Effects of some Environmental Challenges and Centralization on the Entrepreneurial Orientation and Performance of Public Sector Entities

ALBERT CARUANA, MICHAEL T. EWING
and B. RAMASESHAN

The relevance of entrepreneurship in the public sector is considered. In investigating relationships a review of the literature is undertaken and a model is proposed to examine the effects of certain environmental variables and centralisation on entrepreneurship and ultimately, performance. The proposed model is based on work conducted by Covin and Slevin [1991], reconsidered within a public sector context. Research is conducted among Australian public sector entities. A structural equation model is used to examine the hypothesised linkages. Implications of the findings are discussed, limitations are noted and directions for future research are outlined.

INTRODUCTION

There is a widespread belief that entrepreneurial activity stimulates general economic development as well as the economic performance of individual firms [Covin and Slevin, 1986; Zahra, 1986]. Reviewing the various antecedents and consequences of entrepreneurship, Covin and Slevin [1991] build a model that links entrepreneurial posture to organisational performance. The authors also identify three sets of elements that they term external, strategic and internal variables that have an influence on the entrepreneurial posture of the firm. External variables in the environment include technological sophistication, hostility and other factors. Strategic variables are mission strategies, business practices and competitive tactics,

Albert Caruana is at the Centre for Communication Technology at the University of Malta, Msida MSD06, Malta. Michael T. Ewing is at the Department of Marketing, Faculty of Business and Economics, Monash University, PO Box 197, Caulfield East, Victoria 3145, Australia. B. Ramaseshan is at the Curtin University of Technology, School of Marketing, GPO Box U1987, Perth 6845, Western Australia.

The Service Industries Journal, Vol.22, No.2 (April 2002), pp.43–58
PUBLISHED BY FRANK CASS, LONDON

while internal variables range from management values to organisational culture to organisational structure. The key question posed by this paper is to what extent do salient elements of such a model hold for entities operating in the public sector?

This research is relevant to many of the major reforms that have been implemented in public sector organisations across many western countries in recent years in reaction to higher expectations by citizens and economic globalisation. There has been considerable interest directed at achieving a high level of service to customers using marketing strategies of which entrepreneurship can be considered an extension. This is coupled with a desire to achieve higher levels of both effectiveness and efficiency, an aim that has been actively pursued by the Australian auditors-general. These developments have been behind various state and federal Australian acts of parliament that in recent years have re-written the legislation on how all government organisations are to be managed. Although these legislative reforms often tend to focus narrowly on principles of public administration and general management theory, they also gave public entities wider latitude of action. The legislative impact may well be enhanced and refined if they take into account research such as this, that transcends traditional management theory and offers deeper insights into under-researched domains.

The study focuses on the effect of a number of environmental challenges together with an aspect of organisational structure on entrepreneurial posture and the effect of this on performance among public entities. Environmental challenges consist of changes occurring in variables that constitute the external environment in which the organisation operates. Our interest in environmental variables stems from findings that US entrepreneurial firms 'generally perform best in hostile environments' [Covin and Slevin, 1986]. Moreover, as economies are becoming more global, environmental issues are becoming increasingly dynamic and salient. We also focus on the issue of centralisation as this is reputed to be a key internal organisational form adopted by public entities, often with its negative connotations of bureaucracy among the general public. Strategic variables are not considered because there is likely to be a strong two-way effect of these variables on entrepreneurship. Two-way effects of external and internal variables on entrepreneurial posture are hypothesised to be much weaker in the model by Covin and Slevin [1991].

In investigating these relationships a review of the literature is undertaken and a research model is developed. Research is conducted among Australian public sector entities and an effective response rate of 27.4 per cent (136 replies) is obtained. A structural equation model is used to examine the hypothesised linkages. Implications of the findings are discussed, limitations noted and directions for future research are outlined.

ENTREPRENEURIAL ORIENTATION

In considering the different conceptualisations of entrepreneurship, Stearns and Hills [1996] identify at least nine elements of the construct, highlighting the various perspectives from which entrepreneurship has been investigated. Conceptually, entrepreneurship can be viewed as 'the process of creating value by bringing together a unique package of resources to exploit an opportunity' [Carland, Hoy, Boulton and Carland, 1984; Drucker, 1985; Kao, 1989; Kanter, 1983; Stevenson, Roberts and Grousbeck, 1989]. Seen as a process, distinct from particular individuals, it can be viewed as existing, to some degree or amount, in *all* organisations, irrespective of size or type [Burgleman, 1984; Miller and Friesen, 1982; 1983]. There is broad agreement on the operational definition of entrepreneurship as involving three types of organisational-level behaviour. These are: 'top management risk-taking with regard to investment decisions and strategic actions in the face of uncertainty; the extensiveness and frequency of product innovation and the related tendency toward technological leadership; and the pioneering nature of the firm as evident in the firm's propensity to aggressively compete with industry rivals' [Covin and Slevin, 1991].

