Socio-Economic Factors Affecting Home Internet Usage Patterns in Central Queensland

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Abstract

Governments and other policy makers are concerned with the gap in home Internet usage between people from metropolitan and rural areas. A survey conducted in Central Queensland, Australia examined differences in home Internet usage patterns between young and old, male and female, people in urban and rural areas, married and unmarried, well-educated and less educated, rich and poor, and employed and unemployed and found significant differences.

These results highlight areas for further research and provide a basis for government agencies and industries to consider these associations in future policy formulation for regional development using ICT. The research suggested that further research should be conducted to monitor consuming behaviors of the youngest age group in Internet use for entertainment and information search in order to detect possible Internet overuse or addiction. In addition, further research should be conducted to find out what people search for on the Internet, and if for employment opportunities, financial incentives are suggested for the unemployed people.

Keywords: Information and communication technologies; community informatics systems, demographic and socio-economic factors, Internet usage patterns, Central Queensland, consumer ICT behaviors.

Introduction

Regional Information and Communication Technology (ICT) infrastructure projects funded by the Australian Government determined that a priority needed to be given to rural and regional areas so that they have the same opportunities from the information economy as capital cities and metropolitan areas (National Office for the Internet Economy, 2002). The use of ICT in regional, rural and remote areas has been increasingly promoted in Australia over the past 5 years in order to provide cheaper and more efficient Internet and e-mail access for people living in these areas (Chenoweth & Stehlik, 2002). However, although the Central Queensland (CQ) region, situated on the coast in the north-eastern part of Australia straddling the Tropic of Capricorn covering some 250,000 square kilometres and with a population of approximately 300,000, has had reasonable and growing access to ICT infrastructure over recent years, the home adoption of Internet has been lower than the national average (Taylor, 2002). Demographic and socio economic factors (location, gender, age, education levels, martial status, children at home, dwelling ownership, combined family income and employment status) affecting Internet access from home CQ have been analysed and reported (Taylor, Zhu, Dekkers and Marshall, 2003).

Content and service providers now use the World Wide Web (WWW) to provide modern consumers with a wealth of information, entertainment and commerce opportunities at home (Stafford, 2002). However, in order to better understand why home Internet usage in regional areas remains relatively lower than in capital cities despite reasonable access to ICT infrastructure, consumers' behavior in the home use of the Internet needs to be studied. These behaviors can be categorized as follows: work at home, education, entertainment, information search, email, managing home finance, online purchase and community networking. Following a review of the literature, this research hypothesizes that there are differences in Internet usage patterns between young and old, male and female, people in urban and rural areas, married and unmarried, well-educated and less educated, rich and poor, and employed and unemployed. This paper examines differences in home Internet use across these parameters and the associations between home Internet consumption patterns and demographic and socio-economic factors in CQ. It also provides relevant information for sociologists, psychologists and other professionals who are involved in examining social uses in the adoption of ICT in regional areas generally and in Australia, in particular.

The instrument used to collect the data for the paper was the Central Queensland Social Survey (CQSS), which was jointly conducted by the Centre for Social Science Research (Mummery & Schofield, 2001) and Community Informatics (COIN) Internet Academy, Central Queensland University.

Methodology

Data Collection

The 2001 CQSS was administrated through the CATI (Computer-assisted Telephone Interviewing) system at the Population Research Laboratory within the Centre for Social Science Research at Central Queensland University (CQU) (Mummery & Schofield, 2001). (Funding to undertake this data collection and analysis was provided by Telstra Research Laboratories, Australia.)

The interviews were conducted from 9th to the 25th November, 2001. The CATI program allowed the sample to reflect the socio economic profile of the region by identifying and managing the proportions of socio economic subsets required. In all, 1200 interviews were collected with 400 from Rockhampton (urban area) and the remainder collected from within a 350 km radius of Rockhampton (rural area).

