

## **Learning Regions in New Zealand: The role of ICT**

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### **ABSTRACT**

A "Learning Region" is characterised by the existence of high quality linkages between different regional stakeholders such as: local businesses; community groups; and education providers. This sharing of information leads to innovation and economic success. Within a regional area interaction and exchange of information is easier and cheaper than in a national or international context. The success of an individual organisation is directly related to the quality of information available locally. Information technology can be an important tool in improving the flow of knowledge between the stakeholders within a region. This paper examines the potential for information and communication technologies to enhance the efforts of regions in New Zealand to achieve sustainable economic success, by improving the flows of knowledge, both within the region itself, and between the region and the outside world.

**Keywords:** *Learning Region; New Zealand; commerce; culture; learning; information flow.*

### **INTRODUCTION**

Promoting the development of a knowledge society is a tactic increasingly adopted by governments who want to encourage economic development at the local, regional and national levels. Research has shown that regions in particular, are growing in importance as centres of innovation, and this has led several countries, notably those in Europe, to develop strategies to encourage knowledge sharing at a regional level with the aim of establishing "Learning Regions". There is no single definition of a learning region; however a common strand in the literature is that such regions have an explicit commitment to placing innovation and learning at the core of development (1999). A learning region would generally consist of a network of inter-firm relationships, supported by social capital and trust, and kept dynamic by a continuous process of interactive learning. The idea of a learning region has developed out of previous research on "Regional Systems of Innovation" (Cooke & Morgan, 1998) which noted the growing importance of the region as a nexus of learning. Related concepts are those of the "innovative milieu", "new industrial district" and "local productive system" (Doloreux & Parto, 2004).

Little is known about the role of information and communications technology (ICT) in enhancing learning regions. The presence of "institutional thickness" has been shown to be an important indicator of regional success (Amin & Thrift, 1994). This can be identified by lively interactions between firms, business associations, development agencies, innovation centres, unions and community groups. The use of ICT could encourage "digital institutional thickness" by providing technology that improves the quality of information flows between stakeholders in a regional setting. Of particular interest is to consider how these information flows can contribute to organisational learning and innovation. How does the changing balance of intra and extra-regional networking affect the organisations operating within a particular area?

This paper will discuss the growing importance of knowledge sharing at the regional level, and expand on the concept of the learning region. The different forms a learning region can take are explored, and the potential contribution that ICT could make to regional learning is discussed.

The paper finishes by considering what lessons New Zealand can take from the learning region concept.

## THE SIGNIFICANCE OF THE REGIONAL PERSPECTIVE

The term region generally defines a broad geographical area distinguished by similar features. A region generally refers to sub units within a country, broadly equivalent to the state level in Australia and the United States, or a county in England. It should be noted that a region can either sub-divide a country or cut across national boundaries, for example the Øresund region is in two countries Sweden and Denmark, and the Great Lakes is in both Canada and the USA. The term region can also refer to a geographical area that covers many countries, such as the South Pacific region.

The variation in the definition of a region is not imprecision; it reflects the different geographic scales at which economic change can occur (Malecki, 1997). Geography, culture, economic activities and political boundaries can all be factors in defining regions. Regions are built environments rather than natural ones and are formed as societies build distinct economies and political systems. Regions tend to change over time in size, shape, and significance. A region may be bound together against a common external enemy, or there may be unifying internal factors, such as a common language, tribe, or religion.

Regions are different from nations in that they are more “open”. A larger proportion of the region’s economy depends on flows of imports from and exports to other regions. These flows are often difficult to measure due to the lack of formal borders and customs barriers (Malecki, 1997). A useful working definition of a region is given by Ann Markusen (1987):

*“A region is a historically evolved, contiguous territorial society that possesses a physical environment, a socio-economic, political and cultural milieu and a spatial structure distinct from other regions and from other major territorial units, city and nation.”* (p. 16)

Cooke and Morgan (1998) identify three main reasons why the regional level is so important:

- 1) There has been an increasing externalisation of the production of goods and services by corporations throughout the 1980s and 1990s as outsourcing has taken off, this has resulted in “clustering” as small firms look for better external economies from geographic proximity;
- 2) As a consequence of externalisation there is an increasing specialisation of regional economies, due to the exchange of tacit knowledge at the regional level or below;
- 3) There is a growing regionalisation of industrial policy, enterprise support and promotion for inward investment, partly caused by a relative decline in national economic sovereignty.

Ohmae (1995) explains the rising importance of what he terms “region states” by examining the flows of what he terms the four “I”s: investment; industry; information technology; and individual consumers. Investment is no longer geographically constrained, and is mostly private rather than from a particular government, wherever an opportunity looks attractive the money will go to that opportunity no matter where in the world it is. Industry is increasingly global in orientation, and as corporations move around the world they bring with them capital, and technology transfer and managerial know-how. Information technology is an important enabler, which makes it possible for a company to operate in different parts of the world without having to build up an entire business system in each area. Individual consumers, are increasingly global in orientation, and tend to want the cheapest products no matter where they come from.

