Effects of dislocation of the dominant player within a fine arts cluster

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This paper outlines a study which is examining the ways an industry cluster functions when a key player (one that in the past dominated the cluster) is forced temporarily to assume less prominent roles. Closure of the National Gallery of Victoria for renovation, and as a consequence scaled down operations for a period of three-four years (1999-2003) before reopening, provides a unique opportunity to study the effects of dislocation of the dominant player have on the way the fine arts cluster in Victoria operates. This investigation examines innovative activity and interrelations between members of the cluster in three phases of transition; that is, before, during and after disruption of the National Gallery's core activities.

The primary objective of this research is to understand the interactions and networks between cluster members and investigate the effect of disruption of the key player's core activities.

The National Gallery of Victoria (NGV) has simultaneously been the dominant member of industrial and regional fin art clusters in Victoria as well as a powerful figure in the national fine art industrial cluster. Closure of the NGV for renovation, and as a consequence scaled down operations for a period of three-four years before reopening, provides a unique opportunity to study the effect of dislocation of the dominant player, on the way the fine arts cluster in Victoria operates. This investigation will examine inter-relations between members of the cluster before, during, and after disruption of the NGV's core activities.

Innovation is considered one of the key factors underlying growth and hence networks of innovation are the rule and the result of complex interaction that involve multiple actors. The aim of this thesis is to analyse the levels of innovation, or "innovative activity" (De Bresson 1996) during the process of change within the fine art cluster and determine the effect of dislocation of its key player, on how the cluster operates. The analysis will focus on innovation activities and determine if inter-relationships between members change during the three stages of transition. A continuum of innovative activities, will offer an opportunity to compare the effect of dislocation on the innovative achievements and consequent innovative status (Spielkamp and Vopel 1999) of the cluster and its members during the three stages of transition.

The complex nature of innovation ensures that there is no straightforward way to analyse it. Hence in this respect, it is valuable to analyse innovation from a "multi-actor" or macro-level perspective, as reflected in the cluster, rather than from an individual (micro) firm basis (Dodgson and Bessant 1996:20).

Essentially this thesis is concerned with two issues:

1. The effect of dislocation of a key player on the level of innovative activity Within the fine arts cluster;
2. The manner in which the inter-relationships between cluster members respond to change in cluster dynamics during dislocation of its key player.

The key question for research needs to determine the nature of the cluster operations and its inter-relationships over the three stages of dislocation, that is:

Does dislocation of the dominant player affect the way the fine art cluster operates (ie level of innovation) and change the inter-relationships between members?

The NGV's consequent downsizing within the fine art cluster is hypothesized to be disruptive to the overall cluster operations and will change inter-relationships between members. Solving, or at least investigating the key question for research has been developed as three separate sub-problems. The first is determining the boundaries, the second is analysing impacts and repercussions of disruption on relationships, while the third sub-problem is to measure entry, exit and growth to analyse competitive dynamics.

The methodology undertaken at *each* of the three stages of transition include:

- Mapping the fine art cluster to determine membership and its inter-relationships;
- Tracking formal organizational structures and informal networks of cluster members to determine any change;
- Verifying competitive dynamics and 'innovative state', that is, the level of innovation, research and development (R&D) and accumulation of knowledge.

The paradigms used to evaluate the effect of dislocation during transition, consists of Rosenfeld's classification of a cluster, Miles and Snow's typology (Miles and Snow 1978; Rosenfeld 1997), the 'Co-opetition Continuum Scale' developed in context to the neo-classical; constructive co-operation and alliance capitalism framework, together with Spielkamp and Vopel's (1999) 'Innovative Cluster Formula'. By summarising the innovation and system behaviour of a number of firms within the fine art cluster, groups of firms with similar innovation patterns and consequent strategic types (Miles and Snow 1978) will be identified.

The contemporary art market is characterised by high uncertainty. This reinforces the importance of the role of trust and co-operation, reputation and the importance of cluster members' embeddedness in the social context. The 'Co-opetition Continuum Scale' will be used to identify an overall summary (personality) of the cluster, that is, a measure of cluster dynamics to determine the cluster's type (personality) as well as possible power structures in the network. The levels of co-operation and competition (and a combination of the two) will be measured to assist in analysis of the competitive dynamics in terms of the alliance capitalism and neo-classical models. The scale has been developed for:

- Stressing the network of actors and their propensity to co-operate and collaborate in generating, diffusing and using technology while simultaneously competing.
- Indicating groups of firms with similar innovation characteristics that belong to the cluster.

