Beyond Clusters - Collaborative Commerce and Clustering

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The authors form part of a team studying collaborative commerce adoption by small and medium enterprises as part of an Australian Research Council grant. This paper explores issues of importance to that larger project, which is multidisciplinary in nature, reflecting the expertise and interests of the authors.
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Dr Walker works actively with small businesses in the Perth Region and has extensive experience collaborating with local government and bodies such as AusIndustry to assist small businesses. Dr Walker is involved in the ARC project looking at collaborative commerce for SMES in the West Australian context.
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Abstract

Recent studies regarding industry and regional competition have demonstrated the benefits of inter-firm co-operation and networking by small and medium enterprises (SMEs) as they form alliances and partnerships to compete in an increasingly Information Technology (IT) enabled global world.

Collaborative commerce (c-commerce) is one type of alliance, and some argue it is the next stage in electronic business (e-business). Given local and regional government interest in encouraging SMEs to participate in electronic commerce (e-commerce) this paper addresses the ability of SMEs to engage in c-commerce and the reasons they may consider same.

Clusters provide a concentration of related and supporting industries to engage collectively in markets. They create an environment where governments can foster natural relationships and utilise existing collaborations to encourage c-commerce adoption. This facilitates an exchange of ideas and knowledge, the transfer of technology and promotes product and market development. In this way clusters and c-commerce are related, though further research as to their relationship is required.

This paper overviews collaborative networks, including c-commerce, and investigates different types of clusters – regional, industrial, knowledge and eco-industry clusters. Consideration is given to the benefits flowing from c-commerce and the mechanisms and structures required for clustering and c-commerce adoption through best-practice case studies.

Based on academic and practical research this paper proposes a model for cluster development which can be used to develop strategic cluster policies in the future. This model demonstrates an evolution of types of clusters and shows the role c-commerce plays in this evolution.

Key words: collaborative commerce, SMEs, clustering.
Introduction

Small and medium enterprises (SMEs) operate in a new information society characterised by competitive, savvy international markets. Encouraging growth and prosperity of SMEs is critical to strengthening regional economies, which tend to be dominated by SMEs. Australia’s large SME base is fast becoming the cornerstone to regional economic development and their success in turbulent times requires the development of information technology (IT) capabilities as well as a new approach to operating. This includes, \textit{inter alia}, forming collaborative relationships as a way to keep up or to access additional complementary resources, to achieve efficiencies and to access markets.

The dawning of the information society saw the initial focus on the link between SME’s and the exploration of new markets via electronic commerce (e-commerce). E-commerce is simply the utilisation of Information Communications Technology (ICT) for business transactions. However, generally, there is a relatively slow uptake of e-commerce by SMEs for reasons discussed elsewhere. In the face of this, with the realisation that new approaches are needed, partnerships or collaborative networks are emerging, some around IT. With ICT naturally decreasing the importance of proximity, the transfer of ideas and knowledge becomes the key reason for SME’s to cluster or collaborate.

Successful businesses are forming alliances and partnerships to compete in the new IT-enabled world. Collaborative commerce (c-commerce) is one example of this response and is seen by some as the next stage in e-business.

Recent studies in industry and regional competition have shown the specific benefits of inter-firm cooperation and networking for SME’s. With interest shown by local/regional government to encourage SME participation in collaborative networks, this report investigates different types of collaborative networks which are potentially stepping stones to c-commerce - regional, industrial, knowledge and eco-industry.

Strengthening collaborative networks gives governments a foothold in promoting innovation and competitiveness. It assists the concentration of related and supporting industries to engage collectively in markets and creates an environment where governments can foster natural relationships utilising existing collaborations to encourage further collaboration. This facilitates the flow of ideas, the transfer of technology, product/market development, as well as regional economic development (Mazzarol, 2003).

This report identifies four types of clusters and then suggests a migration of cluster types, arriving at c-commerce. Best practice case studies serve to illustrate this migration. Focusing on case study examples of collaborative networking helps to identify key problems and their lessons.


**Collaborative and knowledge networks**

New business patterns are characterised by, *inter alia*, diminishing geographical and time boundaries, globalisation of the labour market, increased connectivity, and extended or virtual companies. A shift to a knowledge era (European Community, 2000) has implications for the notion of clusters as IT potentially allows interregional collaboration.

