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Exploring the Impact of Government ICT Initiatives on the Livelihood of Australian Rural Communities

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Abstract

This paper explores the impact of e-learning and e-government initiatives on rural communities in Australia. It discusses some of the initiatives, analyses a number of impact analysis frameworks, and includes the findings from a selected set of initiatives. It is a preliminary analysis of qualitative data discussing the outcomes achieved from the initiatives in terms of social, human, financial and physical capital impact on rural communities.

Keywords: e-Learning, e-Government, ICT, impact assessment, rural, Australia

Introduction

Ubiquitous and pervasive nature of information and communications technologies (ICTs) can support global community interaction, commerce and learning, resulting in higher standards of living and improved social welfare (Dewan & Riggins, 2005). This view is supported by Madon (2000) who suggests that with the right mix of policy and capability to access and utilise information and knowledge, the Internet offers a great opportunity for improving the livelihood of communities. Accordingly, many countries are introducing ICT based initiatives to improve and support communities (Southern & Townsend, 2005) in both urban and rural areas.

Use of ICTs in government and governance can significantly improve the relationship between policy making and service delivery and has implications for such key values as social equality and inclusiveness (King, 2007). The facilitation of online learning and distance education has the “potential to extend learning opportunities to those who would otherwise be denied a good education” (World Bank & AusAID, 2001:7). Behind these optimistic outlooks of ICT benefits, there lie differences in perceptions of what ICTs represent underpinned by comparative theories of technology.

- *Instrumental theory*: argues that technology is a ‘tool’ without any inherent value (Feenberg, 1991:5). Supports a one-size-fits-all policy of universal employment of ICTs (Ebersole 1995).
- *Substantive theory*: suggests that “technology is not neutral and in itself it has a positive or negative impact” (Feenberg 1991:6).

- *Critical Theory of Technology*: suggests that technology is a site of struggle and use of technology is shaped by underlying power relations (Warschauer 2004:2). Technology in the form of the Internet creates a new set of relationships and places (Wiseman 1998:85).
- *Social Informatics*: places ‘social shaping’ of technology as central tenet (Kling 2000; Loader & Keeble 2004:39; Taylor 2004; Schuler 1996). In Social Informatics, looking at what people do with technology rather than what they have is pertinent for making effective use of ICTs for social change and social inclusion.
- *Community Informatics*: suggests that information and communications technologies (ICTs) enable community processes and the achievement of community objectives including overcoming “digital divides” both within and among communities (Gurstein 2002).

Australia is well placed in the world in the state of its overall ICT environment. In 2006/2007 Australia ranked 15th in the world Networked Readiness Index (Dutta & Mia, 2007). Table 1 below illustrates the type of Internet connections in Australia and Table 2 presents the type of Internet connections.

Table 1: Internet connection types, Source: ABS, 2007

No Internet connection	Broadband	Dial-up	Other	Not stated
35.43%	39.22%	21.49%	0.60%	3.26%

Table 2: Internet users and access types, Source: World Bank, 2005

Internet users (per 1,000 people)	Personal computers (per 1,000 people)	Broadband subscribers (per 1,000 people)	Schools connected to the Internet	Mobile subscribers (per 1,000 people)
698.0	683	103.4	97%	906

Australia is a vast country where majority of Australians live in urban settings, however, these cities are located thousands of kilometres apart, divided by vast deserts and mountain ranges (ABS, 2007). Approximately 18 percent of the Australian population live in rural and remote areas (Alston and Kent, 2004). Ten percent of Australians live in very remote parts, making ICT infrastructure a challenge and creating various layers of the urban-rural divide. To avoid digital divide and to ensure that all communities are capable of attracting and exploiting the opportunities of ICT, Governments at both the Federal and State levels in Australia have initiated a number of e-learning and e-government services for rural communities.

This paper explores two ICT-based initiatives in rural Australia; the delivery of e-Government and e-Learning services in the last decade. It includes a discussion of rural communities in Australia, government ICT initiatives for Australian rural communities, the research model and methodology, and a preliminary analysis of the impact of a selection of the two initiatives.