Full details and purposes of interview were reported by Taylor (2002). One of the purposes was to identify Internet usage patterns and their associations with demographic and socio economic parameters in CQ. Eight Internet usage patterns and nine parameters are abstracted in Figure 1.

Data Analysis

Chi-square tests were employed to examine significant differences between two and three categories within a variable, and associations between pairs of variables (after Kinnear & Gray, 1998). Significant difference level was set at $p = 0.05$, but when $0.1 < P > 0.5$, the associations between two variables are also discussed. However, using these methods for variables with more than two levels creates difficulties in identifying which category of a variable is significantly in association with other variables. In addition, one factor may affect Internet connection for different usages. Therefore, multivariate analyses with Post Hoc Tests were also used to obtain the indicative differences between the categories of a variable in association with different Internet usages.
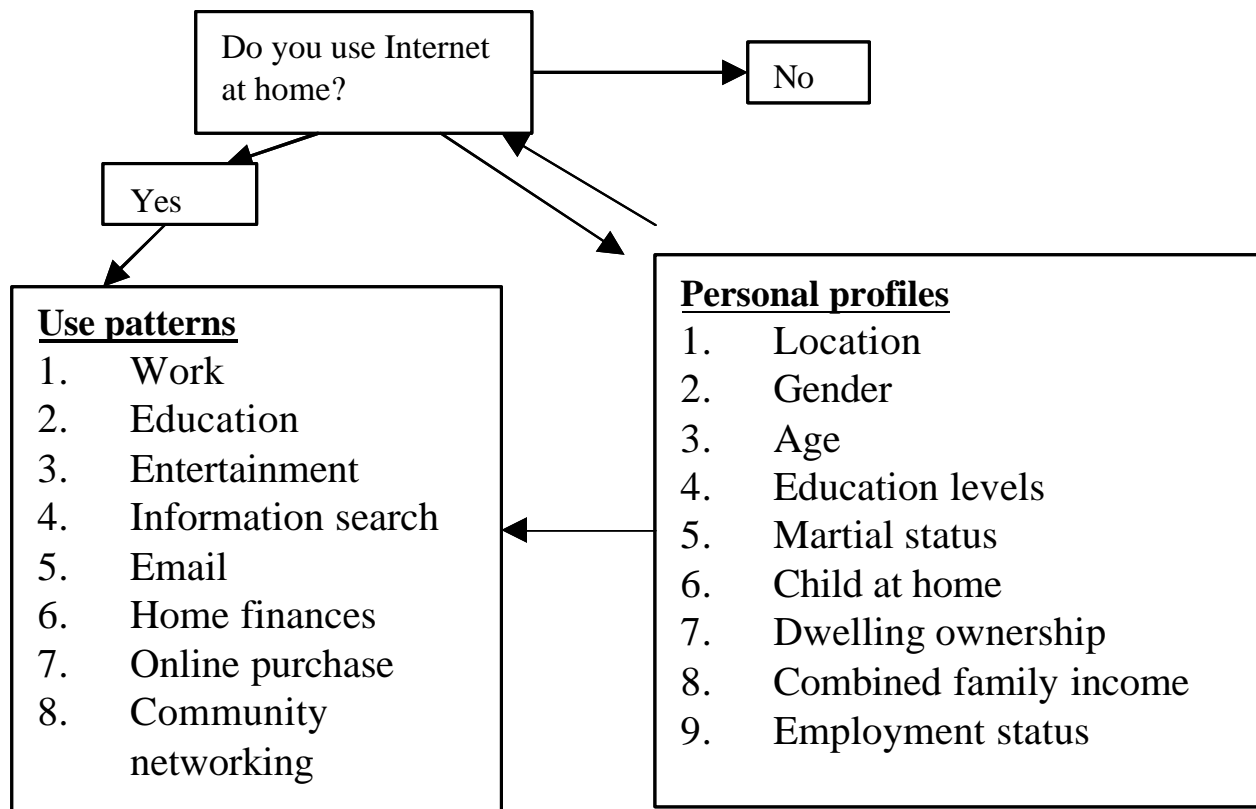
```
┌─────────────────────┐                    ┌──────────┐
│ Do you use Internet │───────────────────▶│   No     │
│ at home?            │                    └──────────┘
└─────────────────────┘

      ┌──────┐
      │ Yes  │
      └──────┘
```

