Title	A Multi-Country Strategic Alignment Study: Are SME Leaders' Decisions Aligned with their Country's Innovation Environment?

Submission ID: 153

Track:

Author(s):	University/Organisation:	Email:
1. *Philip Olson*	University of Idaho	polson@uidaho.edu
2. *Tim Mazzarol*	University of Western Australia	Tim.mazzarol@uwa.edu.au
3. *Thierry Volery*	St Gallen University	Thierry.volery@unisg.ch
4. *Delwyn Clark*	University of Waikato	dnclark@mngt.waikato.ac.nz
5. *Newell (Sandy) Gough*	Boise State University	sgough@boisestate.edu

Abstract:

The innovation strategies of SMEs in four OECD countries are examined in order to compare the perceived climate for innovation in each country with reference to government support, regulations and access to markets, infrastructure, skilled labour, management and venture financing. The strategic decision making of the senior managers from these firms in relation to the commercialization of an innovation is also examined. A third purpose is to study the strategic alignment or pattern within each country with regard to: each country's innovation climate and the decisions made by the firm's leaders concerning innovation management. Country differences were observed among innovation climates, innovation management decisions made by leaders and alignments.

INTRODUCTION

Innovation is a competitive strategy available to small and medium enterprises (SMEs) – defined as those with fewer than 250 employees (OECD 2004). Actions linked to this strategy include making or doing something new (OECD 2010). Although many perceived innovations don't succeed, those that do provide an enterprise with something unique. As with any SME strategy, the innovation strategy needs to fit or be aligned externally with the environment (e.g., customers, suppliers, economic conditions, etc.), and internally with the SME's capabilities (e.g., resources, actions, etc.), to increase its chance of being effective (Tidd 2001; York and Venkataraman 2010).

This paper focuses on SME firms developing new technologies as their innovation strategy in OECD countries with particular focus on four: Australia, New Zealand, Switzerland, and the United States. One purpose is to compare the innovation or creative climate between each country. Climate refers to a subset of environmental issues and forces

like regulations, resources and services that promote SMEs using the innovation strategy. Countries as well as regions vary in the degree to which they develop a supportive climate. At the macro-level it has been identified as a National Innovation System (NIS) (OECD 1997; Lundvall 2007) and has been noted as playing a key role in the commercialization of innovation across different countries (Walsh and Le Roux 2004). Most research into NIS has focused on larger firms and the role of government policy. There has been less attention given to the impact of climate on SMEs (Balzat and Hanusch 2004; Sharif 2006).

A second purpose is to compare SME leaders' strategic decision making between the four countries. Of particular interest are those decisions made by leaders concerning which people will have *influence* when commercializing innovations. Capitalizing on a new idea not only means that an idea has to be conceived but it also needs to be implemented (commercialized), a task that is not necessarily simple. The role of the CEO in driving and shaping innovation has been identified as critical (Jung, Wu and Chow 2004; 2008).

A third purpose is to examine innovative SME competitive alignments among countries. In this paper, alignment is viewed as a position, configuration or pattern composed of various factors. More specifically, this purpose is to study country-level alignments that capture: a country's innovation climate, and its SME leaders' decisions or strategies that surround innovation commercialization. Do different country patterns exist? If so, what factors define them? Further, what are the possible implications for countries and their SMEs?

LITERATURE REVIEW AND HYPOTHESES

Innovation has been a business research topic for many years (Tushman and O'Reilly 2002; Christensen 1997; Drucker 1985) and over time a number of subthemes have developed. One subtheme is innovation climate and it can be defined as the recurring behavior and practices plus environmental issues and factors that influence the development

of innovations in organizations and countries (Scott and Bruce 1994; Gonzalez-Roma, Peiro and Tordera 2002). The first purpose of this study is to compare the innovation climates of four countries: Australia, New Zealand, Switzerland, and the United States.

Many early innovation climate research studies had an organizational focus or context (Mathisen and Einarsen 2004; Susanj 2000; Isaksen, Lauer, Ekvall and Britz 2001). That is, the purpose of these studies was to identify behaviors "within an organization" that promote the development of innovations. Ekvall's (1996) research on creative climate stimulated much of this research. Ekvall (2006) defined climate as the recurring patterns of behavior and attitudes that portray life in an organization.

A more recent innovation climate research direction is reflected in studies with a country (national) or regional focus (Bavec 2009; Lam 2006; Whitley 2000). Here, the research centers on identifying factors "within a country" that influence business' ability to produce innovations. In this context, according to Jolly (1997), climate is a subset of environmental issues and forces like regulations, resources, and services that influence the development of innovations.

Initially, it was multinational companies that discovered the challenges of innovating in different countries (Lam 2006; Whitley 2000). One study, discussed by Zain, Richardson, and Mohd Nazri Khan (2002), involved two subsidiaries of a German multinational company operating in Germany and Malaysia. Given that both units were part of the same firm, the expectation was that their innovative productivity would be similar. But the German subsidiary outperformed its Malaysian counterpart on innovations. Hence, it was suggested that factors at the country level were impacting the outcome--i.e., that different innovation climates existed within the two countries.