There can be no innovation without risk taking. Risk taking concerns the degree to which managers are willing to make resource commitment to capture opportunities that have a reasonable chance of costly failure [Miller and Friesen, 1978]. Research indicates that successful entrepreneurs are good risk managers, not wild-eyed risk takers. They are willing to assume calculated risks if the potential rewards are appropriate [Stearns and Hills, 1996].

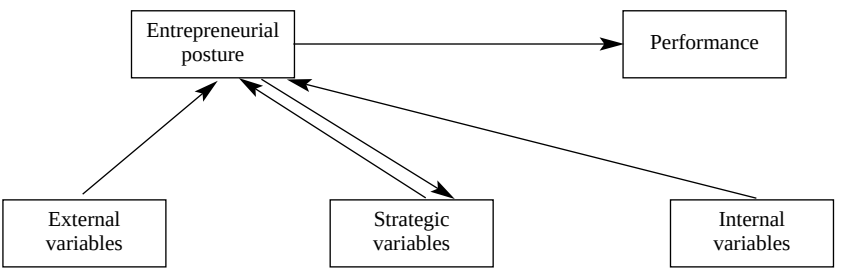
Innovation is 'the central value of entrepreneurial behaviour' [Gardner, 1994] and involves seeking the creation of unusual or novel solutions to problems or needs. It necessitates the conscious effort to create purposeful, focused change in the economic or social potential of an entity, at the basis of which lies individual creativity and intuition [Phillips, 1993]. People who are intuitive and creative are known to enjoy operating in work environments that provide a high degree of independence and autonomy. A very important aspect of intuitive and creative output is the fact that it is most often based on limited information which inherently cannot be proved, except through a bold decision to take the plunge in the market to test that insight.

Miller and Freisen [1978] argue that proactiveness of decisions deals with 'how the firm reacts to trends in the environment: does it shape the environment by introducing new products, technologies, administrative techniques, or does it merely react'. Proactiveness necessitates that individuals possess high levels of performance, commitment and

imagination. This proactiveness typical of many entrepreneurs has been stressed by many authors [see for example: Phillips, 1993; Walker and Henry, 1991]. Proactiveness refers to the ability to make things happen irrespective of the obstacles that may be faced within the organisation [Davis, Morris and Allen, 1991; Morris and Sexton, 1996]. Proactiveness also involves having to convince many people of the worthiness of the innovative concept in order to get hold of the package of resources (human, technological, financial) needed to get the idea implemented.

The conceptual model of entrepreneurship as firm behaviour by Covin and Slevin [1991] which acts as a basis for this study describes the adaptive behaviour of the organisation. It considers the stimuli the organisation receives from environmental variables, the mediating mechanisms arising from internal variables, its response in terms of strategy variables and its resultant health in terms of successful performance. External environmental variables encompass technological sophistication, dynamism, hostility and industry life cycle stages. Strategic variables are related to the mission strategy, business practices and competitive tactics while internal variables include top management values and philosophies, organisational resources and competencies, organisational culture and organisational structure. These all have strong main effects on entrepreneurial posture, however in the case of strategic variables there are strong two-way main effects. In terms of consequences the model proposes a strong main effect on organisational performance. The basic structure of the model showing strong main effects appears in Figure 1.

FIGURE 1
CONCEPTUAL MODEL OF ENTREPRENEURSHIP



Source: Covin and Slevin, 1991: 10.

ENVIRONMENTAL CHALLENGES AND ENTREPRENEURSHIP

Miller and Friesen [1978] identify three key environmental challenges that typically confront an organisation, namely: Dynamism, Heterogeneity and Hostility. Dynamism in the environment is manifested by the amount of unpredictability of change in customer tastes, production or service technologies and the modes of competition in the firms' principal industries. This aspect is unlikely to be critical for public entities as these are generally unlikely to operate in markets that they cannot predict. Heterogeneity in the environment concerns the difference in competitive tactics, customer tastes, product lines, and channels of distribution. Hostility in the environment is evidenced by price, product, technological and distribution competition, severe regulatory restrictions, shortages of labour or raw materials and unfavourable demographic trends. In the case of government organisations the main aspect of hostility that is most likely to impact them is the turbulence resulting from the technological environment. Munificence is a further environmental challenge noted by other authors [for example, McGinnis and Kohn, 1993]. Environmental munificence is defined as the scarcity or abundance of critical resources needed by (one or more) firms operating within an environment [Dess and Beard, 1984; Gastrogiovanni, 1991]. The variable has been studied not only among profit making firms but also among public entities. For example, Koberg [1987] who looked at primary and secondary schools found that declines in munificence were associated with changes in budget, planning and control systems and equipment and facilities, while Aiken and Hage [1968] who looked at 16 social welfare and health organisations report that munificence was inversely related to the number of joint projects undertaken. It is suggested that at least three of these environmental challenges also impact public sector entities so that:

> H1: The more pronounced the environmental challenges of heterogeneity, technological turbulence and munificence are to public sector organisations, the higher the level of entrepreneurship.