It is hypothesised that on re-entry into the cluster, and after organizational restructuring into two separate entities:

- The NBV International in St Kilda Road will adapt their production and organizational capabilities to the requirements of the common objectives of the international *industrial cluster*. This organizational restructuring will broaden the cluster boundaries; reposition itself as an international play, however, remaining the same strategic type (ie Defender).
- The NGV Australia at Federation Square will simultaneously strengthen its national and Victorian links, dominating the industrial and *regional* fine art cluster in Victoria, as well as acting as a powerful figure in the national fine art *industrial cluster*. This organizational restructuring will transform the re-branded entity into a new strategic type (ie Analyser / Prospector) as well as blurring its boundaries to emerge as a member of the entertainment and leisure cluster, thus improving the network prospects and innovation status of the cluster.

The outcome of this thesis will be useful as a prescription, a guide to action, in future restructuring of key players within the cluster.

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Strengthening wine and tourism cluster complementarity: A framework

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The wine industry and tourism industry within a region share many commonalities such as geographic co-location and economic, social and resource assets. These are reflected in the considerable emphasis regional development places on the complementarity these two industries exhibit through wine tourism. This complementarity, both its nature and economic significance however, varies considerably from one region to another. By further developing the phenomenon of clusters and applying this to locally based wine and tourism industries, an exploration of the complementarity and competency flow between these industries may be explored. In order to apply a cluster approach in this context there is the need to develop a 'micro cluster' framework to facilitate the application of cluster theory to localized, and often rural micro economic landscapes. This paper discusses the development of a framework, which builds on cluster identification and the clustering process. Through this process the research will identify the particular dimensions of wine and tourism clusters that advantage each other and determine whether the extent of cluster overlap assists in the inception of new opportunities or industries within this predominantly rural landscape.

The localisation of regional development initiatives has been promoted by numerous regional economic development organisations. In many regions, both the tourism and wine industry have been identified as key industries where these initiatives can be developed. There appears however, a great variation in the success of the tourism and wine industry as drivers for regional economic development. This is particularly evident when comparing those regions where wine tourism has become a successful component in regional development and those regions where it has had little impact. To understand the factors that influence these outcomes is an area of research which both the wine and tourism industries are keen to address. This provides an opportunity for research into the interaction between these two industries to identify the key factors that could direct initiatives to take better advantage of the development opportunities of these industries in the local and regional context.

The primary aim of this research is to develop a robust model of complementarity in regional wine and tourism clusters and examine the scope for private and public initiatives that may influence regional tourism growth. The primary research question is: Where clusters overlap, does the extent of complementarity influence both the productivity of each separate cluster and the ways in which the clusters work and are structured? This research will determine if the strength and nature of the complementarity of wine industry and tourism industry clusters in a region can provide the conduit for strengthening wine tourism in a region.

The applicability of cluster theory to research into the relationship between the wine and tourism industries is based on a number of factors. Wine regions often overlap with tourism regions in both a spatial and perceptual sense and can be described as clusters or agglomerations of economic, social and resource assets. By recognising that in clusters, co-location can be as important as physical resources, and economic activity is embedded in ongoing social relationships (Harrison 1992; Rosenfeld 1997; Porter 1998), cluster theory provides an appropriate theoretical base for this research. Furthermore, clustering in the Australian wine industry has been acknowledged by Michael Porter in a recent article in the Business Review Weekly (James 2002) and has been well documented (Marceau 1997; Marsh and Shaw 1999; Anderson 2001a). Tourism industry clusters, though acknowledged, have been less well documented (Enright and Roberts 2001). And finally, the growth in both the wine and wine tourism industries in regional Australia has been recognised by State Governments as demonstrated by the promotion of wine, wineries, tourism products and wine tourism organisations. These factors support the need to gain a better understanding of the synergies between these two industries in a regional context.

The use of clusters in the current international arena however, seems to focus increasingly on innovation or major industry sectors and is used as an economic development driver and policy vehicle with localised rural regions seemingly being left by the wayside. In many instances rural sectors, such as agriculture and in certain cases tourism, are seen as residual cluster sectors with limited growth potential (Rosenfeld 2001b). As a consequence, to identify clusters in rural/regional context, alternative methods of identification may be required. They need to look for unusual and smaller scale forms of interdependencies or complementarities and perhaps use broader sets of commonalities (Rosenfeld 2001b) than those used in identifying clusters via more traditional means. This research requires the development of a cluster complementarity identification and process framework that is more applicable in the micro economic regional context. In this situation, clusters of activity may not, in their own right, have the economic significance or industry focus that would normally allow them to be captured by more standard cluster descriptions. The significance of looking at wine and tourism industries as clusters provides an opportunity for the overlap between sectors to be better identified and may enable a region, through joint industry activity or 'cluster complementarity', to achieve economic advantages particular to that region.