Rural Communities in Australia

Rural and regional refers to those areas outside the capital cities (Curtin, 2001). A rural community is frequently defined in the literature as a community of location or place (Cocklin and Dibden 2005; Scott et al 2000: 438). The OECD working definition of a rural community is based on population density and that rural areas have no more than 150 inhabitants per square kilometre except in Japan (OECD, 1994). In Australia, three classifications of degrees of rurality are: the Rural, Remote and Metropolitan Areas (RRMA) based on the size of the population and the level of remoteness, according to the Accessibility Remoteness Index of Australia (ARIA), which is a strictly geographic measure of remoteness in terms of accessibility, and the Australian Standard

Geographic Classification (ASGC) Remoteness Structure (IRRR, 2004). Green and Raeleene (2004) argue that the concept “rural” is subjective and use it to describe areas with low population density and far from major service centres. The concept of a rural community may also include communities of interest, which often extend beyond the defined spatial boundaries of particular localities. In terms of communities of interest, rural communities are those people living in farms or agricultural service centres including those in mining towns and coastal holiday and retirement communities (Black et al, 2004). Although agriculture is important to rural communities, not everyone who lives in a rural area farms or mines. Some people work in towns, sell items in stores, own their own business, are school teachers, work for the government and are members of the medical team.

Rural communities are characterised by limited availability of services such as telecommunications, banking services, transport systems, public housing, shops, civic associations and community networks (Black et al, 2004). Especially in terms of Information and Communication Technologies (ICTs) and related services, rural communities face constraints such as (a) high cost of accessing ICT such as telecommunication prices (b) restricted access to education, training and user-supported services and (c) inadequate technical capability of the telecommunications infrastructure to access services and information that require high bandwidth (Buckeridge, 1996). One group of rural citizens in Australia represent communities that are generally characterised by lower incomes, higher levels of unemployment, fewer jobs and educational opportunities, higher levels of morbidity, reduced service access and support, and ongoing socio-demographic decline (Hall and Scheltens, 2005; Alston and Kent, 2004). Other rural citizens are members of communities that live off farm and mining. Such communities are not generally poor but are vulnerable to digital divide. A third category of rural citizens consist of professionals and retired people who choose the rural life as a lifestyle. Such citizens are generally affluent, retired, professionals or ‘hobby-farmers’. To combat digital divide digital inclusion initiatives are essential.

Government ICT Initiatives in Australia

In Australia a number government initiatives to support rural communities regarding ICT use and uptake have been put in place.

1. Networking the Nation (NTN)

The Australian Government’s Networking the Nation (NTN) program was an outcome of telecommunications reform in Australia, directed towards communications infrastructure. It aimed to assist the economic and social development of rural Australia. The focus was to improve the availability, accessibility, affordability and use of communications facilities and services and to reduce disparities in communications access and use between metropolitan and non-metropolitan Australians (DCITA, 2005). Two areas that received funding under the NTN scheme were government agents, referred to as Rural Transaction Centres and public Internet access points, called Telecentres.

2. Rural Transaction Centres

http://www.communitybuilders.nsw.gov.au/rural_regional/resources/rts.htm

The aim of Rural Transaction Centres (RTCs) is to enhance rural and remote communities’ access to government services. The Australian Government allocated \$70 million to set up RTCs to introduce new services to smaller rural towns. Under this one-stop shop for government services each RTC offers a range of services including: financial, post, phone, fax, Internet, health, employment, visitor and tourism information, printing and secretarial support, insurance, taxation, library and federal and state government services. RTCs also offer Adult Community Education which act as community and information hubs for a range of issues from drought to health information.

