

connectivity and e-commerce: spawning e-business communities of common interest

action research towards regional growth

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Introduction

The global Internet community is made up of people in more than 200 countries who are linked into a myriad of data and services exchanges (Nua Internet Surveys 2000). In June 2000 the Internet had approximately 332 million users worldwide and that number is estimated to swell to 500 million by 2003 (Nua Internet Surveys 2000). By February 2000, half of all Australian households (3.5 million households) had a home computer and 28 per cent (1.9 million) had access to the Internet (Australian Bureau of Statistics (ABS) 2000). Computer use by Australian companies increased 20 percent between 1994 and 1998 (Online Australia News 1999) and information economy statistics indicate that by June 1998 almost a third of Australian firms were connected to the Internet (ABS 1999). Given the rapid uptake of Internet technology, this figure will likely have risen since then.

With the rise of globalisation through technologically enabled access to and diffusion of knowledge via computers and the Internet, companies of all sizes are scrambling to reinvent their existence in the new knowledge economy. Globalisation has forged a shift from the traditional corporate hierarchy and big

business conglomerate to an economy in which global and regional companies can be equally successful, provided that they are part of an integrated network in which core competencies, localisation and customisation are achieved (Milton-Smith 1998).

In the networked economy knowledge and relationships have become crucial assets to business survival and business expansion on a global scale (Davis and Meyer 1998). New network structures are emerging in which clusters and inter-organisational alliances play an increasingly important role. Research indicates that network building is a major new source of competitive advantage and an essential regional, and indeed, global management requirement (Tapscott 1996; Chisholm 1998; Milton-Smith 1998; Porter 1998; Martinez-Fernandez 1999). Tapscott (1996) described the notion that 'if you can understand how the new technology corresponds to the new internetworked enterprise, you can begin to forge a strategy for competing in the new economy' (Tapscott 1996:68). Regional growth theories in particular are focusing on the emergence of networks and the development of regional economic communities (Martinez-Fernandez 1999; Henton et al 1997).

Considering the strategic importance of alliances as further delineated below, this study focuses on regional connectivity and virtual network building between small and medium size enterprises (SMEs). The study puts forward six links – IT **connectivity**, inter-firm **clustering**, inter- and intra-sector **collaboration**, knowledge **communication**, **community** building and online **cooperation** -- as pivotal in the development of a regional SME knowledge web capable of competing in a global marketplace. Denoted in this study as the 'C-Factors', these links are closely interconnected and should be viewed as mutually inclusive. While each factor is elucidated independently, it is hypothesized that a hyper-linkage or aggregation of C-factors is required to construct a regional e-commerce structure aimed at economic gain and regional growth.

Connectivity

Some observers perceive globalisation as a threat to local diversity and autonomy while others see it as an opportunity to develop rich new regional economies (Amin and Thrift 1995). It is the very awareness of competitive international opportunities or threats that has alerted regional policy makers to

the need to stay ahead and the necessity to put regional interests, and hence the interests of SMEs, back on the agenda (Boekholt 1997). Tapscott (1996) concurs that growth in the innovation economy is coming from SMEs rather than from large corporations or government. Regional SMEs are in a better position than ever to partake in the innovation economy, provided they have the connectivity needed to participate. Cooke (1995) characterises the trend towards regional innovation policies focused on network infrastructure and technological support for start-ups and inter-firm relationship building as *networked regional innovation architecture*. The role of government in this architecture is to support initiatives to help strengthen existing networks and spawn potentially innovative networks (Cooke 1995).

In line with the growing awareness that connectivity is unequivocally altering competitive advantage, both Australian Commonwealth and regional innovation policies are increasingly focused on building strategies and initiatives towards regional connectivity, the expansion of regional and rural business, technology-enabled capabilities and e-commerce.