At the regional level it is geographically possible for individuals to make face-to-face contact on a regular basis, this gives them the opportunity to maximise the use of human capital and resources within the area. Each region has a unique cultural heritage and has the potential to utilise that shared understanding and common way of working together to obtain economic advantage. For some cross-country regions that shared understanding is achieved when different cultural backgrounds are combined in a complementary fashion, an example is San Diego/Tijuana which crosses the US/Mexico border. Though the use of ICT has made it possible to communicate globally, contact made through technology only reinforces the need for physical meetings. The use of ICT for communication can help to build up and enhance networks at a regional level.

### **THE LEARNING REGION CONCEPT**

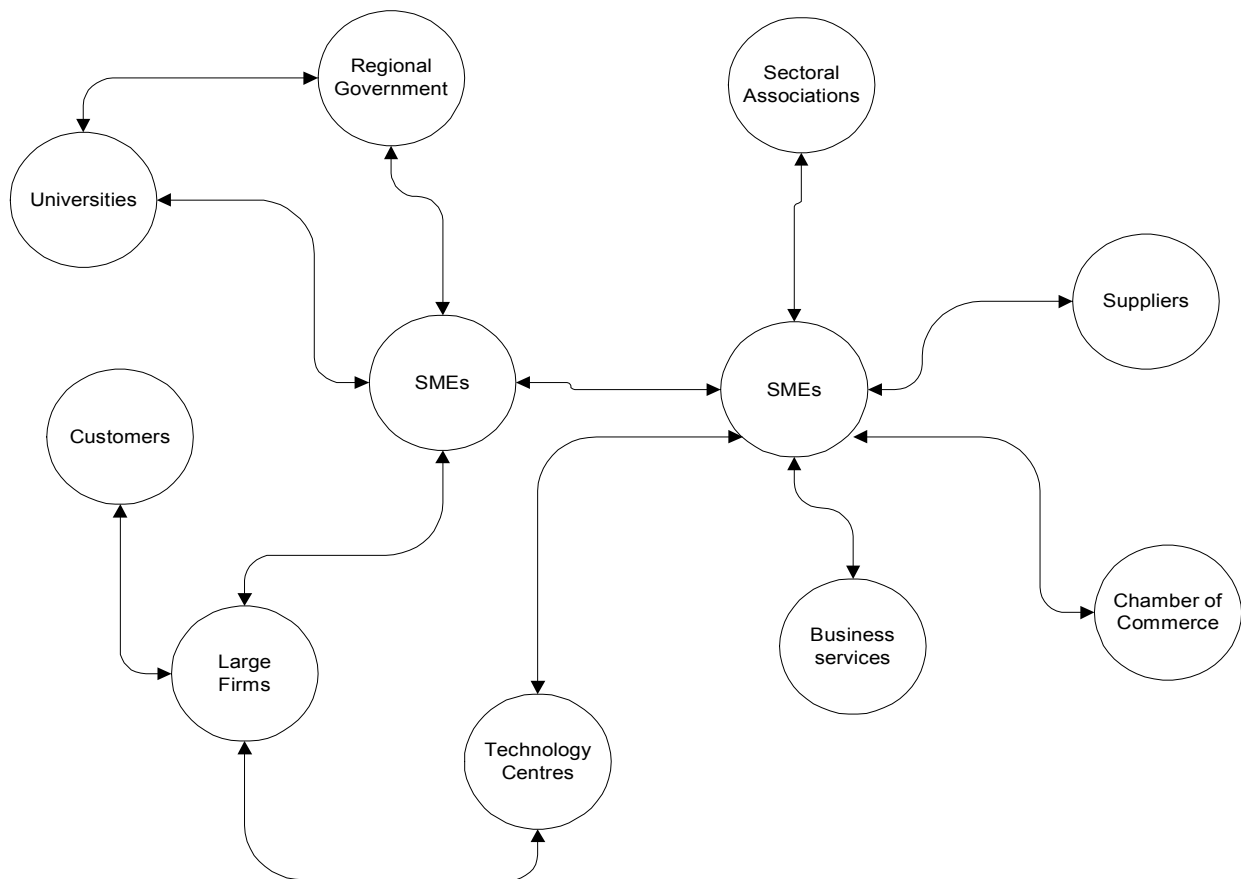
Many authors (Florida, 1995; Morgan, 1997; Ohmae, 1995; Saxenian, 1994a; Storper, 1995) have identified regions as the most important sites in which to capitalise on the flows of knowledge that abound in contemporary globalisation. Regional coalitions create economic and social relations to facilitate interactive learning, innovation networks, institutional thickness and soft social capital. Ohmae (1995) identifies the development of region states around regional centres such as the Bay area around Silicon Valley, and Southern China around Hong Kong. Saxenian (1994a) in a comparative study of Route 128 in Massachusetts and Silicon Valley in California argues that the success of the latter owes as much to its rich technical and commercial relationships as to the competitive rivalries and initiative of individual entrepreneurs. Morgan (1997) uses a network paradigm to show that flows of knowledge and social capital can be most appropriately nurtured at a regional level where regular interactions can be sustained over time.