3. Telecentres

Telecentres (Public Internet Access Points) are also known as multipurpose community telecentres, village information shops or information kiosks. The services they offer include telephone calls, email, facsimile, photocopying, web browsing, information retrieval assistance, general purpose computing, and computer training (Rathore & Alhabashi, 2005). Harris (2005) argues that community characteristics are the most important factor in influencing the success of telecentres in rural communities. In Australia, telecentres are “centres with full or part-time staff, unstaffed Internet kiosks, computers in public libraries with Internet access and centre that provide communities with Internet access” (DCITA, 2003). Services offered by telecentres may include: communication, computer resource, education and training, government, social development and community development services. Online access centres play a significant role in meeting the social and economic needs of communities, and contribute to the development of community capacity building and therefore social capital (DCITA, 2003), a view also supported by Pease *et al.*, (2003) and Wright (2001).

4. Queensland Government Agent Program

An equivalent of the RTCs is the Queensland Government Agent Program (QGAP), an initiative specific to one Australian state, Queensland only (Monley and Spelman, 2001). At QGAP offices citizens are able to conduct business with government departments and agencies or obtain information about government services from the one convenient location. The services are the same as those available to Queensland urban communities (www.Qld.gov.au, 2007). QGAP provides a network of 68 offices throughout rural and remote areas of Queensland (population less than 3000). Some QGAP offices are managed by local governments as well. The range of services for rural citizens delivered via QGAP are similar to RTCs discussed above.

5. Neighbourhood Houses and Adult Community Education Centres

Neighbourhood houses (community or learning centres) are initiatives supported by state governments in Australia as well as education providers. Services offered by these units are similar to those offered by RTC's discussed earlier in this paper (Choy *et al.*, 2006). Adult Community Education (ACE) centres deliver a wide range of education and training services for adults in community-based settings. Importantly ACE centers are often the first step along a learning pathway to accredited and more formal forms of education and training (Walstab, Volkoff & Teese, 2006). ACE has operated largely as an informal education sector in Australia for over 100 years. The informal nature and diversity is a unique characteristic of ACE (Choy *et al.*, 2006).

From the above discussion it is apparent that in Australia a number of e-government and e-learning initiatives have been introduced and implemented. However, what impact these initiatives have on rural communities is yet to be determined. Therefore this research entails the following questions. What is the impact of the e-government and e-learning initiatives on Australian rural communities? What improvements did the rural community in Australia achieve from these initiatives?

Impact Analysis Frameworks

According to Nadvi (2004: 29-30) “there is no single blueprint for impact assessment. Instead, there is a continuum from more quantitative economic approaches to sociological and anthropological approaches (KirKpatrick and Lee, 2000). Current debate in impact assessment dictates that the purpose of impact assessment is to *improve* rather than *prove* impact (Nadvi 2004). Impacts could also be short term as well as long term. Referring to ICTs, Menou (1998) defines impact as the change in the ability of people to satisfy their needs brought about by the use of the technology. Notwithstanding the clear need for impact assessment, little empirical evidence

is available concerning the impact of ICT projects on the lives of the beneficiaries (Amariles, Paz, Russell & Johnson, 2006) particularly in the rural context. Although a number of ICT initiatives that tackle the digital divide have been analysed, there is a paucity of frameworks that can be used to meaningfully assess the impact. Therefore an analysis of relevant impact frameworks was undertaken.

Table 4: ICT Impact Assessment Framework Literature

Framework	Source	Description	Analysis
Community Telecentre Assessment	Whyte (1999)	Evaluates community telecentres in Africa from the perspective of different stakeholders.	Restricted to the assessment of telecentres in Africa, however the framework includes impacts on individuals, organisations and communities.
Sustainable Livelihoods Approach (SLA)	DFID (1999)	A framework used to assess livelihood outcomes. It assumes outcomes and impact are to reduce poverty and vulnerability, and are widely applicable to developing countries. However, it addresses social, human, financial, physical and natural capital impacts.	Not applicable to Australia in its entirety, due to its emphasis on poverty and vulnerability reduction. As stated earlier, all Australian rural citizens are not poor or vulnerable. A large number of people live in rural Australia due to professional incentives and by choice. Australia is also a developed country with a rural community. However livelihood impacts of social, human, financial capital are relevant for the impact of ICT initiatives.
Social Impact Assessment (SIA)	Vanclay (2003), (2005)	Social impact assessment analyses the intended and unintended social and cultural consequences of planned policies, programs and any social change invoked by those interventions.	Places an emphasis on social impacts, however, ICT's are expected to have an impact greater than social only. The framework is noted for issues that may impact the Australian indigenous community in rural Australia.
Measuring impact	NCVO (2003)	Refers to impact assessment to be broader than performance measurement. Assesses the need and demand for the initiative, resources, activities, outputs (outcomes) and impact.	Relevant outcomes include quality of life; skills, confidence and self esteem; access to learning and skills development; community development and social inclusion; participation in and effect on service provision; empowerment; employment and cultural activities, financial and public awareness. Relevant impacts include social inclusion, community development, local employment, improved health and well being, participation in local decision making and enhanced cultural life.