In Victoria, the State Government's Connecting Victoria policy (Multimedia Victoria 1999) aims to improve infrastructure and access; boost e-commerce and grow industries of the future; connect communities and build a learning society (Multimedia Victoria 2000a). To achieve these objectives, the Victorian Government is working cooperatively with industry and local communities to create IT-savvy connected communities. One outflow of the Connecting Victoria policy is its so-called VEEM (Victorian E-Commerce Early-Movers) assistance scheme, which provides grass roots funding through local councils for e-commerce initiatives by SMEs (Multimedia Victoria 2000b). Also tied to the Connecting Victoria policy is the Regional Connectivity Project, which apart from State Government funding receives support from the Commonwealth through its Networking the Nation Program, the University of Ballarat and local government. The Regional Connectivity Project 's mission is to position itself as a 'Smart Region of 21st Century thinkers' (Western Region Forum 1999:4) by introducing the latest technology in every aspect of business and community life. To facilitate the embracing of communications, information technology and e-commerce, the project is establishing community owned and operated Community Enterprise Centres (CECs) throughout the region.

Communications is now everyone's business. Australian telecommunications companies (telcos) are also positioning themselves as players in the regional markets. Intended to boost competitive advantage, telecommunications companies such as Telstra, Macquarie Corporate Telecommunications and Nortel Networks are launching regional data centres to provide products and services tailored to corporate needs (The Australian 2000a). By funding these regional data centres, telcos are able to trial new e-commerce products and assess whether regional portals are a viable business model (Pasiczny 2000).

Enhanced telecommunications infrastructure generates significant welfare gains for rural and regional communities, according to a recent study measuring the impact of regional infrastructure on business (Cruse, Furze and Patullo 2000) and is hence integral to competitive advantage for SMEs in the region. The next generation of connectivity now being developed in Europe will be capable of delivering computer power the same way today's power grids supply electricity (The Australian 2000b). 'The Grid' as it is referred to, will be about a community reliably sharing its resources and data (The Australian 2000b). The relationship between connectivity and companies should be seen as reciprocal according to Nouwens and Bouwman (1995) because 'telecommunications technologies and services not only have a significant impact on how inter-organisational relationships are developed but the structure and culture of an existing network of organizations itself also seems to have considerable predictive power for the way in which the telecommunications network is developed, implemented and used' (Nouwens and Bouwman 1995:online).

Clustering

As connectivity optimises exchange of information and has the potential to create competitive advantage, there has been an increased focus on existing and emerging regional economic networks (Boekholt 1997; Martinez-Fernandez 1999). Connectivity is ideal to build on the concept known as 'clustering', whereby industries in a particular region cluster themselves in an economic network to achieve a more effective and prosperous business sector through inter-firm knowledge and resource sharing (Porter 1998).

The geographic scope of a cluster can vary from a single city, state or region to a network of companies across state borders or even country borders (Porter

1998). They can be formal or informal, in the public or private sector, horizontal or vertical. In a horizontal network companies within the same industry sector might share an industrial or technological base, operate within a common market and use a common purchasing and/or distribution channel. Vertical networks include horizontal cluster participants as well as suppliers, users and related services (Boekholt 1997).

Connectivity is revitalising conventional reasons for clustering, e.g., creating critical mass, as it facilitates the knowledge-based infrastructure network imperative for today's competitive advantage (Porter 1998). In the context of emerging technologies and related business models, research indicates that businesses online can profit from the interactive culture the Internet has to offer (Armstrong and Hagel 1996). Linking stakeholders in dynamic clusters is believed to enhance competition and regional innovation (OECD 1999) and new network structures are emerging in which clusters and inter-organisational alliances play an increasingly important role.

Albeit somewhat slow in the uptake and initially trailing business-to-consumer (B2C) and consumer-to-consumer (C2C) online buying systems, shopping portals and business-to-business (B2B) e-commerce exchanges (also known as portals or e-hubs) are rapidly becoming the norm (Wilson 2000a). An analyst with Gartner's Sydney-based e-Market Intelligence Services, Harpur (2000) predicts that by 2001 more than eighty per cent of large Australian organisations will support B2B portals. Such portals will extend to provide B2B resources, extranets, customer and supplier integration as well as other inter-organisational processes (Harpur 2000),

At this time, SMEs are not identified with B2B clustering. Given that connectivity and inter-firm collaboration have become pivotal market forces, SMEs would benefit from adopting a 21st century SME cluster model (see Figure 1) capable of (a) handling the dynamic evolution of a regional knowledge economy and (b) achieving economies of scale. Considering the potential loss of competitive advantage for SMEs not pursuing connectivity and inter-firm relationships, key SME cluster objectives would necessarily have to include (1) aggregation of regional economic interests; (2) fostering of existing and emerging SME networks; and (3) cultivation of virtual SME clusters into B2B and B2C 'communities of common interest', able to embrace traditional horizontal and/or

vertical cluster features as well as new collaborative and cooperative information and knowledge strategies which are discussed below.



