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Social and economic impact of introducing telecommunications throughout Vanuatu

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Contents

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Executive summary

This study explores how people in urban and rural Vanuatu exploit access to telecommunications, and how the use of telephony impacts on household livelihoods. It also considers the implications of telecommunications for gender dynamics, small and medium enterprises, and rural-urban linkages. This is the second year of what will be a multi-year study to track changes and trends.

How did we do it?

The study draws on recent research conducted by the British Department for International Development (DFID), assessing the impact of telecommunications on poverty reduction and rural livelihoods in India, Mozambique and Tanzania[1]. The underlying conceptual framework of the DFID study uses the Sustainable Livelihoods Framework[2].

In adapting the DFID model, a detailed household survey was developed incorporating contextual changes to ensure relevance for Vanuatu. This year a total of 767 respondents were randomly selected from twelve locations: nine rural (Isini, Lamnatu, Port Olry, Levetlis, Atabulu, Atangurua, Lamen Bay, Ngala, Unpongkor, and Port Narvin) and three urban (Freswota 1, Blacksands and Chapuis East). The findings of the study are not representative of Vanuatu as a whole. A true representation could only be obtained through pure random sampling to the natural distribution of the population of the country rather than purposive sampling of the locations where the study was undertaken. Nevertheless, the research sites reflect the diversity of rural and urban Vanuatu, and also minimises the impact of such factors as proximity of market and telecenter, predominance of particular types of economic activity, and island groupings in urban areas.

The survey sets out to find how households use telephony and how such uses impact on livelihoods. It identifies the linkages between contexts (rural/urban), patterns of use (including access and/or ownership of phones) and impacts on livelihoods (livelihood strategies and vulnerability of context). Comparing and contrasting rural and urban households is particularly important in the context of the dual (urban-rural) economy of Vanuatu.

A further 142 individuals participated in semi-structured interviews and focus group discussions to probe deeper into the impact of telephony on individuals and households. Drawing on the survey and qualitative research methods, the report presents three case studies: *small and medium enterprises and telecommunications, gender and telecoms, and the linkages between telecommunications and household income.*

1. Souter, D., N. Scott et al. (2005) *The Economic Impact of Telecommunications on Rural Livelihoods and Poverty Reduction: A Study of Rural Communities in India (Gujurat), Mozambique and Tanzania,* Commonwealth Telecommunications Organization for UK Department for International Development.

2. The Sustainable Livelihood Framework has four key interrelated components: vulnerability, assets, structures and livelihood strategies (Bebbington 1999, Kolmair and Gamper 2002 and www.livelihoods.org).

Why did we do it?

In response to global moves towards liberalisation and the rapid developments in telecommunications technology, the Government of Vanuatu faced considerable pressure to end the TVL[3] exclusive franchise prior to its 2012 end date. The argument for breaking the monopoly centred on promoting competition and separating out the regulatory powers from service providers. The anticipated result was better network coverage and lower prices.

The *Telecommunications (Amendment) Act 2007* was enacted in December 2007 and opened the market to competition. In December 2007, Caribbean based company, Digicel, was granted a licence to provide mobile telecommunications in Vanuatu. Presently, Digicel operates in five markets in the Pacific (Samoa, Papua New Guinea, Tonga, Vanuatu and Fiji) with an experimental license in the Solomon Islands.

Lessons from other from other developing countries suggest both pro-poor and distributional inequalities arise from differential access to telecommunications. However, to date there has been little research specific to Vanuatu or the Pacific more generally. The differing geographic, cultural and economic context of Vanuatu needs to be considered in any understanding of the introduction of telecommunications services throughout the country; particularly in rural areas that have been largely isolated from urban centres and activities.

What did we find?

Profile of respondents

The initial study in 2008 provided a snapshot of behaviour and impact of telephony on livelihoods at a time when the telecommunication sector was opened up to competition and a new service provider first commenced operation. In this, the second year of what is to be a multi year study, we can track changes and trends in mobile use and access, and the resulting impact on people's livelihoods.