Perhaps the most embedded argument against the applicability of clusters in the rural micro economic situation is how do you define the cluster? By focusing on the cluster process rather than the definition and assuming that the cluster exists at some level (Rosenfeld 2001a), it is argued that clusters can form the basis for such a framework. Given that the focus of this research is to apply cluster theory to small industry groups in a rural/regional context, the following definition, which applies to clusters of limited economic significance with a diverse industry base, has been adopted.

> A cluster is '…simply used to represent concentrations of firms that are able to produce synergy because of their geographic proximity and interdependence, even though their scale of employment may not be pronounced or prominent' (Rosenfeld 1997 p.4).

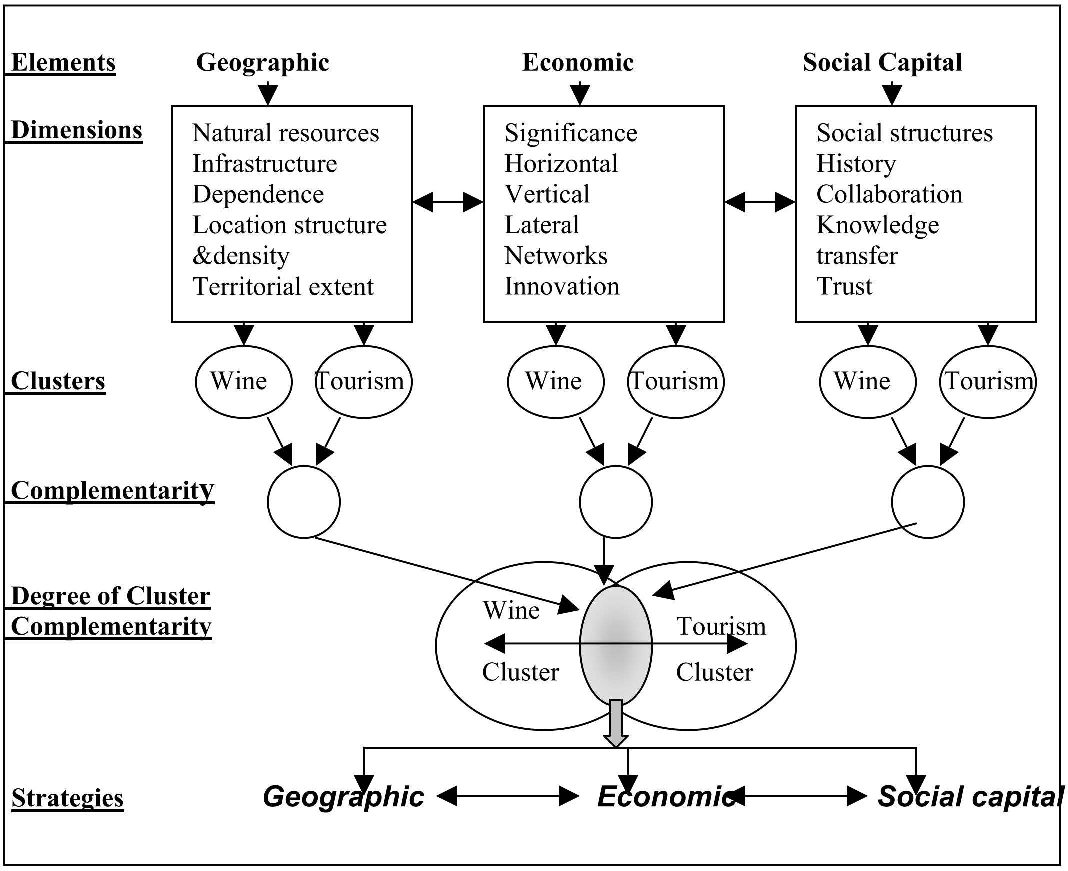
This definition provides the flexibility needed for using the cluster concept as a tool to further understand the regional wine and tourism industries that, in some instance are only small or developing industries with limited regional economic significance.

The development of a cluster complementarity framework has become integral to this research and is in its formative and as yet, untested stage. This framework comprises three consecutive components. The first component is the identification of the cluster by determining the elements of the cluster and exploring their dimension (Jacobs and De Man 1996; Rosenfeld 1997; Verbeek 1999; Enright 2000). Secondly, identifying those dimensions that are common to the clusters being researched, in this case wine and tourism clusters, and exploring the nature and strengths of this complementarity. And finally, to develop strategies that strengthen the identified complementarities.