Storper (1995) introduces the concept of untraded dependencies; these include institutional norms and values such as trust, reciprocity and cooperation, as well as regional conventions inherent in labour markets and public institutions. These interdependencies are vital to economic and organisational learning and co-ordination. They are based on collective tacit knowledge that cannot be removed from its human, cultural and social context. In other words, it is knowledge that is territorially specific. Storper (1995) views untraded dependencies as the most significant form of scarcity in contemporary capitalism, largely because they are non-codifiable. Soft infrastructures such as conventions, trust-based interactions and civic cultures are inherently esoteric and intricate and harder to identify than more visible public infrastructures such as roads, schools, training colleges, or the formulation of inward investment strategies.

Florida (1995) visualises the learning region as a large-scale version of a knowledge intensive firm. Regions must adopt the principles of learning in the provision of a series of inter-related infrastructures in production, human capital, physical and digital communications alongside an effective system of industrial governance. Amin and Thrift (1994) use the idea of institutional thickness to highlight the way that the capacity to territorially embed global processes in place is becoming increasingly dependent upon a whole series of social, cultural, and institutional forms. Institutional thickness is identified by a lively interaction between firms, business associations, development agencies, innovation centres, unions and voluntary bodies. How can ICT assist with the development of institutional thickness? Digital institutional thickness can be encouraged within a region by providing the software and telecommunications technology that facilitate the exchange of information, in the form of regional portals, extranets, groupware or similar.

### Regional Tacit Knowledge

Knowledge flows are important to regional innovation systems, because tacit knowledge is more easily transferred within a regional context where constant interaction and exchange is easier and cheaper and tacit assumptions are more easily decoded, than in a national or international context. The innovative capacity of the regional firm is directly related to the learning ability of a region (Oughton et al., 2002). The learning that takes place between the businesses in a region depends on there being a pool of business intelligence that will trigger demand for new knowledge, and the access and availability of that knowledge. Usually regional government plays a key role in facilitating the development of a successful learning region, and well founded co-operation between the private and public sectors is critical in building the networking culture required for inter organisational learning (Morgan, 1997). Figure 1 illustrates some of the possibilities for flows of information within a learning region.



**Figure 1:** Information Flow within a Learning Region (adapted from Oughton et al, 2002)

Globalisation has resulted in an increase in international business collaboration, by locating various activities in different regions and countries organisations can gain economic benefits from a deepened division of labour. This in turn may provide new opportunities for less favoured regions and countries (Maskell & Tornqvist, 1999). These huge national differences in labour costs are likely to remain, as labour is still a largely immobile factor of production, while the cost of other industrial inputs will become similar. This could possibly provide advantages for New

Zealand, as labour costs are cheaper here than in Europe or the USA, but there are also other countries where labour costs are even lower. However the quality of work that can be purchased for a given labour cost is obviously an issue. Over a hundred years ago, Menger (1871) stated that “*What everyone has can never constitute an advantage*”, meaning that the possession of everyday resources will not help an organisation to prosper. Organisations most valuable inputs will be those that are scarce e.g. unique resources, a unique patent, or fishing rights, or by having the ability to do something better than their competitors. By being localised in a region, organisations are able to utilise factors in their surroundings that are not accessible to their competitors. One approach is to try to create a competitive advantage through learning, and this is most successful when it is done at a regional rather than an organisational level. In a 1996 study of 1,641 Canadian innovations from 1945 to 1970, it was found that less than 10% of them came from in-house ideas only (DeBresson, 1996). The sharing of the tacit knowledge concentrated in a particular geographical area results in a cross-fertilisation of ideas that creates an innovative regional culture. There is a general agreement that in order to develop learning regions more effort needs to be put into promoting inter-organisational flows of information and knowledge (Morgan, 1997). A learning region does not rely on labour as a principle factor of production, but on knowledge. New Zealand and Australia emerged as leading primary producers due to the fact that they had relatively few hands on the farm, but lots of brains in the science labs working on technology-driven applications to keep reducing the labour component of industry.

### **ELEMENTS OF THE LEARNING REGION**

Maskell (1999) proposes that to develop a learning region 5 key elements need to be in place:

- 1) Critical and knowledgeable customers;
- 2) Competent suppliers;
- 3) Trustful inter-firm relations and networks;
- 4) High degree of intra-industry rivalry;
- 5) Good regional receiving system, which helps firms identify and utilise technological innovation.

Regional learning takes place between the organisation and its customers; between the organisation and its suppliers; and between the different organisations in a region. The regional receiving system will help firms identify relevant knowledge, and may be based in the public or private sector or a combination of both. Though the five factors identified above are relevant, they concentrate on the features that are relevant to business, without considering the underlying social, economic and environmental characteristics of a region. It is also relevant to consider human, social, and cultural capital, both from the point of view of the competence of the available workforce, and also because of “quality of life” issues that are important when trying to attract talented immigrants to a region (Florida, 2002).

From a global point of view, a learning region should have demonstrated consistent economic success. It should have the ability to attract and retain highly qualified human capital. It should have demonstrated the ability to be flexible, and have achieved success in more than one economic sector. There should be evidence of networks between businesses, between business and education providers, and between businesses and local institutions. A learning region should show consistent improvement in social capital.

An illustration of the types of interactions required in order for a region to benefit economically from an innovation can be gained by considering how New Zealand adapted to take advantage of freezer ship technology. Farming practices had to alter to rationalise land holdings, and improve

productivity. Dairy factories and abattoirs were needed to process meat and dairy products. The government had to provide an overall quality control mechanism, and to provide the capital for research into increasing agricultural productivity (NZGovernment, 2004). The technology of refrigeration in itself did not lead to economic benefits, local businesses needed to be flexible and alter their processes, with the aid of co-ordination and capital provided by government.