CENTRALISATION AND ENTREPRENEURSHIP

The internal variables grouped in the model by Covin and Slevin [1991] highlights organisational structure as a critical antecedent to entrepreneurship. Formal checks, controls and rigid structures tend to inhibit 'intrapreneurial' behaviour in organisations thereby limiting individual performance [Sinetar, 1985; Morris and Trotter, 1990; Morris, Avila and Allen, 1993]. This issue is likely to be of particular importance in

public sector entities with their bureaucratic forms of organisation resulting from excessive centralisation of decision-making power. Indeed, centralisation refers to the extent that decision-making power is concentrated at the top levels of the organisation. The virtues of centralisation in terms of discipline, standardisation, single mindedness and effective control were expounded by the scientific management school and underpinned by a set of assumptions embodied in Theory X [McGregor, 1960]. Such a management system favours efficiency in lieu of effectiveness and presupposes an external environment that is stable, constant and clearly defined [Spillard, 1985]. Concentrated power arrangements tend to prevent imaginative solutions to problems since centralized decision-making often translates into processes that run counter to the requirements of a creative environment [Argyris, 1964; Deal and Kennedy, 1982; Peters and Waterman, 1982; Rickards, 1985; Thompson, 1965]. Olson, Walker and Ruekert [1995] claim that successful projects involving new and innovative concepts must rely on organic structures and participative co-ordination where a supportive climate of risk taking and a greater flow of information exists. In such an environment, innovative ideas can be proposed, critiqued and refined with a minimum of financial and social risk. On the basis of the above discussion it is suggested that the relationship noted from research among private firms can be extended to public sector entities so that:

> H2: The higher the level of centralisation among public sector organisations, the lower will be the level of entrepreneurship.

ENTREPRENEURSHIP AND PERFORMANCE

One of the main interests in fostering an entrepreneurship orientation stems from the positive effect this is believed to have on performance. Organisational theory and strategic management offer much of the basis for the conceptualisation of the performance construct. Strategic management builds on organisational theory simultaneously considering multiple dimensions in terms of core financial performance measures such as ROCE [Venkatraman and Ramanujam, 1986] together with operational performance measures such as market share [Hofer and Sandberg, 1987; Kaplan, 1983] and other measures that consider and capture multiple stakeholder interests.

Mintzberg [1996] attacks the myths of measurement in government, an ideology that he holds is ‘embraced with religious fervour by the Management movement’. He notes that many of the benefits of measurement do not lend themselves to government entities and that many

activities are in the public sector precisely because of measurement problems. 'The assessment of many of the most common activities in government requires soft judgement – something that hard measurement cannot provide.' A main reason for this is that for some sectors, like education, medical services and others, the appropriate output measures are not clear. Hensher and Waters [1993] describe three types of measures of productive efficiency in organisations in the public sector that they term: econometric model estimation, Non-Parametric Data Envelopment Analysis and Non-Parametric Total Factor Productivity. Venkatraman and Ramanujam [1986] provide a comprehensive two-dimensional framework for classifying organisational performance measures integrating performance measures with collection methods. On the organisational performance dimension, financial vs. operational variables are considered, while on the method of collection dimension, primary (questionnaire-interview) vs. secondary (archival) data sources are taken into account. Subjective and objective measures each have their own merits. Given the impracticality of collecting objective measures this research will make use of subjective measures of organisational performance.

The main consequence of a strong entrepreneurial posture highlighted by Covin and Slevin [1991] about the entrepreneurship construct is a resulting positive performance. The perspective provided by Peters and Waterman [1982] in their well-known book, *In Search of Excellence*, provides anecdotal evidence supporting the notion that the more entrepreneurial firms tend to perform in a superior manner, exceeding industry norms. Indeed, Covin and Slevin [1991] argue that the main reason for the increasing interest in entrepreneurship comes from the belief that such activity can lead to improved performance in firms. However, these authors concede that 'surprisingly little systematic empirical evidence is available to support the belief in a strong positive relationship between entrepreneurial posture and firm performance'. Zahra [1986] provides empirical support for a relationship between corporate entrepreneurship and net income to sales ratio. More recently, the study by Morris and Sexton [1996] among a cross-section of US firms confirms a strong relationship between entrepreneurial intensity and various financial and operational measures of company performance. On the basis of the above it is suggested that the relationship can be extended to public entities. We are in agreement with the propositions put forward by Covin and Slevin [1991] that the entrepreneurial posture is more positively related to firm performance among firms in hostile, dynamic and technologically sophisticated environments rather than those operating in benign, stable and technologically unsophisticated environments. Given the antecedent variables that have been considered in earlier hypothesis, it is proposed that:

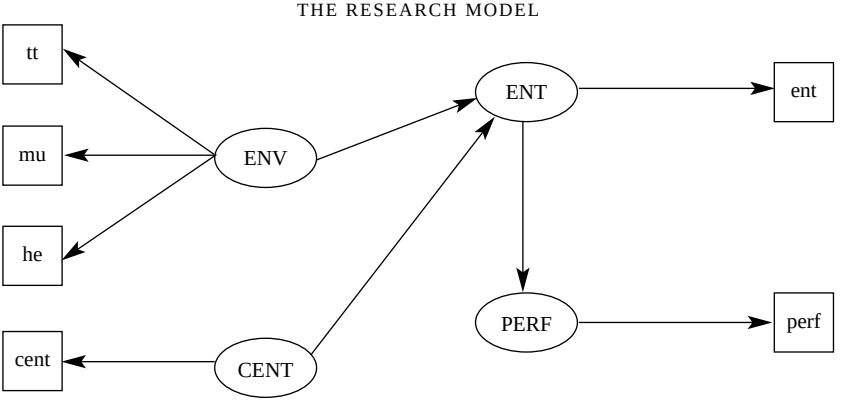
H3: The higher the level of entrepreneurship among public sector organisations, the more positive the performance.

The research model used in this study utilises the framework developed by Covin and Slevin [1991] for firms operating in the private sector and seeks to test some of the variables indicated in a public sector context. This study focuses on technological turbulence, munificence, and heterogeneity as three variables that are grouped under the external environmental category together with centralisation as a key internal organisational variable. All four variables are antecedent constructs to an entrepreneurial orientation. Performance of the organisation is an outcome variable. The hypotheses underlining these relationships are incorporated into the research model, which appears in Figure 2.

CONSTRUCT MEASURES AND DATA COLLECTION

The measure adopted for entrepreneurship (ENT) consisted of a 13-item instrument (ent) that was originally developed from an original 5-item instrument first used by Miller and Friesen [1983] and subsequently enhanced by others [Morris and Paul, 1987; Schafer, 1990]. The reported reliability alpha [Cronbach, 1951] of the scales in the various studies ranged from 0.74 to 0.87. Centralisation (CENT) was measured using the 5-item instrument (cent) developed by Ferrell and Skinner [1988] based on earlier work by John [1984]. These authors report a reliability alpha of 0.82 and 0.75 respectively. Environment challenge (ENV) was measured by three measures. Heterogeneity (he) and munificence (mu) were measured by two 3-item instruments [McGinnis and Kohn, 1993] while technological turbulence (tt) was measured by a 5-item instrument [Jaworski and Kohli,

FIGURE 2
THE RESEARCH MODEL



1993]. These are reported to have coefficient alphas of 0.70, 0.79 and 0.88 respectively. To measure performance it was thought impractical to expect busy respondents to collect actual performance data, even if they were agreeable to divulging such information. Dess and Robinson [1984] who looked at the accuracy of archival data hold that it is also of minimal use in explaining variation in performance between firms and recommend that researchers consider using questionnaire or interview based perceptual measures of organisational performance. Pearce, Robbins and Robinson [1987] show that such questionnaire-based evaluations are reliable means for measuring performance. A review of the literature by Murphy, Trailer and Hill [1996] among private sector firms about how performance is measured in entrepreneurial research 'reveals that the vast majority of studies considered only financial measures'. Marketing performance measurement needs to consider both efficiency and effectiveness. Drucker [1974] holds that 'effectiveness is the foundation of success – efficiency is the minimum condition for survival after success has been achieved. Efficiency is concerned with doing things right. Effectiveness is doing the right things'. To measure organisational performance (PERF) use is made of a 4-item scale (Perf) developed by Dess and Robinson [1984] with a reported reliability of 0.84. Seven-point scales were used throughout, described at either end by strongly disagree (1) and strongly agree (7). A 'not applicable' point was also included. A look at the Appendix indicates that the items used to measure performance include two effectiveness type measures relating to cost effectiveness and to the level of customer service together with an efficiency measure that considers the resources committed to improvement achieved. An overall performance item is also included.

Piloting took place via 30 personal interviews carried out with a sample of public entities in Western Australia. Some items were suitably amended to reflect the situation in public sector organisations. Five and one item were deleted from the 13 and three-item instruments for entrepreneurship and heterogeneity respectively. Details of the instruments with means and standard deviation appear in the Appendix. In addition, three self report classificatory questions were added. These dealt with the name of the organisation, the number of employees and the size of the annual budget. The final questionnaire was made up of 33 questions that consisted of multi-item measures for each of the constructs.

