

Riding On The Internet's Back: Can Rural Communities Use Information Technologies For Economic Development?

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Abstract

Information and communication technologies are the foundation of a booming global industry and many regional and local governments view information technology and telecommunications as an important means to regional economic development. This paper discusses the issues surrounding IT and economic development in one region, Warrnambool in southwest Victoria. The study identifies those factors that facilitate the development of IT and telecommunications industries in regional areas and discuss potential strategies that regional local governments can use to foster IT industries as part of the development of their regions.

Keywords

BA01 Economic impacts, BC03 Public Policy, BC0102 Local government, BD0101 Computerization of society, community issues, computers and society

INTRODUCTION

A new world economy has emerged over the past two decades and is becoming even more rapidly established as the Internet spreads, electronic commerce grows and telecommunications become more sophisticated. This economy has been described as an 'information economy' (NOIE, 1999) and a 'network society' (Castells, 1996). Its changes are profound. It does not supplant the manufacturing and service industries of the past but changes the way that these industries operate. A key feature of the new economy is that it blurs (and in some cases, dissolves) the boundaries of regions and nations. It has a global scope that is only possible because of the communications power of the Internet. It is that global reach which makes the information economy so formidable and with such significant implications for local economies based on traditional industries.

In Australia, a key area of interest is the local economies of rural, regional and remote (R-3) communities. Traditionally these communities have relied principally on agricultural production and associated support activities plus some small-scale manufacturing to provide livelihoods for the people living there. Because commercial and business activities are highly centralised in the major metropolitan centres and because agriculture and primary production have become less important in the Australian economy, R-3 areas have been struggling to maintain their viability. As regional employment opportunities shrink and population shifts to the cities, government and commercial services are withdrawn or downgraded which further undermines R-3 communities and economies (Wilde, Swatman & Castleman, 2000).

Governments at all levels have used strategies to halt or reverse these problems in country areas. From the regionalisation policies of the 1970s (Waits, 1998) to a number of local incentive schemes, these strategies have been arrayed against strong underlying trends toward urbanisation and centralisation. The impact of the information economy on regions is uncertain. On the one hand it may offer an opportunity to reverse these trends in a number of ways as we discuss below, but on the other hand it may accelerate trend towards centralisation (Amin and Malmberg, 1992). For regional governments the need to be involved in the development of the information economy represents both a carrot and a stick. The benefits to such governments appear clear: economic development, employment and competitive advantage against other regional areas. On the other hand failure represents a very real fear that the region will be on the wrong side of the digital divide (Korac-Kakabadse, Kouzmin & Korac-Kakabadse, 2000; NOIE, 2000) with an information poor region supported by shrinking industries and the threat of existing services being replaced by services supported by the internet outside the region.

It is little wonder then that many regional governments are considering their opportunities to participate in the information economy. How can an R-3 community turn its opportunities into real gains? Can the potential we see in the use of information technologies and telecommunications (IT&T) readily translate into tools that provide a counterbalance to the forces that undermine R-3 areas? How can these communities use IT&T as part of a wider strategy and what factors impede efforts to do this?

In this paper we report our investigation of these issues as they pertain to the Warrnambool district of southwest Victoria. First, we outline the main implications of the information economy for R-3 areas before examining the specific experiences of the Warrnambool region in seeking to develop IT clusters as part of its regional development strategy. We identify both opportunities for and impediments to this strategy.

R-3 AREAS IN THE GLOBAL INFORMATION ECONOMY

Two major forces are driving the development of the global economy: the development and distribution of information and communication technologies, in particular the rapid growth of the Internet, and the progressive dismantling of trade barriers between nations. These trends offer Australian enterprises unprecedented opportunities to reach new customers and expand markets globally but they also bring the threat of global competitors. With these trends, nations are increasingly investing in information technology and telecommunications as a major means for obtaining a competitive advantage and Australia is no exception (NOIE, 1999).