Figure 1: 21st Century SME Cluster

Inter- and intra-sector collaboration

Connectivity may well allow networked enterprises to link electronically to one another, but simply upgrading technologies to allow cluster formations to play a role in electronic commerce will not suffice. Adoption of e-commerce – referred to here in terms of connection, electronic data exchange and transaction capability

via the Internet -- by SMEs is directly related to the size and nature of SMEs and largely depends on their perception of e-commerce affordability and opportunities for their business (Organisation for Economic Co-Operation and Development (OECD) 1998). Adoption and implementation of technologies, access to electronic markets, acquisition of technology skills and knowledge, firms' abilities to control electronic market entry and exit terms are amongst the e-commerce barriers facing SMEs (OECD 2000).

Australian research indicates that SMEs, which make up 96 per cent of all enterprises in the private non-agricultural sector, not only hesitate to invest their time and money in a rapidly changing e-commerce economy, they fear isolation and loss of control. SMEs also perceive innovation policies as pertaining to large firms and are hence suspicious of e-commerce regulations (Australian Electronic Business Network 1998). In regional Victoria e-commerce barriers include lack of awareness, lack of time and lack of personnel and resources to evaluate and implement IT solutions (Tradegate ECA 1998). A recent study on uptake of e-commerce technology by SMEs in the region concludes that more attention will need to be paid to inhibitive factors if competitive advantage is to be realised (Cruse, Lamb and Patullo 2000a).

While interconnected networks are potentially exciting and sound e-business structures for SMEs, joining the e-commerce market as a sole trader, let alone as part of an interconnected network or B2B cluster stakeholder will entail an enormous conceptual leap into the future for most SME managers and will need a collaborative effort or 'innovation partnership' between government, academia and future stakeholders to bring to fruition.

The development of SMEs in the global economy requires government directives towards the building of innovative policies. Boekholt (1997) points to a large proportion of regional innovation actions being aimed at establishing links between firms and government and discusses parallel initiatives integral to an active regional economy developing its own innovative policies. 'There is increasing awareness that 'offering financial incentives for industrial investment alone is not sufficient for sustainable economic development and...creating synergy between indigenous firms and the investors is now on many regional politicians' agendas' (Boekholt 1997:120-121). Policy makers on all levels can play a role in encouraging virtual networks to grow and thrive by moving SME

clustering to the front seat of their economic development agenda and becoming catalysts for change (Ffowcs-Williams 2000).

There are some excellent examples of government interest in 'inter-firm relationship building where 'regional government policies have played a crucial role in supporting and enhancing the network building' (Boekholt 1997:123). In the Netherlands, the Department of Economic Affairs, in its introduction of telecommunications systems to companies, has subsidized projects and supported studies in various economic sectors in order to (i) organise value chains, (ii) create a learning environment and (iii) stimulate copying of strategic company behaviour (Nouwens and Bouwman 1995). The Connecting Victoria policy (Multimedia Victoria 1999) has slated the formation of an advisory group to prepare an industry development plan. While the policy supports the formation of clusters by hi-tech firms and research institutions as well as innovation in the small business sector and in country Victoria (Multimedia Victoria 2000a), it does not delineate SME clustering as such. Since SME clusters can challenge large firms as equals in the global marketplace, support for the building of inter-firm collaboration in virtual network structures capable of handling the dynamic evolution of a regional economy would constitute effective innovation policy.

Having identified Victoria as a learning society which includes building an IT savvy culture (Multimedia Victoria 2000b), academia can play a leading role in fostering inter- and intra-sector collaboration by (1) studying the formation of virtual clustering in regional economies, (2) determining the basis and success factors for effective collaboration and networking, (3) formulating appropriate economic frameworks for virtual clusters, and (4) developing skills in using the technology. It is anticipated that this study is will contribute towards virtual clustering knowledge in regional connectivity settings.