The average age of respondents was 32 years for women and 36 for men, however there was a significant age spread. The youngest interviewed were teenagers, and the oldest octogenarians. Well over half of respondents were under 30. The average household size was 4.8 with a mean of 2.7 adults and 2.1 children under the age of 18 years. Despite the fact that the survey was designed to capture equal numbers of men and women respondents, there was a significant gender imbalance of respondents (66% of respondents were men and 34% were women). This was partly because men were more willing to participate.

Migration, both within Vanuatu and overseas, was an integral part of life for respondents, with the majority of respondents reporting household members living in other parts of Vanuatu or overseas. Rural respondents generally worked in agriculture whereas urban dwellers were more likely to engage in small business such as running a kava bar, retail store or working for others.

It is important to note that the purpose of the study was not to report on teledensity, but rather to investigate behaviour patterns of users telephony in general and mobile phones in particular.

3. Telecom Vanuatu Limited - at the time a three way joint venture between the Government of Vanuatu, Cable and Wireless and France Telecom.

There continues to be an increasing use of and access to mobile telecommunications throughout Vanuatu

- Nearly universal access and use of mobile telephony in both rural and urban areas, including in areas that are currently outside of network coverage. Access to mobile telephony increased from 81% in 2008 to 92% in 2009.
- Access to mobile telephony amongst rural respondents increased by 23% since the 2008 study.
- In areas without network coverage, respondents are bearing the direct and opportunity costs of finding signal (walking up to three hours) in order to be able to use mobile telephony.
- Mobile telephony has replaced other forms of telecoms (public and private land lines) as the preferred medium of communication. Access and use of public phones has decreased by 44% with comparable decline in both rural and urban areas.
- The gap in frequency of use of mobile telephony between urban and rural respondents has decreased. Use of mobile telephony has increased from an average of once a month in 2008 to a weekly in 2009.
- Increasing evidence that users are switching from TVL to Digicel in both rural and urban areas. Exclusive use of TVL has decreased from 57% in 2008 to 3% in 2009. Exclusive use of Digicel has increased by 29% since 2008. Only 8% of respondents are using TVL and Digicel in combination.
- The digital divide in ownership of mobile telephony between rural and urban areas has decreased further. Respondents in both rural and urban areas preferred to own a mobile phone individually rather than to share with other members of the household.
- Expenditure on airtime is higher amongst urban households than rural ones. But rural respondents continue to spend disproportionately high levels of disposable income on mobile telephony relative to total household income and expenditure. Lack of access to electricity is contributing to high relative costs in rural areas as mobile users pay a fee to have their phone battery re-charged.
- The majority of respondents owned a mobile phone and had bought the handset themselves.
- 80% of rural respondents had first acquired a mobile phone in the last year.
- The majority of those who do not own a mobile intend to acquire one in the next year.
- An equal percentage of rural and urban users send ‘please call me’ messages. A higher percentage of rural users make ‘missed calls’.
- Telephony has been integrated into existing forms of information and communication flows. Telephone is valued most in communicating for social information, emergencies and education. But greater access to telecommunications has not replaced face to face communication or business purposes, and use of radio for listening to news and getting weather updates.

The 2009 study has yielded more positive results on the impact of mobile telephony on household livelihoods than the 2008 study

- In particular, respondents perceive that mobile telephony is reducing household vulnerability, maintaining social relationships, and reducing household costs.
- Urban respondents perceive that the impact of mobile telephony is having a more significant impact on their livelihood than the rural counterparts.
- Urban respondents also point to wider and more innovative ways in which mobile telephony is impacting on household livelihoods than rural respondents.
- Both rural and urban users view telecommunications as critical for their economic activity and will find it difficult to continue if they could no longer use telephony.