Porter describes the complexity of a cluster as 'a system of interconnected firms and institutions whose value as a whole is greater than the sum of the part' (Porter 1998 p.231). To understand any complex system, the identification of elements is a primary step (Van Gigch 1974). By comparing the diversity of cluster definitions and approaches throughout the literature, three common elements emerge. Clusters are concerned with geographic elements, economic integration elements and social elements. These elements can be further broken down into dimensions that have been identified in the literature (Harrison 1992; Jacobs and De Man 1996; Rosenfeld 1997; Bryant and Wells 1998; Verbeek 1999; Enright 2000; Rosenfeld 2001a).

The complementarity framework shown in Figure 1 has been built from the elements of clusters and their identified dimensions and applied to each industry cluster. This provides the basis for identifying the complementarity of these dimensions in the wine and tourism clusters. The strengths of the complementarities can then be explored in depth to determine if cluster complementarity impacts on the productivity, workings and structure of these micro clusters.

Figure 1: Wine and tourism cluster complementarity framework



This framework is currently being applied using a case study approach where an assessment of its applicability is being undertaken.

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Electronic commerce in a coal mining industry cluster: A case study in a regional context

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With the increasing influence of Internet technology on business strategy and organisational composition, and the consequent effects on industry structure and competitive advantage, what effects is this influence having on the localised processes and synergistic relationships that exist within an industry cluster; in particular, one that relies on the 'black gold' that is coal and is located in central Queensland. Coal is Queensland's biggest export state commodity, the greatest contributor to the Mackay region's Gross Regional Product ('GRP') and is the Mackay region's biggest employer. In the light of a so-called 'digital divide' between metropolitan Australia and its three 'r' cousins (regional, rural and remote), is it possible that a regional coal mining service industry cluster can exploit the opportunities of business-to-business ('B2B') e-commerce technology to increase its own competitive position in an increasingly globalised economic landscape? Are there 'factors', possibly related to geographical location or industry sector, which may impact, either positively or negatively on the adoption of new technologies? This letter outlines an approach that is being taken to examine these issues, using Porter's (2001) re-evaluated five competitive forces model as the theoretical framework. One of the anticipated deliverables from this research will be a framework of recommendations for the adoption and utilisation of Internet technology within the coal mining services industry cluster for the purpose of developing and/or enhancing B2B e-commerce strategies.

Introduction

This research is concerned with investigating what factors may inhibit or promote the adoption of Business-to-Business ('B2B') E-Commerce by enterprises in the coal mining services industry in the Mackay suburb of Paget, where there exists a concentration, or cluster, of such coal mining service enterprises.

The coal mining industry

The research topic has been chosen for the following reasons: -

Economic importance of coal mining industry.

Queensland possesses the largest seaborne coal trade of any state in the world; indeed, it represents the biggest state export commodity, valued at $5.34 billion in the year 1999-2000 (MWREDC 2001a). It also contributed the biggest percentage to Mackay's Gross Regional Product (GRP) at 31.04% in the last available figures for 1994-1995 (MWREDC 2001b). For comparison, the next largest export industry was Agriculture, Forestry and Fish, which contributed 9.44% to GSP for Mackay (MWREDC 2001b). As at June 30th 2000, the total number of employees in all mines was 7,972 (MWREDC 2001a) with 9.4% of mining industry businesses in Queensland located in the Mackay region (MWREDC 2001b).

Location of coal mining industry.

The majority of exported coal is produced from the Bowen basin area of central Queensland. Furthermore, six of the top ten coal exporting mines are located in the Mackay Whitsunday region, accounting for nearly sixty eight percent of the tonnage exported (MWREDC 2001a). Belyando Shire is the largest area in terms of production, the six mines within the shire producing 36,775,719 of saleable tonnes in the year 1999-2000 at a value of $1,609,782,389 (MWREDC 2001a).

Importance of coal mining support industry.

In order to underpin the coal mining industry, there is a requirement for an effective and efficient support industry. Such an industry comprises the provision of goods and services, extending from the manufacture of production machinery through to the supply of engineering consulting services. Although no data are available to quantify the exact value of the support industry to the Mackay region's GSP, its relative economic importance may be seen in the context of the previously asserted mining industry's 9.4% contribution to GRP.

Location of coal mining support industry.

Although the mining support industry is distributed throughout Queensland, for the purposes of this research, there is one proposed area of study: Paget, a suburb in southwest Mackay. This particular suburb, located between Mackay railway station and Mackay airport, has evolved into a distinct industrial area, comprising a large number of coal mining support enterprises. Facilitated by rail, air, road and sea links – the Bruce highway and Port of Mackay being close by – and the proximity of competing and complimentary businesses, Paget is an example of how competitive success may be achieved and maintained through decidedly localised processes (Porter 1998). It is also an example of an industry cluster, borne out of the highly successful coal mining industry and bound to it in a mutually reinforcing process (Porter 1998). The location of Paget also offers the researcher the advantage of convenience, being situated within a couple of kilometres of the University campus.

