

## **Can Knowledge Management Save Regional Development?**

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## **Can Knowledge Management Save Regional Development?**

Australia needs to create innovative regions to sustain economic prosperity and regional development. In order to do this, regions will need to systematically address their knowledge needs and identify tools that are appropriate in maximising their effectiveness. Many initiatives have focused on information and communication technology (ICT) to enable knowledge exchange and stimulate knowledge generation, but active knowledge management (KM) strategies are required if ICTs are to be used effectively. These strategies must respond to the regional economic and social environments which incorporate small and medium enterprises (SMEs). This paper outlines the importance of KM for supporting regional cluster development and the key ways in which communities of practice (CoPs), a KM technique, have been used to add value in similar contexts. How CoPs and their online counterpart, virtual communities of practice (VCoPs), can be used and developed in regional areas of Australia is considered along with a program for further research.

**Key words:** Regional Development, Virtual Communities of Practice (VCOPS), Small and Medium Enterprises (SMEs); value creation.

## **Introduction: Promoting Regional Development in the Knowledge Economy**

In recent years many governments have been promoting regional development in the belief that it will address the problems that have arisen through the globalisation of production and the change of the locus of the economy from resource-based to knowledge-based. This is observable in Australia where successive State of the Regions reports (for example, National Economics 2004) have identified the need for governments to address globalisation and the knowledge economy to enable local economic advantage by creating innovative regional clusters. 'As manufacturing becomes a truly global affair, the basis of competition will switch from individual companies and their supply chains to regional clusters' (Carrie 1999, p 45).

Many regional development initiatives aimed at addressing this globalisation problem have focused on implementing information and communications technology (ICT) in the belief that this will stimulate regional development, such as *Networking the Nation* and *Connect Victoria* in Australia (DIIRD, 2003). The results of these ICT programs have been inconsistent in achieving regional development (see for example, Gengatharen, Standing & Burn 2004). We assert, after Kaufmann et al (2003), that instead of relying on ICT alone as a source of regional development, regional planners and governments should be investigating the applicability of knowledge-based techniques for sustainable regions and then implementing ICT as a means of facilitating such initiatives. These regional development endeavours should stimulate knowledge exchange and knowledge generation through active knowledge management (KM) strategies.

The key to the success of these KM strategies for regional development will be encouraging the participation by small and medium enterprises (SMEs). SMEs are critical to the development of regional clusters in Australia, as they are the major source of prosperity and employment forming the backbone of regional development (Commonwealth of Australia, 2003). SMEs are essential components of regional clusters (Mitra, 2000) especially when they form into local networks clustered around an industry, sharing skills, resources and capabilities in cooperative relationships where competition and cooperation coexist. Frequently these networks are based on long traditions of social, business and organisational relationships that enable them to meet the fluctuations of local and global demand and, in the process, increase both their own and the region's productivity (Pihkala, 1999).

When such SME networks are formed, the local economy and regional development are enhanced through innovative and entrepreneurial activities (Hendry, Brown & Delfillippi, 2000). For example, research in Baden, Germany, found that innovative SMEs are more likely to form intra-regional linkages, more innovations arise from

SMEs with these linkages, and SMEs benefit more from those linkages than larger firms (Sternberg, 1999). The knowledge people have is the source of human capital and this is the key to innovation (Stewart, 1997). Regional development therefore requires a mechanism that will access people's knowledge by connecting them in innovative networks or clusters.

We have argued previously, along with others (see Mason, Castleman & Parker, 2004; Braun, 2002a; Benner, 2003; Forsman & Solitander, 2004; Ho, Au & Newton, 2003), that the KM approach with the most promise for supporting SME knowledge sharing in regional clusters is the formation of communities of practice (CoPs), which are

... groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis (Wenger, McDermott, & Snyder, 2002, 4).

But do CoPs have the potential to stimulate sustained regional development? This question has largely remained unanswered and will be the focus of this paper. Evidence will be provided to indicate why this is the right model for sustainable regional development. We will identify examples of what has been achieved previously that reflect how this technique may be extended using a CoP-based approach. For example we will illustrate how incorporating ICT into CoPs has the potential to further enhance regional development through online or virtual communities of practice (VCoPs).