Rapid developments in collaborative networks in the last two decades are fast becoming the basic unit for innovation and production in the knowledge economy with network participation contributing to knowledge.

Collaborative networks and clustering also are a source of productivity and competitiveness which is paradoxical since firms are often reluctant to share information and knowledge formally for fear of undermining their competitive position. It has been observed (European Community, 2000) that ‘the relationship between competitiveness and competition may evolve, and that the ‘co-opetition’ model’ may be of use. This is the subject of discussion elsewhere (Pease & Rowe, 2005).

As well as encouraging clustering in its many forms, collaboration promotes intersectoral and interregional cooperation - ie, interaction between regional or industrial clusters. Geographical groups may represent a latent network, as in professional groups. In other words, collaboration amongst firms situated in close proximity has not been fully exploited.

The advent of knowledge networks enables consideration of not only internal values but the values that are external to the enterprise. In order to valorise external resources, two factors are required. Firstly, the company must have the appropriate tools and capacity to communicate and to stock the external knowledge it needs. Secondly, it must have put in place appropriate processes to assure an optimum diffusion of this knowledge among its staff in order to exploit the knowledge and generate added value. In other words, ‘develop a new knowledge management process’ (European Community, 2000).

SMEs must both understand the benefits of knowledge networks, and possess the tools, capacity, systems and processes to enable this dialogue and information sharing. If these factors are not present involvement in these networks, including e-commerce and clustering may not be able to proceed.

The following focuses on the phenomena of clusters, collaborative or knowledge networks and e-commerce. This paper offers a discussion of the factors that prohibit and enable SMEs involvement in these relationships with a brief look at a number of case studies.
Barriers

There are numerous barriers facing SMEs as they consider involvement in knowledge networks which are increasingly characterised by clusters. Similar barriers exist for SMEs involved in e-commerce. These barriers include:

- The need for the development of ICT competency amongst SME proprietors;
- The demands knowledge management places upon the SME in terms of processes and tools;
- Lack of uptake of collaborative action between SMEs and networking practices at cluster level.

These barriers appear greater for SME’s than for larger organisations and multinationals; and for small rather than medium businesses. They reflect SMEs limited resources and expertise, as well as factors that have been identified as impeding e-commerce adoption such as security concerns and fear. Issues of trust and commitment and willingness to share information with other partners are critical to collaboration and are discussed elsewhere by the authors (Taylor & Murphy, 2004; Mazzarol, 2003; E-Business Policy Group, 2002).

With respect to ICT-based co-operation other barriers may also be at play, both internal and external to the firm (European Community, 2000). The internal barriers include:

- Lack of single point of reference (ICT manager or ICT champion) able to integrate internal and external businesses communications strategies and knowledge management issues;
- Cultural resistance and managerial and structural inadequacies;
- Lack of suitable in-house dissemination tools;
- Training problems.

The external barriers include:

- Presence of unfavourable ICT market conditions for SMEs (entry costs, gaps in network infrastructure);
- Lack of suitable institutional services for removing technological and economic obstacles to access and use new technologies;
- Absence of suitable consultancy services at costs SMES can afford.

Certainly, it would seem that the benefits of clustering or collaborative networks need to be communicated, focusing on the specific needs of the SME. Such an approach would help overcome these identified inhibitors.

Studies carried out by the EU with respect to a European pilot study for local and industrial networks (European Community – http://www.eu.epsilon.com) confirm the reluctance of SMEs to share information other than informally. ‘They are either unaware of firms with complementary skills or are unwilling to collaborate with their competitors’ (European Community, 2000). This reluctance to open up and share...
information with others seems to be a critical barrier for collaborative networks. Some of the abovementioned factors may explain this reluctance, and those relating to network theory issues are discussed elsewhere.

It could be said many enterprises have not perceived the benefits of co-operation or the importance of knowledge assets as being crucial for value adding and competitive advantage. This, too, is an impediment to e-commerce adoption.

Apart from inter-organisational relationships developed by individual SMEs, existing relationships can be also be used, for example, trade associations and Chambers of Commerce of Business Associations (E-Business Policy Group, 2002). On the other hand, the existence of such bodies may deter SMEs collaborating in other ways since the need for additional collaboration may not be appreciated.

