, policies and organizational forms) (Van De Ven, 1986). This however has been disputed by other authors with the claim that it is an unnecessary fragmentation of innovation (Johannessen *et al.* 2001; Nohria and Gulati, 1996; Van De Ven, 1986). However Damanpour (1996) found that technical and product innovations are “industry-specific” meaning that the focus of innovation is narrower and learning is more explicit and tangible while administrative and process

innovations are “organization-specific”, which suggests a dependency on the structure, culture and systems of the organization. Competence then may differ between types of organizations and will include a range of some generic, such as creativity and opportunity recognition, and some specific skills such as technical disciplines. However from the perspective of competence there are consistent strong links to learning organizations (Sundbo, 1999; Roffe, 1999; Schwabsky *et al.* 2004), which suggests innovative firms are “learning” oriented.

The second element of human capital proposed by Roos *et al.* (1997) is attitudes. Attitude has been described as a predisposition toward behavior (Athayde, 2003). Attitudes such as conservatism, conformity and risk-avoidance can provide major internal barriers to innovation (Neely and Hii, 1998). It has been argued that attitudes negatively affecting the innovation performance of an organization calls for a human capital development strategy that focuses on either internal development or lateral hiring (Kor and Leblebic, 2005). Evidences then of attitudes are found in behaviors and behavior is in turn also affected by the remaining element of the human assets described by Roos *et al.* (1997).

The third element of the human asset group deals with intellectual agility. Roos *et al.* (1997) define intellectual agility as “the ability to use the knowledge and skills, building on it, applying it in practical contexts and increasing it through learning,” (p. 39). This suggests a cognitive view that can be linked to entrepreneurial behavior. For instance Mitchell *et al.* (2002) suggest entrepreneurial cognition to be about *creating* new products and services, assembling resources and not only starting but growing new businesses. For an organization seeking to be innovative, an individual’s cognitive perception about capacity to act and combine or transform ideas into specific outcomes, will significantly affect the innovation performance. Further, Shepherd and Krueger (2002) argue that entrepreneurial teams embody a social cognition that emphasizes the perceptions of desirability and feasibility at both the individual and the team levels.

Entrepreneurial cognition then is closely aligned with taking action as it deals with the individual’s mental model of the organization which affects what an individual will do. When innovative thinking is combined with action it might be referred to as a “*transformative intelligence*”, that is, an intelligence encompassing both the perception of new ways and, the capacities to bring them into being. This requires both a strategic sense and a communicative ability in order to overcome, bypass and surmount obstacles that others often consider as an impasse and barrier. In an extreme organizational setting evidence that action and responsibility is devolved right through all parts of an organization that empower employees to act in new ways would be expected.

*Relational resource assets.* Relational assets address the social capital associated with individuals and organizations (McElroy, 2002). The social capital can be both internal and external and each has an impact on the innovative effect and capacity of an organization (Tidd, 2001; Van Den Ende and Wijnberg, 2001) that can improve the chances of innovation success. The social capital entails a web of relationships that is facilitated through norms, values and obligations. An organization can affect the social capital by increasing the autonomy of employees, however, this raises significant issues of leadership whereby organizational leaders need to encourage the development of tacit capabilities in people as well as create and maintain trust and cooperation within the organization (Hitt and Ireland, 2002). Williams (2001) was found



to address the issue of training managers in preparation for stimulating innovation while Kelloway and Barling (2000) also found that leadership was a key predictor of knowledge sharing in an organization. In this category then evidence of strong and distributed internal and external relationships would be found, supported by an organizations leadership style that creates trust, knowledge sharing, and devotes attention to the development of tacit employee capabilities such as team and communication skills.

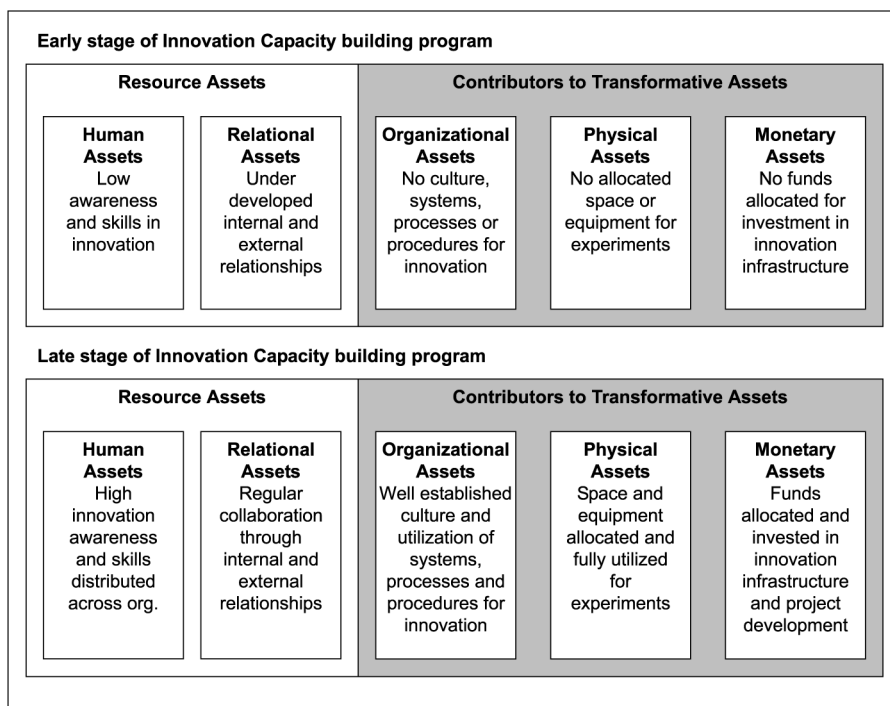
*Organizational capability assets.* Organizational assets in IC measurement parlance broadly include a firm's infrastructure, processes and culture (Roos *et al.*, 1997); however in our case where it was the antecedent state of innovation that was the subject of assessment we included both physical and monetary assets within the organizational asset base for evaluation. The logic in this convergence of assets held that the use and application of all the organizationally owned assets would be witnessed by individual employees as the "organization" and therefore, it served no purpose to treat them separately. In IC measurement these assets are determined to behave differently in economic terms and therefore demand distinct treatment. From the perspective of employees however, this distinction is irrelevant in terms of the perception of innovation support.

HR departments have a key responsibility for building ties between strategic intent and encouraging innovation and intrapreneurship (Twomey and Harris, 2000). This incorporates the Human Resource Management systems and these seem to have two roles: first, to encourage and build the innovative and/or intrapreneurial capacity of the organization, and second; to capture and focus the existing or developed entrepreneurial talent. However, the relationship between an innovative-supportive culture and a firms performance has been found to be extremely complex with both managerial and environmental factors both having strong influences (Chandler *et al.* 2000). Given this complexity, it appears that flexibility needs to be a major component of an innovation strategy although government organizations are inherently far less flexible in their mission and purpose than their for-profit counterparts (Mone *et al.* 1998). Perhaps this is due to the rigidity attached to expectations of multiple constituents and this in turn reduces the capacity for flexibility. In our assessment of innovation capacity we sought to identify how much flexibility was apparent in the organizational culture, systems, procedures and processes.

In summary, Figure 3 demonstrates the sort of change in each asset group that the evaluation proposition sought to identify (reproduced with permission from O'Connor and Ross 2006).