Use patterns
1. Work
2. Education
3. Entertainment
4. Information search
5. Email
6. Home finances
7. Online purchase
8. Community networking

Personal profiles
1. Location
2. Gender
3. Age
4. Education levels
5. Martial status
6. Child at home
7. Dwelling ownership
8. Combined family income
9. Employment status

Figure 1   Outline of survey question flowchart

Binary Logistic Regression with categorical covariates was applied to identify factors contributing to each of Internet usages. Odds Ratios (OR) (after Knoke & Bohrnstedt, 1994) were used to measure the weight of associations of each factor with each of Internet usages. An OR value of 1.00 indicates that two variables were unrelated; an OR > 1.00, indicates the positive co-variation of the variables (eg, locations and Internet connection for work at home); an OR < 1.00, it indicated negative or inverse co variation. As the covariates (factors) are categorical, the first category of each factor was used as a reference (OR = 1.00) to detect the association of category variation (e.g., from younger to older age groups) with each of the Internet use categories.

Results and Discussions

General Use Patterns

There was a general tendency for people surveyed across CQ to use Internet at home mainly for communication purposes through email and for information search. This dominant use pattern was followed by usage for entertainment, education, and then work at home. The usage levels for financial management and online purchasing were relatively low and home usage of the Internet was used least for community networking purpose in this region (Table 1).

Table 1   General usage patters for home Internet use (N = 512)

Use patters	% of total	Total N
Work at home	48.5	248
Education	60.1	308
Entertainment	61.0	312
Information search	89.3	457
Finance management	34.7	177
Community networking	8.3	42
Email	89.5	459
Online purchase	31.6	162

Specific Usage Patterns according to Demographic and Socioeconomic Parameters

Location

The home Internet users in Rockhampton tended to have a lower percentage for working at home, but a higher percentage for education and entertainment purposes, when compared to their counterparts of reminder of the region (Table 2). The higher use of the Internet for working at home in the areas outside Rockhampton may be explained by the higher proportion of home based businesses including farming in these areas.

Table 2   The effect of location on home Internet use.

Location	Work at home	Education	Entertainment	Total
		%		*n*
Rockhampton	43.8	69.5	68.9	177
Reminder of the region	51.0	55.2	56.9	335
Total	48.5	60.2	61.1	512
P	0.070	0.002	0.005	

Gender

Data presented in Table 3 shows that compared to their opposite genders, men preferred to use Internet for working at home and information search, whereas women preferred to use it for communications through email.

Table 3   The effect of gender on home Internet use

	Work at home	Information search	Email use	Total N
Gender		%		*n*
Male	51.5	92.5	87.2	266
Female	45.1	86.5	92.2	245
Total	48.4	89.6	89.6	511
P	0.087	0.027	0.042	

Age

Table 4 presents the effects of age group on home Internet use. Home Internet use for information search was high across all age cohorts except for the senior cohort (>55 years of age).

Home Internet use in the 25-39 age cohort was dominant for education, entertainment, information search, managing home finances and online purchasing. The youngest age cohort (18-24 years of age) also had high use for education; entertainment and information search but were relatively low users for managing home finances and online purchasing.

	Education	Entertainment	Information search	Managing home finance	Online purchase	Total
Age group			%			n
18-24	75.0a*	83.3a	95.8a	16.7b	16.7b	48
25-39	67.0a	70.7a	92.6a	39.3a	40.3a	191
40-55	57.0b	54.9b	89.8a	36.2a	30.0b	207
>55	37.5c	34.4c	75.0b	29.7ab	23.4b	64
Total	60.0	60.9	89.6	34.7	31.8	510
P	<0.0001	<0.0001	<0.0001	0.023	0.003	

<div align="center">Table 4   The effect of age home Internet use</div>

* Percentages denoted with different characters (a, b or c) indicate significant differences a $p<0.05$; and "a" indicates the highest percentage.