Theoretical framework

The research subject considers the adoption of e-commerce strategies by the coal mining support industry in the Mackay region, specifically the suburb of Paget in southwest Mackay. As outlined previously, a coal mining support industry has evolved in the Paget area, supplying products and services to the Mackay region and beyond. As a result, this scenario offers the researcher the opportunity to research the chosen subject within the context of its own industry-specific environment. This opportunity extends to the exploration of such factors as local industry influences on business strategy, the impact of local industry relationships on trade, competitive positioning at an individual firm or group level, inter-firm collaboration and inter-firm purchasing; factors that may provide important conduits for information and analysis when considering the research topic.

In order to fully investigate the research subject and these micro-environmental factors, the researcher proposes to use Porters (1980) five competitive forces model as the theoretical framework. These forces, as expounded by Porter in their original form (1980), are outlined below: -

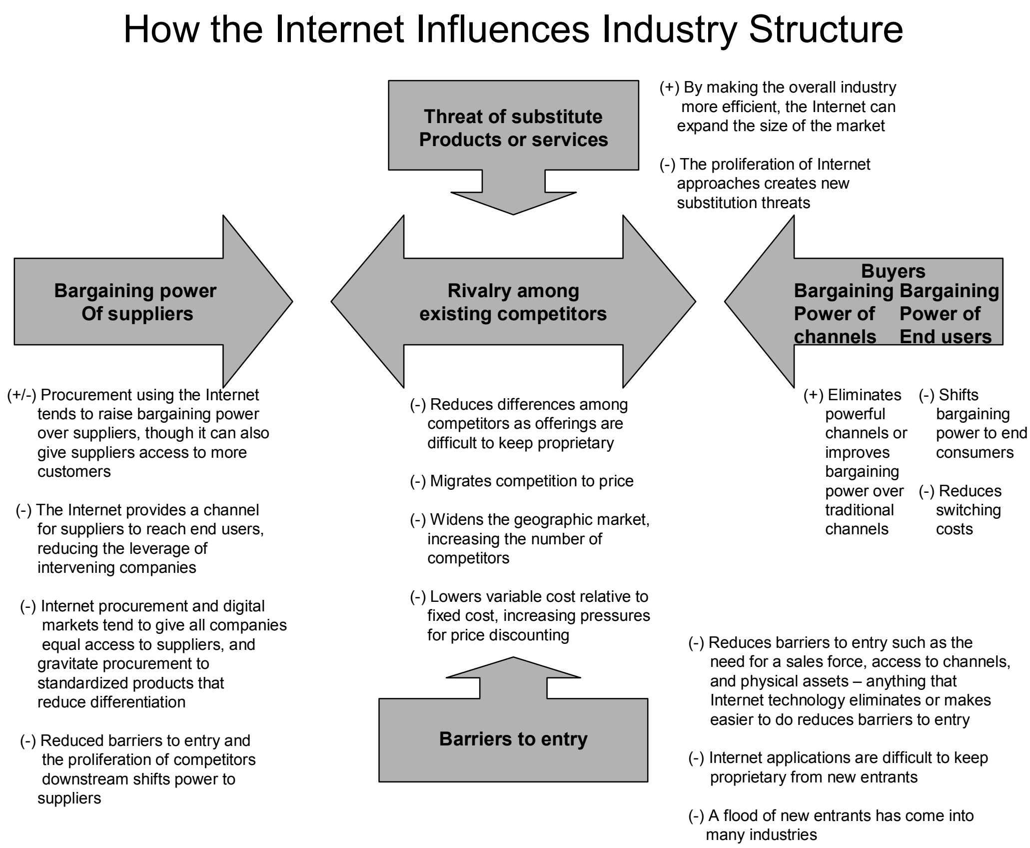
- The intensity of rivalry among existing competitors.
- The barriers to entry for new competitors.
- The threat of substitute products or services.
- The bargaining power of suppliers.
- The bargaining power of buyers.

In the light of the increasing influence of the Internet on business strategy and the resulting effects on industry structure and competitive advantage, these forces have since been re-evaluated by Porter (2001). A diagrammatic illustration of this is given in Figure 1 on the following page.