**The role of public actors in facilitating collaborative or knowledge network formation**

Research has identified few ‘bottom-up initiatives’ indicating a reticence to collaborate. The role of public actors is therefore important to facilitate clustering or collaborative networks and to overcome the barriers outlined.

With respect to the European position around 90% of all collaborative networks receive grants from public actors since they are seen as having a role to play in fostering collaboration between firms, assisting the development of natural clusters rather than trying to create them from scratch. The public sector also is seen as an important source of information, and often has a pivotal role in ‘catalysing synergies’ between various SME support bodies (European Community, 2000).

Additionally, the role of the state is important to ensure disparities in access to ICT does not lead to a ‘two-tiered’ information society as evident in the digital divide, for example between SMEs and large business. This may prove to be a major impediment to e-commerce.

Research into SME’s and ICT adoption is deficient generally in that it fails to recognize the diversity of SMEs in terms of, *inter alia*, size, age, industry, ICT experience, degree of support and need for ICT. It is impossible to formulate a one-size-fits-all model (Dixon *et al.*, 2002). What holds true for large organisations is not the case for SMEs, or with respect to categories of SMEs, as identified by Birch (1987; 1995) and others.

Dixon *et al.*, (2002) in their e-London report suggested that there are two digital divides for SMEs:

1) Ability to perform simple ICT tasks like email and simple brochures websites.
2) Ability to tackle more advanced ICT like R&D and specialised knowledge.

Governments, in seeking to facilitate collaboration, are concerned largely with regional development. They see collaborative networks as facilitating the sharing of knowledge necessary to promote development and are eager to assist industry willin...
to collaborate, or who might act as an anchor tenant to generate a ‘gravitational pull’ to a region. Public actors, therefore, act as facilitators by encouraging links and initiatives to decrease costs and increase benefits to the community as a whole.

**What is clustering?**

Clusters are “geographic concentrations of interconnected companies, specialised suppliers, services providers, firms in related industries, and associated institutions (for example universities, standard agencies, and trade associations) in particular fields that compete but also cooperate” (Porter, 1998). Many clusters are comprised of equally sharing small or medium businesses (SMEs), and others dominated by particular companies (Molina-Bavantes, 2002).

There are primarily two economic benefits from clustering. Firstly, demand/supply side advantages are achieved via the critical mass of market transactions by the concentration of firms. Secondly, a stock of social capital is produced through a network of people, skills, innovations and flow of information. This collaboration between players is enhanced by greater levels of trust and networking (Rosenfeld, 2001; O’Sullivan, 2002).

Regional networks are examples of the first forms of co-operative networks. These began with big firms initiating technical alliances to reduce uncertainty and costs. This phenomenon has been observed in regional clusters as firms pursue ‘aggregation effects’ or ‘locational’ or ‘proximity’ benefits.

Internationally, there has been a spread in clustering activities or ‘regional innovation system strategies’. All aim to bring greater collaboration between regionally clustered firms, enhancing a region’s innovative capabilities. Hubs of economic activity attract other firms and encourage start-ups, potentially expanding businesses at relatively strong growth rates.

Economic development is increasingly focused on strengthening key clusters of alliances and partnerships rather than specific firms. Such networks foster local elements of competitive advantage, encouraging competition and innovation and facilitate growth as they bring together like-minded entrepreneurial operators (Mazzarol, 2003).

**Economic and Social Importance of Clustering**

With the increasing competitive nature of markets, pressure is placed on SMEs to be more innovative. Government initiatives to recognize and support innovative SMEs boosts the creative capacity and competitiveness in outside markets of an entire region (O’Sullivan, 2002).

Changing business culture takes time, the ability and desire to do so and often entails some type of innovation. Innovations can be in terms of business processes, products and market or business systems. Changes can range from very gradual to radical technological breakthroughs. In general, most SMEs are comfortable with slow
change, as radical innovations are often disruptive to production and costly to implement (Mazzarol, 2003).