Research Model

Since no one existing framework can be completely applied to evaluate the impact of e-government and e-learning initiatives, relevant issues from the frameworks discussed in Table 4 are adapted to develop the research model (Figure 1) to guide this research.



Figure 1: Research Model

This research model will identify the E-Government/E-Learning *initiative*, how is it resourced, that is, whether it is a federal or state government *initiator*, how it is implemented and managed (*activities*) in rural areas, and what are the *outcomes* and *impact*. Outcomes can be observed at individual, community, region or general levels, and impact in terms of social, human, physical and financial capital are assessed.

Research Methodology

This research is primarily qualitative in nature, accomplished with two case studies, Victoria and Queensland. Victoria and Queensland are two states in Australia. Case study research is an empirical enquiry that investigates a contemporary phenomenon within its real life context, when the boundaries between phenomenon and context are not clearly evident (Yin, 1994) and provides an understanding of the dynamics in a single setting (Eisenhardt, 1989). In this research the case study allowed investigation of specific instances in the attempt to understand the impact of e-government and e-learning initiatives on rural communities. Victoria was chosen as a case due to easy access to regional and rural areas, and Queensland was chosen because it is a state not adjacent to Victoria, with a different climate and a rural population with a wider mix (locals, immigrants, retirees, and indigenous). Sources of evidence were obtained from documents, web sites, direct observations, archival records, web site analysis and interviews with project managers, key informants and beneficiaries wherever possible.

Data collection involved firstly selecting specific communities and secondly, selecting individual programs within those communities. Project selection criteria included targeting a rural community with a focus on e-Learning or e-Government services. We also considered Internet access and ICT training initiatives because they facilitate the use of e-Learning and e-Government in rural communities.

Findings and Analysis

Discussion of the findings in this section of the paper is a subset of data collected and analysed for this research. Four initiatives, each representing a different kind of e-government and e-learning initiative in the two states are presented and evaluated for outcomes and impact on rural communities. Discussing all the case studies is beyond the scope of this paper due to its enormity.

Table 5: E-Learning and E-Government Initiatives

Initiative (E-learning)	Resource	Implementation	Outcomes
<i>Jobs for our mob (E-Learning)</i>	Indigenous Engagement project as part of the Federal Govt initiative: Australian Flexible Learning Framework	Indigenous e-Training centre at Mt. Isa (a mining town in north western Queensland), Jobs for our mob e-Resource Kit (multimedia learning with animations, tick-sheets and culturally appropriate language) in Indigenous languages.	Improved skills, empowerment, employment prospects (27 participants in initial course found fulltime work), community development, and social inclusion between indigenous community, Mt. Isa community and mining companies.
<i>Murtoa District Neighbourhood House (E-Learning)</i>	A Victorian (State) Govt initiative. Murtoa and Horsham local government, VicNet funding for Public Internet Access Point.	ICT access and training centre for basic e-learning courses. Offered as a first step to formal learning, access to computers and the Internet, and referral service mostly for counselling services.	Computer skills, online learning skills, participation in a govt initiative
<i>Wodonga Rural council Online Services Strategy project (Local E-Govt)</i>	Victorian State Government initiative: Municipal Association of Victoria, Multimedia Victoria and Victorian department of Infrastructure	Local govt web site with increased functionality, interactivity and information. For local e-govt services	A feeling of community, ability to attract skilled migrants through the website, the provision of e-services such as lodgement of building plans, bookings for council facilities, and e-payments for childcare. Engaging the youth of the region by using SMS alerts providing news and upcoming youth-oriented events.
<i>Miriam Vale Rural Transaction Centre (E-Govt)</i>	A Federal Govt initiative. RTC serves and provides a range of services including: Financial services Post, Phone, Fax, Internet, Medicare Australia Access Point, employment Facilities for visiting professionals Printing, secretarial services Tourism, involvement in employment schemes Insurance, taxation Federal, State and Local Government services Library Services	Government e-services hub with access to ICTs and provider of basic computer and Internet training courses, allow tax returns, access to information on immigration,	Access to rural support services, feeling of community connection, technology skills, social inclusion, social capital with personalised services to govt services, physical capital with better access to physical assets (vehicles, land etc), financial capital eg medicare rebates and less travel costs