#### *The evaluative case method*

Case studies can be used in an evaluative sense to explore interventions that have no clear, single set of outcomes (Yin, 1994). The concept of "innovation capacity" is such a phenomenon, whereby the "hard" evidence of the success of DTF's innovation program would only become visible after a long period of time through the successful identification, and implementation of new policy initiatives. In the near term only "soft" and intangible evidence would indicate some improvement. von Krogh *et al.* (2001) observed that a "key issue in qualitative strategy research is to have a sufficiently long period of interaction between the firm and the researchers, where more than two years is considered necessary for generating empirical insights into change processes and



**Figure 3.** Asset characteristics and growth in innovation capacity

new management approaches” (p. 437). For exploratory research this time period of observatory interaction maybe mandatory, however, in DTF’s case the problem required a far more rapid inquiry that could present a profile of the innovation project and provide insight into the innovation barriers and this suggested an evaluative method of qualitative research (Neuman, 1994).

The evaluative case study method therefore was developed and conducted in two phases. First, an intellectual capital conceptual framework was applied to four discreet case organizations, sourced independently of the target case, to represent multiple exemplars (Denzin, 1989) of innovation capacity building. These exemplars were “bracketed” or suspended from their context in order to identify essential elements of the innovation capacity development process before being reassembled and applied to the natural setting (Huberman and Miles, 1998) in phase two of our study.

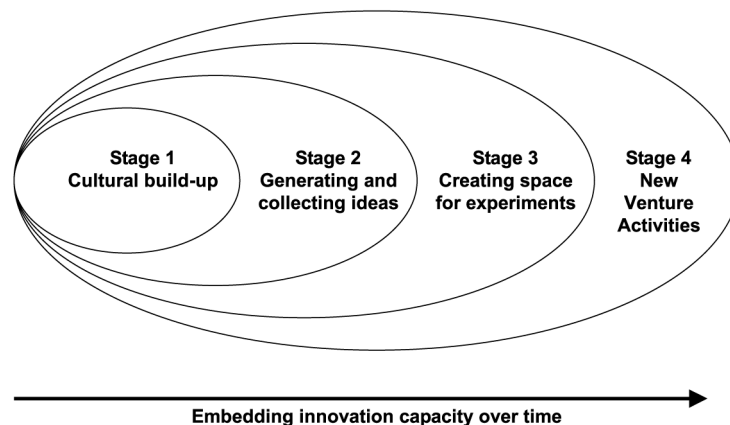
The first phase used the concept of intellectual capital stocks as a first pass framework. This was applied to the texts arising from previous work comprising a series of unstructured interviews with individuals from selected companies that had faced or were facing the challenge of incorporating innovation at heightened levels within their organizations. Each had a different strategic purpose for innovation and provided a cross-section of experiences. More particularly, four individuals were identified from different organizations with variations in ownership (i.e. government, publicly listed and privately held), product focus (i.e. service, technology, infrastructure assets and resources), size and structure (i.e. global, multinational, regional-divisional and regional-autonomous units) and innovation objective (i.e. new

products, increased profitability, increased efficiencies and re-organization). Theme analysis of the unstructured interviews yielded a common pattern of transition and change in the intangible assets as they experienced increased innovation capacities. This was then utilized as a conceptual framework for the second phase of the case study design to be applied to the target case, DTF.

The resulting evaluative framework charted the existence and growth in capacities of individuals, their relationships and the supporting organizational infrastructure responsible for generating new ideas; contributing toward the development of ideas, and; the conversion of ideas into a tangible means of creating value. This framework made explicit four overlapping change steps, similarly portrayed by each of the interview subjects, namely; Cultural Build-up, Idea Generation and Collection, Creating Space for Experiments, and New Venture Activities. This was termed the Dynamic Innovation Development System (Dynamic IDS®) and formed the basis of comparison for evaluating DTF's progress with developing an innovation capacity in the evaluative phase of the project. Figure 4 illustrates an innovation capacity being embedded over time as each stage develops and strengthens overlapping and becoming a foundation for the proceeding stage.

#### Conducting the case study

In March 2002, the Department of Treasury and Finance (DTF), for the Victorian state government (Australia), embarked upon a strategic initiative using an action research method to develop its innovation capacity across the department in response to a call by one of its main stakeholders. The Victorian Government had articulated a new policy direction through "Growing Victoria Together" (Department of Premier and Cabinet, 2001) and was seeking different and more effective ways of achieving societal outcomes. As a central agent and key advisor to government, it was considered essential that DTF made significant contribution toward achieving the Government's aims. Specifically, this meant that DTF needed to: become outcome and solutions focused; substantially change its paradigm about how quickly things could be done; push the boundaries of conventional thinking, and; create new insights to deliver workable solutions with strong implementation potential to Government (Department of Treasury and Finance, 2002).



**Figure 4.**  
The Dynamic Innovation  
Development System  
(Dynamic IDS®)

The aim of the innovation project was “to develop and maintain ongoing innovative thinking by DTF in all policy advice provided to government and across all the department’s outputs and processes” (Department of Treasury and Finance, 2002, p. 6). The Senior Executive Group further recognized that to meet these expectations, DTF would have to become an exciting and united organization, delivering high impact and innovative solutions, fast. After two years of focused effort it was apparent that while improvement was evident it was not to the extent that the organization had hoped for and further, the barriers that prevented the diffusion of innovation capacity through the organization were not clear. The challenge this presented to the Human Resources (HR) department was to determine the weaknesses in the innovation development strategy and propose a plan for the next phase of the action cycle.

The innovation project had aimed to raise the level of awareness and importance of innovation and increase the innovation capacity within the department by utilizing two key components. The first was to implement a problem solving tool developed in house that was called the Yellow Brick Road (YBR), and the second was to build the innovation capabilities of key individuals. These individuals became known as Innovation Facilitators (IF’s) and their task was to assist other members of the organization to develop and plan innovative solutions to problems as they were encountered.

In essence it was considered that much of the innovation within DTF would be incremental in nature and modeled more closely to the Peters (1991) view of thriving on chaos as opposed to the radical and disruptive innovation model offered by Leifer *et al.* (2000). Therefore the development of creativity at the individual, team and organizational levels became a central theme to the innovation platform. This view was supported by authors such as Amabile (1998; 1997), de Bono (1995), Williams (2001) and Robinson and Stern (1997) who each considered creativity and consequently innovation as a result of planned and structured process.

#### *Data gathering*

In order to assess the stage of innovation development within DTF a series of 3 × 3 hour focus group workshops were arranged. To limit bias, the participants for the workshops were selected by someone from each of the operating divisions and independent of the Senior Executive Group overseeing the project. It was aimed to gather around fifteen percent of the total organization into these workshops however the actual sample represented approximately five percent of the total department. Table I shows the sample representation of the Department as a whole and of the

Division participation profile	Number of participants	Number of innovation facilitators participating	Number of RoP project members participating
Budget and financial management division	8	3	
Commercial division	3		
Economical and financial policy division	7	5	
Strategic management division	5	1	1
Total number of participants	23	9	1

**Notes:** Sample size approximately 5 percent of organization; of the sample, 40 percent represents Innovation Facilitators

**Table I.**  
Focus group  
participation profile

divisions. Further, the innovation facilitators were highly represented in the focus group sessions and this did result in a bias of positive opinion about the stage of innovation development that had to be taken into account in the findings. The workshop opened by covering key concepts about innovation and the evaluation process before progressing to a series of questions to elicit the participant's experiences with the innovation program. The data collected was anonymous with confidentiality measures designed and incorporated to maximize the integrity of each individual's contribution. Electronic meeting technology[2] was used in the workshops to capture the data and maximize the accurate recording of the individuals input.