The relatively low use of Internet at home by youngest age group for managing home finance and online purchasing may imply that the majority of this group was not financially independent as expected.

It is clear that the senior age cohort (>55 years of age) generally lagged behind other groups for all aspects of home Internet usage.

Education levels

People with higher education levels tended to have higher level of home Internet usage for work at home, education, information search, and online purchasing, when compared to those with lower education levels (Table 5). These differences indicated that people with higher education levels may have jobs which make use of computers in the workplace thus increasing their application knowledge, skill levels and computer-skills support networks. Further, some of these types of jobs require regular extended work hours to achieve agreed performance targets. Other research has found that professional workers show a preference for working the extended hours at home close to family in preference to work at the work place (Taylor, 2002). However, in this analysis because of low representation in the primary education level, the significant differences were automatically justified when conducting statistical tests.

Table 5 **The effects of education on home Internet use**

Education levels	Work at home	Education	Information search	Online purchase	Total
			%		n
Primary#	28.6**b**	28.6**b**	71.4**bc**	14.2**ab**	7
Secondary	38.4**b**	55.4**b**	89.8**ab**	22.0**b**	186
TAFE	40.2**b**	58.3**ab**	85.8**c**	33.9**a**	127
University	64.4**a**	67.0**a**	92.6**a**	40.3**a**	191
Total	48.4	60.1	89.6	31.7	511
P	<0.0001	0.035	0.010	0.001	

#Significant differences were automatically justified due to small number of samples.

Marital status

In this survey, the 'never-married' people had a higher level of home Internet usage for working at home, education, entertainment, and email, but lower use for managing home finances when compared to people with other marital states (Table 6). There was a higher proportion of never married people in the younger age groups. It is understandable that some people in these groups, such students, may have more spare time to use the Internet for education, entertainment, and use email to communicate with their friends. This analysis again points to the non-use of home Internet for managing home finances by younger and single people. However, it is hard to explain why people who had never married had a level of higher home Internet usage for work at home. Possible explanations lie in the area of increased available time when compared to people with partners and families.

Table 6 **The effects of marital status on home Internet usage patterns.**

Marital status	Work at home	Education	Entertainment	Email use	Managing home finance	Total
			%			n
Never married	54.4**a**	69.9**a**	78.6**a**	97.1**a**	21.4**b**	103
Used-to-be married	26.2**b**	66.7**b**	59.5**b**	83.3**b**	21.4**b**	42
Married	49.5**a**	56.7**b**	56.3**b**	88.3**b**	39.8**a**	367
Total	48.5	60.2	61.1	89.6	34.6	511
P	0.007	0.035	<0.0001	0.013	<0.0001	

It seems logical that married people tend to use the Internet to work at home and managing home finances. As indicated above and in other work people with partners and families show a preference for this method of balancing their work and domestic goals (Taylor, 2002). It is proposed that married people are more likely to have and to recognize needs for close management of home finances

Children at home

People with children at home used the Internet more for education, information, and managing their home finance, but less for email use, when compared to those without children (Table 7).

It is proposed that those with children at home and the children themselves may have a higher immediate need to use Internet for online education and information search, and those without children (including 'never-married' and 'used-to-be married' persons) may have more free time to communicate with friends through email

Table 7   Effect of children at home on home Internet use

	Education	Information search	Email use	Managing home finance	Total
Children at home			%		*n*
No children	54.9	87.3	93.2	30.8	237
At least one child	64.7	91.6	86.5	37.8	275
Total	60.2	89.6	89.6	34.6	512
P	0.024	0.074	0.013	0.096	

People with children at home used the Internet more for education, information, and managing their home finance, but less for email use, when compared to those without children (Table 7).