A country's innovation climate can influence the development of innovations in both existing and new businesses. Regarding new businesses, May (2010) studied issues facing

entrepreneurs around the world. He used data drawn from several surveys including: a Small Business Administration's Office of Advocacy study; a World Bank "Doing Business 2010" study; and a Global Entrepreneurship Monitor "2009 Global Report" study. His study focused on business start-up issues including costs, time it takes, and the governmental procedures/steps that are required. One finding was that developing countries often impose high costs and numerous regulations on entrepreneurs. Another result concerned the best countries in which to start a business. As expected, developed countries ranked high, including the four countries being examined in this study. (The United States ranked third, New Zealand fifth, Switzerland seventh, and Australia eleventh. Denmark and Canada, respectively, ranked first and second.)

The research by May (2010) is helpful to the current study in that it included countries around the world. It also had a country business start-up climate focus. It did not, however, cover "innovation" climate nor did it include existing small and medium sized firms (it covered only start-ups). Both of these issues are of interest for the current study and, in addition, for countries that are seeking to increase their high-technology capabilities. Also, with innovations as the focus, there are other important country climate factors for businesses to consider than just costs, time, and procedures. These factors measure how easy it is for a business to access a workforce with the necessary skills and education; how easy it is for a business to access external financing (e.g., banking or venture capital) to fund future growth; how easy it is for a business to find and recruit high quality managerial staff to assist with future growth; the cost of doing business in comparison to other countries; how easy it is to access high quality research centers (e.g., universities); whether regulations governing business operations in this country (e.g., patent laws, taxation, and corporate governance rules) support a business; and whether communications infrastructure (e.g., roads, telecommunications, internet services) support a business.

Because little research has focused on the influence of these country level innovation factors, new studies are needed. One area that could be helpful is research that examines country innovation climate factor strengths and weaknesses. Hence, this study's first hypothesis is:

H1: *Countries have different innovation climate factor strengths and*

weaknesses.

Knowing, for example, which of the innovation factors are a country's strengths or weaknesses could assist the country's SME leaders in developing innovations.

As noted above, a second purpose in this study is to compare countries regarding their SME leaders' strategic decision making when commercializing innovations. Of particular interest is the decisions SME leaders make concerning which people (and agencies) are given influence in this process. There are few, if any, SME leaders or entrepreneurs who would claim to be an expert in all aspects of their business and have the time to perform all the work. Hence, leaders need assistance from others. One way to categorize these helpers is whether they come from inside the business or outside.

Scott and Barnes (2011) define an "internal consultant" as a staff member who serves in a consultant role within an organization. They discuss processes that these consultants should follow to be effective, including the importance of developing trust and relationships. Further, they state that internal consultants with experience in that firm have advantages externals external consultants don't have. They have knowledge of the organization—its history and its routines. This knowledge, in turn, can give them an edge in getting projects, including innovations, started because they know the people and processes as well as how to make things happen—i.e., they know the organization's innovation climate.

Internal consultants include equity partners (e.g., individual shareholders and venture-capital firms) and employees (e.g., managers and other skilled staff members). Many

businesses are started with two or more partners. Consider Reuf, Aldrich and Carter's (2003) study on nascent entrepreneurs. They found that more than half of all United States' ventures were started by a team of entrepreneurs. In these cases, the lead entrepreneur has other partners who can assist in commercializing innovations. Reuf et.al. (2003) also found strong support for trust, and not functional diversity, as influencing initial team composition. That is, when selecting partners, entrepreneurs sought out those they trusted (e.g., people within their families, friendship circles, workplaces, and residential areas) rather than outsiders who could complement their weaknesses.

Outside people and agencies can also provide assistance to an SME leader. In this scenario, the assistance comes from those who have neither ownership nor employment in the business. Governmental agencies typically provide services at little or no cost. Suppliers (vendors) also are not likely to charge for information or time because they have a vested interest in seeing the business succeed. Likewise, a business' customers that provide assistance on design or other features of an innovation usually do not change for their information. On the other hand, there are costs linked to contracting with accountants, lawyers, bankers, and other external consultants.

Do SME leaders in different countries vary concerning which people and agencies are given influence when commercializing innovations? No comparative studies on the influence of people were identified. However, several studies from three countries (United States, Britain, and Sweden) exist on the effectiveness and, hence, possible influence of different governmental agencies or programs.

The governmental agency studied in the United States was the Small Business Development Center (SBDC). It provides publicly funded, professional-quality counseling to a large number of small businesses. Chrisman and McMullan (2000) researched the SBDC and found it effective in helping firms not only survive but also grow in both sales and

employment. They also confirmed that the SBCD makes sense from an economic perspective in a second study (Chrisman and McMullan 2004).

These results for the United States, however, are not duplicated in British or Swedish studies. In a British study (Storey and Westhead 1994) the authors found that it was difficult to isolate the influence training had on small business performance. In Swedish studies the impact of business and strategic start-up courses on firm success was examined. Davidsson and Henrekson (2002) concluded, after reviewing several studies, that weak, zero, or even negative correlations existed between entrepreneurs taking courses or receiving counseling on the one hand and, on the other hand, operating a successful business.

