WHAT DRIVES & SUSTAINS FIRM INNOVATIVENESS?

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ABSTRACT

Fostering greater firm innovativeness may just be the most critical advantage organisations must develop to effectively compete in the markets of not only today, but those of tomorrow as well. The connection between volatile and dynamic environments and the strategic need for firms to be more innovative is oft made; this paper reports on research undertaken into the underlying components of firm innovativeness in Japanese SMEs. Japan in particular has faced over an extended period trying conditions, experiencing perhaps the most prolonged recession any developed country has witnessed since the Great Depression. Data was gathered from over 2,200 Japanese SMEs regarding the underlying components of firm innovativeness. Results of the study detail the critical associations amongst management and firm employees, individual firm members, groups and work teams, leaders and mentors, along with firm environment issues including regional systems of firm agglomeration and consumer and market uncertainty; associations which have significant impacts on a number of levels in regard to firm innovativeness.

Keywords: Learning organisation, Business innovation

The prominence of researching innovativeness at the individual, firm, regional, national and global levels has increased as a function of the increasingly dynamic environments in which we live and work. Business-wise, cycle times have shortened for all value chain activities, pressuring firms to be more creative and efficient in meeting ever increasing demands. Yet, our understanding of the underlying components of firm innovativeness remains rather underdeveloped (Wang & Ahmed 2004), despite considerable cross disciplinary research efforts, in fields of enquiry such as management, marketing, economics, and organisational psychology. Indeed there still appears to be confusion in defining innovativeness as this term and 'innovation' are often used interchangeably by theorists (see for example Van De Ven 1986 or Deshpande *et al* 1993), yet there remains significant confusion as to what is being referred to (Gudmundson *et al* 2003).

Avlonitis *et al* (1994:21) points out that barely 10 years ago "current thinking…sought to assess innovation on the basis of a single or a small number of adoption decisions undertaken by the firm in the past". Similarly, Slappendel (1996:108) observed "there is a tendency to objectify the concept… the word innovation is frequently used to describe an object such as a new microcomputer or a late model car". Hurley and Hult (1998) seeking to clarify definitional issues proposed that innovation pertains to "the number of innovations successfully implemented" and that innovativeness is "associated with cultures that emphasize learning, development, and participative decision making" (1998:42). While more recently Wang and Ahmed (2004) conceptualised innovativeness across five

dimensions; product, market, process, behavioural and strategic.

The research objective of the study reported on here was to examine the overall conditions and actions that influence innovativeness at the firm level in particular SMEs; not to trace the development and implementation of a particular 'innovation'. The term innovativeness in this paper encompasses the concepts of newness in systems, processes, products and services, behavioural change, environmental adaptation, and learning and knowledge development; all which occurs in context over time. This embracing of a dynamic conceptualisation of firm innovativeness is significant for several reasons. Firstly, it distinguishes innovation as a tangible new concept, product or service that is developed and adopted by the firm in engendering a performance outcome such as increased sales or reduced labour hours. Secondly, innovativeness whilst also comprising perhaps more evolutionary notions of newness, encompasses and integrates the roles of organisational players, in regard to issues of support and collaboration, decision-making, as well as the learning and development of the individual, team and firm. Thirdly, it allows examination of systems of innovativeness developed over time that may exist external to the firm, a critical issue that in view of some theorists is virtually overlooked (see for example Johannessen *et al* 2001).

Even though theoretical and practical understanding of the critical components that drive firm innovativeness remains somewhat underdeveloped there is consensus amongst theorists that more innovative firms perform better. As Wolfe (1994:405) notes "few issues have been characterized by as much agreement among organizational researchers as the importance of innovation to organizational competitiveness and effectiveness". Policy-makers likewise concur, Takeo Hiranuma, the Japanese Minister of Economy, Trade and Industry (METI) in the Annual White Article on SMEs in Japan (*Chusho Kigyo Hakusho*) noted in regard to recent Japanese industrial performance, "in all size categories enterprises that are more innovative perform better" (2003:73).