The emerging economy confronts national governments with significant challenges and Australian government bodies have been working on strategies to help the nation use these technological developments competitively (DFAT, 1999; Austrade, 2000). But these forces are played out at other levels as well. In fact, the regional economies face an even more serious dilemma. Not only do they share the difficulties of their counterparts in urban Australia, but they also face economic threats from those urban economies. Just as some international enterprises will use Internet commerce to out-compete Australian companies on their home ground, so some metropolitan-based enterprises will be able to gain access to regional markets traditionally served by companies located in those areas. The 'little fish' are in danger of being devoured by progressively bigger fish who gain competitive advantage from IT&Ts and the information economy – unless they become the hunters rather than the prey.

This, then is the crux of the issues R-3 areas face in the information economy. The new order is neither temporary nor insignificant; it must be dealt with. If country areas embrace the new technologies they are in danger of losing more than they gain – the local economy is now exposed to stronger competitors which, because of their city or national base, can offer more variety or cheaper prices. If they resist the changes they risk falling even further behind in the information economy. There is a third alternative for regional areas which is to adopt a strategic approach to IT&T development in R-3 areas and seize the opportunities in a planned and targeted way to maximise their benefits while protecting their local industries, enterprises and communities. A strategic approach will need the coordinated efforts of local government and local enterprise, along with input from other local service providers (including educational and training institutions).

Of what might a region's strategies consist? We can identify essentially three levels of action on the new technologies, each of which commits a region to a progressively greater level of strategic engagement. A region may:

1. develop and promote IT&T technologies and the supporting infrastructure, with supportive services, to help the region conduct existing business and to make local industries and enterprises more effective
2. use these technologies to access labour markets such as by attracting remote work and establishing call centres into the area
3. work to develop a local IT industry to compete with metropolitan and international suppliers of IT services and innovations.

At the highest level of engagement, an R-3 area may seek to establish an IT&T 'cluster'. Cluster development is the economic strategy currently employed in the US and Europe for national development (Waits, 1998; Cooke and Morgan, 1998). This general strategy is closely tied to regional IT&T strategies. Within the United Kingdom this approach has been dubbed 'new regionalism' and has informed the British Government's development of regional authorities and the political development of Scotland and Wales (Lovering, 1999).

Cluster development as a regional strategy was first popularised in Michael Porter's (1990) study *The competitive wealth of nations*. Porter argued that economic growth occurred within identifiable clusters where firms were closely interlocked in terms of a shared human resource pool, close inter-business relations and trade and through joint ventures.

Silicon valley in California is the most celebrated example of an IT&T cluster. Indeed, Porter and others, in part developed the notion of cluster development through their empirical study of Silicon valley (Scott, 1988; Castells and Hall, 1994). Since that time, there have been a number of attempts to replicate the success of Silicon valley with moderate success. Other international IT&T clusters includes the development in Cambridge, UK, Paris-Sud in France and Munich in Germany (Castells, 1996: 57). An example of a successful smaller scale regional IT&T cluster is found in Tucson, Arizona (Greater Tucson Economic Council, n.d.).

What is the key to developing successful regional IT&T clusters? What are the appropriate approaches for national and regional governments to foster their development? What is the likelihood of success? There is little Australian research on this topic but the international evidence suggests that the barriers to IT&T development in R-3 areas are formidable. It is difficult to attract large companies into country areas for a variety of economic and social reasons

(Cheshire and Gordon, 1996: Waits, 1998: Wong, 1998), though their participation is essential to developing both profile and clientele for IT services. Most IT&T clusters have centred on major research and defence industries (Castells, 1996) and seem to rely on such a core to get the initiative launched. Even then, it is debatable whether the benefits flow to the local community and whether appropriate levels of technology transfer occur with such an operation (Lovering, 1999).

But the dilemmas remain and in R-3 areas, governments have begun to consider what they should do. The main approaches seem to include 'smokestack chasing' (inducing large companies to transfer some of their operations into the area), niche cluster development and developing new associations between local government and businesses. But developing IT&T clusters remains an attractive strategy for some areas.