The introduction of telecommunications throughout Vanuatu continues to affect the value chain of business by reducing the costs of doing business (incremental) and expanding business opportunities (transformational benefits)

- While mobile telephony has reduced the costs of doing business and expanding business opportunities, it is primarily the 'flyers' and 'risk takers' who are more able and willing to experiment with innovative uses of mobile technology to expand their businesses.
- Of the total number of individuals who have access to mobile telephony, approximately 56% are using mobile telephony for a wide range of business purposes – from arranging transport to contacting potential and existing customers to sell their produce.
- Urban respondents are more likely to report higher influence of telecommunications on business indicators - reducing costs of doing business, increasing sales, and improved transport and logistics.
- Some entrepreneurs (or flyers) have also maximised on the spillover benefits of using mobile telephony - for example mobile phone battery charging businesses have emerged to serve users without access to electricity.
- Some of the retail stores in the rural areas have reported how the sale of mobile pay-as-you-go credit has increased profits through increased revenue from credit sales and also attracting customers to the shop.
- Mobile banking and use of mobile telecommunications as a medium for disseminating information and knowledge to small and business enterprises remains undercapitalised in Vanuatu.
- Telecommunications mainly complement rather than substitute for efficient inter-island shipping and roads critical for increasing access to markets. Recurrent problems highlighted by retail businesses in rural areas are unreliability of inter-island shipping and the frequent 'leakage' of products during shipment.
- Lack of access to electricity substantially increases the costs of using mobile telephony in rural areas.

The gender gap in ownership of mobile telephony has decreased in urban areas but increased in rural areas

- Women are experimenting with a wider range of uses of telecommunications compared to 2008. Lower literacy rates no longer pose a significant barrier for women to access low-cost services such as SMS.

- There are few differences in the type of information and communication channels men and women prefer accessing. However, women have a higher propensity to use mobile telephony for accessing social information or for 'relationship maintenance'.

- Such differences in men and women's use of mobile telephony in rural areas is likely a product of intra-household division of labour as well as allocation of resources and/or women's lack of income generating opportunities.

- There are few differences in how men and women use mobile telephony in urban areas because women are more likely to be involved in a wider spectrum of income generating activities, on par with men.

- Mobile telephony is having a greater impact in reducing women's use and dependence on pre-existing information and communication channels.

- Both men and women considered telecommunications as having a more significant impact on household livelihoods (vulnerability, social, financial and human capital) compared to 2008. However, men consider that the impact of telecommunications has been most significant in reducing household vulnerability whereas women consider that the impact on social capital has been more important.

- Women associate the negative aspects of mobile telephony with increases in male infidelity and health related problems. Men consider that telecommunications erodes 'kastom' (or customary beliefs and practices), triggering inter and intra-community conflicts, and encouraging illegal and clandestine behaviour.

The recent explosion of telecommunications in Vanuatu suggests people in both rural and urban areas are willing to invest significant amounts on mobile telephony

- Although rural users spend disproportionately high amounts on mobile phone use relative to urban users, mobile telephony may be triggering an increase in rural household productivity rather than leading to a reduction in household income.

- Mobile telephony is reaching a saturation point in urban areas as the opportunity costs of using mobile telephony increases relative to benefits.
- Urban respondents were likely than rural respondents to be more price sensitive and develop greater number of strategies to reduce expenditure on mobile telephony.
- Rural respondents faced more constraints in developing strategies to reduce communication costs.
- Mobile telephony is likely triggering an increase in rural productivity, and enhancing rural and urban distribution of resources.

What do we need to do next?

This research has demonstrated that telecommunications liberalisation and the advent of competition in the telecommunications market is leading to nearly universal access to mobile telephony.

Widespread access to and use of mobile telephony is also helping rural and urban households to offset household vulnerabilities, maintain social relationships, reduce household costs, narrow gender gaps in ownership and access, reduce costs and increase the profitability of small and medium enterprises, and expand rural productivity. Nevertheless, the report also suggests:

- a lack of complementary infrastructure;
- gender specific concerns and constraints in using mobile telephony;
- significant costs associated with finding reliable mobile network coverage; and
- a lack of appreciation of using the Internet and high costs associated with Internet services.