While abovementioned governmental and academic actions will provide integral support structures to help SMEs overcome e-commerce barriers and potential loss of competitive advantage, the willingness of SME managers to collaborate with common interest competitors and cooperate in the formation of online clusters is, however, crucial to the success of the innovation partnership.

Community Building

The notion of communities goes to the very heart of the Internet, which was formed in 1969 for the exchange of information by a community of American scientists (Armstrong and Hagel 1996). The original purpose of this community of scientists was, and remains for many virtual communities to date, data exchange of a non-commercial nature. One of the oldest virtual communities, The Well, launched in 1985 by a group of computer enthusiasts in the San Francisco area, is still operational today (Armstrong and Hagel 1996). With the proliferation of Internet users, communities of common interest (CCIs) have sprung up everywhere to cater to consumer and social interests ranging from information to communication, education, business and entertainment.

Commercial B2B or B2C communities are relatively new to the virtual world. Considered communities of transaction rather than communities of common interest, these portals primarily focus on delivering product (Armstrong and Hagel 1996). With a few exceptions such as Amazon.com, most still provide transaction information only and allow for little information exchange or interaction between parties. However, by satisfying both relational and transactional needs and fostering relationships and networks of interest within these e-market places, e-hubs have the potential to become highly competitive clusters of economic value (Armstrong and Hagel 1996).

Connectivity partners, trade organisations and industry sector operators are all pivotal in the formation of a virtual union and the notion of sharing common interests. Since participation in e-commerce and virtual community building will constitute a major challenge for SMEs and constitute a learning curve for all involved, fostering of a virtual cluster culture also falls within the parameters of the innovation partnership described above. Wheeler and Sillanpaa (1997) substantiate the importance of fostering a cluster culture by claiming that 'in the future the development of loyal, inclusive stakeholder relationships will become one of the most important determinants of commercial viability and business success' (Johnson and Tilley 1999:online). All stakeholders operating within a complex commercial environment will 'need to be acknowledged, understood, and responded to appropriately if the organisation is to survive, take control of its own destiny, and in many ways prosper' (Johnson and Tilley 1999:online).

Identifying stakeholder interests as the key to success, academia can play a role in the fostering of the embryonic cluster culture by facilitating a participatory and

evolving research process towards cluster formation and by imparting relevant technology skills. Policy makers concerned with the performance of regional economies should seek to understand the key characteristics of a networked community culture (OECD 1996:online) through active participation in the virtual cluster formulation process. As connectivity and e-commerce evolve, so will the virtual cluster culture. With communities of common interest being one of the critical concepts underpinning e-commerce related value creation and e-business models, there is an emerging body of research on virtual and strategic knowledge management and commercial community building featuring a culture of trust, community practice and social capital through which relationships between government and business (Simpson, Daws, Previte and Wood 1999) as well as between business network participants are reassessed (Zack 1999).

Knowledge Communication

Typically, companies are embedded in a variety of professional, social and intellectual exchange networks. The extent and importance of these networks usually relate to a firm's horizontal and vertical relationships, company culture and strategic complementarity. While many companies have implemented more technology driven solutions for improved information flow and productivity, an organisation's knowledge platform or intellectual capital is built upon the social capital its employees develop over time through interaction within their intellectual and social exchange networks (Zack 1999). The knowledge and social capital a person accumulates through experience and networking is highly personal or tacit knowledge and considered a valuable asset. Scholars (Fukuyama 1995; Walker et al 1997, in Gottschalk 2000) refer to social capital as an attribute of not only organisations but of communities, industry networks or even geographic regions, which can help expedite economic development.

A new form of social capital building is emerging in large firms through a spontaneous new knowledge exchange trend known as 'communities of practice' (Wenger and Snyder 2000). Showing great promise in driving company innovation and strategy, this form of knowledge management is being adopted by companies in many diverse areas in the public and private sectors. Burk (2000) calls communities of practice simple expansions of one-on-one knowledge sharing. Theorists Wenger and Snyder (2000) describe them as informal groups

of people who regularly share their expertise and experiences. Communities of practice differ from other forms of organisational knowledge management incentives in that they are voluntary and informal. Most communities of practice are internal company networking groups, if necessary divided into subgroups by area of expertise or domain, but they can also flourish with members from different companies (Wenger and Snyder 2000).