Our project in the Warrnambool area considered IT&T clusters as a potential strategy for regional development and examined the opportunities, barriers and possible directions that such a development strategy might take. Warrnambool is a useful focus for such an investigation and exemplifies the issues faced by R-3 areas in Australia and elsewhere. Because of its relatively robust local economy and its educational resources and infrastructure, Warrnambool is a particularly useful example because it may be better positioned than other regions for the development of regional IT&T clusters. If IT&T clusters are to succeed R-3 areas, we would expect them to succeed in Warrnambool.

BACKGROUND TO THE PROJECT

The Region

Warrnambool is a city of 28,000 people approximately 300 km west of Melbourne. It services a regional catchment of approximately 80,000 people with population growth in excess of 1% per annum. Over the past two years its workforce has grown by approximately 4% per annum. The major employment industries of the immediate Warrnambool region are agriculture (23%), government, health and educational services (21%) and retail trade (13%) (ABS, CData96). The Warrnambool region is the second largest dairy producer in Victoria. Tourism also provides an important seasonal industry in the Warrnambool region. Manufacturing comprises 11% of employment. It appears that much of the manufacturing, excluding dairy processing, focuses upon manufacturing products for farmers and consumers within the region.

Warrnambool is a regional service centre, providing services to the predominately agricultural hinterland. A recent Warrnambool City Council survey found that over 90% of sales by business were within the region (WCC, 2000). To some extent the fortunes of Warrnambool can be said to reflect the fortunes of the surrounding region as well as the location decisions of service providers such as government and hospitals. For our purposes, the most critical point is the focus of Warrnambool's economy on servicing the immediate needs of the region itself. Over the past twenty years the area's growth has been counter to trends in regional Australia. However with the rapid decline in traditional industry in the more recent past and a slowing in the emergence in replacement industry it is clear that without concerted action this region too will enter the spiral of decline in jobs, population and net worth.

The Project

In late 1999 we undertook a consultancy project for the Warrnambool City to ascertain what opportunities there were to develop an Information Technology, Multimedia & Software Development Cluster within the City. The primary objective of this project was to assess the capability of Warrnambool to develop and attract businesses in the areas of information technology, multimedia and software development in order to provide enhanced employment and business opportunities in the region.

The project team undertook three major tasks:

- To identify the conditions for IT&T cluster development
- To examine key indicators to determine the Warrnambool region's current potential for cluster development
- To produce a strategy for the region that maximised the chances for IT&T cluster development.

An ethnographic or field research methodology was employed for the study (Neuman, 1994). Ethnography uses a variety of methods to obtain information, including qualitative and quantitative approaches and attempts to observe and understand activity and points of view in their natural setting.

Our observations were made using two methods:

- The use of informants. Through our contacts in Warrnambool, the Warrnambool City Council and the Warrnambool Business Centre (WBC), IT&T business representatives and business leaders in the region were identified and acted as key informants for the study. They were interviewed using semi-structured interviews either singly or in groups. In all, eleven individuals were interviewed. In addition to these informants, business owners or managers businesses participating in eCommerce workshops undertaken by the consultancy were informally interviewed during the workshops and social activities associated with the workshops and material prepared as part of the workshops concerning their views on the barriers to their business were analysed.
- Surveys. Two surveys were prepared and distributed. The first survey was an email survey of 40 businesses who had been identified by WBC as an IT&T business or had dedicated IT&T staff in their business. The second survey was distributed to the 30 businesses that participated in the eCommerce workshops.

The purpose of the semi-structured interviews and surveys was to identify the current position of IT&T in Warrnambool and to identify and discuss opportunities and barriers to the further development of IT&T in Warrnambool.

Finally, a SWOT analysis was conducted on the basis of the interviews and surveys. This information on the local area was compared with the conditions for IT&T cluster development identified from the literature discussed below. Using this approach, we were able to identify the key strategic gaps that existed and the implicit risks to the regional industry occasioned by failure to address these gaps.