One limitation of this three country comparison is that the governmental agencies/programs being examined are not similar. However, the different outcomes are intriguing and suggest that country differences may exist in terms of commercializing innovations. The second hypothesis is:

H2: Countries differ regarding the influence given to various people and agencies by business leaders when commercializing their innovations.

The study's third purpose is to examine country-level alignments or positions that capture: a country's innovation climate, and its SME leaders' decisions or strategies that surround innovation commercialization. Literature covering strategies that leaders pursue to achieve goals has existed for several decades (for example, Hofer and Schendel 1978; Porter 1985). Further, strategies have also been studied in various contexts such as different types of industries (Von Hippel 1988; Grant 2008).

The growing recognition of the importance of technological innovation to a country's economic vitality has led to many studies of opportunities for new (or existing) firms, and prescriptions for management strategies (Dorf and Byers 2005; Schilling 2010). Typical of these studies is a focus on stages of development of single firms, without much emphasis on

the country of origin. Other work in the technology transfer stream, by contrast, does attempt, on a limited basis, to link specific infrastructure characteristics of countries to the growth of innovative small firms (Shapera and Rosenfeld 1997).

Little research, however, has been conducted relating SME strategies within a given country to that country's wider innovation climate - with the potential for alignments or patterns. Hence, the third hypothesis:

H3: *Countries have different alignments between innovation climate factors and the people/agencies that are given strategic decision-making influence when commercializing innovations.*

METHODOLOGY

Data for each SME was collected using a questionnaire administered face-to-face and from an in-depth follow-up interview with the owner/manager. A total of 269 firms were drawn from across the four countries examined for this study distributed as follows: Australia (83); New Zealand (93); Switzerland (67) and the United States (26). Firms were identified by investigation within each country of innovative companies many of which were listed in government or industry databases. In some cases contacts were made via technology incubators and simple networking by the investigators. The sampling process was purposive rather than random in nature and involved direct approaches to each firm's senior management to secure agreement to undertake the interview. All respondent firms had to have an innovation under development that they were planning to commercialize in the next three years from time of interview.

In order to determine their leadership role in the firm all respondents were to be senior managers with decision making power. Of the managers interviewed, 30% described themselves as "owner-managers", 21% as "executive managers and principal shareholders", 29% as "executive managers with shareholding" and 19% as "executive managers without

shareholding". These firms ranged in size from micro-enterprises with fewer than 10 employees (23%); small, with between 10 and 50 employees (40%), and medium, with between 50 and 250 employees (37%).

The data collection process involved use of a case study survey methodology (Yin and Heald, 1975). A common discussion protocol and questionnaire were employed across all countries and use was made of a computer based questionnaire running in EXCEL to allow the data to be entered during the interview and discussions to take place with the firm's managers at the same time. While this process was time consuming it allowed for a more in-depth examination of the issues and included some opportunity to validate the responses through examination of products and product brochures with those interviewed.

The questionnaire contained ten items addressing the national climate for innovation within country, and 12 items relating to the perceived value of different *influencers* in relation to their ability to assist strategic decision making in relation to commercialization. Each of these items was scored on a five-point Likert scale, with five indicating the most supportive SME innovation climate or value of advice.

Exploratory factor analysis (Principal Components) of the country climate and strategic decision making items reduced these 22 items to 10, of which 5 were related to country climate and 5 to strategic advice. Initial analysis involved ANOVA tests (one-way) on the four countries in relation to these items.

A discriminant analysis was then undertaken in which these same items were used as independent variables along with firm size and level of R&D intensity (as measured by the proportion of annual turnover invested in R&D). Grouping was by country of origin. A total of 259 of the original 262 cases were used in the analysis. Correlation analysis (two-tailed Pearson tests) between the ten factor items was undertaken to examine for alignment between

the 5 country climate and 5 strategic advisory items for each country. Details of the data analysis are discussed in the following section.

DATA ANALYSIS

Ten items measured perceptions of country climate. These are listed in Table 1 along with the means and standard deviations for each item. Analysis of variance (ANOVA) tests (one way) on each of these items using country as a factor found significant differences between various countries on all by one of these items. This was the issue of whether government support for local innovators was strong. It can be seen that the mean score for this was 2.77 suggesting that many respondents did not feel particularly positive about this.