Management interest and support for communities of practice is often casual and under-resourced, yet this spontaneous new think-tank mode of team building through face to face meetings, email, knowledge sharing networks, teleconferencing or video- and desktop conferencing is proving to be a crucial aspect of organisational learning and knowledge management. With communities of practice driving strategy, starting new lines of business, solving problems, transferring best practice, developing professional skills and helping companies recruit and retain talent, Wenger and Snyder (2000) characterise them as the 'hidden fountainhead of knowledge development' (Wenger and Snyder 2000:online) and the key to the knowledge economy.

With Intranets and dynamic Web sites, it is now possible to support distributed communities of practice and also to maintain interactive and evolving information about local circumstances and group history. However, if innovation is to be supported within and between companies in a collaborative environment we need to look beyond software solutions towards innovation in business models to enable technology-enabled organisational change (Malhotra (2000).

Tying social capital to learning, Putnam (1993) defines norms, networks and trust as the key features which facilitate cooperation for mutual benefit. Social scientist Fukuyama (1995) places a high value on voluntary associations that build social capital. Emphasising the relationship between trust and cooperation, Fukuyama (1995) argues that trust or social capital determines the performance of a society's institutions and facilitates large-scale economic activities. Granovetter (1985) suggests that institutional mechanisms, social networks and general morality are the basis of trust and trustworthiness. Malhotra (2000) draws attention to the business models adopted by Internet-based companies such as Amazon.com and e-Toys who have redefined the value of knowledge assets or intellectual capital by achieving valuation through information flows between organisations and industries. The work of Brown and Duguid (1998) and

Malhotra (2000) accentuates the different ways of moving knowledge within companies rather than between them and suggests that synergy between knowledge management and connectivity can lead to innovative business models for companies of all sizes.

While SME managers participate in a variety of industry and social networks via which they informally exchange valuable business information, typically SME industry networks neither have a common technology infrastructure nor the cooperative information exchange structure present in communities of practice. With embedded knowledge flows and innovation linked to cooperative relationships and communities of practice as well as through linkages using technology, SMEs do have the potential to both collaborate and compete by taking advantage of e-commerce based connectivity and new relationships founded on the exchange and sharing of embedded knowledge. While emulation of a large company type community of practice may be impracticable, appropriate new economy alliances between SMEs, with connectivity, clustering, SME community building, knowledge communication and cooperation as central objectives, can be examined.

Online cooperation

E-hubs are electronic business alliances for mutual competitive advantage (Wilson 2000b). B2B e-hubs come in various forms, depending on the horizontal or vertical nature of the aggregation and matching of industry objectives. By facilitating horizontal and vertical trading via automated e-commerce engines in B2B e-hubs, the latest IT solutions are being promoted as collaborative or c-commerce solutions in which strategic industry alliances are key. Companies such as SAP promote global focus solutions through customised information interfaces in which 'customers, employees, suppliers and business partners work together in one virtual business environment as if they were all one company' (SAP 2000:16).

While we may speak of e-commerce collaboration in these e-hubs, traditional cooperative approaches are generally sidelined in favour of one-stop-shop virtual

marketplaces. Cooperatives are voluntary associations of individuals and small business owners formed to meet common economic, social and cultural needs (International Cooperative Alliance 1995). Their crucial feature is the link between investment and return through participation and ownership. Cooperatives date back to the 1840s when British socialists set up the Rochdale Cooperative in response to changing economic times during the Industrial Revolution (James 1999). Australian cooperatives, which are predominantly associated with primary industries, have been on the wane due to industry deregulations and reduced levels of support (James 1999). Restructuring of traditional cooperative structures into shareholder-owned companies, which can attract outside investment and be listed on the Australian Stock Exchange has, however, provided a welcome boost to ailing Australian cooperatives (Baker 1998). In the Asia Pacific region, cooperative communities continue to wield considerable political and commercial power in countries such as Japan and Indonesia (James 1999). Inspired by new European cooperative models and focused on capturing continued concentration of wealth, America is experiencing an explosion of new cooperative development (Hazen 2000).