THE CONDITIONS FOR IT&T CLUSTER DEVELOPMENT

The advent of information and communications technologies as a major industrial force and the concept of industry clustering as a means of regional economic development are recent. It is therefore not surprising that there has been little theoretical consensus and systematic research on IT&T cluster development in Australia or overseas and as a consequence there is no definitive finding concerning the development of IT&T clusters.

As a first step, we identified the key conditions necessary for cluster development, based principally upon the economic theory of flexible specialisation and production (Scott and Storper, 1987) and innovative milieux and network approach (Castells, 1996). Table 1 summarises these conditions. Further empirical investigation and systematic analysis are required to rank the importance of these factors and to identify which conditions are critical and which are desirable. Nor is it possible yet to determine the dynamic inter-relationships among the conditions.

Strong civic, business and political leadership
Existing companies and highly skilled labour force
Network milieux fostering collaboration and information-sharing
Existence of research universities and research centres
Direct and indirect government intervention
Finance and venture capital
Physical Infrastructure

Table 1: Key conditions for successful IT&T clustering

Strong civic, business and political leadership within the region

A key condition for the genesis and development of IT&T clusters appears to be the existence of strong civic, business and political leadership within the region (Cheshire and Gordon, 1996). Clustering appears to occur where there are key agents and business entrepreneurs take a key role in the attraction and establishment of industry and the development of a collaborative network milieux.

Cheshire and Gordon (1996) point out that the relationship between business leadership, local government and regional growth has been very close in the United States but considerably less so in Europe where national governments have had prime responsibility for regional development. Significantly, the growth of new regionalism in Europe (Cheshire and Gordon, 1996; Lovering, 1999) can be viewed as a response by European governments to develop strong regional government as a major means for fostering regional growth.

Existing high technology companies and highly skilled labour force

In a chicken and the egg paradox, clustering appears to occur where there already exists a critical mass of companies which provide or use high levels of IT. These companies are able and willing to collaborate with each other and other partners in the area. They share a common pool of technical resources and highly skilled labour. These companies characteristically utilise

innovative new technologies, are closely interconnected branches of the same industry and share the same labour pool and end market (Sternberg, 1996).

Network milieux

A key element of successful clustering is the establishment of a 'network milieu'. Both the theory of flexible specialisation and production and the network approaches stress the development of a shared pool of knowledge and values and where companies cooperate and collaborate with each other, competing on quality production rather than price (Sternberg, 1996; Castells, 1996). Castells (1996:53-60) argues that encouraging cross fertilisation of ideas across companies in informal 'clubs' and social venues is particularly important. Within a network milieu, skilled staff are highly mobile, moving from one company within the network spreading new ideas, approaches and technical advances.

In the popular business literature, a neologism has been developed "collabenomics" to refer to new ways of companies working with and competing against each other.

If the predominantly small businesses of the region are to compete in the global marketplace, they must work together collaboratively. "*Collabenomics*" is a term that has been coined as a means for defining and marketing the process to collectively assess each industries current economic situation and competitive position, and develop long-term collaborative industry specific plans. (CREDC, nd:1)

Existence of research universities and research centres

Successful IT&T clustering appears to form around major research universities and research centres. Silicon Valley, for example, was initially part of an industrial research park of Stanford University and Silicon Alley was close to MIT. The most prominent high technology industries in the UK are between Cambridge University and London or within the Cambridge technology park. Research bodies contribute as members of network milieux, provide training of the skilled labour force, are involved in technical and business development and help attract funding and venture capital.

Direct and indirect government intervention

Government activities are critical in the development of clusters. The massive United States government budgets for defence and space exploration and its substantial university research support contribute to the development of IT&T clusters in many regions engaged in high technology research and defence installations.

Europe has been even more openly interventionist in the development of IT&T clusters. A major European approach has been to 'buy-in' existing successful US and Japanese companies (Castells, 1996: 58-59). In Ireland and the UK, major IT education and industry support campaigns have been developed (SSTI,1998; Forfás, 2000). Many European governments have been strengthening the development of regional political and business structures to facilitate regional development (Lovering, 1999).