## SHAPE OF A LEARNING REGION

Does a successful learning region have a particular form? Are there certain regional structures that lead to better collaboration? The classic model of the learning region is the new industrial district (NID) based on the Emilio-Romanga district in Italy. A NID consists of small innovative firms embedded within a regionally co-operative system of industrial governance. An industrial district is a spatially delimited area of trade-orientated economic activity which has a distinctive specialisation, which could be resource related, or based on manufacturing or service industries (Markusen, 1996). Cooke (1996) argues that small firms in industrial districts gain substantially from operating in a collaborative networked business milieu. They have been shown to be able to offer higher levels of employment, better wage levels, and higher rates of growth than firms in the same industry not operating in a district type setting.

This networking model has been successfully implemented in Denmark (Cooke, 1996) which in terms of geographical area and population size (5.1 million) is similar to New Zealand. In 1989 the Danish Technological Institute (DTI) established a "Network Programme" which channelled government support to firms willing to co-operate in certain business activities. In one case history, seven furniture makers from Jutland found their local markets shrinking, so they used the Network Program to create a trading company. They divided up key tasks, so that design for all the firms was done by two designers, and each firm specialised in a particular production phase. The company now exports high quality furniture to the European Union and beyond. Many regions are trying to set up network models of economic development. They are looking to develop an innovative infrastructure of vertical and lateral network linkages between large and small firms, research institutions, and public technology, and information transfer agencies.

However Markusen (1996) is critical of the dominance of the NID model, and argues that there are at least three other organisational forms that have demonstrated resiliency in advanced capitalist countries in the post war period. She argues that these alternative models demonstrate the continued power of the state and multi national corporations to shape and anchor industrial growth. Markusen researched the regional economies of North America looking for a number of features generally associated with NIDs (e.g. up and down stream industrial linkages) and a number of other features (e.g. long term development dynamic of major industries). The research did identify NIDS, but also found three other successful industrial spatial types: hub and spoke industrial districts; satellite platforms; and state anchored districts.

### Alternative Models

Hub and spoke industrial districts consist of a number of key firms and/or facilities that act as anchors or hubs to the regional economy, with suppliers and related activities spread out around them like spokes of a wheel. A simple version would be where a single large firm (e.g. Boeing in Seattle, Ford in Detroit, or Toyota in Toyota City) buys from both local and external customers who may be large or from masses of individual consumers. Markedly lacking is the co-operation among competitor firms to share risk, stabilise the market and share innovation. Strategic alliances on the part of the larger firms are more apt to be forged with partners outside the region. Workers loyalties are to core firms first, then to the district, and only after that to small firms. If

jobs open up in hub firms, workers will often abandon smaller employers to get onto the hub firms payroll.

Satellite platforms are a congregation of branch facilities of externally based multiplant firms. Often created by government intervention as a way of stimulating regional development in outlying areas and simultaneously lowering the cost of business for competitively squeezed firms bristling under relatively high urban wages, rents and taxation. Business structure is dominated by large externally situated firms that make key investment decisions. Their most conspicuous feature is the absence of any connections or networks within the regions. Personnel exchanges are common between branch operations and the headquarters firm, but not locally with other branch facilities. There will be high rates of labour migration in and out of the district at the managerial, professional and technical levels.

State anchored districts are where a public or non-profit entity, e.g. a military base, prison complex, government office is the key anchor tenant in the district. It can look like the hub and spoke model. Labour markets will be tailored to the particular state activity hosted. Workers loyalties will be devoted to large state institutions and/or state dependent facilities first, then to the district, then to the firms.

Many localities, especially larger metropolitan areas are “sticky mixes” exhibiting elements of all four models. Silicon valley, for instance, hosts an industrial district in electronics, but also revolves around several important hubs (Lockheed Space & Missiles, Hewlett Packard, Stanford University) as well as hosting large “platform” type branch plants of US, Japanese, Korean & European companies (IBM, Oki, Hyundai, Samsung).

Though Markusen has a good point when she argues that certain sectors of the economy, for example the production of aircraft, are not likely to happen in small businesses, it is not really proven that all the organisational forms she identifies are conducive to innovation. As previously discussed, DeBresson (1996) has observed that 90% of innovations are a result of interactions outside the firm. Large organisations, such as Ford Motor Company, have a habit of internalising innovation which leads to diminishing returns in the long-term. The hub and spoke model seems to be successful in some cases but not in others, and the satellite industrial platform seems unlikely to lead to any lasting innovation. The classic NID model does seem to be the most relevant in terms of New Zealand’s economy, however it is important not to assume that because the business in a region has another form, then that automatically means that innovation is unlikely to occur.