Perhaps couples with children at home or their children may have immediate need to use Internet for online education and information search. One the other hand people without children (including 'never-married' and 'used-to-be married' persons) may have more free time to communicate with friends through email.

Dwelling ownership

People who rented residential properties tended to have higher home Internet usage patterns for entertainment and information searching, but lower usage for managing home finances, when compared to those who owned their own properties (Table 8).

Table 8   The effect of dwelling ownership on home Internet use

	Entertainment	Information search	Managing finance	Total
Dwelling ownership		%		*n*
Rent	70.1	93.5	25.2	107
Own house/flat	58.2	88.1	37.7	378
Total	60.8	89.3	35.0	485
P	0.026	0.074	0.017	

As evident in the data presented in Table 9, people who rented properties were mainly within younger age groups (18-24, 25-39). Renting may indicate lowered capital reserves and less emphasis on delayed gratification capital expenditure. The home Internet consumption patterns of younger age groups, as presented in Table 4, support a proposition of lower use for managing home finances in this group.

Table 9   Rent associated with age groups

Age group	Within group (%)	N	Across groups (%)	Total no of the group	p
18-24	70.3	52	19.0	74	<0.0001
25-39	34.5	115	42.0	333	
40-55	16.2	71	25.9	437	
>55	11.7	36	13.1	309	
Total	23.8	274	100.0	1153	

Combined family income per week

The middle range income group (AU$160 - 399 per week) had the lowest level of home Internet usage for work at home, entertainment, information search and email use, when compared to the other two income groups. The highest and the lowest income groups had similar trends of Internet usage patterns (Table 10).

Table 10 The effect of combined family income per week on home Internet usage patterns

Income (AU$/wk)	Work at home	Education	Entertainment	Information search	Email use	Total
	%					n
<160	54.3**a**	52.9**b**	60.1**a**	91.3**a**	92.5**a**	173
160-399	28.6**b**	57.1**b**	38.1**b**	71.4**b**	76.2**b**	21
>400	46.7**a**	64.4**a**	63.1**a**	89.9**a**	89.0**a**	317
Total	48.5	60.2	61.1	89.6	89.6	511
P	0.047	0.044	0.072	0.018	0.055	

Further analysis presented in Table 11 indicates that middle range income (AU$ 160 -399 per week) was strongly associated with the senior age group (>55 years of age). The effect of age on home Internet usage patterns is presented in Table 4.

Table 11   The effect of age the middle range income (AU$160 -399) group

Age group	Within the group (%)	N	Across groups (%)	Total no of the group	p
18-24	8.4	8	6.3	95	<0.0001
25-39	6.3	22	17.3	347	
40-55	6.4	28	22.0	439	
>55	21.8	69	54.3	316	
Total	10.6	127	100.0	1197	

Employment status

The effect of employment status on home Internet usage patterns is presented in Tables 12 and 13. Employment status was only significant for home use of the Internet for work at home and entertainment. No differences were detected between fully and semi- employed people regarding the proportion of

work at home. However, it is interesting to note that 26.3% of unemployed people surveyed claimed to being working at home. This is probably due to the system error caused by data re-categorization, as unemployed people were defined to include retired, pension and home duties and some of those may have part time jobs as well.

Table 12   The effect of employment status on home Internet use

Employment status	Work at home (%)	Entertainment (%)	Total (*n*)
Fully employed	58.3**a**	68.7**a**	266
Semi-employed	48.8**a**	52.8**b**	127
Unemployed	26.3**b**	52.9**b**	118
Total	48.5	61.1	511
P	<0.0001	0.001	