The context of regional clusters will form the basis of this argument into the key success factors for developing KM and knowledge exchange. The viability of CoPs/VCoPs as a KM technique for SMEs will be identified. Value that can be achieved from CoPs/VCoPs will illustrate ways they enhance sustainable regional development especially in the Australian context. This paper will conclude by outlining an empirical research approach to ascertain the validity of CoPs/VCoPs as a KM technique for regional development.

### **Regional Innovative Clusters**

Porter (1998) popularised the term *clusters* and emphasised the importance of agglomeration, which occurs where firms group together in close local proximity such as a region. 'Clusters are geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition' (Porter 1998, 77). Besides this agglomeration, other factors required for successful clustering include dense, collaborative, social networks, accessibility to skilled labour, proximity to research centres and universities eager to participate.

Marshall (1947) was the first to identify the agglomeration of firms and named them industrial districts. These arose around existing physical conditions, such as ready availability of clay for pottery, or the demand for goods by royalty. Once established these industrial districts became entrenched because of the self-perpetuating advantages provided by the proximity to other firms with complementary skills. An ongoing creative cycle was initiated where new ideas emerged, were incorporated by other firms, who by adding to them initiated a source for further new ideas.

Collaboration and networking within a region, particularly based on knowledge sharing, has been shown to be an essential element of the development of regional clusters in research from other countries (see, for example, Mitra, 2000). Mitra described three forms of collaborative networking by SMEs that made the Emilia Romagna regional cluster of Italy so strong. These were:

- industrial districts based on niche markets;
- clothing, footwear and other artisan networks;
- subcontracting networks that grew around medium sized firms.

The SMEs in these networks drew upon socially cohesive networks of informal (family) and formal (unions, government etc) institutions where the agreed norms and values of the region, including good governance, ensured entrepreneurial success not only of the SMEs but of the region itself. As can be seen by this example, networking is critical for the development of regional clusters of SMEs, because it provides them with access to resources and knowledge thus helping them overcome their size disadvantages. Lin and Zhang's (2005) study of Taiwanese SMEs established that the best way for these firms to survive in the fiercely competitive knowledge-generating publishing industry (requiring flexibility, speed and innovation) was to be actively involved in strategic level networks whilst at the same time retaining operational level independence. These networks display the coherent use of intellectual capital to create value (Johannessen, Olsen & Olaisen 2005). A learning region emerges with the following characteristics: SMEs simultaneously competing and cooperating; a unique physical, knowledge and legal infrastructure; enhanced regional collective learning; and improved competitive positioning of individual SMEs (Hospers & Beugelsdijk, 2002).

In the latter decades of the 20<sup>th</sup> Century a resurgence of interest in regional clusters arose from the spectacular global success of the industrial clusters in Emilia Romagna (Italy), Baden-Wurttemberg (Germany), and especially the high-tech cluster of Silicon Valley (US) (Hospers & Beugelsdijk, 2002). Perceiving that ICT was the key ingredient in the success of high-tech clusters many governments have attempted to replicate the Silicon Valley success (Brown & Duiguid, 2002; Diez, 2003; Hospers & Beugelsdijk, 2002; Kolko, 2002; Gertler & Wolfe, 2002). These initiatives, however, have proved inadequate in facilitating regional clustering (see, for example, Diez, 2003; Longhi, 1999), because few regions have the pre-existing conditions for developing high-tech clusters.

The reliance on ICT as an instigator of regional clustering, instead of encouraging the agglomeration (grouping together of firms), may have the opposite effect. For example Bellini et al's (2003) Italian regional investigation revealed that increased use of ICT had a dispersive effect, spreading economic activity beyond the region. This dispersive effect was greater when such initiatives involved low ICT knowledge industries such as call centres. Interestingly Kolko's (2002) USA research revealed that access to highly skilled labour was the reason high-tech industries disperse at less than half the average rate of all industries, not ICT. Not only are ICT based initiatives inadequate for creating clusters, they may even lead to the erosion of existing clusters (Wever & Stam, 1999).

Previously it was thought that ICT was the critical success factor for regional development, however these examples and recent SME research illustrate that ICT initiatives alone are inadequate for sustained regional development (Tann, Platts & Stein, 2002; Braun, 2002b; Gengatharen, Standing & Burn, 2004). How then can SMEs establish KM networks which foster regional development?