### **The Irish Example**

Lessons can be learnt from Ireland, which developed as a “second wave” economy, that leapfrogged from a pastoral to an information economy, without going through a manufacturing stage (Trauth, 2000). In many ways Ireland faces some of the same issues as New Zealand: emigration of the brightest; an economy based on agriculture; and a history of colonial domination by the UK. Both countries have a well-developed infrastructure, a stable political system, relatively low wages, and an English speaking population which make them attractive to foreign multinationals. However Ireland has the extra advantage of providing access to the large European market. The Irish government used tax breaks and other financial incentives to attract foreign businesses to Ireland. They expected this to lead to the development of spin-off businesses, and the growth of a Silicon Valley type economy, but this did not initially happen. The satellite firms were used by their foreign owners for routine assembly work, and not for research and development or decision making type work. This did not develop the skills of the local workforce, and there were few linkages with the local economy. In the early 1980’s the strategy of attracting satellite branches of foreign owned companies was refined, to ensure that such

companies did actually improve the local economy. There was a move away from low-waged assembly type work towards computer services and software development, together with the promotion of greater linkages between indigenous and multinational firms. At the same time there was an increasing emphasis on education and producing skilled workers, and also a move to strengthen the telecommunications infrastructure. These changes resulted in much higher numbers of spin-off businesses being generated by former workers at satellite branches (Trauth, 2000). This shows that satellite branches of a multi national corporation are unlikely to produce learning region type growth if left to their own devices. However, the Irish example does show that if the conditions under which satellite branches are operating are carefully controlled, they can provide lasting economic benefit to the region.

## QUANTIFYING THE LEARNING REGION

How can you identify a learning region? Cooke and Morgan (1998) suggest that only three regions of the world qualify as true learning regions: Silicon Valley, Emilia-Romagna, and Baden-Württemberg. Other authors would not even accept that these three regions make the grade. At a 2002 OECD conference it was concluded that at present there are no pure learning regions (Keating et al., 2002). An alternative view is that all regions, even the least favoured have some rudimentary learning system in place (Doloreux & Parto, 2004). Wherever the benchmark is set the concept of the learning region is important for the overall economic prosperity of regions. It is clear that certain conditions are conducive to the development of a learning region, and that there is a high degree of synergy between those conditions that lead to economic competitiveness and growth and those that promote the social inclusion of all members of society. Four themes have been identified as benchmarks against which progress towards a learning region can be measured:

- 1) Sustainable economic growth including the expansion of high quality jobs;
- 2) Social inclusion and the building of social capital;
- 3) The role of different education and training strategies in fostering learning regions;
- 4) An integrated approach to achieving good governance.

More specifically Antonio Acosta (Rio, 2001) has identified a number of variables that taken as a whole can help to determine whether an area exhibits or lacks the profile of a learning region. Innovation can be quantified to some extent by looking at the level of spending on research and development by the government, business, and institutional sectors. The level of computerisation is another measure of technological development, as is the number of technology patents issued. The control that a region has over research and development policies is also relevant, has a region got the capacity to develop its own innovation policies? The percentage of the population with tertiary education is another important variable, and it is also relevant to look at whether the majority of these qualifications are technical and professional in nature, rather than academic. Another indicator is the number of research groups operating in a region. It is also important to try to gauge qualitative aspects such as the readiness of the local inhabitants to change, and whether they are willing to engage in ongoing training. There are many models for measuring social capital, which typically look at factors such as crime rates, and participation in voluntary groups. Cultural capital can be gauged by looking at indicators such as library consultations, museum visits, or number of speakers of Te Reo. Other relevant variables are migration movements, is the region a "magnet" region which is attractive to outsiders in terms of the quality of life it offers? The regions' infrastructure in terms of its capacity to relate to other areas is of key importance. Instead of making a distinction between central and peripheral regions, it is more relevant to use the concept of regions with low, medium or high levels of relations. The weighting of these individual elements is very closely tied to the particular model of regional development



being used, so it is important to reconsider the relative importance of these variables in each individual case.

## **RELEVANCE TO NEW ZEALAND**

New Zealand is a mountainous country; only a quarter of the land surface is suitable for European style agriculture. The scattered arrangement of this land lies behind much of the country's human geography. The mountains present a major barrier to movement between the West and the East coasts, particularly in the South Island. The rivers are short and steep in profile, and provide poor or no access to the interior from the sea. At the start of European colonisation, the shape of the land influenced the siting of the earliest settlements; safe ports with promising hinterlands were few. In New Zealand, as in Australia, a strong regional and coastal primacy developed because of the distance and difficulty of internal communications. Each region has a unique cultural identity, which has developed from the original Māori pattern of settlement, and been changed by the migration of different ethnic groups to various parts of the country. The country grew outwards from a few nodal points established by the geography of first arrival and by the nature of the land itself.

Agriculture in the two countries developed as a technology driven enterprise, employing a relatively low percentage of the settler population. This meant that the population clustered in the coastal cities, reinforcing the effect of the physical geography. New Zealand cities have been nodes for intellectual capital from the beginning, and the economy relied on this. The cities were centres for the management of the postal and rail systems that enabled capital-intensive, thinly populated, export orientated agrarian and extractive economies. Though New Zealand's main exports are agricultural it is the cities themselves that drive the economy, and generate economic growth rather the agricultural land around them (Jacobs, 1972). The city is the centre of learning, knowledge and innovation that drives the logistics, exporting, and market intelligence for its regional hinterland, thereby adding value to the raw materials available.