The following recommendations address the major issues that continue to pose significant challenges to maximising the benefits of the recent liberalisation of the telecommunications sector in Vanuatu.

Recommendation 1: Improve complementary infrastructure to fully realise the benefits of increased access to telecommunications, including roads, shipping and electricity.

Recommendation 2: Disseminate examples of how mobile telephony can benefit small and medium enterprise development, in particular drawing on international practices relating to electronic and mobile funds transfer.

Recommendation 3: Target women with information campaigns to encourage use and better understanding of mobile telephony to assist in mitigating gender inequalities.

Recommendation 4: Empower rural users to voice against potential abuse, and problems with mobile telephony network coverage through a targeted information and communication program. Disseminate information about strategies developed in different rural areas to reduce the overhead costs of using mobile telephony.

Recommendation 5: Carry out further research to investigate how mobile telecommunications can facilitate the redistribution of resources to rural areas.

Recommendation 6: Drawing on examples from other countries, investigate private sector initiatives together with public-private partnerships to encourage greater use of the Internet and address issues of affordability.

Recommendation 7: Update this research project in twelve months time to track changes and include further research into the areas identified above.

1. Introduction

The introduction of competition in the mobile telecommunications secor in Vanuatu in July 2008 was a significant milestone in Vanuatu's social and economic development. This is the second year of a multi-year study exploring how people in urban and rural Vanuatu exploit access to telecommunications, and how the use of telephony impacts on livelihoods.

Breaking the monopoly

Historically, telecommunication services have been operated by monopoly providers the world over. Following privatisation of the sector in 1992, Telecom Vanuatu Ltd (TVL) was established as a joint venture owned equally by the Government of Vanuatu, Cable and Wireless and France Telecom, and given an exclusive license to operate all telecommunication services until 2012.

As sole provider, TVL has long suffered accusations of poor service, high calling costs and limited mobile network coverage. Teledensity levels in Vanuatu remained low relative to other Pacific countries[1]. By 2007 there were 23,300 mobile phone subscribers and 7,300 fixed line subscribers, representing a penetration level of 3% and 11% respectively.[2] The Independent Telecommunications Regulator has estimated the teledensity level to be 57% in December, 2009[3].

In response to global moves towards liberalisation and the rapid developments in telecommunications technology, the Government faced considerable pressure to end TVL's exclusive franchise prior to its 2012 end date. The argument for breaking the monopoly centred on promoting competition and separating out the regulatory powers from service providers. The anticipated result was better network coverage and lower prices.

As part of negotiations to end the exclusive license arrangement, the Government surrendered its one third share holding in TVL to the other two shareholders - France Telecom and Cable and Wireless. The Telecommunications (Amendment) Act 2007 was enacted in December 2007 and opened the market to competition.

Only one extra license for mobile services has been granted - in December 2007 to the Caribbean based company Digicel. A condition of the licence required Digicel to launch its service within six months and cover 85 per cent of the population, a target confirmed by the Independent Telecommunications Regulator in December, 2009.

1. *Telecommunications in the Pacific. Background Paper for Pacific Economic Survey, 2008.* http://www.pacificsurvey.org/UserFiles/PS-BackgroundPaper-Telco.pdf
2. TVL Presentation at USP Emalus Campus 13 September, 2007
3. *Vanuatu Daily Post*, 8 December 2009

The Government of Vanuatu draft Telecommunications Policy Statement (2008)[4] anticipated that by 2010, following the transitional period, the telecommunications market will be fully opened for new entrants interested in establishing new telecommunications networks. However, in late 2009 the Minister of Infrastructure and Public Utilities issued six new Internet service providers (ISP) licences that included a prohibition from providing mobile telephony services unrtil March 2011 at the earliest[5]. The government's policy statement further highlighted some specific telecommunications services that might be provided from the beginning of competition under a general license or exemption order under the proposed legislation, including: international telephony and voice over Internet protocol, provided that they use another company's telecommunications network.