The observation that fostering innovativeness may just be the most critical advantage firms must develop to remain competitive is significant given Japan's experiences over the past 15 years where economic growth has been severely stymied and firm competitiveness significantly eroded. The well documented adverse effects of the 'Lost Decade' (see for example Hayashi & Prescott 2002; Fukao 2003) indicate that the lessons learnt by managers surviving and even prospering over this difficult economic period enables deep insights to be developed into firm innovativeness. Japanese management practices have long been the source of extensive research, especially given the success of Japanese firms in transforming a war-torn country into a world economic power. However, during the nineties and the early years of the 21st century Japan has appeared to be not so much that mighty world economic power, rather its economy has been beset with maladies that at times have given commentators cause for much hand wringing. As Pain (2003:2) stated "Japan has been in the doldrums for so long that most of us have given up on spending too much time analysing it". It would appear that

the halcyon era of 'Japan is No.1' as Vogel (1979) and other observers proclaimed has waned and that the shining light focused on the 'art of Japanese management practices' has dimmed somewhat, though in recent times there has been a welcome vitality return to Japan's economic fortunes.

Masayuki Morikawa (1999:12), Director of the Research Office, Small and Medium Enterprise Agency at METI noted that "in a mature economy, growth-oriented and innovative businesses are what give the economy as a whole its vitality. It is therefore no exaggeration to say that the future of the Japanese economy will depend on such SMEs". The importance of SMEs to a nation's economic well-being is substantial, and there is some evidence to suggest that in times of adversity the importance of SMEs is further enhanced due to the 'shock absorber' effect they have in dampening adverse impacts. The 'shock absorber' thesis centres on the notion that SMEs being smaller, dynamic and versatile in nature are more easily able to leverage their flexibility in adapting to, for example, changes in market demographics and requirements than their larger counterparts. Likewise on the crest of the next peak in the business cycle they are able to take advantage of first-mover advantages by flexibly competing on scope as opposed to scale. Underlying business cycle dampening, however, remains the issue of prolonged economic adversity and it is in these conditions posit theorists such as Nugent and Yhee (2002) that the real value of SMEs is manifested. SMEs enable smoother and quicker structural adjustments in response to any prolonged downturn due to SMEs being less likely than larger enterprises to engage in "collective action to protect their old businesses" and more likely when conditions improve to start new businesses "that can be expected to go through the various stages of growth" (Nugent & Yhee 2002: 99).

It is undeniable that SMEs contribute significantly to Japan's economic performance; 81% of the total workforce (public and private) or 49.11 million people are employed in SMEs, while 51% of total exports are produced by SMEs adding annually approximately 105 trillion yen to Japan's economic activities. Given the importance of SMEs to Japan's economy (and for that matter most other country's economies), combined with the lack of understanding regarding factors that contribute to greater firm innovativeness, the research set out to answer the question *'What are the underlying components of firm innovativeness?'* as perceived by owners and managers of SMEs in Japan. The results extend our understanding of the critical issues that impact upon firm innovativeness and provide firm owners and managers with valuable knowledge that will assist their firms in becoming more effective in meeting the ever increasing demands of dynamic business environments.

It is not just in Japan that the value of SME's contribution to economies is acknowledged, Ghobadian and Gallear (1996:85) observe that SMEs are "the life blood of modern economies". However, much of the research into firm innovativeness up to this point has focused on the activities of large corporations (Gudmundson *et al* 2003), yet SMEs contribute more significantly too many country's economic landscape than do large companies. Statistics on business enterprise published by OECD

(2004) are compelling, detailing that in Japan 99.5% of all enterprises are SMEs, and that in terms of employment, SMEs in Japan employ 72% of all private sector employees. Rapid technological innovation and diversification in market requirements are generating significant shifts in industrial activity and dramatically transforming many economies from primary output to the manufacture of high value-added products and from the production of goods to the provision of services. As a consequence, all economies, regardless of their stage of development, need to develop and produce an increasingly diverse array of high value-added goods and services. This is an area in which the capability of SMEs to respond flexibly works to their advantage, and SMEs can be at the forefront of driving further structural sophistication and sustained economic growth. Such industrial development must, however, be built upon the presence of SMEs with appropriate managerial and technological know-how. It will also depend upon the development of suitable supporting infrastructure for SMEs. Supporting industries constitute an essential part of the industrial infrastructure needed for expanding foreign direct investment, stimulating the formation of regional production networks, and contributing to domestic and regional economic growth.