Table 1: Country Climate Measures

Q: With respect to your ability to manage a competitive and innovative firm within your country, would you agree or disagree with the following: [where 1 = strongly disagree and 5 = strongly agree]	Mean	Std. Dev
It is easy for our business to access a workforce with the necessary skills and education?*	2.64	1.080
The cost of doing business is low in comparison to other countries?*	2.50	1.023
Geographic distance to key markets is not a problem for our business?*	3.25	1.388
It is easy for a business such as ours to access external financing (e.g. banking or venture capital) to fund future growth?*	2.93	1.299
It is easy for a business such as ours to find and recruit high quality managerial staff to assist with future growth?*	2.51	1.069
The lifestyle in this country enhances our business?*	3.67	1.111
It is easy for a business such as ours to access high quality research centres (e.g. universities) locally?*	3.46	1.059
Government support for local innovators is strong?	2.77	1.089
The regulations governing business operations in this country (e.g. patent laws, taxation, corporate governance rules) are excellent for our business?*	2.84	1.072
The communications infrastructure in this country (e.g. roads, telecommunications, and internet services) is excellent for our business?*	3.68	1.176
* Indicates significant differences (at *p <0.5)* found between the four countries in relation to these items.		

The ANOVA tests for these ten country climate items found United States firms to be more positive over the ease of accessing skill employees than their counterparts in the other

countries. The US firms were also more positive over their ability to recruit high quality managerial staff. Differences were also found between the Swiss firms and their counterparts in Australia and New Zealand. For example, the Swiss were the most positive over the issue of geographic distance to markets while the New Zealand firms were the most negative. Australian and US firms were not differentiated in this matter and sat in the middle. This is not surprising given the respective geographic locations of Switzerland and New Zealand. However, Swiss firms were significantly less positive than New Zealand firms over whether the cost of doing business was low in comparison other countries.

Swiss firms were also found to be more positive than their counterparts in Australia over the ease with which they could access external financing to fund future growth. They were also more positive than New Zealand firms over their ability to access high quality research centers such as universities at a local level. Swiss firms were also more positive over government regulations such as taxation and patent laws than firms in New Zealand.

The New Zealand firms were also the most negative about the quality of their communications infrastructure while the Swiss and American firms were the most positive, with the Australians falling in-between. A similar pattern emerged for lifestyle as an enhancement for business. The New Zealand firms were the most negative and the Americans the most positive with Australian and Swiss firms falling in between.

Table 2 lists the twelve items that were used to measure the perceived value of various outsiders in relation to strategic decision making over the commercialization of an innovation. Once again ANOVA tests found significant differences between the four countries in relation to these items. While no differences were found in relation to customers and senior management within the firm, Australian firms were more likely to see suppliers as providing value than did the Swiss firms. By contrast, Swiss firms were more likely to place value on their board of directors than the respondents from the other three countries. Swiss

and New Zealand firms were also found to put more value on their shareholders than Australian firms. By contrast the Australian firms put more value on the opinion of family members than did the Swiss, while American firms were more positive than Swiss over the value of friends and social contacts, other business people, accountants, lawyers and providers of venture financing.

Table 2: Influence of Strategic Decision Making by Others

Q: How would you rate the relative influences of the following people in relation to their influence on your strategic decision making when seeking to commercialize an innovation? [1 = of no value to 5 = very valuable]	Mean	Std. Dev
Customers, particularly leading customers?	4.53	.736
Suppliers, particularly key suppliers?*	3.20	1.136
Directors of your management board?*	4.12	1.008
Equity partners / shareholders in the firm?*	3.57	1.361
Other senior managerial staff within your firm?	3.96	.933
Family members (e.g. partners, close relatives)?*	2.40	1.376
Friends and social contacts?*	2.18	1.076
Other business people with whom you have contact?*	3.05	.995
Accountants?*	2.38	1.215
Lawyers or legal advisors?*	2.42	1.183
Bankers or providers of debt financing?*	2.28	1.225
Providers of venture capital financing?*	2.04	1.239
* Indicates significant differences ($p < 0.5$) found between the four countries in relation to these items.		

Factor Analysis

Two factor analyses were undertaken with the data. The first of these was with the ten items measuring perceptions of the innovation climate, the second with the 12 items relating to the value of outsiders influence on strategic decision making. In each case a principal component analysis was used with a varimax rotation to provide a final structure. Initial measures of sampling adequacy (MSA) were undertaken using the Kaiser-Meyer-Olkin and Bartlett's test of sphericity. These were significant at the $p < 0.000$ level suggesting that the data was suitable for further analysis (Kaiser 1974). In keeping with the principal component

approach eigenvalues of greater than 1 were used to define the factors in each model (Hair et.al. 1992).

The ten items relating to the innovation climate grouped into four factors explaining 58.5% of the variance in the model. Three items loaded onto the first factor explaining 23% of variance, with loadings ranging from 0.836 to 0.429. These related to the ease of recruiting skilled workforce, finding high quality managers and the lifestyle of the country. A further three items loaded onto the second factor explaining 13% of variance, with factor loadings ranging from 0.617 to 0.732. These related to government support, the ease of accessing research centers and financing. Three items loaded onto the third factor explaining 11.4% of variance. These had factor loadings ranging from 0.671 to 0.775 and dealt with the quality of the national communications infrastructure, geographic distance to markets and government regulations. The last item, relating to the perceived cost of doing business, was loaded onto the final factor with a loading of 0.901. These factor loadings were within the boundaries of acceptability (Stewart 1981).