Thus, the majority of social change is through the gradual diffusion of information and innovation. The more open a community is to the outside world, and the greater the willingness of firms within a region to collaborate and share knowledge, the more innovative it will be. Innovation and its adoption levels decrease with decreased exposure to other influences (Mazzarol, 2003; Rosenfeld, 2001).

Cluster strategies and knowledge networks often go hand-in-hand, as clustering facilitates the frequent social interactions necessary for transferring tacit knowledge, learning and innovation (OECD, 2001). The ability of social networks to transfer knowledge is limited by the connections between members. Weak connections result in a lack of access to collective social capital. Therefore, there is frequently a need for facilitators or agents to aid in the provision and establishment of these necessary linkages (Rosenfeld, 2001).

Types of clusters

The paper now discusses the four types of clusters identified in the research – regional, industrial, knowledge and eco-clusters. Having identified examples of each type of cluster, a model is then put forward depicting a progression of clustering types towards e-commerce.

There are four identified types of clusters in the literature:

- Industry clusters - defined by their “share(d) needs for common talent, technology, and infrastructure” (Waits, 2000);
- Regional clusters – which are industry clusters organized by region;
- Knowledge hubs – defined as “specialised networks of innovative, interrelated firms centered outside…deriving competitive advantages primarily through accumulated, embedded and imported knowledge among local actors about highly specific technologies, processes and markets” (Munnich et al, 2002);
- Knowledge community - a knowledge hub completely integrating all elements of community, government and business through high-tech ICT and high-level collaboration with innovation and entrepreneurship key to this globally competitive e-commerce community.

Regional and industrial clusters

It is often difficult to distinguish between industry and regional clusters as geographically concentrated clusters based on specific industries naturally form wider regional connections. Regional and industry clusters are defined as ‘groups of business concentrated in a particular geographic area that are interrelated through alliances, competitions or the buy-supplier “food-chain” and that draw on a common
talent, technology and support base’ (Blandy, 2003). These networks become magnets for new businesses, technology, skilled personnel and investment due to their innovation or specialisation. Thus, cluster development strategies are potential engine rooms for to assist business transformation.

When SME’s cluster together geographically and so collaborate many benefits arise. Business networking gives easier access to specialised suppliers, services and human resources, as well as access to greater resources, for example, financial, managerial and physical (Mazzarol, 2003; O’Sullivan, 2002).

These networks are also key in creating a market for the supply of products and services, establishing a cycle of increasing competition and success. This is referred to as external economies, defined as ‘advantages that arise not as the result of actions by a firm itself, but rather from the firm’s location’ (Blandy, 2003). As previously discussed, these interchangeably can be referred to as proximity or locational benefits.

SME’s achieve the benefits of economies of scale by basing activities around regional clusters in terms of (Rosenfeld 2001; Whittaker et al, 2003; Mazzarol, 2003; Taylor & Murphy, 2004; Fitzsimons, 2004):

- Infrastructure
- Centres of Excellence
- Informal knowledge transfer
- Linkages to R&D institutions
- Attracting professionals

An example from the Australia context are the Cairns and the Mackay Regional Economic Development Corporations, whose regional economic development strategy allows industry clusters to operate autonomously under one umbrella. They value collaborations over the strengthening individual firms, providing an industry cluster support network and regional expertise (Mackay Whitsunday Regional Economic Development http://www.mwredc.org/publications.html; Cairns Regional Economic Development Corporation http://www.redc.com/au/clusters.html).

Eco-Industry Parks are another example worthy of mention. Typically they are businesses collaborating within a community promoting regional economic activity and environmental consciousness. The most basic model is a one-stop-shop waste disposal resource recovery park allowing the community to decrease costs by centralising and reselling cheaply recycled/composted waste materials. Individual businesses are usually small, their co-location allowing them to share hard and soft infrastructure and other business expenses (Liss, G. and Associates, 2004).

**Knowledge hubs and knowledge networks**

Knowledge networks are based on collaborations between governments, institutions and industry and contain both public and private knowledge-intensive organizations. They operate to generate, transfer and apply knowledge, and subsequently, to train...
and educate others in the knowledge (Western Australian Technology and Industry Advisory Council, 2002).

They are distinguished from industry and regional clusters by the role placed on knowledge as the essential component of innovation and competitive advantage (Munnich et al., 2002).