Finance and venture capital

As the above suggests, there has been considerable financial investment by governments in regional economies that have assisted in the production of industry clusters. However, it is

widely recognised that the existence of business and venture capital is crucial for the development of industry clusters (Sternberg, 1996).

Physical Infrastructure

There is little research available on the importance of existing physical infrastructure. In some cases the IT&T clusters themselves may create regions rather than regions creating clusters (Sternberg, 1996). However, clusters rely on excellent telecommunications and, depending upon the nature of the industry, efficient means of goods distribution.

In conclusion, it appears that establishing a *major* IT&T cluster presents a formidable challenge for regional economies. It is not surprising that many commentators believe the outlook for regional economies is bleak (Amin & Malmberg, 1992).

CONDITIONS FOR CLUSTER DEVELOPMENT IN THE WARRNAMBOOL REGIONAL

So how does the Warrnambool region measure up against the conditions for cluster development? On the basis of extensive consultations and our interviews with IT&T representatives and businesses and government within the region, we assessed the region's potential against the conditions outlined above.

Civic, business and political leadership in Warrnambool

Warrnambool's local government economic development unit was highly respected and seen as innovative and progressive. However, the region's business associations and leadership were poorly organised and there is clearly a need for a business IT&T and eCommerce champion in the region. On the other hand, most respondents said that they were willing to participate in forums for regional development and were willing to participate in joint projects with other businesses identified by such a forum as long as there was a clear business opportunity.

Existing companies and highly skilled labour force

There are only a few IT&T companies in the immediate region and they were micro or small enterprises. We identified approximately twelve IT&T companies offering website design, ISP provision and software development and a further 40 businesses who retailed computer related products, provided computer related training or had an IT&T manager for their business. They found that it was difficult to attract a highly skilled workforce.

The Warrnambool region has few large industries that could support a medium sized IT&T industry and the regional agriculture-based hinterland had not significantly adopted information technology in their business operations and domestic activities.

Network milieu

The small size of the IT&T industry and lack of business forums were major barriers to the development of a network milieu. In addition, IT&T representatives reported that conflict between sections of the industry had hindered previous attempts at collaboration. On the other hand, respondents and informants pointed out that the business community across industries was

close knit and there was a strong culture of buying local in the expectation that other businesses would do likewise.

Existence of research universities, research centres

The Warrnambool region has a university campus (Deakin University) and South-West TAFE. IT&T representatives also believed that the standard of IT&T teaching in the local secondary schools was extremely high. However, at this stage opportunities for collaboration are not well realised. The existence of a university campus and TAFE college provides some competitive advantage in comparison to most other Australian regions. However, it must be recognised that unless substantial funding is found to develop these institutions as research centres, the ability of these institutions to contribute substantially to IT&T in the region is relatively minor.

Direct and indirect government intervention

The Commonwealth and Victoria Governments have developed piecemeal initiatives to stimulate R-3 development. These include the Federal Networking the Nation program to the Victorian State Government eCommerce adoption initiative.

Finance

Respondents and informants all believed that venture capital and other finance was difficult, if not impossible, to obtain.

Physical Infrastructure

Warrnambool has an excellent telecommunications infrastructure within five kilometres of its central business district and high quality links to Melbourne. Its major disadvantage is the distance from Melbourne (3½ hours by car). This increases distribution costs and also deters companies and a highly skilled labour force from locating in Warrnambool where proximity to Melbourne is seen as important for business and social reasons.

DEVELOPING OPPORTUNITIES FOR WARRNAMBOOL

Our investigations indicated that the Warrnambool region is not well positioned to attract new IT&T industry or to develop a significant IT&T cluster in the short to medium term. This finding, which we believe is accurate, is clearly unhelpful. We were therefore faced with the task of developing a coherent strategy that could assist the region to participate in the information economy.