Six "asset" questions were identically posed to each focus group. Two additional questions were included to check the internal stakeholder view of the need for innovation and to cross-reference the findings from the stage of development investigation with a reflection on the organizational culture. Table II outlines the questions and the asset group to which the questions were directed.

### *Analysis*

The qualitative data analysis began by clustering together the responses to each question from across the three focus group sessions while maintaining labeling of the division from which the individual's responses originated. Each of these responses was

Question	To explore . . .
What new skills and knowledge have you acquired during the DTF Innovation project and when did you acquire them? If none, type none, and please explain why?	Human assets
Have your attitudes and behaviors changed during the course of the DTF Innovation project and what actions taken by DTF have changed them?	Human assets
Do you feel as though you can assume responsibility for new ideas in your department and if so how do you go about creating new ideas? If not, why not?	Human assets
How have internal and inter-departmental relationships changed during the DTF Innovation project and what actions by DTF do you think have caused this change(s)?	Relational assets – internal
How have external stakeholder relationships changed during the course of the Innovation project and do they contribute to innovation at DTF? If yes, how do they contribute to innovation at DTF?	Relational assets – external
Describe any organizational infrastructure and support that you think has been provided through the Innovation project at DTF (include financial and access to physical space in this response).	Organizational assets – systems, processes, procedures, branded activities, commitment of physical and financial assets etc.
Are the initial innovation needs discussed earlier still current at DTF? Have these needs changed or do they need review?	Internal stakeholder "need" for innovation
How would you describe the culture at DTF?	Cross-reference on organizational culture

**Table II.**  
Focus group questions

then coded against the Dynamic IDS® framework categories. For instance the response “a greater understanding of the basic tools and methodology used in meetings” was a response to the new skills and knowledge question that was coded as “Cultural build-up” as it evidenced only understanding and not the generation of new ideas, use of physical or temporal space or new activities that would fit the alternate categories.

As the responses were coded they were transferred to a spreadsheet for the particular asset question and the response was allocated to the appropriate stage. Negative or neutral responses were also gathered and used as evidence of non-penetration or take-up of the innovation project initiatives. This negative/neutral category was a new development for the Dynamic IDS® and as the coding progressed a visual representation of the level of activity occurring at the different stages for each of the divisions became clearly apparent. The entire analysis was compiled and a summary of the analysis was produced.

## Findings

### *Human assets – competences*

Consistent with the skills training and development activities undertaken by DTF, there was evidence of some increased knowledge and understanding of innovation, the process of idea creation and the need for new directions. However, this was not the case for all individuals and particularly evident was that employing this knowledge appeared to be problematic for those that were not the trained innovation facilitators. This suggested a requirement of a more comprehensive training program incorporating experiential techniques and team involvement to further legitimize the innovation intent and organizational practices wholly across DTF. It seemed that the training and development program played an important role in not only skill development but empowerment of employees.

Evidence of general competence toward the higher order innovation skills such as opportunity recognition, evaluation and presentation was not found. Facilitating innovation within an organization requires an entrepreneurial mind and entrepreneurship training most effectively enables individuals to distinguish between a good idea and a good opportunity (Thornberry, 2003). While some parts of DTF were highly skilled in this area, there was evidence that some individuals could not test and justify ideas in order to present a case for moving forward or equally importantly be able to recognize why some ideas were not worth pursuing. Without this skill base, it appeared that many did not understand why their particular ideas were not being progressed and this in turn seemed to contribute to organizational discontentment, a factor appearing in the evidence. To maintain balance within the organization, it would seem that the pathway to participation must be transparent and open and this suggests that employees should have a minimum level of understanding about what makes a good idea worthwhile and relevant to their organizational context.

The analysis of competence also raised questions around clarity of purpose. Typically, as discussed earlier, organizations seeking to adopt innovation practices in commercial environments do so to challenge their existing products and/or markets; or, improve their competitive position and/or profitability. This assists to define the areas of competence required within the organization. In the case of public administration new products and markets do not have the same meaning. In this case it was evident that the scope and purpose of innovation was not clear and this seemed to result in not

only vague lines of responsibility and accountability but imprecise notions about appropriate competence.

#### *Human assets – attitude*

From the perspective of attitudes, again the innovation facilitators (IF), showed much more evidence of advanced progress over the other participants. The non-IF participants offered more negative and neutral stage comments that demonstrated a lack of engagement with the innovation project. These participants therefore were not inclined to attribute any influence on their attitudes to the innovation project. Comments did suggest however, that other factors had influenced their attitudes and this included their job function's roles and responsibilities. Position descriptions, the assignment of roles and clarity of responsibilities are essentially organizational functions that are often coordinated and supported through a HR department. Therefore this suggests that a strong working relationship between line management and the HR function, results in organizational assets that can have a significant affect on the attitudes of individuals and that tightly weaves innovation into the fabric of an organization.

#### *Human assets – entrepreneurial cognition*

Interestingly, the evidence from the focus groups suggested a relatively more advanced level of development in entrepreneurial cognition than anticipated with some innovation allocated to the "Creating space for experiments" phase of development. However notably it was often led by the request of others and it did not appear to be a readily adopted organizational way of being. The presence of entrepreneurial cognition would be indicated by an individual's sense-making and collective decision processes (Jelinek and Litterer, 1995) inclusive of the individual. The evidence suggested that an adequate level of activism had been sparsely achieved and the organizational opportunity was to build a more wide-spread, robust, fast and efficient proposal and response mechanism that reflected the nature and level of innovation required and that allowed empowered employees to act.

#### *Relationship assets*

Surprisingly this was the least recognized element by the participants as a component of innovation. Under conditions of uncertainty and complexity – which seem to be two characteristics of the modern day policy-making environment – innovation in products and services are affected by internal and external linkages (Tidd, 2001). While the question on internal relationships revealed some evidence of a more open and communicative inter-divisional environment, the external relationship questions revealed only a few select individuals holding access to and frequent dialogue with external parties. This may be a deliberate organizational strategic decision, however, the implication of that decision suggests a form of "closed" network that emphasizes control, standards and locked-in relationships (Tidd, 2001). DTF had recognized this block to innovation and were implementing a knowledge management system in an attempt to create a more "open" network, a characteristic Tidd (2001) suggests is more common for innovation in complex environments such as that typical of a government policy-making organization. A "closed" network operating platform is not suggestive

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of an innovative organization faced with complexity and evidence suggested that DTF had not yet shifted significantly toward an open environment.

#### *Presence and recognition of innovation transformative assets*

Each of the preceding asset groups are influenced by the availability and application of organizational systems, processes, procedures, intellectual property, branding, culture, space and monetary contribution. These organizational assets combine to influence and facilitate the people and their relationships with respect to developing and delivering upon innovative ideas and demonstrating organizational capability (Ridder *et al.* 2005).