New Zealand's geographical location as a small country at the bottom of the South Pacific poses particular problems for the national economy's integration into the global economy. Primary industries dominate, and exports of meat and dairy products make a large contribution to New Zealand's economy. However industries such as forestry, horticulture, fishing, manufacturing and tourism have become increasingly significant, and over the past decades, many new industries have emerged and grown strongly, including software, biotechnology, electronics, marine, education exports, media/film and wine. Due to the low population the issue of critical mass is important; for New Zealand's economy to develop businesses need to reach international markets. New Zealand has always been a country where foreign trade forms a high percentage of production. In 1992, 77% of New Zealand production was for foreign trade, compared with 45% for Australia, 62% for the UK, and 29% in the USA (Maskell, 1999). However, New Zealand's isolation and physical distance from major trading partners' means that New Zealand's predominantly small firms wanting to move into export markets face big costs.

### **Potential of ICT**

The New Zealand government has identified a number of success factors for local economic development. The two most relevant to ICT are;

- 1) Key essential infrastructure (particularly communications infrastructure);
- 2) Critical mass achieved through networks and co-operation (Schollman et al., 2002)

Due to economies of scale and scope, central government can reduce transaction costs and add value by acting as a catalyst and facilitator for the formation of economic development networks for capability building and for ensuring the provision of quality information. Morgan (1997) identifies an essential role for regional development agencies in acting as the initiators of regional renewal.

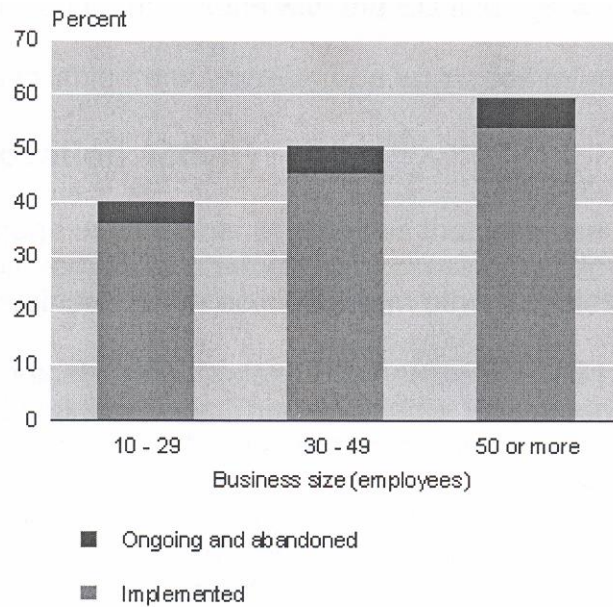
New Zealand's infrastructure for the knowledge economy is relatively strong. It includes Internet access and ICT penetration, and electronic commerce. New Zealand has a very high rate of engagement with new technology. However, New Zealand lacks the intense interaction between enterprises, learning, innovation and high value added production that characterise the leading knowledge intensive regions such as those in the USA and parts of Europe. In addition, despite the fact that New Zealand has a larger proportion of its population that has tertiary education than Australia, the country's economic performance is much weaker.

### **ICT AND SMALL AND MEDIUM SIZED ENTERPRISES (SMES)**

What role can ICT play in facilitating knowledge flows? Both the public and private sectors and their interactions are sustained by networks, there are "soft networks" for social interaction, and also "hard networks" that plug into the Internet (Malecki, 2002). The competitiveness of firms depends not only on the degree to which they are embedded within local networks of suppliers, but also on the presence of links to external markets. Successful regions, like successful companies, maintain connections with other places in the global economy (Malecki, 2002).

SMEs are particularly significant for the New Zealand economy, with 96% of businesses having less than 20 employees (StatisticsNZ, 2005). Since the early 1990s SMEs have been identified as the only source of employment growth in most OECD countries (Cooke, 1996). Large privately owned firms are "downsizing", and the public sector has been contracting from the mid 1980s. Many regions have adopted network models of SME orientated industrial policy in the hope and expectation of improving business competitiveness.

It is argued by some that ICTs (together with range of other factors) are creating a networked economy where firms will trade electronically over increasing distances. Not all firms, peoples or territories will necessarily become part of networked economy. Castells (1996) suggests that central nodes will become even more important, while surrounding areas become irrelevant. This suggests that action is required if small firms, particularly those in rural areas are not to be excluded from the networked economy.



**Figure 2:** Innovation Rate by Business Size (from NZ Statistics, 2003)

In 2003, Statistics New Zealand carried out a survey of innovative activity in businesses (StatisticsNZ, 2003). The results showed that SMEs tended to be less innovative than larger businesses. As shown in Figure 2 only 40% of businesses with less than 30 employees reported innovative activities, as compared to 59% of businesses with 50 or more employees. ICTs are seen by some as a tool to help SMEs become more innovative and to overcome the limitations of small size and remote location by amplifying information flows and by allowing small enterprises to borrow scale from networks. A UK study of the potential impacts of ICT in rural areas (Richardson, 2002) suggests that SMEs in general, and rural SMEs in particular, are relatively slow to adopt ICTs for the following reasons:

- 1) SMEs are unwilling to get involved in projects if the bottom line is not clear;
- 2) SMEs want “just-in-time” fixes rather than generic or strategic solutions;
- 3) ICT hardware and software providers develop services for the corporate market and do not tailor services to smaller firms;
- 4) SMEs do not devote time to training.