Analysis of case study is qualitative and interpretive based on Klein and Myers (1999) principles for conducting and evaluating interpretive field studies in Information Systems. The impact of initiatives is discussed under social, human, physical and financial capital, interpreted from the

outcomes of the e-learning and e-government initiatives. It is important to note that many of the initiatives are connected for example many of the e-government initiatives offer e-learning programs to improve the livelihood of rural communities.

Social capital from e-Learning outcomes are building social networks, providing social support and reducing community isolation. For example, an indigenous engagement e-learning project provided an instructive example in local indigenous languages of e-Learning in a rural setting. This project applied e-learning to train indigenous citizens to prepare them for work, which in turn provided a human capital base for local employers. E-government services such as RTCs promoted social inclusion by keeping people informed of new developments, connected to services such as e-tax and e-banking, and citizen and immigration issues. However, an important finding from the interviews with participants revealed that most rural citizens preferred using e-government services on their own, a social-cultural norm in Australian rural communities due to the size of land and distance between properties. Government initiatives such as RTCs, QGAP provided access to government services, the impact of which also developed social capital. These initiatives supplied an avenue where people could access government services. It was even suggested that a RTC restored the social status of a community whose population was declining as a result of a closure of a bank and other services. It can strengthen social capital by providing accessibility to services which in turn allows people to feel connected.

Human capital is people within a community, their knowledge and skills, information, personal well-being, self-esteem, and ability (DFID, 1999). E-learning and e-government initiatives enhanced human capital with access to relevant education programs for better job opportunities, acquisition of new skills with ICT and Internet and other services available at RTCs, increased self confidence and better health and wellbeing.

Physical capital refers to the basic infrastructure such as roads, ICT infrastructure and other producer goods, which support livelihood activities obtained from using government services online (DFID, 1999). From this research it is seen that citizens can better manage physical capital such as vehicles with convenient and timely access to registration online and services of taxation, transport and weather.

Financial capital denotes the availability of financial resources in the form of savings, remittances, credit and pension to help people carry out their livelihood objectives (DFID, 1999). E-learning initiatives supported better job opportunities and saving money on traveling (in some cases up to 240 kilometres to access training). E-Government initiatives that resulted in financial capital were faster access to money, saving money on transportation and reduced the need to pay someone to perform the service. Financial impacts ranged from improved service options and improved business environment to reduced communication and travel costs for businesses and households.

Summary and Conclusion

This paper presents preliminary results of a broad investigation into the impact of government initiatives of e-learning and e-government on the livelihood of rural citizens. From the discussion above it is apparent that in Australia a number of e-learning and e-government initiatives have been put in place to improve the livelihood of rural citizens. Although it indicates that the impact of social capital at this stage is the greatest, it is obvious that outcomes of these initiatives are also influencing financial, physical and human capital to some extent. Although the impact evaluation is only preliminary, the research indicates that government funded projects in e-learning and e-government initiated are resourced by both Federal and State level governments. These programs are implemented in different ways, some are more widely used than others, and most of them have positive outcomes. The outcomes of these initiatives develop social, human, physical and financial capital among the rural communities in Australia, an essential element for reducing the digital divide.

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