METHOD

To advance the understanding and definition of the complex issue of firm innovativeness a multi-method research approach was taken, however, given paper length constraints, results from the qualitative case studies is not presented here; the quantitative study is discussed following. Firstly, from the literature it was observed that factors researchers have accepted as useful in examining innovativeness fall into three broad areas – environmental factors, firm conduct factors and outcome factors. 103 measurement items encompassing these three areas were identified from previously validated scales used in researching innovation and innovativeness. These items were then pilot tested with the assistance of 10 SME owners and managers. The aim of the pilot study was to eliminate overlapping measurement items such as *customer preferences frequently change* and *it is difficult to predict customer preferences* and to identify items that might not be appropriate in an SME environment such as *senior executives make strategic decisions.* The pilot study resulted in 43 variables being eliminated with 60 variables considered meaningful in investigating the underlying factors that explain and impact on firm innovativeness. A draft questionnaire was developed following Dillman's (1978) principles for questionnaire development, which was initially reviewed by academic peers. Following minor corrections the document was then sent to an independent translation company to be translated into Japanese. Following this it was then back translated to ensure that translation accuracy was achieved. This instrument was then pilot tested using the previous pilot study participants to ensure that the language and grammar used was appropriate and accurate, that it was easy to read

and well formatted and that any errors had been eliminated[1].

Quantitative Sample and Data Collection

The sample for the quantitative study is taken from a peak association based in Tokyo representing SMEs, whose members are located in the Kanto area of Japan. The association has 2,235 members representative of a wide range of firm sizes and industries. The sample is consistent with sampling frame characteristics as detailed in the Japanese Government's Small and Medium Enterprise Agency's 2003 *Chuso Kigyo Hakusho* (White Paper on Small & Medium Enterprises). In almost all cases, surveyed firms have been operating throughout the Lost Decade (from 1992 onwards) hence providing an appropriate catalogue of experience regarding issues faced over an extended period of economic lethargy in Japan. Of the 2,235 questionnaires sent to firms 1,868 were returned at a response rate of 83.6%. Of the 1,868 responses 16 responses were not considered useable, meaning the number of useable responses was 1,852 resulting in an effective response rate of 82.9%. Kaiser's measure of sampling adequacy using SPSS 12.0 returned a value of 0.842 indicating that sampling adequacy was achieved and given the matrix exhibited numerous correlations in excess of the significant 0.3 level advocated by Hair *et al* (1998) it was considered suitable for factor analysis.

Data Analysis

To achieve an empirical summary of such a large data set, Principle Components Analysis (PCA) was undertaken following Tabachnick and Fidell's (2001) three step guide to factor analysis. *Step 1*, preparing and analysing the correlation matrix; *Step 2,* extracting or determining the number of components and *Step 3,* interpretation of components.

The data analysis was systematically run using all seven extraction techniques individually with each of the five rotation techniques available in SPSS 12.0. Following examination of the thirty five iterations it was found that PCA using varimax rotation would result in the solution converging most expediently (after 16 iterations) and critically in providing the best level of interpretability to the components, while accounting for a slightly higher percentage of variance explained. The PCA accounted for 78.4% of the variance with 12 components extracted having eigenvalues greater than 1. The varimax rotation yielded a range of loadings from 0.414 to 0.835 with all variables identifying strongly with at least one component. To test the reliability of the items and the components, Cronbach's coefficient alpha was computed. The item to total scale alpha was 0.858 exceeding the 0.60 level for exploratory research proposed by Hair *et al* (1998) and the more rigorous 0.80 level advocated by Bryman and Carter (2001). Individual reliabilities for each of the 12 components was also computed and ranged from 0.781 to 0.898 meeting acceptable criteria. The components have been grouped by 'Workplace Factors', 'Environment

[1] The final version of the survey instrument is available from the author in either Japanese or English.