To be able to investigate the relationship among the construct a research design was employed that involved postal questionnaires to a cross-section of senior managers in Australian public sector organisations. The database used is a government database of *all* heads of government departments and public entities in the states of Queensland, Victoria and Western Australia. Their objectives are very disparate and range from cemeteries and

cremation to cultural heritage. Four hundred and ninety-six questionnaires were mailed to 215, 151 and 130 heads of government departments in Queensland, Victoria and Western Australia respectively. By the 'cut off date', four weeks later, a total of 155 replies were received, of which 136 could be used, representing an effective response rate of 27.4 per cent. No follow up was undertaken as previous experience with public sector entities had shown that the response rate from these type of respondents tended to be far stronger than similar surveys carried out among private sector firms. In terms of the number of full time employees, respondent organisations were evenly distributed with one-third having less than 150, one-third between 150 to 1,000 and the remainder in excess of 1,000 employees. Similarly in terms of budget size, one-third had less than A$18 million, one-third between A$18 to 200 million and the rest in excess of A$200 million. These findings indicate sufficient depth of the sample and we proceeded to check for non-response bias.

In order to assess non-response bias an 'extrapolation procedure' technique was used. This assumes that 'late' respondents are similar to the 'theoretical' non-respondents [Armstrong and Overton, 1977]. Independent *t*-tests were conducted to determine whether significant differences between the mean for the sum of constructs differed between the two sub-samples consisting of respondents in the first and last quartile. No significant differences were found between the two sub samples for any of these variables. While on its own this does not provide conclusive evidence for the absence of non-response bias, the results do offer some reassurance that there appears to be little difference between respondents and non-respondents for the variables under study. The sample can therefore be considered sufficient to draw conclusions about Australian public sector organisations for the issue under study.

ANALYSIS

Alpha scores [Cronbach, 1951] for each of the constructs (shown in parentheses) were: entrepreneurship (0.85), heterogeneity (0.71), munificence (0.87), technological turbulence (0.79), centralisation (0.84) and performance (0.81). These all exceed the acceptable threshold of 0.70 [Nunnally, 1978]. Factors were treated as indicators for the variables and their correlation matrix, means and standard deviation are shown in Table 1a. The correlation matrix was used as input in a LISREL 8.3 [Jöreskog and Sörbom, 1996] analysis to assess the fit of the model. In evaluating the goodness of fit of a model three aspects are considered, namely overall model fit, measurement model fit and structural model fit. Overall model fit statistics are very acceptable with a $\chi^2(8)$ value of 12.52 ($p = 0.13$), a GFI

of 0.97 and a RMSR of 0.06. The incremental fit measures at 0.97 for the TLI and 0.99 for the RNI and the parsimonious fit measures at 0.92 for the AGFI and 1.18 for the $N\chi^2$ are also very acceptable. In terms of measurement model fit, all the loadings for the elements in the measurement model have *t*-values that are significant at $p < 0.01$ and all standard errors are small. It can thus be said that all variables are significantly related to their specified constructs, verifying the postulated relationship among indicators and constructs. For each of the constructs in the study the variance extracted exceeds the 0.50 level [Fornell and Larcker, 1981]. Table 1b provides details of the structural model fit and indicates that the hypothesised relationships in the model have *t* values that are significant at the $p < 0.01$ level.

CONCLUSION

The results confirm the hypothesised relationships in the model and extend some of the links identified from the private sector to the public sector. The environmental variables considered and reflected in Hypothesis 1 are shown to have a statistically positive effect on entrepreneurship ($\gamma 11 = 0.15$; $p < 0.01$). However, the centralisation that is common in bureaucratic type organisations in the public sector and reflected as an inhibitor to

TABLE 1A
CORRELATION MATRIX OF INDICATORS WITH MEAN AND STANDARD DEVIATION

	ent	perf	te	mu	he	cent	Mean	Std Dev
ent	1.00						34.94	7.61
perf	0.52	1.00					20.96	4.58
tt	0.19	-0.03	1.00				26.68	5.12
mu	0.21	0.12	0.48	1.00			14.80	3.74
he	-0.05	-0.16	0.21	0.29	1.00		10.56	2.59
cent	-0.38	-0.41	-0.02	-0.07	0.15	1.00	12.54	5.48

TABLE 1B
ML ESTIMATES FOR STRUCTURAL MODEL PARAMETERS

	Parameter *t* values	Unstandardized values	Standard errors
Gamma			
ENV ENT	0.15	0.06	2.48
CENT ENT	-0.43	0.08	-5.15
Beta			
ENT PERF	0.98	0.28	3.50

entrepreneurship in Hypothesis 2 is confirmed by the negative value of the coefficient ($\gamma 12 = -0.43$; $p < 0.01$). The results also confirm Hypothesis 3 that envisaged a positive link between entrepreneurial orientation and performance among public sector firms ($\beta 21 = 0.98$; $p < 0.01$).