### **Knowledge Management for SME Networks**

It is our assertion that before ICT investments are made we need to have a better understanding of the ways SMEs share value-creating knowledge and of the most appropriate knowledge management techniques to facilitate this. It is important to then develop a KM strategy which returns real value to SMEs by facilitating knowledge sharing (Bukh, 2003; Rastogi, 2003). A significant finding of George et al's (2001) research into small community banking networks in USA was that the formation of both formal and informal networks not only provided access to scarce resources, but that these networks were also critical to the SMEs' ongoing success. Earlier, in this paper, we described the validity of communities of practice (CoPs) as knowledge sharing technique for regional development because it stimulates the inherent collaboration and networking of SMEs and in the process facilitates innovation and the sustainability of regional clusters.

It became clear when we undertook further research into the KM literature that the most successful model for harnessing the value creation potential of knowledge is CoPs. Large organisations are achieving this, as demonstrated in a study by Lee et al (2002) which revealed that over half of the Fortune Global Top 10 firms are profiting from their CoPs. These organisations are implementing strategies to align their CoPs to the business requirements by funding and resourcing those CoPs that provide business productivity benefits.

CoPs are the most appropriate KM tool for SMEs to create value as they address the two roles of economic exchange: improving efficiency by continually reallocating resources to more productive uses, and stimulating new productivity by combining resources in new ways (Huizing & Bouman, 2002). What is the value that CoPs provide SMEs and what is their potential for regional development?

### **Providing Value through Regional CoPs**

SMEs cannot, by themselves, initiate and manage KM initiatives in the same way as in large organisations; however, the networking, collaborative nature of CoPs, based on a grouping of people with a driving on business interest and common practices, makes them the most valid value creating KM tool for regionally based SMEs. 'Economics of association within the clusters should be encouraged through social dialogue and learning based on shared knowledge and information, thus encouraging interfirm exchange and reciprocity' (Rainnie, 2002). We outline below four types of value that have been achieved from CoPs in the regional environment and elicit ways these facilitate regional development.

#### *Regional Innovation*

One of the major sources of value attributed to CoPs is innovation. This innovative capacity is heightened when members of different CoPs interact with one another. The Motor Sports Valley region of the UK was renowned for its innovativeness. Henry and Pinch (2000) attribute this to the 'churning' of staff between firms ensuring that information embodied in one firm's CoP is moved to the next and in the process continually reinvigorating the knowledge both of the individual firms and of the region, thus creating sustainable competitive advantage in the industry. This region was characterised by dense social networks where employees were loathe to leave for extended periods, if they did they were excluded from access to the region's knowledge, via CoP membership. Similarly Saxenian's (1994) comparative study of Silicon Valley and Route 128 regions in the USA indicated that success of the former was due to its CoP like structures, based on dense social networks, and flexible labour markets. These factors enabled firms to compete fiercely whilst still collaborating with each other and also with other external institutions such as unions and universities. An experimental environment flourished in this innovative milieu or learning region and 'spin off' new entrepreneurial SMEs regularly formed. These two examples illustrate that the key elements of clusters are facilitated by CoPs, and in the process, innovation is enhanced providing great potential for regional development.

A regional case study conducted by Scarborough and Swan (2001) in a Midlands National Health System Trust Hospital, UK, assessed the contribution that CoPs can make to the innovation process. The findings illustrated the contradictory nature of CoPs as holders of valuable innovation creating tacit knowledge with norms of reciprocity and trust, but whose social embeddedness prevented this knowledge being available to 'outsiders'. To overcome this members, representative of the various different local CoPs, were invited to be in a project team to find an innovative solution to problems associated with cataract procedures. Three key features were attributed to the successful innovative solution - the selection of key members of CoPs to participate in the team; the boundary spanning role each of these played in not only providing suggestions from within their own CoP but ensuring CoP acceptance of the final solution; and the innovative environment that flourished when members from different CoPs interacted. This case is very interesting as it illustrates a possible way that regional planners could leverage the valuable tacit knowledge held by members of CoPs without having to establish them, a difficult task given that participation in them is voluntary.

#### *Sustainable Competitive Advantage*

One of the few examples that relates SME CoPs with regional aspects is Forsman and Solitander's (2004) study of Finish jewellers. SMEs who had retained the geographically located untraded dependencies - norms, conventions and language of CoPs from two different national cultures achieved sustainable competitive advantage when forced to relocate, whilst others without these cultural untraded dependencies were unable to continue in business. 'This example serves as a reminder that organisational embeddedness and a community of practice, is not very useful without the right socio-cultural and geographic embeddedness' (Forsman & Solitander 2004, 14). However, it also indicates how CoPs fosters the critical ingredient of successful regional economies, social capital, which facilitates sustainable regional development through the collaboration of local players (Gertler & Wolfe, 2002).