Table 13   The effects of employment status on age

| Employment status | | Age groups | | | | Total |
		18-24	25-39	40-55	>55	P<0.0001
Fully employed	N	37	186	229	39	491
	Within employment status (%)	7.5	37.9	46.6	7.9	100.0
	Within age group (%)	38.9	53.6	52.0	12.3	40.9
	Total (%)	3.1	15.5	19.1	3.3	40.9
Semi-employed	N	36	70	99	34	239
	Within employment status (%)	15.1	29.3	41.4	14.2	100.0
	Within age group (%)	37.9	20.2	22.5	10.7	19.9
	Total (%)	3.0	5.8	8.3	2.8	19.9
Unemployed	N	22	91	112	245	470
	Within employment status (%)	4.7	19.4	23.8	52.1	100.0
	Within age group (%)	23.2	26.2	25.5	77.0	39.2
	Total (%)	1.8	7.6	9.3	20.4	39.2
Total	N	95	347	440	318	1200
	Within employment status (%)	7.9	28.9	36.7	26.5	100.0
	Within age group (%)	100.0	100.0	100.0	100.0	100.0
	Total (%)	7.9	28.9	36.7	26.5	100.0

The level of internet usage for entertainment for semi- and un-employed people was lower than those who were fully employed. The reason for this was that these groups of people were strongly associated

(p< 0.0001) with age groups; at age groups over 40 , over 55% (41.4% + 14.2%) were semi-employed and over 75% (23.8% + 52.1%) were unemployed (Table 13). Age group associated with entertainment use was presented in Table 4.

The summary of associations between each of the demographic and socio economic factors and Internet usage patterns is presented in Table 14. No association between these factors and community networking was detected and therefore these data are not presented here.

The summary of associations between each of the demographic and socio economic factors and Internet usage patterns is presented in Table 14. No association between these factors and community networking was detected and therefore these data are not presented here.

Table 14 demonstrates that each of the individual factors may have multiple Internet usage patterns, and each usage pattern can be affected by multiple factors. In addition, it is obvious that these parameters may be also interrelated. In order to remove potential interrelations and to quantify how parameter variations influence usage patterns, logistic regressions with odds ratios were undertaken. These data are presented in Table 15 and the related interpretations were summarized below according the coded usage patterns.

Table 14   Summarized demographic and socio economic parameters on home Internet usage patterns in Central Queensland (2001)

Usage Codes	Work (1)	Education (2)	Entertainment (3)	Information search (4)	Email use (5)	Managing finance (6)	Online purchase (7)
Locations	+	**	**	ns	ns	ns	ns
Gender	+	ns	ns	*	*	ns	ns
Age	ns	***	***	***	ns	*	**
Education levels	***	*	ns	**	ns	ns	**
Martial status	**	*	***	ns	*	***	ns
Children at home	ns	*	ns	+	*	+	ns
Dwelling ownership	ns	ns	*	+	ns	*	ns
Combined family income per week	*	*	+	*	+	ns	ns
Employment status	***	ns	**	ns	ns	ns	ns

+ p<0.1, * p=0.05, ** p=0.01, *** p=0.0001

Table 15   **Logistic regressions for each of Internet usage patterns (data were odds ratios with the first category of each factor as a reference)**

Parameters	Usage codes	1	2	3	4	5	6	7
Location	Rockhampton	1.00	1.00	1.00				
	Reminder of CQ	1.49	0.51	0.69				
Gender	Male	1.00			1.00	1.00		
	Female	0.63			0.51	1.74		
Age	18-24		1.00	1.00	1.00			1.00
	25-39		0.18	0.21	0.17			1.99
	40-55		0.28	0.25	0.15			0.53
	>55		0.40	0.47	0.24			0.83
Education levels	Primary	1.00	1.00					1.00
	Secondary	2.34	8.55					2.96
	TAFE	3.69	1.37					2.46
	University	3.49	1.45					1.33
Martial status	Never married	1.00		1.00			1.00	
	Used-to-be - married	1.03		0.51			2.11	
	Married	2.45		0.67			2.37	
Children at home	No child					1.00		
	At least one child					0.50		
Combined family income per week (AUD)	<160	1			1.00	1.00		
	160-399	2.25			0.97	0.24		
	>400	2.21			0.21	0.69		
Employment status	Fully employed	1.00		1.00	1.00			
	Semi-employed	0.21		0.62	2.85			
	Unemployed	0.34		1.30	2.89			

Usage code 1. People who tended to use the Internet for work at home were more likely to live outside of Rockhampton, be male, have higher education levels, be married, have a higher income level, or be fully employed.