Three approaches for inserting SMEs into networked economy include:

- 1) Portals and web –sites;
- 2) Providing broadband to SMEs;
- 3) Creating serviced e-incubator units.

A portal is a website designed to act as a gateway to other related sites. One of their benefits is the amount of traffic that travels through them. Portals that attract large numbers of browsers and retain them for longer have the potential to make money from advertising (Tatnall et al., 2004). There are a number of different types of portal: there are general ones such as Yahoo; vertical industry portals that are based around a specific industry; community portals based around

special group interests; and horizontal industry portals which are based around a group of businesses in an industry or a local area. A regional portal is generally a horizontal portal that links small businesses, community groups, and other organisations within a particular geographic area. At present many small businesses are not in a position to set up a portal with facilities such as secure payment services themselves, so becoming a member of a regional portal is a good introduction to electronic commerce (Tatnall et al., 2004). The fact that the portal is regional means that there are cost and efficiency benefits, especially if the physical transport of goods is involved. By participating in a regional portal small businesses can also feel that they are contributing to their local community.

Another example is in Nord-Pas de Calais, which uses ICTs as an integrative mechanism to strengthen business in the region. Tourism is one of most important sectors, and the region is seeking to bring together disparate information bases into a single database. The use of a central portal ensures reciprocal links with small firms already buying and selling over the Internet e.g. renting gites, small brewers (Richardson, 2002).

E-Business-Foundation is a network of e-commerce incubators in the North East of England; it is a public private partnership, drawing together a number of warm hosts who manage individual incubators. The E-Business-Foundation aims to attract knowledge-based firms deemed likely to benefit from access to ICTs and broadband infrastructure. They may be small one-person businesses that have outgrown existing (often home-based premises). The network has both physical and organisational components:

- 1) Sites linked together with broadband;
- 2) Members have the opportunity to exchange information, intelligence and best practice;
- 3) Centres provide an opportunity for firms to make new contacts.

As of 2001 nine E-Business-Foundation centres had been created hosting over 40 firms with 120 workers. The positive features included: access to broadband; access to high-quality premises; technical and business support; and the opportunity to network. However it should be noted that it cost 6 million sterling to set up, and the impact has been mainly in urban areas with only two centres outside the main conurbations.

Regional and rural success and decline are major issues in Australia. Community-led revitalisation and initiatives to expand the uptake of ICT have been identified as essential enabling ingredients for regions to maintain competitiveness and stimulate growth. Many diverse ICT projects have been started, often with universities as recipients or key participants. Most of these are bottom up – trying to find local solutions to local problems. The major problem is sustaining these initiatives after the initial funding has been expended. One successful project is the development of the MainStreet portal by the Centre for Electronic Commerce and Communications at the University of Ballarat (Thompson, 2002).

Learning organisations can provide leadership in community informatics by forging partnerships and by *“helping establish the skilled hands and clever heads”* (Thompson, 2002 p. 1). The case indicates that the university-region engagement can be an important factor in developing a strategic approach to community informatics initiatives.

## CONCLUSION

The New Zealand government has implemented several initiatives to help to develop a knowledge society, encourage innovation, build up regional economic development, and improve usage and access to ICT. The overarching aim is to return New Zealand's per capita income to

the top half of the OECD rankings and maintain that standing. The use of ICT is seen as central to all of these developments. Among the current initiatives are:

- 1) The Regional Partnerships Programme run by New Zealand Trade and Enterprise, which provides guidance and funding to assist regions identify and develop sustainable economic growth strategies.
- 2) The Clusters Development Fund set up by New Zealand Trade and Enterprise to facilitate the development of business clusters with significant growth potential;
- 3) The Growth and Innovation Framework, which aims to enhance the existing innovation framework, develop people's innovation skills, increase global connectedness, and focus initiatives in areas which can have maximum impact. (NZGovernment, 2002);
- 4) Project Probe, a joint initiative between the Ministry of Education and the Ministry of Economic Development has rolled out broadband communications to schools and provincial communities. A follow on from this is the setting up of contestable "Broadband Challenge Funding" to encourage the take up of broadband by businesses, local and regional government and community groups.
- 5) The Digital Strategy brings together many of the current and former initiatives of the New Zealand Government in one unifying vision (NZGovernment, 2005). The purpose of the strategy is to work out the most beneficial way of utilising ICT to maximise the benefits to national and local government, communities and business. The three main goals are to: enable effective use of ICT by communities; encourage innovation by business; and to improve government service.

These five initiatives all recognise the importance of the relationships between commerce, culture, and learning. ICT is viewed as a tool that can assist the development of these relationships. The learning region strategy focuses on the role of networks in facilitating broad institutional learning within a regional economy. Both ICT networks and social networks are critical for the successful development of learning regions in New Zealand.