#### *Improved Learning Processes*

Although the study of 139 SMEs in the Spanish Optometry Industry relates to industry rather than regional CoPs it is significant as the results indicate positive outcomes from the inter-firm SME-based CoPs. This study found external CoPs improve the learning processes of the participating firms: when the SMEs fostered innovation there was a positive relationship between external innovation and the firm's knowledge processes; however if innovation was not fostered there was a negative effect. Regardless of whether organisations encourage innovation or not the learning processes inherent in CoPs created relationship capital in the form of higher quality, better reputation and prestige, customer satisfaction; and better use of knowledge for example improved responses to customer problems and suggestions (Dewhurst & Cegarra Navarro, 2004). These benefits to 'the group' of SMEs are extremely relevant to regional development. If these types of inter-firm SME CoPs are encouraged in the region, such benefits as indicated above could accrue to the region as a whole, thus enhancing its ability to compete in the global economy.

### *New Employee Productivity*

Professional organisations can also provide value to regions. Benner (2003) undertook a case study into the Silicon Valley *Webgrills* CoP. This CoP was established as part of an organisation for professional females interested in new media. One of the major benefits of this CoP was that it facilitated newcomers' integration into the region and in the process enabled them to become more quickly productive in their profession. In the current highly competitive economy speed becomes the essence of success, the potential to hasten the usefulness of employees in industries therefore becomes a regional strategic advantage enabled by CoPs.

These four examples clearly indicate that the KM tool CoPs has the potential to provide SMEs, and the regional clusters within which they operate, significant competitive advantages. Is this potential for regional development enhanced by ICT?

### **Enhancing Regional Value through VCoPs**

In the large organisational context, online or virtual communities of practice (VCoPs) play an important complementary role to CoPs where communication is expected to continue when face-to-face interactions are no longer viable because of the globalisation of operations. It has been found that the virtual nature alters the communication process adding complexity - it is still essential to have ongoing face-to-face interactions based on strong interpersonal relationships or the VCoP loses momentum and 'dies'; additionally shared artefacts, such as planning documents, may be necessary for sustaining VCoPs (Hildreth & Kimble, 2000).

Perhaps most significant is that the implementation of VCoPs involves a three stage process:

- firstly they emerge out of an existing CoP,

- next the co-located members of the existing CoP connect virtually to new members,
- finally the emerging VCoP develops links with similar CoPs in other locations (Hildreth & Kimble, 2000).

VCoPs, thus formed, provide additional value to large organisations by vastly increasing the level of expertise available to them. VCoPs appear to be extremely relevant to regionally based SMEs where their sources of information and knowledge invariably come from external sources (Bennett & Robson, 1999).

Large organisational VCoPs have changed the way intellectual capital is acquired and leveraged for product and process improvement and innovation. Value in this context is created in three main ways: by promoting innovation, by using knowledge more effectively and by recognising and exploiting VCoPs as capital. We will now give examples that illustrate how these have been achieved by regional SMEs and in the process not only consolidate regional development but also have produced a new form of capital, VCoPs capital that is unobtainable by any other means.

Virtual communities of practice (VCoPs) emerged in Hong Kong out of the virtualisation of the textile and clothing industry supply chains. Here the multinational companies (MNCs) insisted that their supplier SMEs had to operate online to be used. A symbiotic relationship emerged where the MNCs were able to streamline their operations and at the same time provide technical advice, assistance and even products to the SMEs (Enright, 2000). By participating in these virtual supply chains SMEs became familiar with ICT that provided ready access to, and benefit from, external sources of information previously not available to them. It was not long before these SMEs started communicating virtually in VCoPs thus extending the advantages they achieved from their interpersonal interactions. This virtualisation process redefined how intellectual capital was obtained and leveraged into innovation in the form of improved products and processes. Ho et al, (2003) assert that the new industry specific knowledge assets that are embodied in VCoPs have created a new source of capital Virtual Communities of Practice Capital.