Limiting discussions of entrepreneurship to private sector firms is unduly restrictive. Public sector entities can provide new value to the various stakeholders they serve by adopting an entrepreneurial approach with the resources over which they have control. In fact, there are an ever-increasing number of public entities that have effectively reengineered themselves by being innovative, proactive and willing to take a degree of calculated risks. The Australian Tax Office, utilities such as Alinta Gas, the Water Corporation and certain local governments, municipalities and shires represent but a few Australian examples.

Clearly, entrepreneurship is not a dichotomous state. Nor is it always necessary for all organisations to have a highly entrepreneurial stance *all of the time*. Much depends on the challenges being faced in the environment at any point in time. In static or fairly stable environments, a lower level of entrepreneurship is required than in more challenging environments. It is a question of degree and some public entities may require a lesser 'dose' than others facing a more demanding, unpredictable environment. If management in public entities seeks to deliver better performance it must consider its organisational structure and be willing to move away from centralized systems that involve higher levels of formality to organisational systems that facilitate higher levels of discretion.

There are a number of limitations in the research and the model presented in this study. First, there is the possibility of specification error in that the study has been limited to a relatively small number of variables – and excluded other, potentially important constructs. More environmental, organisational and other constructs can be considered impacting on entrepreneurial orientation. Secondly, the issue of measuring performance is problematic and although use of managers' perceptions has been used in this study in line with other studies, it is recognised that these can include a degree of bias. It is possible that performance scores may reflect the degree of self-confidence of respondents who might view themselves as entrepreneurial therefore also offering good performance scores. Thirdly, there is some evidence that size of the organisation is possibly an intervening variable in the link between entrepreneurship and performance [see Murphy, Trailer and Hill, 1996]. Other intervening variables cannot be excluded. Finally, this study was carried out among Australian public sector entities and generalisations across other countries must be done with caution.

Further investigation of public sector situations with constructs and models developed primarily for private sector operations provides a rich

field of investigation. The role of entrepreneurship in the public sector is an area worthy of further research in the context of pressure to ensure that taxpayer money is spent more effectively and efficiently. Numerous relationships that have been identified in the private sector can be investigated for their relevance among public entities. More specifically, alternative moderator hypothesis can be investigated in addition to those included in this study. It appears that response rates among public entities are fairly good, as evidenced by the 27.4 per cent obtained in this study. This may be because many of these entities are not yet as inundated with questionnaires as their counterparts in the private sector.

REFERENCES

Aiken, M. and J. Hage, 1968, 'Organizational Interdependence and Intro-organizational Structure', *American Sociological Review*, Vol.33, pp.912–30.

Argyris, C., 1964, *Integrating the Individual into the Organization*, New York: Wiley.

Armstrong, J.S. and T.S. Overton, 1977, 'Estimating Non-response Bias in Mail Surveys', *Journal of Marketing Research*, Vol.14, Aug., pp.396–402.

Burgelman, R.A., 1984, 'Designs for Corporate Entrepreneurship in Established Firms', *California Management Review*, Vol.26, No.3, pp.154–66.

Carland, J.W., F. Hoy, W.R. Boulton and J.C. Carland, 1984, 'Differentiating Entrepreneurs from Small Business Owners', *Academy of Management Review*, Vol.9, No.2, pp.354–9.

Covin, J.G. and D.P. Slevin, 1986, 'The Development and Testing of an Organizational Level Entrepreneurship Scale', in R. Ronstadt, J.A. Hornaday, R. Peterson and K.H. Vesper (eds.), *Frontiers of Entrepreneurship Research*, Wesley, MA: Babson College, pp.628–39.

Covin, J.G. and D.P. Slevin, 1991, 'A Conceptual Model of Entrepreneurship as Firm Behavior', *Entrepreneurship Theory and Practice*, Vol.16, Fall, pp.7–25.

Cronbach, L.J., 1951, 'Coefficient Alpha and the Internal Structure of Tests', *Psychometrika*, Vol.16, No.3, Sept., pp.297–333.

Davis, D., M. Morris and J. Allen, 1991, 'Perceived Environmental Turbulence and its Effect on Selected Entrepreneurship, Marketing and Organizational Characteristics in Industrial Firms', *Journal of the Academy of Marketing Science*, Vol.19, No.1, Winter, pp.43–51.

Deal, T.E. and A.A. Kennedy, 1982, *Corporate Cultures: The Rites and Rituals of Corporate Life*, Reading, MA: Addison-Wesley.

Dess, G.C. and D.W. Beard, 1984, 'Dimensions of Environmental Task Environments', *Administrative Science Quarterly*, Vol.29, No.1, March, pp.52–73.

Dess, G.G. and R.B. Robinson, 1984, 'Measuring Organizational Performance in the Absence of Objective Measures: The Case of the Privately-held Firm and Conglomerate Business Unit', *Strategic Management Journal*, Vol.5, Jul.–Sept., pp.265–73.

Drucker, P., 1974, *Management: Tasks, Responsibilities, Practices*, New York: Harper and Row.