Analysis using scale reliability tests (Cronbach 1951) was undertaken to determine if these items provided a useful measure before further analysis was undertaken. Of the three items that loaded onto the third factor, the item relating to geographic distance was not found to be a good fit and was removed and held as a separate measure. This created a total of three new dimensions or factors that had Cronbach alpha coefficients ranging from 0.483 to 0.546, plus two single item measures associated with geographic distance and the cost of doing business.

The 12 items measuring strategic decision influences were subject to a separate factor analysis. This produced four factors that explained 60% of variance. Five items loaded onto the first factor which explained 27% of variance with loading scores ranging from 0.583 to .0769. These encompassed perceptions of the value of accountants, lawyers, bankers,

suppliers and other business people. Two items relating to equity partners and the board of directors loaded onto the second factor, explaining 13% of variance, with loadings from 0.851 to 0.860. Three items loaded onto the third factor, explaining 11.7% of variance, with loadings from -0.650 to 0.708. These dealt with customers (the negative item), friends and family. Finally, two items relating to senior managers and venture capital providers loaded onto the fourth factor, explaining 9% of variance, with factor loadings of 0.626 and 0.794. Scale reliability tests resulted in the removal of customers from the third factor and its retention as a separate item. This led to the creation of four factors with alpha coefficients ranging from 0.641 to 0.737, plus the customers item.

At the completion of these two factor analyses ten factor items were developed. Five of these dealt with the innovation climate and were labeled: *Personnel*, *Support Networks*, *Infrastructure*, *Geographic Distance* and *Business Costs*. The other five were measures of the influence of outsiders on strategic decision making. These were labeled: *Professionals*, *Shareholders and Board*, *Social Networks*, *Senior Managers & VC* and *Customers.*

Discriminant Analysis

These ten new variables were then used in a discriminant analysis to evaluate differences between the four countries and to consider alignment between these factors and the countries. This analysis was run using the step-wise procedure in the SPSS (PASW) statistical software program. A varimax rotation procedure was again used to provide clear separation of the functions. A hold out sample was not employed as the predictive accuracy of the final model was not considered to be primary objective of this study (Birley and Westhead 1993), and sample sizes were too low to permit this. The discriminant model was estimated using Wilk's Lambda (Wilks and Thompson 1937). Rao's V was used to determine the inclusion of the items in the models with a range from 0.05 to 0.01 significance levels of the F-statistics determining entry or removal. The minimum Rao's V for entry was zero.

The discriminant analysis used 259 cases (98.9%) and produced three functions that correctly classified 60% of the cases. Only six of the ten variables were used in the final model. The factors *Customers, Social Networks, Senior Managers* and *Support Networks* were not found to be significant within the final model and were excluded from the analysis. The final rotated standardized canonical discriminant function coefficients are shown in Table 3.

Table 3: Rotated Standardized Canonical Discriminant Function Coefficients[a]

|	Function		
	1	2	3
Personnel (ease of access to skilled labour and quality managers)	.116	.728	.305
Infrastructure (quality of communications & regulatory systems)	.828	.004	-.231
Geographic distance to key markets is not a problem for our business	.411	-.050	.090
Business Costs (the cost of doing business is low in comparison to other countries)	-.375	.201	.388
Professionals (value of accountants, lawyers, bankers, suppliers & business people)	-.097	.784	-.440
Shareholders & Board (value of equity partners & board of directors)	.125	-.235	.870
Canonical correlation for function	.672	.445	.255
Wilk's Lambda (1 through 3 chi-square 224.95; df 18; sig .000)	.411	.750	.935

Coefficients are based on rotated structure matrix.

a. % of variance by function 1 = 64.3, function 2 = 22.4, function 3 = 13.4

Figure 1 illustrates the findings using a diagram to plot the relationship between the four countries and the independent descriptors. Each of the six items listed in Table 3 are shown as arrows with the direction representing the coefficient scores across the two dimensions and the length of the arrow indicating the strength of the coefficients. The four country grouping variables are plotted using their unstandardized canonical discriminant functions evaluated at group means (functions at group centroids).

As illustrated in Figure 1 there is a strong separation between the four countries, although Australia and New Zealand are more closely aligned with each other than are the USA and Switzerland which are individually discriminated. The key factors that discriminate the United States firms are their more positive view over their ability to access personnel such as skilled employees and managers. The Swiss firms were mainly discriminated by their

positive attitude towards the value of shareholders and members of the company board. Both the Swiss and the American firms were also discriminated by their positive view of the quality of their national infrastructure (e.g. communications and regulations), and their sense that they are geographically close to key markets.