Knowledge hubs have recently been referred to as ‘Techno-economic Networks’ (Mazzarol, 2003). Many governments are beginning to view such high-tech industry networks of firms, government agencies and research centers as the new focus for scientific innovation to generate industry competitiveness.

They often have a strategic role and are a focal point for research, development and business concepts. Increasingly, firms in some industry market systems are seeking to expand existing networks to include partnerships outside of regular dealings with research agencies or universities. Industries interested in such relationships are likely to be those experiencing large growth. Joint initiatives in these areas serve as a method to overtake competitors (Mazzarol, 2003).

There is a growing spectrum of ICT-based business networks and knowledge-focused knowledge resource networks. Whilst there is a broad range of knowledge networks from single-purpose cooperation between advanced ICT users to portals facilitating business-focused resources, for SMEs it is likely that they suffer from a deficiency of IT capabilities and resources able to be dedicated to collaborative partnerships. The need for interoperable systems and processes and the demands this raises in terms of resources and time also is an issue facing SMEs (Taylor & Murphy, 2004; Braun, 2002; Webster et al., 2004). The appropriate restructuring of knowledge-oriented business processes relies on the capacity to implement technical and relational tools.

Why knowledge?

The focus on knowledge with the advent of the knowledge economy reflects a structural shift that is taking place worldwide as knowledge and information is recognised as a commodity. The derivation of value from information to foster competitive advantage has been bought about by developments in ICT.

With countries placing increasing value on establishing knowledge economies, some argue that e-commerce will make a company’s location less relevant in business relationships (Taylor & Murphy, 2004; O’Sullivan, 2002). Thus, the issue of knowledge-based wealth creation is of greater importance to many regions, either due to the ‘tyranny of distance’ or underdevelopment. This has implications for clustering in its traditional sense and opens up new approaches with respect to clustering (Sheehan & Grewal, 2000).

C-commerce is an example of a new approach to clustering. It enhances the proximity or locational factors by adding the virtual proximity to the physical proximity (European Community, 2000). Since collaboration occurs around IT the need for physical proximity becomes secondary as information is shared.
electronically. This places strain on the systems and processes in place internal to and between SMEs.

The knowledge challenge

Whilst having knowledge is an advantage, it very quickly becomes obsolete. Competitive advantage based on having knowledge can be eroded – due to globalisation, imitation and the easy transfer of information across technical barriers. Developed countries find little economic success in the adoption of others’ ideas, instead relying on their own innovations, knowledge, and their ability to renew this stock. ICT therefore has a critical role to play in ensuring the sustainability of competitive advantage founded on knowledge and knowledge sharing. This applies equally at a macro level as well as for the individual firm or collaborative network (Munnich et al, 2002; Zack, 1999; Pages, 2004).

Examples of Knowledge Clusters

One example of a knowledge network is defence industry clusters. Direct and indirect knowledge inputs into the closed regional defense industry cluster systems have huge competitive advantage implications for both a region and a nation. In the recent KPMG 2004 Competitive Advantage study released in the USA, Adelaide was chosen as the top place in the Asia-Pacific to do business. It is the most cost-competitive environment in a combination of key traditional and knowledge economy industry clusters (Hopkins, 2004).

Unlike most industries, the Australian Government is the core consumer of the defense industry economic network and as its contracts are highly sensitive only a small number of highly specialised firms have access. To circumvent this, South Australia established the Defence Teaming Centre (DTC), whose 56-Australian-company membership join with the main bidding contractor for any project. Its bids imitate those of larger organisations by pooling member resources. There are strict collaborative guidelines through a general code of ethics and collaborative contracts to facilitate the trust and flexibility of members. The probability of any of its bids being won by individual members without the collective efforts of the DTC is almost nil (Government of South Australia, 2004; Blandy, 2003).