Drucker, P., 1985, 'The Discipline of Innovation', *Harvard Business Review*, May–June, pp.67–72.

Ferrell, O.C. and S.J. Skinner, 1988, 'Ethical Behavior and Bureaucratic Structure in Marketing Research Organizations', *Journal of Marketing Research*, Vol.25, Feb., pp.103–9.

Fornell, C. and F. Larcker, 1981, 'Evaluating Structural Equation Models with Unobservable Variables and Measurement Error', *Journal of Marketing Research*, Vol.18, Feb., pp.39–50.

Gardner, W.B., 1994, 'Where's Entrepreneurship? Finding the Definitive Definition', in G.E. Hills (ed.), *Marketing and Entrepreneurship: Research Ideas and Opportunities*, Westport CT: Quorum Books, pp.25–33.

Gastrogiovanni, G.J., 1991, 'Environmental Munificence: A Theoretical Assessment', *Academy of Management Review*, Vol.16, No.3, pp.542–65.

Hensher, D.A. and W.G. Waters, 1993, 'Using Total Factor Productivity and Data Envelopment

Analysis for Performance Comparisons Among Government Enterprises: Concepts and Issues', Institute of Transport Studies, Working Paper 1, Graduate School of Business, University of Sydney.
Hofer, C.W. and W.R. Sandberg, 1987, 'Improving New Venture Performance: Some Guidelines for Success', *American Journal of Small Business*, Vol.12, Summer, pp.11–25.
Jaworski, B.J. and A.K. Kohli, 1993, 'Market Orientation: Antecedents and Consequences', *Journal of Marketing*, Vol.57, July, pp.53–70.
John, G., 1984, 'An Empirical Investigation of Some Antecedents of Opportunism in a Marketing Channel', *Journal of Marketing Research*, Vol.21, Aug., pp.279–89.
Jöreskog, K.G. and D. Sörbom, 1996, *LISREL 8: Users Reference Guide*, 2nd Edn., Chicago, IL: Scientific Software International.
Kanter, R.M., 1983, *The Change Masters*, New York: Simon and Shuster.
Kao, J.J., 1989, *Entrepreneurship, Creativity and Organization*, Englewood Cliffs, NJ: Prentice Hall.
Kaplan, R.S., 1983, 'Measuring Manufacturing Performance: A New Challenge for Managerial Accounting Research', *Accounting Review*, Vol.58, Oct., pp.686–705.
Koberg, C.S., 1987, 'Resource Scarcity, Environmental Uncertainty and Adaptive Organizational Behavior', *Academy of Management Journal*, Vol.30, No.4, pp.798–807.
McGinnis, M.A. and J.W. Kohn, 1993, 'Logistics Strategy, Organizational Environment and Time Competitiveness', *Journal of Business Logistics*, Vol.14, No.2, pp.1–23.
McGregor, D., 1960, *The Human Side of Enterprise*, New York: McGraw Hill.
Miller, D. and P.H. Friesen, 1978, 'Archetypes of Strategy Formulation', *Management Science*, Vol.24, No.9, pp.921–31.
Miller, D. and P.H. Friesen, 1982, 'Innovation in Conservative and Entrepreneurial Firms: Two Models of Strategic Momentum', *Strategic Management Journal*, Vol.3, pp.1–25.
Miller, D. and P.H. Friesen, 1983, 'Strategy Making and Environment: The Third Link, *Strategic Management Journal*, Vol.4, pp.221–35.
Mintzberg, H., 1996, 'Managing Government Governing Management', *Harvard Business Review*, May–June, pp.75–83.
Morris, M.H. and G.W. Paul, 1987, 'The Relationship Between Entrepreneurship and Marketing in Established Firms', *Journal of Business Venturing*, Vol.2, No.5, pp.247–59.
Morris, M.H. and D.L. Sexton, 1996, 'The Concept of Entrepreneurial Intensity: Implications for Company Performance', *Journal of Business Research*, Vol.36, No.1, pp.5–13.
Morris, M.H. and J.D. Trotter, 1990, 'Institutionalizing Entrepreneurship in a Large Company: A Case Study at AT&T', *Industrial Marketing Management*, Vol.19, No.2, pp.131–9.
Morris, M.H., R.A. Avila and J. Allen, 1993, 'Individualism and the Modern Corporation: Implications for Innovation and Entrepreneurship', *Journal of Management*, Vol.19, No.3, pp.595–612.
Murphy, G.B., J.W. Trailer and R.C. Hill, 1996, 'Measuring Performance in Entrepreneurship Research', *Journal of Business Research*, Vol.36, No.1, pp.15–23.
Nunnally, J.C., 1978, *Psychometric Theory*, New York: McGraw Hill.
Olson, E.M., O.C. Walker Jr. and R.W. Ruekert, 1995, 'Organizing for Effective New Product Development: The Moderating Role of Product Innovativeness', *Journal of Marketing*, Vol.59, Jan., pp.48–62.
Pearce, J.A., D.K. Robbins and R.B. Robinson, 1987, 'The Impact of Grand Strategy and Planning Formality on Financial Performance', *Strategic Management Journal*, Vol.8, March–April, pp.125–34.
Peters, T.J. and R.H. Waterman, 1982, *In Search of Excellence*, Avon: Bath Press.
Phillips, N., 1993, *Innovative Management*, London: Pitman.
Rickards, T., 1985, *Stimulating Innovation – A Systems Approach*, London: Pinter.
Schafer, D.S., 1990, 'Level of Entrepreneurship and Scanning Source Usage in Very Small Business', *Entrepreneurship Theory and Practice*, Vol.125, No.1, pp.19–31.
Sinetar, M., 1985, 'Entrepreneurs, Chaos, and Creativity – Can Creative People Really Survive Large Company Structure?', *Sloan Management Review*, Winter, pp.57–62.
Spillard, P., 1985, *Organization and Marketing*, Kent: Croom Helm.
Stearns, T.M. and G.E. Hills, 1996, 'Entrepreneurship and the New Firm Development: A Definitional Introduction', *Journal of Business Research*, Vol.36, No.1, pp.1–4.