Factors' and 'Strategic Factors' and the items loading on each component above the 0.32 significant level advocated by Tabachnick and Fidell (2001) are now presented and discussed.

RESULTS AND DISCUSSION

Workplace Factors

Component 1		Trust, Support, Participation and Reward
Management Support for Employees	**.790**	The component indicates that the level of trust for management, support from management for employees and the quality of relationships amongst employees themselves has a significant association with firm innovativeness. This supports key issues such as organisational pride, staff development, employee competence and the nature of reward systems.
Employee Trust of Management	**.752**	
Decision-Making Style	**.695**	
Organisational Pride	**.667**	
Staff Development	**.663**	
Worker Relationships	**.662**	
Team Building	**.618**	
Performance Linked to Rewards	**.563**	
Employee Competency	**.530**	
Participation in Decision-making	**.426**	
Employee Needs, Abilities, Aspirations	**.414**	

Component 2		Firm Dynamism
Strong emphasis on developing/adopting new technology	**.749**	The component indicates that firms must strive to develop an atmosphere of dynamism where new technologies, products, processes and solutions are embraced. The aim is to be extraordinary not ordinary. Given the SME level focus this becomes a critical component of competitive advantage especially in diluting the impacts of scale.
Novel solutions to problems	**.747**	
Dynamic workplace atmosphere	**.716**	
Employee proposals for new processes & technology	**.716**	
Flexible, challenging job roles	**.698**	
Emphasis on continual improvement	**.635**	
Highly customer focussed	**.532**	
Emphasis on new product/service development	**.531**	

Component 3		Empowerment
Flexible employee supervision	**.768**	The component indicates that employees are more likely to contribute to firm innovativeness if supervision is not overbearing. The second and third items were reverse anchored hence supporting the notion that management should not be focussed on mistakes and adherence to rules and policies rather there should be a strong tendency to let requirements of the situation and the individual's characteristics define on-job behaviour.
Management by exception	**.645**	
Job rules	**.607**	
Employees are expected to think for themselves	**.598**	

Environment Factors

Component 4		Communication
Number of managerial levels in firm	**.773**	The component indicates that formal and informal communication in SMEs is critical and is enhanced by flatter chains of command. Firm members are more likely to socialise together after hours and this would appear to further enable cross-pollination of information and knowledge between e.g. sales, accounts, customer service and management.
Informal, open channels of communication	**.754**	
Established formalised feedback system	**.703**	
Firm employees socialise outside work hours	**.698**	
Functional cross-pollination	**.587**	

Component 5		Regional Networks
Significance of regional networks on firm performance	**.813**	The component indicates that formal and informal networking activities with both business and government agents are critical in increasing firm knowledge. Firm knowledge then feeds regional knowledge in an iterative cycle.
Level of involvement in formal networking in region	**.745**	
Level of involvement in informal networking in region	**.718**	
Effectiveness of firm networking in region	**.686**	
Government policies degree of influence	**.657**	

Component 6		Regional Mix
Level of environmental opportunity	**.805**	The component indicates that at the SME level, there is an association between external opportunity, the degree of diversity amongst firms in milieu and the rate of firm learning as a result of knowledge diffusion amongst these firms in milieu.
Diversity in mix of industry in milieu	**.726**	
Rate of firm learning in milieu	**.698**	

Component 7		Regional Agglomeration
Supply and distribution costs are lowered as a result of location in region	**.756**	The component indicates that SMEs by locating in milieu are able to lower costs, access specialised resources such as labour and infrastructure and hence compete more effectively against larger firms who are able to leverage scale in the marketplace.
Location in region enables easier access to specialised resources	**.730**	
Locating in regional milieu enables smaller firms to compete more effectively against scale	**.716**	

Strategic Factors

Component 8		Environmental Uncertainty
Rate of change in environmental conditions	**.822**	The component associates customer orientation with the level of environmental uncertainty. This indicates that at least for Japanese SMEs, the economic conditions that have resulted from the Lost Decade are that pervasive as to be considered inescapable and that the most appropriate response to this is to increase firm knowledge regarding customer preferences and needs and hence demand for a firm's products and/or services
Ability to predict consumer demand	**.754**	
Ability to predict customer preferences	**.731**	
Rate of change in firm's products/services	**.690**	