Usage code 2. People who tended to use the Internet at home for education were more likely to live in Rockhampton, be in the youngest group (18-24 years age), or have a secondary or higher education level.

Usage code 3. People who tended to use the Internet at home for entertainment were more likely to live in Rockhampton, be in the youngest group, were never married, or are unemployed.

Usage code 4. People who tended to use the Internet at home for information search were more likely to be male, be in the youngest group, have a lower family income, and/or be either semi-employed or un-employed.

Usage code 5. People who tended to use the Internet at home for email were more likely to be female, have no children, or have lower family incomes.

Usage code 6. People who tended to use the Internet at home for financial management were more likely to be married.

Usage code 7. People who tended to use the Internet at home for purchasing online were more likely to be in the 25-39 age cohort or have higher education levels.

In the presentation of information in Table 15, not listed is data concerning Dwelling Ownership that was shown in Table 14 as it did not have any significant influence on all usage patterns according to the regression analysis. The reason for this is that the status of Dwelling Ownership was interrelated with the Age (see Table 9), and therefore, compared to the Age factor, Dwelling Ownership becomes an insignificant influence with regards to usage patterns.

Research Implications

It is interesting to note that males had a higher level of home Internet usage for work at home and for information search when compared to their female counterparts who preferred to work away from home and to use home Internet for communications through email. This finding is consistent with other research. For example, Rovai (2001) found that in distance education via the Internet using the Blackboard.com e-learning system, females demonstrated a stronger sense of community than that their male counterparts and that the female students exhibited connected communication patterns while the communication pattern of males was mostly independent.

In this study, people within the youngest group were quite active in home Internet use for education, entertainment and information search, when compared to their elder counterparts. Loges and Jung (2001) also documented significant differences between old and young Americans in Internet access and tendencies in younger groups to pursue a more narrow range of personal goals. Even in developing countries it has also been observed that young people seem to understand and to use information technology fluently without adult intervention (Mitra & Rana, 2001). However, there are growing community concerns that these narrow ranges of Internet usage patterns should be carefully studied and that consuming behaviors should be observed to avoid excessive use and unhealthy use of the Internet (Kraut, Patterson, Lundmark, Kiesler, Mukhopadhyay and Scherlis, 1998).

In this study, the youngest group tended to use home Internet for entertainment and online search. But the questions of 'how long and how frequently do they use it for entertainment' are not answered. A separate paper by these authors will document the volume and frequency of home Internet usage for all demographic and social economic profiles with a special attention to patterns in young adults. In addition, this study did not collect data on what people searched for in their online information searches. This is an area for future research, and in order to provide better service from related ICT industries, it is suggested that the following categories could be examined: education, health care, entertainment (movies, and music), job hunting, weather and news, financial information and personal use. Finally, managing home finance and purchasing online have become increasingly popular in recently years and the trends of this growth should be analyzed. These authors will also examine this issue in a subsequent paper.

Conclusions

This paper has identified, presented and discussed the associations between a range of demographic and social economics factors and home Internet use patterns in Central Queensland, Australia. The paper highlights the opportunity for sociologists and physiologists to undertake further research regarding human social and physiological behaviors in home use of the Internet. In addition the paper provides a ba-

sis for government agencies and industries to consider these associations in future policy formulation for regional development using ICT. The paper suggests that further research needs to be conducted to into the consuming behaviors of the youngest age group in using home Internet for entertainment and information search in order to detect the possible Internet addiction or overuse. And also, in order to provide better service from related ICT industries, it is necessary to investigate what home Internet users search for, and for those unemployed people, the online search for employment opportunities should be encouraged with financial incentive.

References

Chenoweth, L., & Stehlik, D. (2002). Using technology in rural practice--Local area coordination in rural Australia. *Rural Social Work, 7*, 14-21.