Figure 1: Plot of Climate and Strategic Influences by Country
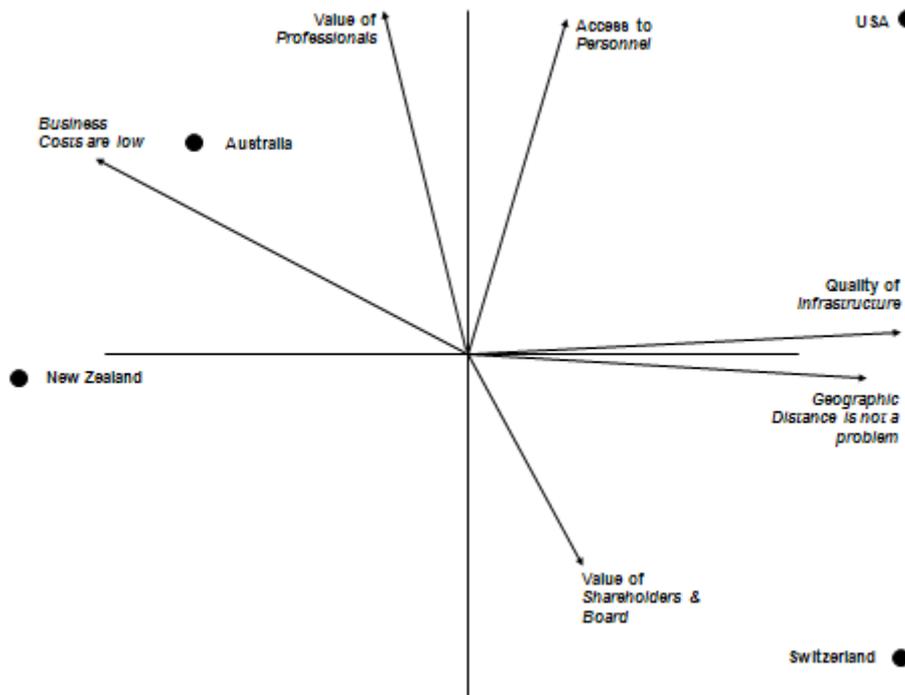
By comparison the Australian and New Zealand firms were discriminated by their more positive view over the cost of doing business. The Australian firms were also more likely to put value on the use of professionals such as accountants, lawyers, bankers, suppliers and other business operators.

These findings suggest some tentative support for all three hypotheses postulated for this study. However, we advise caution in the interpretation of these findings for several reasons. First, the overall size of each country sample is quite small, particularly that of the United States. Second, the purposive sampling process undertaken meant that many samples were drawn from specific industries and sectors in the countries of origin. For example, the US sample was largely recruited from a technology incubator in Idaho while many of the

Swiss firms were recruited from the German speaking region around Zurich. The firms from Australia were recruited from both the west coast around Perth and the east coast around Melbourne, while the New Zealand sample was drawn from a wide cross-section of that country. There were also some size differences found within these sub-samples, with the New Zealand and Swiss firm more prominent in the medium size category than those from Australia and the United States.

DISCUSSION

Our findings provide evidence that SME leaders in these four countries have different perceptions of many key external environmental factors which shape the context or innovation climate in which they operate. Country-specific differences in nine of the ten innovation climate items (as outlined), reflect different challenges for SME leaders in these countries who are implementing innovation strategies. Understanding the strengths and weaknesses of the innovation climate in each country is therefore important for SME leaders, as well as for policy makers in each country.

Our results also show that SME leaders in these countries had similar rather than different perceptions of the level of government support for local innovators. As OECD (2010) data suggests, most countries adopt similar policies to support SMEs, this finding is not really surprising. However, our innovative SME leaders in their respective countries appear to be unimpressed by the level of government support provided. This suggests that although global benchmarking of SME innovation policies has been conducted, further investigation is required of the effectiveness of the government policies and practices to support innovation and commercialization processes of SMEs.

In terms of strategic decision making influencers in these four countries, our results identified significant differences in the perceived value of many key people by SME leaders seeking to commercialize an innovation. This finding suggests that SME leaders evaluate the

potential value of outsiders differently and will develop stronger relationships with different types of people and agencies: this is likely to be influenced by cultural perceptions including social norms and values (Hofstede 2001). Furthermore, country-specific priorities for strategic decision support imply that innovation strategy processes may vary for SME leaders in different countries. These findings will be of particular interest to policy makers as many of the programs offered to assist innovators focus on supply of R&D providers, technology transfer, or financial advice, rather than on the source of ideas underpinning the innovations (from key customers and creative managers). SME innovation policies need to be checked to ensure that market-driven ideas for new innovations are recognized and not excluded from consideration (as is current practice in many countries).

The five key factors which were identified from factor analysis of the innovation climate variables (in order of importance by mean scores) were found to group into three tiers by order of importance rating score: i) infrastructure; ii) geographic distance to markets and support networks; iii) personnel and business costs. This suggests that these firms held their most positive views towards the national infrastructure such as telecommunications and business related legal systems. Their least positive perceptions were towards the ease of finding human capital and the overall cost of doing business, with geographic proximity to markets and the availability of support networks such as local R&D centers and government support programs lying in-between.

Further, the five aggregated factors which were developed by factor analysis of the strategic influencers (in order of importance by mean score) were: i) customers; ii) shareholders and board; iii) senior managers; iv) professionals; and v) social networks. Finally, the discriminant analysis found significant differences for six of these factors as illustrated in Figure 1. These findings as plotted provide further insight into the similarities and differences between these four countries for key climate and strategic influencer factors.