Component 9		New Market Development
Overall performance of firm	**.718**	The component relates that new market development is supported by competency of firm in being able to change operational processes, while maintaining focus on quality control and that this is associated with overall firm performance.
Success in developing new markets in past three years	**.656**	
Ability to change firm's operational processes	**.655**	
Firm's degree of focus on quality control	**.631**	

Component 10		Firm Flexibility
Rate of change in firm's operational methods	**.835**	Relates that firms must be operationally flexible in adapting to changing business conditions and that underlying this is management's approach to risk-taking and consultation when making decisions.
Degree of risk-taking in decision-making	**.788**	
Ability to adapt freely to changing circumstances	**.708**	
Degree of consultation in strategic decision-making	**.618**	

Component 11		Application of Technology
Degree of firm involvement in Ecommerce	**.761**	Relates that a firm's propensity or inclination to undertake business activities using the internet is dependent upon the level of IT infrastructure in the firm and the level of expertise on the part of employees in using IT systems. Underlying this is senior management's inclination undertake such activities and invest in such systems
Level of resource munificence	**.668**	
Use of IT in firm's control systems	**.639**	
Degree of focus on cost control	**.631**	
Management commitment to the use of IT systems	**.556**	

Component 12		Action Orientated
Firm's ability to take advantage of new opportunities	**.789**	Relates that firms that place strong emphasis on continually seeking to develop new products and services will also be better positioned to take advantage of opportunities and that supporting this there should be a strong focus on cost control
Degree of emphasis placed on marketing existing products/services or newly developed products/services	**.713**	
Firm is more likely to lead than follow	**.708**	

RESULTS AND DISCUSSION

The results synthesise and extend critical aspects of a number of theoretical perspectives including the individual innovativeness perspective, the structural perspective, interactive perspectives and regional and national systems of innovativeness. It is evident that our understanding of the drivers of firm innovativeness must be multifaceted, managers must actively work towards developing and nurturing firm-centric and firm-exterus climates for innovative activity to occur. It is important to note that this research provides an opportunity to learn from failure and indeed hardened economic times where the weak have been weeded out and the remaining players forced to innovate or evaporate. This is in direct contrast to the positivist approach to best practice focused so readily on Japanese management practices in times gone by.[2]

The individual innovativeness perspective assumed that individuals were the drivers of change in an organisation. Schumpeter (1934) noted that in order for individuals to be entrepreneurial and achieve innovative behaviour, development of 'new combinations' was vital. These long held views are supported by numerous others such as Scott and Bruce (1994:582) who detailed the significant impact of the interaction between "individual, leader, work group, and climate for innovation" on individual innovative behaviour. This position is echoed by results of this research; though in conjunction with other drivers of change external to the organisation that have become increasingly more important. The Workplace Factors extracted from the PCA strongly indicate the critical nature of creating an organisational fabric that binds its members, nourishing their development, promoting competence and especially building strong foundations based on trust. This is significant as the strong influence of trust and support has not been explicitly noted in studies into firm innovativeness, rather if acknowledged, their importance usually remains buried under the blanket of organisational culture. It is obvious, particularly at the SME level that firm owners and managers should pay particular attention to the

[2] The Track Chair for Knowledge Management is gratefully acknowledged for highlighting this.

internal health of their organisations so that they can more dynamically interact with their external environments.