The positions of Innovation Facilitator, the Yellow Brick Road process, innovation training, innovation posters, innovation tools and materials were all cited in evidence of infrastructure and organizational commitment. This showed a clear “Cultural Build-up” within the organization. There was also evidence of the “Idea generation and collection” phase with electronic spaces for ideas, provision of lounge spaces, time and facilities to be innovative. However there was less evidence of infrastructure that facilitated experiments and new project activity. It would appear that the efforts toward innovation were largely “outside-in” meaning that the tools, space and skills had been provided to create an innovative workplace however the “inside-out” infrastructure to facilitate the emergence, adoption and freedom of individuals to engage with different parts of the organization and stakeholders were yet to be developed. Apart from the suggestion of some new projects there was no identification of a process or procedure to have ideas heard, appraised, reported or enacted and indeed the comment “Support in terms of ‘follow through’ often lacks, what happened to my idea?” was an example that cited the need for better enabling infrastructure.

This prompted a review of the Yellow Brick Road innovation tool which was originally designed as a problem solving template with gates and signs stopping at the implementation stage. This was the exact point at which individuals struggled with traction of their ideas in the organizational context. The YBR was not originally intended to emulate other stage-gate processes or articulate a path of appraisal, acceptance/rejection, team formation, budget allocation and reporting systems although it had the potential to do so. This adjustment to the YBR would potentially allow transparency of the idea progression pathway along with clarifying the responsibility for idea management and ultimately allow individuals recourse for pursuing innovation implementation.

#### *The “needs” and “culture” cross check*

The two final questions were included to cross check the analysis and findings of the asset grouping’s depth of stage development. The following were typical responses:

I believe [the innovation needs] are still very relevant. More work needs to be done around the application and communication of the tools and techniques. There also needs to be a greater exploration and support of ideas. I believe this support is lacking.

Objectives are still current – but our focus and how we go about innovation may need to be adapted. i.e. need for greater support and acknowledgement of ideas – even if not used, i.e. where there are ideas banks someone needs to look at.



There is a pecking order but it depends on your division and even your team to quantify the culture. DTF is dedicated to training and improvement but is at the same time about processes and outputs in a lot of cases.

Lots of good minds and good experiences in DTF – lets make more of these assets . . .

These questions on “needs” and “culture” reflected an increased employee desire and willingness to do new things. This broadened the anticipated drivers for innovation. While it was clear from the focus group sessions that the initial drivers identified by the Senior Executive Group were considered valid, the participants themselves were inclined to drive a “need” for innovation. That is the employees themselves wanted to be innovative and they wanted DTF to be responsive to their need. The challenge then was to provide the right organizational context and environment to allow the expression of these desires.

#### *Overall progress and organizational assessment*

Given the two year implementation time frame, it could be said that advancement though the different and progressive stages had been steady. A shift toward cultural acceptance of innovation is not a quick or easy process (Hamel, 2000) and to be winning support and desire from employees was a major achievement.

The major barriers that were troubling success of the innovation project were narrow “innovation management practices” and the “process orientation” of the functional organization, both of which were pertinent to the historical mission of the organization although now they impeded the progress of innovation capacity development.

A summary of the key findings were:

- DTF showed clear evidence of an early stage of “Cultural build-up” for innovation capacity.
- There was some evidence of later stage development however this was mostly evidenced through reference to the senior management team and the innovation facilitators. Individual employees expressed a desire to be innovative but did not yet generally perceive it as permissible or possible.
- There was no uniformity of innovation awareness and capacity across the organization. There was variation between divisions within the department and the innovation facilitators were well ahead of the rest of the organization with respect to awareness and a perception of freedom to innovate.
- The leadership in innovation demonstrated by the innovation facilitators laid a ground swell of interest although without a concerted effort to distribute the innovation skills and facilitate the growth and implementation of ideas it was likely that enthusiasm for the innovation program would wither. This observation can be supported by citing a study of a “bottom-up” approach to change within a public sector organization in which O’Brien (2002), notes that the requirements for training and the realigning of roles and relationships should not be underestimated if an initiative is to have more than a short-term impact.

#### **Discussion**

DTF had recognized that an integrated and interdependent suite of programs were required to generate an innovative capacity and overall DTF exhibited evidence of

change across each of the asset groupings. The innovation facilitators however demonstrated the bulk of evidence suggesting advancement of the organization to high order participation in actual innovation activities. Others, while not totally devoid of innovation participation were mainly reflecting comments at either the negative / neutral level or at the early cultural build-up stage and this therefore reflected the overall lack of broad organizational representation of innovation and innovative ideas.

In another study involving the Victorian public sector, it was found that generally and overall there was a tendency toward a "Rational Goal" culture closely followed by a strong "Internal process" mindset (Bradley and Parker, 2001). This suggested a strong orientation toward production and pursuit of outcomes, a stable environment, prevalence of rules and policies and a hierarchical culture. This also was contrasted with an environment for innovation that was described by way of an "Open systems culture" that are "dynamic and entrepreneurial, their leaders are risk takers, and organizational rewards are linked to individual initiative" (Bradley and Parker, 2001, p.21). Interestingly, when asked about preferred culture it was the "Open systems" culture that was found to be the preferred second rating, with a "Rational Goal" culture maintaining the primary position. The largest negative shift was found in the "Internal process" style of public sector organization (Bradley and Parker, 2001, pp. 22-23) signaling a strong desire to move away from the constraints of rules and hierarchy. The findings of Bradley and Parker (2001) support much of the observations in this study whereby the internal processing mindset was acting to inhibit innovation for the general employee while the innovation facilitators at least were perceived to be operating differently and from an open systems type of culture.

These findings resonated strongly with the innovation program's coordinators and the value from the method was the fast, cross-sectional view that reached deeply into the organization and exposed different elements of innovation that are frequently obscured by the veneer of survey methods looking at outcome metrics. Limitations however are encountered in sampling the organization whereby those that were interested in innovation tended to dominate the focus groups. This raised the need for caution when analyzing the data.

The focus group method coupled with the electronic meeting technology and isolating the management team by utilizing a third party resulted in free form dialogue and openness with equality of contribution from each group participant. The IC lens aided distinction of the issues and offered clarity and focus to the group to allow new insight into how the organization was working and where the particular obstacles were occurring. However, analyzing the assets does not alleviate the need to achieve a clear conceptualization of what innovation means to a particular organization as the innovation "value" in the asset depends upon the aims of innovation. Public sector organizations face very different challenges from their private sector counterparts and the definition of innovation requires significant attention. In DTF's case four possible types of innovation were identified, namely; reactive stakeholder policy response; proactive internal policy exploration; internal process improvement; new stakeholder or initiative development. Each of these types of innovative activities requires a set of processes and procedures that are congruous with the flexible needs of innovation and the overarching mission of the organization.

Where for-profit organizations pursue innovation for product, process and profit motives assessment of innovation performance can be based upon repeated historical

measures. However the public sector organization produces different work and faces the challenge of managing intangible capacities where outcomes are predominantly located in future performance. Both sectors however have a need to develop their intellectual capital and this “soft” base of innovation attitudes, skills, motivations, relationships and transformative intelligence captured within and across organization boundaries needs to provide, ironically, the solid ground upon which the facilitative power of the organization acts to produce targeted innovation outcomes. Borins (2001) portrays this facilitative power, as seven key characteristics of public sector organizations producing innovative performance: support from the top; rewards and awards for innovation; committing resources; encouraging diversity and innovation; learning from the outside; a distributed responsibility for innovation; and indulging in experimentation and evaluation. However knowing what the beast looks like doesn’t reveal its inner workings and supporting these explicit characteristics are resource and capability assets that carry the task of performance. Using IC as a lens strips the organization down to its barest resources and examines the strength and capacity of each to produce the evidence of innovation characteristics.