In this work, Porter (2001, p.61) argues that ‘The question isn’t whether you should use the Internet or traditional methods to compete; it’s how you can use *both* to your greatest strategic advantage’. Essentially, Porter (2001) proposes three ways that the Internet can be used to complement existing strategies: -

- Integrating Internet technology to create a customized, yet common systems platform, which cannot be easily imitated
- Using Internet activities to complement existing ways of competing, particularly in areas of customer service
- Overcoming disadvantages in areas such as intangibility of goods and services through the integration of virtual and physical activities

Figure 1 Porters Five Forces Model
(Reproduced from Porter 2001, p.67)



Specifically, this framework will serve as a basis to explore where electronic commerce is influencing the current Industry structure, where these influences are emanating from, and provides a vehicle for suggesting transformational strategies through the utilisation of electronic commerce for positively influencing the competitive nature of this Industry structure. This theoretical framework also provides an opportunity to test Porter's framework, as well as providing the underlying stimulus and direction to the research activities and guide the basis of the research objectives and the subsequently derived research questions.

Research goals

Based on the research outcomes, it is intended to develop a framework of recommendations for the utilization of Internet technology within the coal mining support industry cluster in Paget for the purpose of developing and/or enhancing e-commerce strategies. This framework will employ the five competitive forces model of Porter (1998) as its theoretical base, such that each force may be analysed in the context of its own influences and recommendations and in so doing, permit the researcher to prove and/or disprove some of Porter's notions.

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Growth and decline: Rejuvenating and sustaining regional and rural communities

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Electronic commerce has been hailed as the business revolution of the information age with promises of new market opportunities, productivity improvements and efficiencies that can maintain or enhance competitiveness (Earl 2000; Vigo and Arnold 2000). However in a regional and rural context the availability of practical assistance is often limited and when combined with little local knowledge and experience, the valuation of electronic commerce benefits is often difficult (Ashford 1999; Papandrea and Wade 2000; Pattulock and Albury Wodonga Area Consultative Committee 2000). In recognition of this governments have invested heavily in partnerships with educators, businesses and communities to promote electronic commerce adoption. One area of focus has been the provision of funding to support the establishment of local and regional web portals. Across Australia initiatives have been funded and implemented with mixed results. Some projects have produced 'static' or 'fixed solutions'. Others have attracted funding without a sufficient understanding of web portals or local needs. Some initiatives have stalled when perceived as a competitive threat to the local information technology and web development industry. Others have experienced delays in implementation and lost momentum with less time and other resources available to promote the actual use of portal services when delivered. Finally, in terms of ongoing sustainability, it is rare to find examples of portals that have 'life' after funding. Most fail to develop sufficient revenue streams or systems that can support the project staff, portal content and infrastructure beyond the seed funded period. The objective of this paper is to disseminate some of the learning from the MainStreet regional portal project (www.mainstreet.net.au). This project was implemented by the University of Ballarat's Centre for Electronic Commerce and Communications (CECC). While a number of important factors will be highlighted, the most successful and unique aspect has been the development of a replicable portal framework. It is this capability that has been leveraged to grow 'buy in', participation and ongoing investment in this regionally developed web based service. The case also demonstrates how providing practical support in the development of a community informatics initiative has enhanced University-region engagement.

Introduction

Why do some regional and rural communities thrive whilst others decline? Regional and rural success and decline continues as a major issue in Australia but research remains discontinuous and incomplete (Geno 1997). How, for example, do the roles played by federal, state and local governments, universities, private enterprise and by community organisations influence regional development (or indeed decline) (Black et al. 2000)?

Community led revitalisation and initiatives to expand the uptake of information communication technologies (ICT) are currently matters of considerable profile (Allen 1999; Biggs 1999; Brown et al. 2000; Commonwealth Government of Australia 2000; Keller 2000). Funding to seed initiatives is available from federal and state governments with universities often recipients and/or key participants in funded projects. Many are 'bottom up' initiatives which aim to build community capacity by developing and implementing 'local solutions to local problems'. But what are the factors that influence the likelihood that local initiatives will succeed (Black et al. 2000)?

This paper forms part of a study which is examining models of economic and social development and exploring the scope for private and public initiatives that may influence growth. More specifically, the study is examining the benefits that regional and rural communities can secure through community informatics (CI) initiatives. There are four industry partners supporting this research. They are the Rural City of Ararat, Wimmera Development Association, AME Systems and the Shire of Hepburn.

Embedding ICT for community benefit is becoming known as community informatics. This approach requires a commitment to capacity building, community participation and a goal of community emancipation (Donovan et al. 2002). CI is explored in this paper through the case of the University of Ballarat (UOB) and its Centre for Electronic Commerce and Communications (CECC).

Background

In the Golden West Region of Victoria there has been a strong recognition of the need to work in partnership to promote electronic commerce adoption. In May 1999 the Golden West Regional Forum, the Central Highlands Area Consultative Committee and a collective of Regional Stakeholder Organisations engaged the CECC to research the requirements and make recommendations on how the region could capture greater advantages from new information and communications technologies. Around 13,500 businesses operate within the Golden West Region across ten local government areas.