A considerable body of empirical research has been developed in regards to the components of organisational structure. Damanpour (1991) conducted a meta-analysis of research findings whereby empirical results were systematically cumulated to test the stability of the wide array of variables offered by researchers as structural determinants of innovativeness. He considered this exercise important as "organizational variables have been the most widely studied, and some authors have pointed to their primary importance as determinants of innovation" (Damanpour 1991:557). Malecki (1995) has noted that SMEs are disadvantaged in terms of resource munificence compared with larger companies however, one plane that SMEs can effectively compete with larger companies on is the development of an innovative climate and culture. In this regard managers would do well to cast a wide net in building-up the capabilities of firm members through training and development programmes, through supporting employees in their endeavours and through rewarding firm members in an appropriate fashion. Results reflect Damanpour's views and those of Johannessen, Olaisen and Olsen (1999) who proposed that managers in more innovative firms exhibited the qualities of 'focus, mastery, intensity and integrity' (1999:116). In order to 'focus' on being more innovative managers need to be willing to take risks, be proactive and set personal goals. In terms of 'mastery' managers need to develop tools and processes that inspire commitment, initiate change whilst effectively managing time. 'Intensity' describes drive and energy; that little bit extra beyond 'motivation, focus, self-confidence, determination or will'. Whilst 'integrity' is critical in the development of trust, personal values and guiding ethical heuristics, which impact upon the capacity of the manager to nurture and respect others.

Stronger and richer interpersonal relationships among firm members have been found in this study to be critical in facilitating greater creativity and learning. Furthermore, the ability of management to provide support to employees via open communication channels on both formal and informal levels, training and education programmes to enable personal development and what may be referred to as systemised freedom and creativity, is also vital. Systemised freedom may appear to be somewhat of an oxymoron however, Japanese philosophy is oft characterised by a paradoxical undercurrent representing the mutuality between underlying structure and beauty and elegance. To enable freedom and creativity, employees and management must be confident in the support of organisational systems that deal with the tangible so that the intangible may be fostered. So too, they must be confident in each other's competency which is a function of the skills and capabilities developed through experience, managerial support, training and education. To conceptualise and develop novel ways of doing things, firm members must feel the security of support and trust from management which will empower them to participate and contribute at a level far in excess, than if support and trust was lacking, creativity and learning will not magically occur without a supportive framework. Firm members need to be listened to, for they are a valuable source of internal knowledge, they must be

encouraged and provided a means to feedback formally and informally into a firm's communication channels. As well, recognition is a powerful motivator and the issue of appropriate rewards being developed and bestowed is an essential element in fostering greater participation and effort. It is vitally important that firm owners and management build emotional equity in the firm, bestowing great value on firm members but netting collectively for the firm even greater value in terms of knowledge, skills, competencies, creativity and commitment.

Knowledge management has also become an area of critical interest for theorists, with Nonaka (1988) and Takeuchi (1992) in particular, going to great lengths to explore the impacts that both explicit and implicit knowledge has on organisational learning and innovativeness. As Nonaka (1994:14) observes, "knowledge, and not simply information, is the primary source of an organization's innovative potential". More recently Rodin and Galunic (2004) examined individual managerial performance in fostering innovativeness in a European communications company. Their results suggest that it is critical to understand how managers develop and implement knowledge, claiming the paramount factor in innovativeness development to be knowledge heterogeneity amongst managers in a network setting. This reflects the interactive perspective which points to the influence that human behaviour and learning has on shaping environments and the influence that environments have on shaping human behaviour and learning. Significantly, findings from this study extend these views on learning organisations into the domain of spatial economics and the learning *region*, suggesting that it is vital that SME managers compliment internal organisational development with external engagement in regional systems of innovativeness to fully realise the learning and innovative potential of their firms.

The interaction between firm behaviour and geographical systems, particularly regional systems of innovativeness, has emerged in the past few years as a new and exciting avenue of enquiry. According to Johannesson *et al* (2001:20) in the last decade there has been 'explosive attention' levelled on firm innovativeness "as a means to create and maintain competitive advantages" and one of the key drivers they hypothesise is the influence of regional systems on innovative activities at the firm level. The authors' results of a study into European firms indicate that firm innovativeness is positively influenced by the firm's ability to interactively learn by creating and using new knowledge. Yamada (2003:302) concurs, noting that "the social infrastructure and learning environment in a region" are "the determinants of competitiveness and innovation". For managers, the value of effective engagement in regional network building has perhaps become slightly overlooked in our rush to be 'global' in outlook. This study's results show that a readjustment may be required in that tapping into and developing further, regional knowledge networks heterogeneous in scope and both formal and informal in nature, should become a priority for SMEs. In developing this regional interaction, positive impacts on profitability issues such as cost and risk reduction as well as access to new