Kinnear, P.R., & Gray, C.D. (1998). *SPSS for Windows made simple*. Hove, UK: Psychology Press.

Knote, D. & Bohrnstedt, G.W. (1994). *Statistics for social data analysis*. ITASCA, Illinois: F. E. Peacock.

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukhopadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist, 53*(9), 1017-1031.

Loges, W.E. & Jung, J-Y. (2001). Exploring the digital divide: Internet connectedness and age. *Communication Research, 28*, 536-562.

Mitra, S. & Rana, V. (2001). Children and the Internet: Experiments with minimally invasive education in India. *British Journal of Education Technology, 32*(2), 221-232.

Mummery, K. & Schofield, G. (2001). *Central Queensland social survey 2001*. Rockhampton, Australia: Rockhampton Population Research Laboratory, Centre for Social Science Research, Central Queensland University.

National Office for the Information Economy. (2002). *Regional Australia projects-Overview.* Retrieved 30 Oct 2002, from http://www.go.gov.au/projects/access/Archive/regional.htm

Rovai, A.P. (2001). Building classroom community at a distance: A case study. *Education Technology Research & Development, 49*, 33-48.

Taylor, W.J. (2002). *Factors affecting the adoption of Internet technologies for community practice in a regional area*. Doctor of Philosophy thesis. Faculty of Informatics and Communication, Central Queensland University, Australia.

Taylor, W.J., Zhu, G.X., Dekkers, J. & Marshall, S. (2003, June). Factors affecting home internet use in Central Queensland. *Proceedings of the 2003 Information Science and Information Technology Education Conference, Pori, Finland,* 573-588. Retrieved from http://ecommerce.lebow.drexel.edu/eli/2003Proceedings/PaperPage131.html

Biographies

Dr. Wal Taylor leads a research effort in Community Informatics Systems (CIS) at the COIN Internet Academy which is a collaborative effort between the Faculty of Informatics and Communication, Central Queensland University, and the Rockhampton City Council. He is a part of an international consortium of researchers examining the impact of Internet technologies on civil society and factors affecting ICT adoption for local community benefit. He is particularly interested in CIS relationships between developed and developing countries.
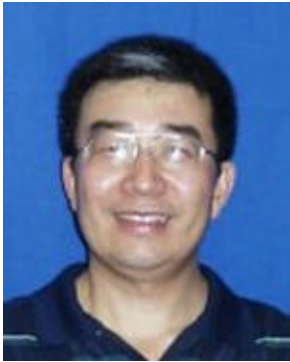
Dr. Grant X Zhu is a Postdoctoral Research Fellow undertaking research in community informatics for regional development in Central Queensland University. He has expertise in regional development planning, rangeland management and farming systems management with strong statistical background in both social and natural sciences. Prior to his PhD research program, Dr Zhu's worked in north western China, Israel and Cameron focusing on regional development.

E. Professor John Dekkers has had a successful academic and research career in distance and open learning. He has particular interests in the use of ICT for life long and life learning in both developed and developing countries and in the associated research methodologies.
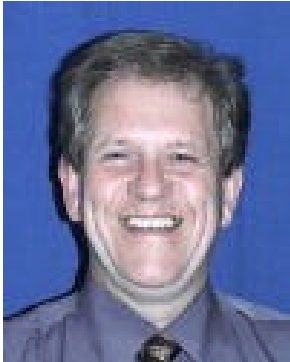
Professor Stewart Marshall is the founding Dean of the Faculty of Informatics and Communication at Central Queensland University. He has a wide experience in IT educational processes in academic, community and policy settings in four countries. His Faculty provides undergraduate, graduate and post-graduate teaching and research programs across 14 campuses in eastern Australia and the south western Pacific. Professor Marshall has particular interests in the use of ICT for inclusive educational programs, both in face-to-face and distance education, the changing face of tertiary education in relation to community engagement and community empowerment, particularly in disadvantaged and indigenous communities.