Another example of a knowledge cluster is Desert Knowledge Australia, formed to establish networks for the research, product development and marketing of sustainable communities. With global warming and environmental issues taking on a higher profile in political, economic and social arenas, knowledge will potentially be adopted to change practices in desert communities and energy conscious nations globally. Desert Knowledge Australia is working towards an integrated knowledge community to gather and research the collective resources and knowledge of the Australian desert industry, Aboriginal organisations, government, private enterprise and Australian and international universities to research issues faced by populations and viable sustainable community solutions of arid lands (Desert Knowledge Australia http://www.desertknowledge.com.au/DKA/aboutus.html).
Eco-Industry Parks are slightly more complex than resource recovery centres, where the wastes of one organisation becoming the inputs of another. Many have an anchor tenant who provides sufficient waste material to sustain the business eco-system, for example the eco-industrial systems of Europe (CSIRO, 2002). With their need for innovation and knowledge to explore more efficient waste recycling between organisations, there are potential links to research and development facilities and Centres of Excellence.

Another example of a knowledge community is the North Carolina Research Triangle where three universities work together with a science/technology park to form an integrated living/working/education community. Research is a priority with each university having its own specialist, yet complementary, learning/research facility, as well as about 100 resident R&D facilities (Research Triangle Park http://www.rtp.org/index.cfm?fuseaction=page&filename=about_us_history.html).

The success of the Triangle can be attributed to a number of factors. Firstly, it possesses a high university/population ratio; secondly, a specifically nominated committee exists to evaluate and improve Triangle living/working conditions; and finally, agencies have been set up to encourage knowledge sharing and networking between inherently secretive R&D centers and to aid in intellectual property and legal issues (Mazzarol, 2003; Western Australian Technology and Industry Advisory Council, 2002).

Zero Emissions represents optimal resource recovery characterized by no wastes with outputs completely reused. Japan is currently the second greatest waste producer amongst developed countries. With the majority disposed in landfill, Japan’s serious lack of space and resources have increased their interest in EcoIndustry. The Kyoto Mandate delivered an ultimatum to reduce 1990 carbon dioxide emission by 6% by 2012. With goals clearly identified, such as industry pollution, it can be seen that industry collaborations and innovation play a vital role in reducing levels. The United Nations Zero Emissions Research Initiative (ZERI) is an industry/university research mission to promote and foster eco-development in Japan. Approximately 15 companies are currently at or heading towards zero emission targets (Morikawa, 2000).

**Moving SME’s Towards C-Commerce Targets**

An integrated model of c-commerce for clustered SMEs transitioning, from traditional industries, using traditional business processes and relatively limited ICT, to more complex industries using c-commerce requires understanding of the dynamics between regional drivers and SME c-commerce barriers. The increased competition of global markets heightens the need for collaborative relationships based on innovation and design capabilities. Where this occurs the potential exists to facilitate the shift of a region towards a knowledge economy with associated economic development gains.

**Where does c-commerce fit in?**

13

Ballarat, June 30-July 1, 2005
C-commerce consists of all an organisation’s ICT bases, knowledge management and business interactions with its customers, suppliers and partners in the business communities in which it interacts. It can be horizontal competitive co-operation or vertical collaboration along a supply chain.

Essentially, it is the coming together of collaborators using IT to exploit opportunities as they arise. Fundamental to c-commerce, however, is the ability of the SME to enter into relationships with other firms and their willingness and ability to share information and knowledge. C-commerce comprises the connectivity of both ICT and social networks. The collaborations between business and community depend upon the willingness of businesses to network and ability to accept business cultural change. The technology networks depend upon the hard and soft infrastructure available and the willingness of business to adopt new business methods involving business technological changes (Braun, 2002).

C-Commerce Transition Model

SME’s are not homogeneous. They vary with respect to the number of employees, organizational structure, business experience and ICT background of the proprietor or ICT champion, access to resources, attitudes to and experience regarding inter-organisational relationships, attitude to and ability to innovate, and so on. These factors directly contribute to a SMEs ability, readiness and willingness to collaborate with other businesses and to engage in ICT (Taylor & Murphy, 2004).

The diverse nature of SMEs and their degree of social networking implies that there are a variety of strategies to encourage involvement in collaborative networks which potentially may shift an economic region towards higher levels of c-commerce. These strategies will depend upon the financial commitment of the various players and different combinations of the drivers and barriers to c-commerce, some of which have been discussed earlier in this paper. External factors such as culture, infrastructure and the role of public actors also have a major part to play (Rosenfeld, 2001; Martinez-Fernandez, 2002; Saarenketo et al, 2004).