The study identified that although many organisations had developed business practices that worked well in the 'off-line' world, they would require assistance in identifying new processes and practices which could be adopted to overcome obstacles to successful electronic commerce. The research, documented in *Victoria's Golden West Portal Project Business Case* (Thompson 1999) involved a number of different stages. These included confirming existing regional web content, examining community portal developments, identifying portal tools, potential revenue streams, conducting focus group sessions and continuing stakeholder consultation.

Funding applications were prepared when stakeholders agreed to implement the research recommendations and in November 1999 the MainStreet project (www.mainstreet.net.au) secured funding of $274,000 through Networking the Nation with a further $135,000 approved in May 2000. CECC was engaged to implement the project as it was considered they had the requisite skills necessary to develop the portal infrastructure and services.

Implementation

Many 'portal type projects' were delivering 'static' of 'fixed' solutions. Applicants were securing funding, calling for tenders, having the site built and then switching their efforts to encouraging their target community to 'get on board' and use this new infrastructure. A major implementation decision was therefore whether to 'buy in' or 'build' the portal infrastructure for the MainStreet project. In the end a mixed approach was adopted. Some portal product was externally sourced but technically skilled staff were engaged 'inside' the project from its commencement. This decision positively impacted on how the MainStreet.au.com project evolved.

Over a period of approximately six months the technical officer with some assistance from part-time student programmers, developed a portal framework based on the core services identified during the preliminary study. Tools were sourced or developed with non-technical end users in mind. The initial toolset included event calendars, news publishing tools, an online registration, payment and product systems, access to web wizards and other web publishing tools.

The core services created capacities to link regional Internet information and services, construct searchable directories, dynamically generate content like news and weather, distribute publishing and authoring rights, promote community news and events and provide access to web wizards and an online payment and product system.

Learning through action

The original goal had been to establish MainStreet.net.au. as the 'point of first electronic contact for the region' (Thompson 1999, p. iv.). The vision was that people would find MainStreet.au.com and from there be able to search and access information about a particular region or locate services of a particular type. What however was quickly understood was that 'communities' would be much more motivated if the functionality of MainStreet.net.au could be delivered at a much more local level with local web addresses and branding. Information could then be filtered up to the MainStreet.au.com umbrella so that client communities could be either accessed directly or through MainStreet.au.com. While this turned the original concept upside down, there was a strong indication that groups within the project's target region were prepared to pay to both establish and maintain such a service.

If this replication of the portal framework could be achieved this 'product' would have the potential to generate a significant revenue stream, one which was not identified in the original projections. Further it would better achieve the original project goal of expanding the uptake and utilisation of ICT and electronic commerce.

Through projects like Ararat Online (www.ararat.asn.au) credibility was established by delivering tailored solutions within very tight time-lines. Completed projects were used as examples to attract further projects, first with Birchip Cropping Group (www.bcg.org.au) with funding through Multi Media Victoria and then with local councils who secured funding through the Victorian e-Commerce Early Movers program (www.pyreneesonline.com.au and www.mconline.com.au).

During the last three years, the portal infrastructure and tools have been replicated to suit a range of different clients including local governments, town based communities, membership-based organisations, industry groups and small and medium enterprises. E-commerce outcomes can be viewed through eight community portals, fourteen comprehensive websites and over 280 web wizards. Online communities for the Young Australian Rural Network (www.yarn.gov.au), the Pyrenees Hay Processors Cooperative (www.exporthay.com) and the Rural and Regional Research Network (www.mainstreet.net.au/rrrn) connect hundreds of individuals who common interests with online services providing new ways to communicate, collaborate and share information and resources.

University-region engagement has been enhanced through implementing this initiative which has support the development of a strategic approach to CI initiatives. CECC has been able to actively promote the advancement of electronic commerce, particularly in its practical application through education, training, research and consultancies. Stronger partnerships have been forged with local governments, geographical communities, businesses and other regional groups. Further research should be undertaken to examine the benefits which accrue by combining suitable CI infrastructure with strong university leadership, to determine whether a greater uptake of ICT and electronic commerce can be achieved across all sectors.

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Far North Queensland sustainable industry study

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The aim of this Study is to provide a framework or context in which government agencies, community organizations and industries can make decisions that will offer opportunities to promote and maintain sustainable economic development for existing and emerging industries in the far North Queensland (FNQ) region. The Study has grown out of the FNQ Regional Plan, which is the principal strategic framework guiding the development and management of the region over the next two decades (until the year 2020). The study recommends a number of strategic directions for the development of sustainable industries in the FNQ region into the future including regional cluster development, cleaner production, regional industry environmental management systems, and regional brands in food production.