Another interesting extension of the regional CoP, the transnational CoP, has emerged with migration of employees eg from India to Silicon Valley (Coe & Bunnell, 2003). These employees retain their CoP links virtually to their 'home country' CoPs and the knowledge embodied in these is made accessible to the 'new' firm's regional CoPs. Much value is provided by these boundary-spanning CoP members including new ideas for innovation, and sources for funds, suppliers, markets and staff – these are real advantages to their firms and thus enhance the development of the region.

The collaborative and networking nature of CoPs and their associated VCoPs facilitates knowledge sharing and thus creates value for SMEs in regional clusters. As the above discussion indicates this value is invariably in the form of intangible assets, perhaps the greatest source of potential value is from increased innovation opportunities emerging from inter-firm CoPs. A necessary prerequisite for incorporating virtual CoPs is to have well functioning face-to-face CoPs as these are more effective in dealing with uncertainty and ambiguity. Thus regional clusters that have extended their CoPs by

incorporation of ICT creating VCoPs now have access to a previously unattainable asset, VCoPs capital.

### **Conclusion and Directions for Further Research**

Australian SMEs are key players in regional economies as they are the major employer and wealth creators. The emergence of the globalised knowledge-based economy creates problems for SMEs as practices used successfully in the resource-based economy are no longer always viable. What is needed is a knowledge management technique that will enable them to become active players in this competitive business environment characterised by rapid changes and new challenges. This paper has illustrated how ICT approaches implemented by governments to encourage regional development are limited and in some ways have proved problematic. The much touted high-tech clusters are proving elusive as they are slow to implement, need extensive resources and an environment conducive to their success. In any case, Australian SMEs are often not able to take advantage of such ICT initiatives.

Many large organisations have incorporated CoPs/VCoPs as a key strategy for sharing tacit knowledge, in the process creating value in the knowledge-based global economy. We have identified CoPs as the most appropriate KM technique for stimulating networks, clusters and regional development as they are based on shared trust, member reputation and shared interest in maintaining the network. Investigations into regional and SME research revealed that the networking and knowledge creating nature of CoPs, and their associated VCoPs, has enabled them to achieve intangible value in the form of innovation, new employee productivity, sustainable competitive advantage, improved learning processes and access to external information and resources.

It is widely believed that SMEs in Australia do not share valuable business knowledge with other SMEs, although there is no definitive research confirming or discounting this assertion. This paper has indicated that knowledge sharing is a crucial factor for regional development and that the most appropriate knowledge management technique for this is *Communities of Practice* and its associated *Virtual Communities of Practice*. Research is therefore urgently needed using a knowledge value focus to provide insights into the emergence and ongoing participation of CoPs by regionally based inter-firm CoPs and their associated VCoPs. VCoPs must develop appropriate practices to foster trust, an ethos of innovation, and commitment to the regional area. These developments present not just an opportunity, but a mandate for action given the global nature of competitiveness. Further research on VCoPs in regional clusters will help us understand how to enhance the value of the collective knowledge of SMEs and how regional areas can establish and sustain SME-based clusters and derive value from them. This will necessitate establishing what value is for SMEs, how they create that value, how CoPs can contribute to that, and how these are impacted by the use of VCoPs. To do this, the research must develop an understanding of what types of value the owners of SMEs in regional areas recognise as being beneficial in their businesses, how these are related to activity in the local area and what views they hold about knowledge exchange in conventional and virtual CoPs.

Our research project will investigate these issues through a series of case studies conducted in regional areas in Victoria. These regional areas will be in non-metropolitan areas centred on a city with a population of at least 40,000 people. Each

region will display potential clustering attributes such as having geographic concentrations of SMEs displaying active economic development and resource sharing. They will also have access to external organisations important to competitive positioning, such as educational and training facilities, local / state / federal government initiatives, or active industry / professional groups. This is not an industry-based study investigating hierarchical supply-chains; rather the focus is on how horizontal network relationships operate. By conducting this empirical research in clusters that are both successful and less effective in using CoPs/VCoPs for value-creation maximises the elucidation of more “generalised scripts” (Hospers & Beugelsdijk, 2002, 397) which are transposable to other SME-based regional clusters. The insights thus obtained will provide those interested in regional development an effective mechanism for identifying areas where ICT investments provide the best potential for regional development. They will also make a unique contribution to the theoretical understanding of the effectiveness of KM practices of regionally based inter-firm SMEs. The KM technique of CoPs/VCoPs will then be in a position to save regional development.

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