Most notably, electronic technologies are now being used to improve communication efficiency and effectiveness of cooperatives (Nelson 1999) and e-hub forms of trading are reviving cooperatives as the new economy enterprise model (James 1999). While aggregate supply and demand models achieving economies of scale are considered part and parcel of a successful e-hub at this time, common interests between cooperative stakeholders will most likely be the long-term driver of highly cooperative e-hub models (Wilson 2000c). Nelson (1999) compares today's learning organisations to early cooperative models, which made a commitment to ongoing learning in order to compete in a difficult business market and achieve competitive advantage for their cooperative organisation by being risk-takers, partnership builders, profit-sharers, niche marketers and investor-controlled business innovators (Nelson 1999). He might have extended his comparison to communities of practice and B2B cluster networks, new generation cooperative structures similarly committed to resource sharing and knowledge innovation in an unpredictable economy.

E-cooperative models have the potential to aggregate information exchange, knowledge management and marketing, bargaining and transaction power. Cooperative relationships being one of the most important determinants of

commercial viability and business success in the information age, e-cooperatives may well emerge as a significant 21st century SMEs cluster model opportunity. For such a model to succeed, however, the e-cooperative will have to be customised to suit stakeholder needs; facilitate SME community building, resource sharing and knowledge management practices; and be supported by favourable economic policies.

The Study

To date no studies have been identified in which regional SMEs are brought together in a virtual cooperative cluster environment. With regional innovation progressively focused on building network infrastructures to enhance inter-firm collaboration between SMEs, it seems timely that we become knowledgeable about what connectivity can offer towards the building of inter-firm collaboration in virtual network structures capable of handling the dynamic evolution of a regional economy.

The proposed study targets regionally dispersed special interest (e.g., nature-based) tourism operators as a community of common interest (CCI). To develop participatory online business solutions for regional special interest tourist operators, an action research methodology will be applied. An action research approach was chosen as it has the dual aim of bringing about action or change in a group, community or CCI while increasing the understanding on the part of participants and the researcher in an inclusive, collaborative and evolving process (Dick 1992-1993). Given that action research is considered to be collective, self-reflective and critical (McCutcheon and Jung 1990) and is undertaken by participants in social situations to improve their understanding and practices (Kemmis and McTaggart 1990), the participatory and reflective process of action research is deemed to constitute an appropriate methodology in view of the objectives to develop a 21st century SME cluster cooperative model based on stakeholder needs. By engaging the participants and the researcher in a mutual-collaborative environment (Grundy 1982) aimed at building trust, altering or improving existing business practices and adopting new business ideas, it is believed to be an especially suitable approach vis-à-vis the adoption of systems of innovation such as electronic commerce.

The proposed action research methodology in this study will take the form of a participatory strategic planning session in a search conference framework designed to (a) identify stakeholders' common strength and needs; (b) define common strategic knowledge management and e-commerce goals; (c) solidify stakeholder relationships through networking; (d) create action plans towards common strategic goals for a virtual CCI hub; and (e) formulate an initial virtual cluster model. The search conference will be preceded by interviews of special interest tourism SMEs to identify core competencies and virtual clustering interest and will be followed by multi-modal participatory reviews using a cyclic action research approach, continuous interaction, participation and reciprocation (Dick 1992-1993) to build a virtual cluster model for eventual adoption by the CCI. Embracing the premise outlined above that relationship building is integral to success in the new economy, key regional infrastructure, industry and governmental representatives will be invited to participate in the action research process. By involving key regional players in the virtual cluster formation, relationships with regional bodies or stakeholders are likely to be enhanced and suitable cluster incentives are more likely to ensue.

By defining the parameters, position and context of the mutually dependent C-factors and placing them within the framework of regional e-commerce development, it anticipated that this study will help determine underlying commitment of regional industry to innovation; further our understanding of regional and rural IT business needs vis-à-vis connectivity in general and the special interest tourism industry in particular; provide longitudinal data on adoption and diffusion of technology by SMEs in the region; gauge the viability of clustering regionally dispersed businesses into virtual value chains; and contribute towards viable economic models for regional growth in the networked economy.

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