### Implications and further research

Some studies have suggested that the type of innovation sought by an organization is less important than the organizational determinants for innovation (Damanpour, 1991; Johannessen *et al.* 2001; Nohria and Gulati, 1996; Van De Ven, 1986). Damanpour (1996) later added however that innovation maybe “industry-specific” or “organizational-specific” and we found that innovation in the case of DTF was indeed dependent upon the organizational-specific systems, processes, culture and mission.

It would seem that the mission and purpose of first the organization and second the innovation strategy are the fundamental precursors to the development of an innovation capacity (Bart, 2004). In attempting a qualitative analysis of the development of innovative capacity these are considered the starting points for determining what it is that is required and what constraints are imposed by the organizational and environmental factors. DTF at the outset had defined the meaning of innovation as a whole of organization responsibility, however, had then progressed the implementation with a functional approach consistent with its history and heritage, training one element of the organization – the innovation facilitators – and compartmentalizing innovation as one strategy in a suite of organizational change programs. Ultimately the evaluation reinforced that many of the other change programs influenced innovation within the department and innovation was not an individualistic strategy but an overarching organizational “way of being” brought together through the suite of strategies.

Other types of organizations, for example research organizations, hold innovation as a way of being or *raison d'être* (Simpson and Powell, 1999). However organizational designs of these research and science institutions are not uniform and again it returns to the mission of the organization to establish how the organization is constructed to achieve the best output. Simpson and Powell (1999) provide a typology of four archetypes tested with New Zealand research organizations and similar research may be helpful for policy organizations to assist with organizational design strategies.

Distinguishing an innovation capability with its emphasis on outcomes, from an innovation capacity that addresses the internal potential to enable outcomes was found to be important. This may be further explored in organizational designs where intangible forward looking measures are emphasized, for instance when it is the responsiveness of the organization and its abilities to utilize its innovation capacity when directed to a variety of different challenges that are not pre-determinable. To date capacity and capability seem to have had little focused distinction in the public sector, however we argue that there is indeed a difference and capacity is a powerful concept for a policy-making organization. Capability might be better considered as a combinational form of asset and it is the capacity of the derivative assets that determines the efficiency and effectiveness of its use when measured against outcomes. Capacity requires close attention to the underlying resources and the extent to which it is embedded (Hall, 2005) while capability addresses the process of combination compared with defined outcomes. Further research to confirm the usefulness and benefit of this distinction is still required.

Innovation as an organizational design or organizing principle also raises the issue of a systems approach as suggested by the Bradley and Parker (2001) study. Innovation systems are often considered from the perspective of cross-institutional frameworks at national and international levels (Hall, 2005; Spencer, 2003) to provide significant regional and community benefit. In the commercial environment, Getz and Robinson (2003) have investigated systems for managing ideas at the organizational level while Costanzo (2004) established that a company's capability to innovate continuously was linked to its nimbleness, structured processes, extensive communication and a focused management team that bundled together to create a core capability. Overall the systems approach requires different thinking about organizational form (Harkema and Browaeys, 2002) and research that addresses these challenges in the public sector environment would be valuable to the understanding of how different organizations are able to respond.

The innovation capacity evaluation of DTF also allowed trialing of a different technique for an evaluative case study and the testing of a phase development instrument for innovation. Both the technique and the instrument would benefit from further refinement, testing and development, however, the first pass of this approach seems to offer considerable benefit as a fast cross-sectional organizational capacity evaluation method that is less restrictive than quantitative methods that utilise tangible measures and potentially offers a more active and open voice to the organization's key constituents and stakeholders.

## Notes

1. Marginal utility behavior is an economic term that refers to the extra benefit gained from an incremental increase in the asset. It has its roots in consumer behavior theory, however here it is applied to the returns that accrue to the organization through the growth of the particular asset. The behavior may either exhibit diminishing or increasing returns.
2. Electronic Meeting Technology is a system that provides individual meeting participants with a keyboard that is connected to a central projected display unit. Each individual is able to simultaneously contribute to centrally posed questions or discussion items, via the keyboard, thereby maximizing the equality of input and accuracy of expression of the respondents. The projected responses are anonymous and clarifications and themes are gathered by the facilitator at the direction of the group.

**References**

- Aghion, P. and Tirole, J. (1994), "The management of innovation", *The Quarterly Journal of Economics*, November, pp. 1185-209.
- Amabile, T. (1997), "Motivating creativity in organizations: on doing what you love and loving what you do", *California Management Review*, Vol. 40 No. 1, pp. 39-58.
- Amabile, T. (1998), "How to kill creativity", *Harvard Business Review*, Vol. 76 No. 5, pp. 76-87.
- Amit, R. and Schoemaker, P.J.H. (1993), "Strategic assets and organizational rent", *Strategic Management Journal*, Vol. 14 No. 1, pp. 33-46.
- Athayde, R. (2003), "Measuring young people's attitudes to enterprise", paper presented at the International Council for Small Business 48th World Conference, Belfast, June 16-18.
- Barry, N. (2002), "The stakeholder concept of corporate control is illogical and impractical", *Independent Review*, Vol. 6 No. 4, p. 541.
- Bart, C. (2004), "Innovation, mission statements and learning", *International Journal of Technology Management*, Vol. 27 Nos 6/7, pp. 544-61.
- Bontis, N. and Fitz-enz, J. (2002), "Intellectual capital ROI: a causal map of human capital antecedents and consequents", *Journal of Intellectual Capital*, Vol. 3 No. 3, p. 245.
- Borins, S. (2000), "Loose cannons and rule breakers, or enterprising leaders? Some evidence about innovative public managers", *Public Administration Review*, Vol. 60 No. 6, pp. 498-507.
- Borins, S. (2001), "The business of government, the challenge of innovating in government", The PricewaterhouseCoopers Endowment, Arlington, VA.
- Borins, S. (2001a), "Public management innovation in economically advanced and developing countries", *International Review of Administrative Sciences*, Vol. 67 No. 4, pp. 715-31.
- Borins, S. (2001b), "Public management innovation: towards a global perspective", *American Review of Public Administration*, Vol. 31 No. 1, pp. 5-21.
- Borins, S. (2002), "Leadership and innovation in the public sector", *Leadership & Organization Development Journal*, Vol. 23 No. 8, pp. 467-76.
- Bose, S., Oh, K.B. and Thomas, K. (2002), "An exploratory identification of management issues in the intellectual capital intensive sector", ANZAM Conference, Beechworth, December 6-9.
- Boyle, J. (2002), "Working 'faster, better, cheaper': a federal research agency in transition", Doctor of Philosophy in Human Development, dissertation, Virginia Polytechnic Institute and State University, Blacksburg, VA.
- Bradley, L. and Parker, R. (2001), "Organizational culture in the Queensland public sector", *Canberra Bulletin of Public Administration*, Vol. 100, pp. 20-5.
- Burgman, R. and Roos, G. (2004), "Measuring, managing and delivering value performance in the public sector", *International Journal of Learning and Intellectual Capital*, Vol. 1, p. 2.
- Chandler, G.N., Keller, C. and Lyon, D.W. (2000), "Unravelling the determinants and consequences of an innovation-supportive organizational culture", *Entrepreneurship Theory and Practice*, Vol. 25 No. 1, p. 59.
- Christopher, G.C. (2003), "Innovative government practice: considerations for policy analysts and practitioners", *Journal of Policy Analysis and Management*, Vol. 22 No. 4, p. 683.
- Cohen, W.M. and Levinthal, D.A. (1990), "Absorptive capacity: a new perspective on learning and innovation", *Administrative Science Quarterly*, Vol. 35, pp. 128-52.
- Costanzo, L.A. (2004), "Strategic foresight in a high-speed environment", *Futures*, Vol. 36, pp. 219-35.