## REFERENCES

- Amin, A., & Thrift, N. (1994). Living in the Global. In A. Amin & N. Thrift (Eds.), *Globalisation, Institutions and Regional Development in Europe* (pp. 1-22). Oxford: Oxford University Press.
- Castells, M. (1996). *The Rise of the Networked Society* (Vol. 1): Basil Blackwell.
- Cooke, P. (1996). Reinventing the Region: Firms, clusters and networks in economic development. In P. W. Daniels & W. F. Lever (Eds.), *The Global Economy in Transition*. Harlow, England: Addison Wesley Longman Limited.
- Cooke, P., & Morgan, K. (1998). *The Associational Economy*. Oxford: Oxford University Press.
- DeBresson, C. (1996). *Economic Interdependence and Innovative Activity*. Cheltenham: Edward Elgar.
- Doloreux, D., & Parto, S. (2004). *Regional Innovation Systems: A Critical Review*. Retrieved 5 July, 2005, from [www.ulb.ac.be/soco/asrdlf/documents/RIS\\_Doloreux\\_Part0.pdf](http://www.ulb.ac.be/soco/asrdlf/documents/RIS_Doloreux_Part0.pdf)
- Florida, R. (1995). Toward the Learning Region. *Futures*, 25(5), 527-536.

- Florida, R. (2002). *The Rise of the Creative Class: and How its Transforming Work, Leisure, Community & Everyday Life*.
- Jacobs, J. (1972). *The Economy of Cities*. Harmondsworth, England: Pelican.
- Keating, J., Badenhorst, A., & Szlachetko, T. (2002). *Victoria as a Learning Region: Background Report*. Melbourne Victoria: OECD.
- Larsen, K. (1999). Learning cities: The new recipe in regional development. *Organisation for Economic Cooperation and Development: The OECD Observer, Summer 1999*, 73-76.
- Malecki, E. J. (1997). *Technology and Economic Development: The Dynamics of Local, Regional and National; Competitiveness* (2nd ed.): Longman.
- Malecki, E. J. (2002). Hard and Soft Networks for Urban Competitiveness. *Urban Studies*, 39(5-6), 929-945.
- Markusen, A. (1987). *Regions: The Economics and Politics of Territory*. New Jersey: Rowman & Littlefield.
- Markusen, A. (1996). Sticky Places in Slippery Space: A Typology of Industrial Districts. *Economic Geography*, 72(3), 293-313.
- Maskell, P. (1999). Globalisation and Industrial Competitiveness: The Process and Consequences of Ubiquitification. In E. J. Malecki & P. Oinas (Eds.), *Making Connections: Technological Learning and Regional Economic Change* (pp. 35-59): Ashgate Publishing Ltd.
- Maskell, P., & Tornqvist, T. (1999). *Building a Cross-Border Learning Region: Emergence of the North European Oresund Region*: Copenhagen Business School Press.
- Menger, C. (1871). *Grundsätze der Volkswirtschaftslehre*. Wein, Germany: Holder-Pichler-Tempsky.
- Morgan, K. (1997). The Learning Region: Institutions, Innovation and Regional Renewal. *Regional Studies*, 31(5), 491-503.
- NZGovernment. (2002). *Growing an Innovative New Zealand*. Wellington: Office of the Prime Minister.
- NZGovernment. (2004). *Digital Strategy: a Draft New Zealand Strategy for Consultation*. Wellington: Ministry of Economic Development.
- NZGovernment. (2005). *The Digital Strategy: Creating our Digital Future*. Wellington.
- Ohmae, K. (1995). *The End of the Nation State: The Rise of Regional Economies*. New York: Free Press.
- Oughton, C., Landabaso, M., & Morgan, K. (2002). The Regional Innovation Paradox: Innovation Policy & Industrial Policy. *The Journal of Technology Transfer*, 27(2), 97-110.

- Richardson, R. (2002). *Information & Communication Technologies & Rural Inclusion*. University of Newcastle upon Tyne: CURDS.
- Rio, C. R. d. (2001). *Learning to Innovate: Learning Regions*. Andalucia: OECD/IDR.
- Saxenian, A. (1994a). *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Cambridge, M A.: Harvard University Press.
- Schollman, A., O'Neill, D., Doczi, M., & Kelly, F. (2002). *Regional Innovation, Learning & Governance - Rediscovering New Zealand's Regions: A Central Government Perspective*. Paper presented at the Learning Cities and Regions, Melbourne.
- StatisticsNZ. (2003). *Innovation Survey*. Wellington.
- StatisticsNZ. (2005). *Business Indicators*. Retrieved 28 July, 2005, from <http://www.stats.govt.nz>
- Storper, M. (1995). The resurgence of regional economics, ten years later: the region as a nexus of untraded interdependencies. *European Urban & Regional Development Studies*, 2(3), 191-221.
- Tatnall, A., Burgess, S., & Singh, M. (2004). Community and Regional Portals in Australia. In N. Al-Qirim (Ed.), *Electronic Commerce in Small to Medium Sized Enterprises: Frameworks, Issues and Implications*. Hershey, USA: Idea Group Publishing.
- Thompson, H. (2002). *Creating and Sustaining Online Communities - Replicable Web-Based Services Meeting the Diverse Needs of Regional and Rural Australia*. Paper presented at the Learning Cities and Regions, Melbourne, Australia.
- Trauth, E. M. (2000). *The Culture of an Information Economy: Influences & Impacts in the Republic of Ireland*: Kluwer Academic Publishers.

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