This type of information is valuable for SME leaders seeking to innovate and compete in competitive markets. Understanding the specific advantages and strengths or disadvantages and weaknesses of the innovation climate in each country is important to be able to successfully implement innovation strategies. In addition, understanding comparative patterns in the perceived value of strategic influencers is important for SME leaders and policy makers.

CONCLUSIONS

This analysis provides new evidence and insights which are valuable for policy makers, practitioners, educators and researchers. First, it provides new information for those who are interested in innovation strategy and alignment issues. Little empirical information is available on alignment. The findings highlight the universal importance of customers to SME innovators as a key influencer on innovation, but also suggest that other influencers may feature differently depending on the environmental context in which the SME is located. In countries where it is easier to recruit high quality managers there may be less importance placed on outside professionals. Second, policy makers with interests in designing innovation/creative environments can gain insights from the study. While most OECD nations follow similar approaches to supporting innovation there seems to be more that can be done to enhance the level of support for SME innovator firms. Access to international markets, particularly in countries not already part of the key centers of economic activity such as the Europe and North America, needs to be addressed, and this is likely to be closely aligned with the quality of communications infrastructure such as ICT, broadband internet services and air and sea transport services. Third, because the study focuses on four countries, the results have implications for more than one country. Further research should focus on the similarities and differences between SMEs within their industry and national context to explore if there is universal model for SME innovation, or if country differences prevail.

REFERENCES

Balzat, M., and Hanusch, H. (2004). "Recent Trends in the Research on National Innovation Systems." *Journal of Evolutionary Economics* **14**(2): 197-210.

Bavec, C. (2009) "On the Creative Climate and Innovativeness at the Country Level", *Zb. Rad. Ekon, fak. Rij.* **27**(1): 9-30.

Birley, S., and Westhead, P. (1993). "A Comparison of New Businesses Established by 'Novice' and 'Habitual' Founders in Great Britain." *International Small Business Journal* **12**(10): 38 - 60.

Chrisman, J.J., and McMullan, W.E. (2000) "A Preliminary Assessment of Outsider Assistance as a Knowledge Resource: The Longer-Term Impact of New Venture Counseling", *Entrepreneurship Theory and Practice*, **24**(3): 37-54.

Chrisman, J.J., and McMullan, W.E. (2004). Outsider Assistance as a Knowledge Resource for New Venture Survival. *Journal of Small Business Management* **42**(3): 229-244.

Christensen, C.M., (1997) *The Innovator's Dilemma: When new technologies cause great firms to fail*, Presidents and Fellows of Harvard College, Boston MA.

Cronbach, L. J. (1951). "Coefficient Alpha and the Internal Structure of Tests." *Psychometrica* **16**(3): 297-334.

Davidsson, P., and Henrekson, M. (2002) "Determinants of the Prevalence of Start-ups and High-Growth Firms", *Small Business Economics*, **19**(2): 81-104.

Dorf, R.C., and Byers, T.H. (2005). *Technology Ventures*. New York, McGraw-Hill.

Drucker, P. (1985). *Innovation and Entrepreneurship*. Oxford, Butterworth-Heinemann.

Ekvall, G. (1996) "Organizational Climate for Creativity and Innovation", *European Journal of Work and Organizational Psychology*, **5**(1): 105-123.

Gonzalez-Roma, V., Peiro, J.M., and Tordera, N. (2002). "An Examination of the Antecedents and Moderator Influences of Climate Strength." *Journal of Applied Psychology* **87**(3): 465-473.

Grant, R.M. (2008). *Contemporary Strategy Analysis*. 6th Edition. Oxford, Blackwell Publishing.

Hair, J. F., Anderson, R.E., Tatham, R.L., and Black, W.C. (1992). *Multivariate Data Analysis with Readings*. New York, Macmillan.

Hill, C.W.L., and Jones, G.R. (2007) *Strategic Management: An Integrated Approach*, 8th Edition, New York, South Western.

Hofer, C.W., and Schendel, D. (1978) *Strategy Formulation: Analytical Concepts*, Millennium, St Paul: West Publishing.

Hofstede, G. (2001) *Culture's Consequences: comparing values, behaviors, institutions and organizations across nations*, 2nd Edition, Thousand Oaks CA, Sage Publications.

Isaksen, S.G., Lauer, K.J., Ekvall, G., and Britz, A. (2001) "Perceptions of the Best and Worst Climates for Creativity: Preliminary Validation Evidence for the Situational Outlook Questionnaire", *Creativity Research Journal*, **13**(2): 171-184.

Jolly, V.J. (1997). *Commercializing New Technologies.* Boston, Harvard Business School Press.

Jung, D., Wu, A., and Chow, C. (2004). *The Role of Transformational Leadership in Enhancing Organizational Innovation: Hypotheses and Some Preliminary Findings.* San Diego, San Diego State University, Centre for International Business Education and Research (CIBER), Winter 2004.

Jung, D., Wu, A., and Chow, C. (2008). "Towards Understanding the Direct and Indirect Effects of CEOs' Transformational Leadership on Firm Innovation." *The Leadership Quarterly* **19**(5): 582-594.