- Crespi, F. (2004), "Notes on the determinants of innovation: a multi-perspective analysis", FEEM Working Paper No. 42.04, available at: <http://ssrn.com/abstract=524503> (accessed October 2005).
- d'Aspremont, C., Bhattacharya, S. and Gérard-Varet, L.-A. (2000), "Bargaining and sharing innovative knowledge", *Review of Economic Studies*, Vol. 67, pp. 255-71.
- Damanpour, F. (1991), "Organizational innovation: a meta-analysis of effects of determinants and moderators", *Academy of Management Journal*, Vol. 34 No. 3, pp. 555-90.
- Damanpour, F. (1996), "Organizational complexity and innovation: developing and testing multiple contingency models", *Management Science*, Vol. 42 No. 5, pp. 693-716.
- Daniels, H. and Noordhuis, H. (2005), "Project selection based on intellectual capital scorecards", *Intelligent Systems in Accounting, Finance and Management*, Vol. 13, pp. 27-32.
- de Bono, E. (1995), *Serious Creativity*, HarperCollins, Hammersmith.
- Denton, D.K. (1999), "Gaining competitiveness through innovation", *European Journal of Innovation Management*, Vol. 2 No. 2, pp. 82-5.
- Denzin, N.K. (1989), *Interpretive Interactionism*, Sage, Newbury Park, CA.
- Department of Premier and Cabinet (2001), "Growing Victoria together", available at: [www.dpc.vic.gov.au/CA256D800027B102/Lookup/GVTBookletPDF/\\$file/DPCbrochure.FA.pdf](http://www.dpc.vic.gov.au/CA256D800027B102/Lookup/GVTBookletPDF/$file/DPCbrochure.FA.pdf) (accessed November 3, 2004).
- Department of Treasury and Finance (2002), "Reaching our potential program charter", unpublished document, Department of Treasury and Finance.
- Department of Treasury and Finance (2003), "SEG paper: innovation project", unpublished document, Department of Treasury and Finance.
- du Pre Gauntt, J. (2004), "Harnessing innovation: R&D in a global growth economy", *Economist Intelligence Unit (Ed)*, The Economist Intelligence Unit, London.
- Dutta, S., Narasiman, O. and Rajiv, S. (2005), "Conceptualizing and measuring capabilities: methodological and empirical application", *Strategic Management Journal*, Vol. 26 No. 3, pp. 277-85.
- Edvinsson, L. and Malone, M.S. (1997), *Intellectual Capital*, HarperCollins, New York, NY.
- Ethiraj, S.K., Kale, P., Krishnan, M.S. and Singh, J.V. (2005), "Where do capabilities come from and how do they matter? A study in the software services industry", *Strategic Management Journal*, Vol. 26 No. 1, pp. 25-45.
- Farah, M.F.S. (2005), "Dissemination of innovative cases: learning from sub-national programs in Brazil, approaches and methodologies for the assessment and transfer of best practices in governance and public administration", paper presented at the UNDESA Ad Hoc Expert Group Meeting, Tunis.
- Gans, J. and Stern, S. (2003), "Assessing Australia's innovative capacity in the 21st century", *Intellectual Property Research Institute of Australia*, The University of Melbourne, Melbourne.
- Gates, R.V. (2003), "Strategic management of Navy R&D laboratories: an application of complexity theory: Director of Navy Laboratories case study", Doctor of Philosophy in Public Administration and Policy, dissertation, Virginia Polytechnic Institute and State University, Blacksburg, VA.
- Getz, I. and Robinson, A.G. (2003), "Innovate or die: is that a fact?", *Creativity and Innovation Management*, Vol. 12 No. 3, pp. 130-6.
- Glick, H.R. (1992), *The Right to Die: Policy Innovation and its Consequences*, Columbia University Press, New York, NY.

- Hall, A. (2005), "Capacity development for agricultural biotechnology in developing countries: an innovation systems view of what it is and how to develop it", *Journal of International Development*, Vol. 17, pp. 611-30.
- Halligan, J. (2005), "Public management and departments: contemporary themes – future agendas", *Australian Journal of Public Administration*, Vol. 64 No. 1, pp. 25-34.
- Hamel, G. (2000), *Leading the Revolution*, Harvard Business School Press, Boston, MA.
- Harkema, S.J.M. and Browaeys, M.J. (2002), "Managing innovation successfully: a complex process", conference proceedings of the 2nd European Academy of Management Annual Conference, Stockholm, available at: [www.nijenrode.nl/download/research/Managing%20innovation%20stockholmDEF2.pdf](http://www.nijenrode.nl/download/research/Managing%20innovation%20stockholmDEF2.pdf) (accessed October 2005).
- Hess, M. and Adams, D. (2002), "Knowing and skilling in contemporary public administration", *Australian Journal of Public Administration*, Vol. 61 No. 4, pp. 68-79.
- Hindle, K. (2002), "How entrepreneurial capacity transforms 'small I' into 'big I' innovation; implications for national policy", *Telecommunications Journal of Australia*, Vol. 52, p. 3.
- Hindle, K. and Yencken, J. (2004), "Public research commercialisation, entrepreneurship and new technology based firms: an integrated model", *Technovation*, Vol. 24, pp. 793-803.
- Hitt, M.A. and Ireland, R.D. (2002), "The essence of strategic leadership: managing human and social capital", *The Journal of Leadership and Organizational Studies*, Vol. 9 No. 1, pp. 3-14.
- Hoefler, J.M. and Kamoie, B.E. (1994), *Deathright: Culture, Medicine, Politics and the Right to Die*, Westview Press, Boulder, CO.
- Huberman, A.M. and Miles, M.B. (1998), "Data management and analysis methods", in Denzin, N.K. and Lincoln, Y.S. (Eds), *Collecting and Interpreting Qualitative Materials*, Sage Publications, Newbury Park, CA, pp. 179-210.
- Hull, F. and Azumi, K. (1991), "Invention rates and R&D in Japanese manufacturing organizations", *Journal of Engineering and Technology Management*, Vol. 8, pp. 37-66.
- Hurwitz, J., Lines, S., Montgomery, B. and Schmidt, J. (2002), "The linkage between management practices, intangibles performance and stock returns", *Journal of Intellectual Capital*, Vol. 3 No. 1, pp. 51-61.
- Jäggle, A.J. (1999), "Shareholder value, real options, and innovation in technology-intensive companies", *R&D Management*, Vol. 29 No. 3, pp. 271-87.
- Jelinek, M. and Litterer, J.A. (1995), "Toward entrepreneurial organizations: meeting ambiguity with engagement", *Entrepreneurship Theory and Practice*, Vol. 19 No. 3, pp. 137-68.
- Jensen, B. and Harmsen, H. (2001), "Implementation of success factors in new product development – the missing links?", *European Journal of Innovation Management*, Vol. 4 No. 1, pp. 37-52.
- Johannessen, J.-A., Olaisen, J. and Olsen, B. (1999), "Managing and organizing innovation in the knowledge economy", *European Journal of Innovation Management*, Vol. 2 No. 3, pp. 116-28.
- Johannessen, J.-A., Olsen, B. and Lumpkin, G.T. (2001), "Innovation as newness: what is new, how new, and new to whom?", *European Journal of Innovation Management*, Vol. 4 No. 1, pp. 20-31.
- Katila, R. and Ahuja, G. (2002), "Something old, something new: a longitudinal study of search behaviour and new product introduction", *Academy of Management Journal*, Vol. 45 No. 6, pp. 1183-94.
- Kelloway, E.K. and Barling, J. (2000), "Knowledge work as organizational behaviour", *International Journal of Management Reviews*, Vol. 2 No. 3, pp. 287-304.