Aims

For the purposes of this study, "Sustainable Industries" are defined as industries that are capable of producing goods or services over a long term life span on an economic and commercial basis and without causing undue stress on the regions environment, natural resources and/or community values. The Study seeks to provide "future directions" for industries in the region which take account of their need to be profitable but also respect the important environmental, social, community, and cultural values of the region, including the extraordinary natural values of the reef and the rainforest.

Methods

The study establishes the over-arching principles and concepts for developing the regional sustainable industry strategies. These principles consider current state, national and international sustainability principles as well as local regional issues and conditions.

It collates and reviews existing studies on aspects such as the viability of industries; economic opportunities in sustainable industries in the region; value-adding and diversification for industries; cleaner production; environmental management; and sustainable land use practices.

Further the study looks at a number of regional case studies including the two major industries in the Far North Queensland, agriculture and tourism. Improving the "sustainability" of the regions agricultural and tourism industries has long been recognized as a significant pre-requisite for the long-term economic viability of the region. Both industries are heavily dependent upon access to, and the use of, the regions natural environment and natural resources. These include productive land and water resources for the agricultural industry and access to national areas such as the Wet Tropics World Heritage Area, the Great Barrier Reef, wetlands, coastal foreshores and waterways for the tourism industry.

The outcomes of the regional industry case studies, together with information from other state, national and international programs is then collated to provide a regional sustainable industry framework. This framework identifies the sustainable industry approach most suited to the FNQ region and provides a basis for developing sub-regional or industry specific sustainability strategies.

Strategic Directions Identified

Some of the key strategic directions identified for the region as a result include:

Positioning the region as a world leader in tropical reef and rainforest management.

The region possesses ecosystems that are famed throughout the world, and special bodies have been created to manage them. The FNQ Tradeable Services Study and the FNQ Regional Plan have both identified Environmental Management Services as one of the regions strengths. The Regional Plan notes:

> *Organisations such as James Cook University, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Wet Tropics Management Authority (WTMA) and the Cooperative Research Centre for Tropical Rainforest Ecology and Management (CRC TREM) are well positioned to provide education, training and information on management of tropical regions throughout the (Asia-Pacific) region. (FNQ Regional Plan, 2000, p.188).*

Natural resource and environmental management services and industries are emerging as tradeable service industries with world wide potential for the region. The Regional Plan urges the development of a strategy which supports:

> *Projects involving industry, government and research organisations in capturing environmental and natural resource data and developing management mechanisms/practices to assist industries to improve their environmental management performance (FNQ Regional Plan, 2000, p.185).*

Developing a regional sustainable business network

The creation of a Regional Sustainable Industry Network (or a Regional Cleaner Production Taskforce) – a formal industry network to encourage the exchange of information and promote cleaner production practices.

The majority of businesses in the region are small to medium enterprises, it is widely acknowledged that SME's will increase their uptake of cleaner production concepts and techniques if assisted by networking strategies (Australian and New Zealand Environment and Conservation Council, 1998, p. 24).

The FNQ Regional Plan has identified the need to "encourage and facilitate the development of cleaner production practices for regional industries". It advocates a cooperative approach and the development of a Cleaner Production Taskforce consisting of representatives from government, industry and the community who would assist in promoting and coordinating cleaner production.

Developing new sustainable industry clusters

Building on the Cairns Region Economic Development Corporation's (CREDC) already existing clustering strategy and the foundations they have developed in establishing new clusters including an Environmental Management Cluster. This cluster could be specifically oriented to developing new environmental industries.

Developing Regional Branding

The FNQ Regional Plan recommends that the regional 'image' could be enhanced by:

> *Promoting the region's commitment to sustainable natural resource industries, 'best practices' and quality products…Aspects such as the quality of goods and services, visitor safety, regional competency and environmental practices may add to the marketing of the region's tourism products and experiences (FNQ Regional Plan, 2000, p. 207).*

This strategic direction seeks to develop regional branding based on the growing number of initiatives linking environmental management practices and regional industries such as Ecofish, Greenglobe21, Primary Green and Reefsafe. A recent study of the FNQ regional economy by Roberts has identified the greatest opportunities for inter-industry (leveraged) business collaboration being between tourism, agriculture, food processing, retailing and transport services.

Education and Training, Capacity Building

Following the recommendation of the national study, *Towards Sustainability: Achieving Cleaner Production in Australia*, this strategic direction looks at developing a regional centre for cleaner production training:

> *To allow business ease of access to information in their region, and to form a network of information sources on best environmental practice and technology in Australia. Regional centres would also be able to undertake research and development of cleaner technologies for particular environmental issues as well as providing specific cleaner production advice and services required by industry in their region. The centres could be regional nodes based around universities and integrated with TAFEs (Australian and New Zealand Environment and Conservation Council, 1998, p36).*

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