Different strategies can be mapped on a c-commerce adoption frontier, which is a combination of an organisation’s strategic ICT usage and the degree of collaboration between businesses, perhaps intersectoral. Barriers to c-commerce adoption, reflected in a firm’s position on the frontier, hinder innovation, global competitiveness and economic development and result in economic and social costs to the community. Drivers encouraging c-commerce adoption are reflected in a firm’s position on the frontier and provide economic benefits to the community as they encourage innovation and global competitiveness. Whilst innovation places greater demands on an organisation in the short-term, the increasing returns to scale of knowledge mean that once knowledge has been established there are no costs associated with its repeated use (Munnich et al, 2002; Zack, 1999). This will reflect in decreasing costs to the community over time, however will never reach zero as knowledge needs to be constantly replenished.

Collaborative barriers/drivers deliver economic and social costs and benefits to a community. They can be divided into three areas: ICT related, social capital issues
and economic development issues, the interplay of which impact on a region’s global competitiveness. Strategies incorporating these factors can facilitate the shift of an economy from a limited-ICT-usage traditionally based cluster, such as a regional or industry cluster, to one which embraces the fundamentals of a new knowledge economy as evident in collaborative networks, of which c-commerce is an example.

This framework, outlined in Figure 1, suggests that it is possible for an SME or industry to reap the rewards of innovation and comparative advantage and become more competitive by choosing a business strategy closely aligned with ICT which values and adopts inter-firm cooperative networks. For this to occur acknowledgement and minimization of barriers to collaboration, especially around ICT is required. Policies to enhance and ensure the provision of collaborative drivers also are imperative since assistance to facilitate collaboration around IT and to overcome barriers is likely to be required.

**SME C-Commerce Transition Framework**

![Diagram](image)

**Figure 1 – A framework depicting c-commerce transformation**

Costs represent both costs to the community as well as those borne by the individual firm or collaborative network. They include economic and social costs. Since costs associated with industry clusters tend to be the responsibility of the cluster participants, costs are seen to be low. Some costs may be borne by the community, such as subsidies by local authorities to encourage the formation of the cluster. These costs also reflect the cost of constantly gathering knowledge and information and the associated processes and systems.

Whilst costs associated with other forms of clustering are higher they are borne by those firms involved as well as the community generally. However the commensurate benefits or gains to the players and the community are greater. The frontier is thought to plateau and even fall (i.e., take on a parabolic shape) since the costs associated
especially with collaborative clustering decline over time – the marginal costs diminish. The shape of the curve and its application requires further discussion and empirical research.

**Conclusion**

Strategists, policymakers and academics are now focusing on regional networks to promote economic development of regions. The aim is to endeavour to increase employment, skill the workforce and grow the number of productive and successful businesses in a region. The essential feature of such community-orientated projects is developing communication via IT (Martinez-Fernandez, 2002) and using IT as a tool around which firms collaborate.

The business community is being increasingly regarded as part of a growing web of community, government, research facilities and other organisations. Examining how SMEs are integrated into the wider business community and the relationships they have formed (or have not formed and the reasons for this) can lead to an understanding of how ICT can be utilised to the benefit of SMEs.

This report attempts to examine the relationships of SMEs by way of examples, which potentially lead to e-commerce. The best practice examples explore a range of different business relationship structures from within Australia and around the world; elements of which may be applicable to the unique business relationships found in our own communities.

The report also outlines the importance of linkages. Many of the examples demonstrated some kind of governing body to coordinate efforts towards collaboration, and ultimately, competitiveness and globalisation. Efficient regional networks exchange experiences and information only when open communication exists between the private and public sector as well as between layers of the public sector.

As global competitiveness creates a greater need for collaboration and e-commerce, barriers, such as those noted earlier, will begin to dissolve. Specific policy actions though may be needed to assist in this. For progress to be made in this regard, regional economic development strategies at a state and local level need to incorporate actionable strategies acknowledging e-commerce. Collaborative networks will only develop through this first stage of partnership.

Further research into the emergence of a framework depicting a transition of clustering approaches towards one that is more virtual, such as by way of e-commerce, is required.
References


Working Paper