markets and specialised resources can be achieved. But perhaps more significantly, in the long run being engaged in the region enables firms to develop capabilities in gathering information on a number of levels that may offer immediate opportunity or be transformed to knowledge, fuelling a continual growth cycle in organisational learning and development. The desire and ability of firm managers in a given region to innovate have become central issues for countries worldwide. SMEs if innovative and flexible are seen as being able to take advantage of opportunities in rapidly changing markets more quickly than large firms, as well as being more responsive to market disturbances and shifts in demands (Cooke 1996). Pavitt, Robson and Townsend (1987) in their examination of the size distribution of innovating firms in the U.K., noted that SMEs are more likely to introduce innovations than larger firms because they have less commitment to existing practice and products. Whilst in Japan theorists such as Fujita and Hill (1993) and Goto and Odagiri (1997) observed that the strength of Japan's industrial regions and their flexibility to address external challenges, lies in the successful synchronisation of research, production and marketing, as well as co-ordination of the relevant actors such as management, concerned-core producers, suppliers and financiers, and government and semi-government agencies, into a set of loosely linked networks at the regional level. Innovative activities are thought to be more likely in local environments in which there is a high level of interdependence between firms, agencies and institutions, and where there is a common way of perceiving and understanding problems and of finding solutions to them (Todtling 1992). Cooke (1995:19) argues that "the region is the optimal level of industrial, governmental, and technological support, especially for small and medium-sized enterprises". In other words SMEs are most likely to interact with and learn from other firms and organisations within their region. Similarly Storper (1992, 1997) views regions as systems for co-ordinating socio-spatial relations together with the role of learning, technology and local institutions in advancing regional development.

CONCLUSION

The research reported on in this paper has contributed to our knowledge regarding firm innovativeness in a number of ways. Firstly, it has approached the examination of the phenomenon from a different perspective. Most studies into firm innovativeness involve large corporations and seek to examine best practice so that these practices can then be transplanted to other environments. This study has shown that there is also much to be learned from looking at how firms deal with prolonged periods of adversity, particularly for the shock absorbers of a nation’s economy, its SMEs. The study has also

clearly delineated between innovation and innovativeness, two terms that are all too commonly used interchangeably reducing any real meaning. Firm innovativeness has by and large been examined from a uni-dimensional perspective due no doubt to the complexities involved, with activities such as new product development or new technology adoption isolated via a priori assumptions to gauge impacts on firm outcomes. This propensity to isolate a particular factor and examine its impact on firm innovativeness has in recent times been challenged. Criticism has been levelled at this approach as the results tend to be skewed in favour of the uni-dimensional selection of variables, depriving the findings of any real meaning. Wilson *et al* (1999) assert innovativeness must be treated as a multi-dimensional phenomenon otherwise the conceptualisation will remain shallow and threadbare. The study this paper reports on was extensive involving over 2,200 SMEs and their owners and/or managers, engaging both quantitative and qualitative approaches to data gathering and analysis and was conducted over a three year period. Results illustrate the inadequacies in examining a phenomenon as dynamic and complex as firm innovativeness from uni-dimensional perspectives and indicate that theoretical development must transcend the notion that firm innovativeness can be viewed in isolation from a strategy or culture or climate (or structure, leadership, environment etc.) perspective. Instead, a wider multi-dimensional lens must be used to examine relevant issues concurrently, so that results truly represent the nature of this ever-changing phenomenon. This approach led to one of the most puissant results from this study, the importance of regional systems of innovativeness for SMEs. Such systems facilitate the creation and development of both formal and informal heterogeneous knowledge networks and have implications in regard to resource munificence and infrastructure agglomeration. Furthermore, it was found that firm networking activities were enabled by a diverse mix of businesses in milieu which impacts positively on information gathering activities and knowledge development on individual, group, firm and regional levels. This facilitates the generation of ideas, creativity and development of difficult to replicate core competencies in respect to operations, customers, market maintenance and development and perhaps most critically and indeed strategically nourishes a firm's ability to be more dynamic and innovative.

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