- Kerr, S. and Ulrich, D. (1995), "Creating the boundaryless organization: The radical reconstruction of organizational capabilities", *Planning Review*, Vol. 23 No. 5, pp. 41-5.
- Kor, Y.Y. and Leblebic, H. (2005), "How do interdependencies among human-capital deployment, development, and diversification strategies affect firms' financial performance", *Strategic Management Journal*, Vol. 26 No. 10, pp. 967-85.
- Leifer, R., McDermott, C.M., O'Connor, G.C., Peters, L.S., Rice, M. and Veryzer, R.W. (2000), *Radical Innovation*, Harvard Business School Press, Boston, MA.
- Leliaert, P.J.C., Candries, W. and Tilmans, R. (2003), "Identifying and managing IC: a new classification", *Journal of Intellectual Capital*, Vol. 4 No. 2, p. 202.
- MPherson, P.K. and Pike, S. (2001), "Accounting, empirical measurement and intellectual capital", paper presented at The 4th World Congress on Intellectual Capital, 22nd McMaster Business Conference, 2nd World Conference on E-Commerce, McMaster University, Hamilton.
- McElroy, M.W. (2002), "Social innovation capital", *Journal of Intellectual Capital*, Vol. 3 No. 1, pp. 30-9.
- Marton, R. and Phillips, S.K. (2005), "Modernising policy for public value: learning lessons from the management of bushfires", *Australian Journal of Public Administration*, Vol. 64 No. 1, pp. 75-82.
- Matusik, S.F. (2002), "An empirical investigation of firm public and private knowledge", *Strategic Management Journal*, Vol. 23 No. 5, p. 457.
- Mitchell, R.K., Busenitz, L., Lant, T., McDougall, P.P., Morse, E.A. and Smith, J.B. (2002), "Toward a theory of entrepreneurial cognition: rethinking the people side of entrepreneurship research", *Entrepreneurship Theory and Practice*, Vol. 26 No. 4, pp. 93-104.
- Molas-Gallart, J. (2001), "Government Defence Research Establishments: the uncertain outcome of institutional change", *Defence and Peace Economics*, Vol. 12 No. 5, pp. 417-37.
- Mone, M.A., McKinley, W. and Barker, V.L. III (1998), "Organizational decline and innovation: a contingency framework", *Academy of Management Review*, Vol. 23 No. 1, pp. 115-32.
- Mulgan, G. and Albury, D. (2003), "Innovation in the public sector", Ver 1.9 ed., Strategy Unit, London.
- Neely, A. and Hii, J. (1998), "Innovation and business performance: a literature review", Government Office for the Eastern Region, Cambridge.
- Neuman, W.L. (1994), *Social Research Methods, Qualitative and Quantitative Approaches*, Allyn and Bacon, Boston, MA.
- Nohria, N. and Gulati, R. (1996), "Is slack good or bad for innovation?", *Academy of Management Journal*, Vol. 39 No. 5, pp. 1245-84.
- O'Brien, G. (2002), "Participation as the key to successful change – a public sector case study", *Leadership & Organization Development Journal*, Vol. 23 No. 8, pp. 442-55.
- O'Connor, A. and Roos, G. (2006), "Developing a conceptual schematic to evaluate organizational innovative capacity", presented at The R&D Management Conference Taiwan, Taipei and Hsinchu, November 8-11.
- Palmberg, C. (2002), "The many faces of absorptive capability in low-tech industries: the case of glue-lam and foodstuffs", paper presented at the DRUID Summer Conference on Industrial Dynamics of the New and Old Economy – Who is Embracing Whom?, Copenhagen/Elsinore.



- Peppard, J. and Rylander, A. (2001), "Using an intellectual capital perspective to design and implement a growth strategy: the case of Apion", *European Management Journal*, Vol. 19 No. 5, pp. 510-25.
- Peters, T. (1991), *Thriving on Chaos*, HarperCollins Publishers, New York, NY.
- Pike, S. and Roos, G. (2001), "Measuring and decision support in the knowledge society", paper presented at The 4th World Congress on Intellectual Capital, 22nd McMaster Business Conference, 2nd World Conference on E-Commerce, McMaster University, Hamilton.
- Pike, S. and Roos, G. (2004a), "Mathematics and modern business management", *Journal of Intellectual Capital*, Vol. 5 No. 2, pp. 243-56.
- Pike, S. and Roos, G. (2004b), "Theoretical foundations of intellectual capital measurement and valuation", paper presented at The International Intellectual Capital Conference, NCCU, Taipei, October 11-12.
- Pike, S., Rylander, A. and Roos, G. (2002), "Intellectual capital management and disclosure", in Bontis, N. and Choo, C.W. (Eds), *The Strategic Management of Intellectual Capital and Organizational Knowledge: A Selection of Readings*, Oxford University Press, New York, NY, p. 657.
- Pinchot, G. and Pellman, R. (1999), "Intrapreneuring in action: a handbook for business innovation", Berrett-Koehler Publishers, San Francisco, CA.
- Rauscher, M. (2004), "Interjurisdictional competition and innovation in the public sector", available at: [www.zei.de/download/Foederalismus/Rauscher%20Interjurisd.pdf](http://www.zei.de/download/Foederalismus/Rauscher%20Interjurisd.pdf) (accessed October 2005).
- Rhodes, R.A.W., Wanna, J. and Hanson, S. (2005), "Mapping research agendas with government: surveys, priorities and future needs", *Australian Journal of Public Administration*, Vol. 64 No. 1, pp. 8-10.
- Ridder, H.-G., Bruns, H.-J. and Spier, F. (2005), "Analysis of public management change processes: the case of local government accounting reforms in Germany", *Public Administration*, Vol. 83 No. 2, pp. 443-71.
- Roberts, P.W. (1999), "Product Innovation, product-market competition and persistent profitability in the U.S. pharmaceutical industry", *Strategic Management Journal*, Vol. 20 No. 7, p. 655.
- Robinson, A.G. and Stern, S. (1997), "Three simple principles that dramatically boost corporate creativity", *National Productivity Review*, Vol. 17 No. 1, pp. 43-51.
- Robinson, W.T. (1990), "Product innovation and start-up business market share performance", *Management Science*, Vol. 36 No. 10, pp. 1279-89.
- Roffe, I. (1999), "Innovation and creativity in organizations: a review of the implications for training and development", *Journal of European Industrial Training*, Vol. 23 Nos 4/5, pp. 224-37.
- Romano, C.A. (1990), "Identifying factors which influence product innovation: a case study approach", *Journal of Management Studies*, Vol. 27 No. 1, pp. 75-95.
- Romijn, H. and Albaladejo, M. (2000), "Determinants of innovation capability in small UK firms: an empirical analysis", Working Paper Number 40, available at: [www2.qeh.ox.ac.uk/pdf/qehwp/qehwps40.pdf](http://www2.qeh.ox.ac.uk/pdf/qehwp/qehwps40.pdf) (accessed March 2005).
- Roos, G., Pike, S. and Fernström, L. (2005), *Intellectual Capital in Practice*, Elsevier, New York, NY.
- Roos, J., Roos, G., Dragonetti, N.C. and Edvinsson, L. (1997), *Intellectual Capital: Navigating the New Business Landscape*, MacMillan Press, Basingstoke.