Stevenson, H.H., M.J. Roberts and D.E. Grousbeck, 1989, *New Business Ventures and the Entrepreneur*, 3rd Edn., Homewood, IL: Irwin.
Thompson, V.A., 1965, 'Bureaucracy and Innovation', *Administrative Science Quarterly*, Vol.10, June, pp.1–20.
Venkatraman, N. and V. Ramanujam, 1986, 'Measurement of Business Performance in Strategy Research: A Comparison of Approaches', *Academy of Management Review*, Vol.11, Oct., pp.801–14.
Walker, D. and J. Henry, 1991, *Managing Innovation*, London: Sage.
Zahra, S.A., 1986, 'A Canonical Analysis of Corporate Entrepreneurship Antecedents and Impact on Performance', *Proceedings of the National Academy of Management*, Vol.46, pp.71–5.

APPENDIX 1
ITEMS OF MEASURES USED WITH MEANS AND STANDARD DEVIATIONS

Entrepreneurship	**Mean**	**SD**
At our organisation, top level decision making is characterised by:		
A high rate, compared to other public sector organisations, of new product/services introduction (including new features and improvements).	4.50	1.44
Continuous improvement in the methods of production and/or service delivery.	5.06	1.26
Risk taking by all key executives in seizing and exploring chancy growth opportunities.	4.24	1.46
Seeking unusual, novel solutions by senior executives to problems via the use of 'idea people', brainstorming and similar activities.	4.58	1.58
A top management philosophy that emphasises proven products and services, and the avoidance of heavy new product development costs.	4.06	1.30
A characteristic leader at the top.	4.17	1.61
Cautious, pragmatic, step-at-time adjustments to problems.	3.96	1.48
Active search for big opportunities.	4.38	1.50
Performance		
The overall performance of our organisation in the last three years has been very good relative to that of other government organisations.	5.54	1.36
In relation to the resources committed the improvements achieved by this organisation in the last three years has been very low.	5.27	1.58
The level of customer service provided by this organisation the last three years has been much more than offered by other public organisations.	4.96	1.32
The level of cost effectiveness achieved by this organisation in the last three years has been very low.	5.20	1.52
Technological turbulence		
The technology in our industry/ environment is changing rapidly.	5.84	1.23
Technology changes provide big opportunities in our industry/ environment.	5.80	1.24
It is very difficult to forecast where the technology in our industry/ environment will be in the next two to three years.	4.69	1.55
A large number of new product ideas have been made possible through technological breakthroughs in our industry/environment.	4.94	1.59
Technological developments in our industry/environment are rather minor.	5.41	1.45
Munificence		
Many new opportunities are available to my organisation in existing and new markets.	4.85	1.60

APPENDIX 1 (Cont'd)

Entrepreneurship	Mean	SD
Munificence		
There are many opportunities available to my organisation in the form of existing or new products.	4.97	1.50
The potential for growth in the markets served by my organisation is substantial.	4.98	1.54
Heterogeneity		
Customers served by my organisation vary greatly in terms of product preferences and expected service levels.	5.22	1.56
In order to deliver effectively in the markets served by my organisation, several different technologies must be mastered.	5.34	1.47
Centralisation		
There can be little action taken here until a supervisor approves a decision.	2.58	1.49
A staff member who wants to make his own decision would be quickly discouraged here.	3.16	1.60
In this organisation, even small matters have to be referred to someone higher up for a final answer.	2.57	1.40
My staff have to ask me before they do almost anything.	2.46	1.44
Any decisions my staff make has to have my approval.	1.76	1.12