It became apparent that the existing major industries, agribusiness, tourism and service delivery, significantly under-utilised IT&T in their businesses. The primary reasons offered for under-utilisation were inappropriate or unavailable software, low levels of computer knowledge and lack of access to or confidence in expert eCommerce and technical advice. We concluded that there was a nascent demand for such IT&T services and products within the region that could be employed to develop a carefully targeted niche IT&T cluster within the region. Through collaboration between the IT&T industries and other industry sectors, superior IT&T and eCommerce products could be developed within the region.

The establishment of a carefully targeted niche IT&T cluster is, however, predicated upon the development of a strong coalition between local government, businesses and educational institutions. Without strong leadership and collaboration it would be highly unlikely that the region could attract industry interest, potential government funding or develop a network milieu.

OPPORTUNITIES FOR IT&T CLUSTER DEVELOPMENT IN R-3 AUSTRALIA

Warrnambool is representative of many regional centres across Australia. If anything, it may be argued that Warrnambool is better placed than many regional centres to capitalise upon the opportunities presented by the emerging information economy. However, as has been shown above, the formation of IT&T clusters for Warrnambool is likely to be difficult. Other regions will face the similar impediments to IT&T cluster development. The urgent question is what can regions such as Warrnambool and the national and state governments undertake to either avoid or ameliorate being bypassed in the development of IT&T in Australia?

Based on our work in Warrnambool, we believe there are three imperatives for the development of IT&T in rural and regional Australia.

Sharp focus on developing niche IT&T clusters that support existing industry within the region.

The barriers to substantial IT&T development in regional Australia suggest that a 'shotgun approach' to development is inappropriate. The alternative is to provide an economic opportunity for IT&T businesses to develop IT&T solutions for the industries that currently exist in the region. The advantage of this approach is that it draws upon the existing skills and knowledge of the region to develop IT&T solutions for businesses within the regions and secondly provides a market for those solutions.

For example, a major industry in Warrnambool is tourism. The region therefore has substantial knowledge of the industry that can be utilised by web designers, eCommerce and software and teleservice developers. Collaboration between the local tourism industry and software developers could produce leading edge software, web design and teleservice support for the tourism industry.

The development of a new regional association between local government and business

The development of targeted niche IT&T clusters can only be based upon the development of a close association or coalition between the local or regional government and business. The association would identify and select the niche industries, promote IT&T clustering within and outside the region and foster the establishment of a network milieu.

A new regional development association can provide a co-ordinating forum between business, government and the education sector for the establishment of regional development strategies and facilitate communication between and within sectors. Such an association can encourage the development of joint ventures and partnerships for businesses in the region and foster the development of a 'networking milieu' to enable firms to share technical resources, ideas and approaches. Finally, a new regional association may be more effective in attracting industry interest and Commonwealth and State Government funding.

Federal and State policy and funding

There is an urgent need for Federal and State policy and funding that recognises the need for and supports the development of niche IT&T clusters in R-3 communities. It is apparent that regional areas such as Warrnambool do not have the financial resources to support the establishment of a feasible IT&T cluster strategy. Both Federal and State policy and funding must at the very least support:

- The development of regional associations
- Funding of niche cluster initiatives within regions
- Support for regional based universities to educate students in IT&T in regional areas and to facilitate collaboration between the regional universities and the regions.

CONCLUSION

Our experience in developing an IT&T cluster strategy for Warrnambool suggests that there are considerable barriers to full scale IT&T cluster development and full participation of R-3 areas in the information economy. The key to success for R-3 areas aiming to develop IT&T clusters is to:

- foster strong regional associations of local government, business and educational institutions
- identify and target niche IT&T cluster industries that serve and are based upon existing industries and economy.

However, without Commonwealth or State policy that recognises and addresses the impediments for R-3 communities to develop IT&T clusters it is unlikely that such communities can organise to participate in the information economy. The Commonwealth and State Governments must provide funding support urgently for these initiatives and to the development of IT&T skills in R-3 areas. Without such support it is unlikely that R-3 areas will have the resources to meet the challenges and opportunities of the information economy.

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