- Røste, R. (2004), "Studies of innovation in the public sector, a literature review", PUBLiN Innovation in the Public Sector, working paper, Delivery D8 (version 2), Oslo.
- Sadler, R.J. (2000), "Corporate entrepreneurship in the public sector: the dance of the chameleon", *Australian Journal of Public Administration*, Vol. 59 No. 2, pp. 25-43.
- Sapat, A. (2004), "Devolution and innovation: the adoption of state environmental policy innovations by administrative agencies", *Public Administration Review*, Vol. 64 No. 2, pp. 141-51.
- Schwabsky, N., Vigoda-Gadot, E., Shoham, A. and Ruvio, A. (2004), "Towards a performance orientation measurement grid: the impact of innovativeness and organizational learning on organizational performance in the public sector", paper presented at the EGPA 2004 Annual Conference – Four Months After: Administering the New Europe, Ljubljana, September 1-4.
- Shaffer, B. and Hillman, A.J. (2000), "The development of business-government strategies by diversified firms", *Strategic Management Journal*, Vol. 21 No. 2, pp. 175-90.
- Shepherd, C. and Ahmed, P.K. (2000), "NPD frameworks: a holistic examination", *European Journal of Innovation Management*, Vol. 3 No. 3, pp. 160-73.
- Shepherd, D.A. and Krueger, N.F. (2002), "An intentions-based model of entrepreneurial teams' social cognition", *Entrepreneurship Theory and Practice*, Winter, pp. 167-85.
- Simpson, B. and Powell, M. (1999), "Designing research organizations for science innovation", *Long Range Planning*, Vol. 32 No. 4, pp. 441-51.
- Smith, G.E. and Huntsman, C.A. (1997), "Reframing the metaphor of the citizen-government relationship: a value-centred perspective", *Public Administration Review*, Vol. 57 No. 4, p. 309.
- Spanos, Y.E. and Prastacos, G. (2004), "Understanding organizational capabilities: towards a conceptual framework", *Journal of Knowledge Management*, Vol. 8 No. 3, pp. 31-43.
- Spencer, J.W. (2003), "Firms' knowledge-sharing strategies in the global innovation system: Empirical evidence from the flat panel display industry", *Strategic Management Journal*, Vol. 24 No. 3, p. 217.
- Stewart, T.A. (1997), *Intellectual Capital, the New Wealth of Organizations*, Nicholas Brealey, London.
- Stewart, T.A. (2001), *The Wealth of Knowledge: Intellectual Capital and the Twenty-First Century Organization*, Nicholas Brealey, London.
- Sundbo, J. (1999), "Empowerment of employees in small and medium-sized service firms", *Employee Relations*, Vol. 21 Nos 1/2, p. 105.
- Teece, D. (2000), "Strategies for managing knowledge assets: the role of firm structure and industrial context", *Long Range Planning*, Vol. 33, pp. 35-54.
- Thornberry, N.E. (2003), "Corporate entrepreneurship: teaching managers to be entrepreneurs", *Journal of Management Development*, Vol. 22 No. 4, pp. 329-44.
- Tidd, J. (2001), "Innovation management in context: environment, organization and performance", *International Journal of Management Reviews*, Vol. 3 No. 3, pp. 169-83.
- Tsoukas, H. and Papoulias, D.B. (2005), "Managing third-order change: the case of the public power corporation in Greece", *Long Range Planning*, Vol. 38, pp. 79-95.
- Twomey, D.F. and Harris, D.L. (2000), "From strategy to corporate outcomes: aligning human resource management systems with entrepreneurial intent", *International Journal of Commerce and Management*, Vol. 10 Nos 3/4, pp. 43-55.

- Ulrich, D. (1993), "Profiling organizational competitiveness: cultivating capabilities", *Human Resource Planning*, Vol. 16 No. 3, pp. 1-17.
- Ulrich, D. and Lake, D. (1990), *Organizational Capability: Competing from the Inside Out*, Wiley, New York, NY.
- Van De Ven, A.H. (1986), "Central problems in the management of innovation", *Management Science*, Vol. 32 No. 5, pp. 590-607.
- Van Den Ende, J. and Wijnberg, N. (2001), "The organization of innovation in the presence of networks and bandwagons in the new economy", *International Studies of Management and Organization*, Vol. 31 No. 1, p. 30.
- von Krogh, G., Nonaka, I. and Aben, M. (2001), "Making the most of your company's knowledge: a strategic framework", *Long Range Planning*, Vol. 34 No. 4, pp. 421-39.
- Williams, S. (2001), "Increasing employees' creativity by training their managers", *Industrial and Commercial Training*, Vol. 33 No. 2, p. 63.
- Wyatt, S. (2000), "ICT innovation in central government: learning from the past", *International Journal of Innovation Management*, Vol. 4 No. 4, pp. 391-416.
- Yamin, S., Gunasekaran, A. and Mavonda, F.T. (1999), "Innovation index and its implications on organizational performance: a study of Australian manufacturing companies", *International Journal of Technology Management*, Vol. 17 No. 5, pp. 495-503.
- Yamin, S. and O'Connor, A. (2004), "The dichotomous effects of innovation and entrepreneurial cultures on scale and scope dimensions of organizational growth a conceptual framework", paper presented at the 25th McMaster World Congress, Hamilton.
- Yapp, C. (2005), "Innovation, futures thinking and leadership", *Public Money and Management*, January, pp. 57-60.
- Yencken, J. (2005), "An Australian model for spin-off companies in the commercialisation of university and other public sector research", Doctor of Philosophy in Entrepreneurship, dissertation, Swinburne University of Technology, Australian Graduate School of Entrepreneurship, Melbourne.
- Yin, R.K. (1994), *Case Study Research: Design and Methods*, Sage Publications, Thousand Oaks, CA.
- Zahra, S.A. and Gerard, G. (2002), "Absorptive capacity: a review reconceptualization, and extension", *Academy of Management Review*, Vol. 27 No. 2, pp. 185-204.

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