Kaiser, H. F. (1974). "An Index of Factorial Simplicity." *Psychometrika* **39**(1): 31-36.

Lam, A. (2006). "The tacit knowledge problem in multinational corporations: a comparative analysis of Japanese and US MNCs' transnational learning strategies", *Proceedings of the OLKC 2006 Conference at the University of Warwick*, Coventry, 20-22 March 2006.[available online] http://www2.warwick.ac.uk/fac/soc/wbs/conf/olkc/archive/olkc1/papers/512_lam.pdf

Lundvall, B.-Å. (2007). "National Innovation Systems—Analytical Concept and Development Tool." *Industry & Innovation* **14**(1): 95-119.

Mathisen, G.E., and Einarsen, S. (2004) "A Review of Instruments Assessing Creative and Innovative Environments within Organizations", *Creativity Research Journal*, **16**(1):119-140.

May, J. (2010) "By the Numbers / Global Entrpreneurship – The Best Country to Start a Business – and Other Facts you Probably Didn't Know about Entrepreneurship around the World", *Wall Street Journal*, 15 November, R. 4.

OECD (1997). *National Innovation Systems*. Paris, Organisation for Economic Co-Operation and Development.

OECD (2004). *SME Statistics: Towards a More Systematic Statistical Measurement of SME Behaviour*. Promoting Entrepreneurship and Innovative SMEs in a Global Economy, Istanbul, Turkey 3-5 June, Organisation for Economic Co-operation and Development, Paris.

OECD (2010). *Measuring Innovation: A New Perspective*. Paris, Organisation for Economic Co-operation and Development.

Porter, M.E. (1980). *Competitive Strategy*. New York, Free Press.

Ruef, M., Aldrich, H.E., and Carter, N. (2003). "The Structure of Organizational Founding Teams: Homophily, Strong Ties, and Isolation among U.S. Entrepreneurs." *American Sociological Review*, **68**(2): 195-222.

Schilling, M.A. (2010). *Strategic Management of Technological Innovation*. New York, McGraw-Hill Irwin.

Scott, B.A., and Barnes, C.M. (2011) "A Multilevel Field Investigation of Emotional Labor, Affect, Work Withdrawal and Gender", *Academy of Management Journal*, **54**(1): 116-136.

Scott, S. G., and Bruce, R. A. (1994). "Determinants of Innovative Behavior: A Path Model of Individual Innovation in the Workplace." *Academy of Management Journal* **37**(3): 580.

Shapera, P., and Rosenfeld, S. (1997). "An Overview of Technology Diffusion Policies and Programs to Enhance the Technological Absorptive Capabilities of Small and Medium Enterprises." Working paper, OECD, Directorate for Science and Technology, Paris.

Sharif, N. (2006). "Emergence and Development of the National Innovation Systems Concept." *Research Policy* **35**(5): 745-766.

Stewart, D. W. (1981). "The Application and Misapplication of Factor Analysis in Marketing Research." *Journal of Marketing Research* **18**: 51-62.

Storey, D. and Westhead, P. (1994) *Management Training and Small Firm Performance: A Critical Review*, Working Paper No. 18, Warwick Business School, University of Warwick, Coventry UK.

Susanj, Z. (2000) "Innovative Climate and Culture in Manufacturing Organizations: Differences Between Some European Countries", *Social Science Information*, **39**(2): 349-361.

Tidd, J. (2001). "Innovation Management in Context: Environment, Organization and Performance." *International Journal of Management Reviews* **3**(3): 169-183.

Tushman, M.L., and O'Reilly, C.A., (2002) *Winning Through Innovation: A Practical Guide to Leading Organizational Change and Renewal*, Harvard Business School Press, Boston MA.

Von Hippel, E. (1988) *The Sources of Innovation*. New York, Oxford University Press.

Walsh, V., and Le Roux, M. (2004). "Contingency in Innovation and the Role of National Systems: Taxol and Taxotère in the USA and France." *Research Policy* **33**(9): 1307-1327.

Whitley, R. (2000) "The Institutional Structuring of Innovation Strategies: Business Systems, Firm Types and Patterns of Technical Change in Different Market Economies", *Organization Studies*, **21**(5): 855-886.

Wilks, S. S., and Thompson, C.M. (1937). "The Sampling Distribution of the Criterion Lambda when the Hypothesis Tested in not true." *Biometrika* **29**(1/2): 124-132.

Yin, R. K., and Heald, K.A. (1975). "Using the Case Study Method to Analyze Policy Studies." *Administrative Science Quarterly* **20**(3): 371-381.

York, J. G., and Venkataraman, S. (2010). "The Entrepreneur-Environment Nexus: Uncertainty, Innovation and Allocation." *Journal of Business Venturing* **25**(5): 449-463.

Zain, M., Richardson, S., and Mohd Nazri Khan, A. (2002) "The Implementation of Innovation by a Multinational Operating in Two Different Environments: A Comparative Study", *Creativity and Innovation Management*, **11**(2): 98-106.