The new regulatory environment is a work in progress and covers the transparent issuance of licences, enforcement of licence conditions, dispute resolution and the maintenance of appropriate measures to avoid anti-competitive practices ('Ofa 2008). Additionally, the new legislation has introduced an Universal Access Policy Fund (UAPF) with the aim of subsidising telephony and Internet operations in loss making (rural) areas. The UAPF is financed by international donors and a licensing levy payable by the service providers.

Moreover, in order to ensure effective competition in the open market place, new telecommunications networks licenses will not be granted to companies with common ownership or similar control of existing licenses. The legislation requires the providers of telecommunications services to ensure inter-connectivity between networks.

Why study telecommunications?

Lessons from other parts of the world suggest both pro-poor and distributional inequalities arise from differential access to telecommunications. Existing research demonstrates access to telecommunications can increase GDP, trigger inflow of foreign direct investment, enhance market efficiencies, empower women and others. At the same time, access to telecommunications can reproduce and exacerbate existing inequalities along gender, income, and rural and urban lines. However, to date there has been little research specific to Vanuatu or the Pacific region. The differing geographic, cultural and economic context of Vanuatu needs to be considered in any understanding of the introduction of telecommunications services throughout the country; particularly in rural areas that have been largely isolated from urban centres.

The aim of this research addresses two questions:

How do households and individuals use telephony in rural and urban areas?

How do such uses impacts on household and individual livelihoods?

In answering these questions, this study will identify the linkages between contexts (rural/urban, gender, age, income, small enterprises), patterns of use (including access and/or ownership of phones) and impacts on livelihoods (livelihood strategies and vulnerability of context).

Comparing and contrasting rural and urban households allows us to understand the impact of telephony in these distinct geographical settings. This is particularly important in the context of Vanuatu's dual economy. Increasing rates of migration and urban growth have left households stretched between rural and urban areas. Furthermore,

4. Vanuatu Government (2008) *Telecommunications Policy Statement of the Government of Vanuatu, Proposal for Public Consultation*, Port Vila, March 2008.

5. See www.telecomregulator.gov.vu for details.

households are rarely unified entities and need to be disaggregated to examine the various ways in which access to and usage of telecommunications differ along gender, age, and income lines.

Finally, patterns of use and impact of telephony on small enterprises will help identify the role of telephony on private sector development in Vanuatu. Understanding the linkages between access to telephony and livelihoods, gender, rural-urban migration, and small enterprises will assist informed policy making not only in relation to telecommunications liberalisation, but also wider social and economic development programs.

What did the study include?

Literature review (refer to 2008 survey findings report[6])

The study includes an overview of the existing literature on telecommunications in relation to developing countries and situates the current research on Vanuatu within it. In particular the review explores market structures and regulatory frameworks, macro and micro economic impacts of telecommunications and the socio-cultural patterns of use and impacts of telephony.

Conceptual framework (refer to 2008 survey findings report)

The study draws on recent research conducted by the British Department for International Development (DFID), assessing the impact of telecommunications on poverty reduction and rural livelihoods. The underlying conceptual framework of the DFID study uses the 'Sustainable Livelihoods' approach (see Chapter 3). This allows it to use a multi-layered and interactional approach to understand patterns of telephony use and the impact of such uses on livelihoods, in various socio-economic contexts.

Research methodology and findings (refer to chapters 2, 3, 4, 5,6 & 7)

The following chapters outline the research methodology and findings from the household level survey and case studies. In adapting the DFID model of quantitative analysis, a detailed household survey was developed; drawing on the DFID questionnaire and incorporating contextual changes to ensure relevance for Vanuatu. The 2009 household survey included an additional six rural research sites to the six study locations selected in 2008 (three rural and three urban). Three of the new research sites are currently not serviced by either of the two mobile telecommunications carriers. Additional research sites (including those outside of the network coverage area) have been included to better reflect the reality for some living in rural Vanuatu. A total of 767 people were surveyed (sample increased from 185 in 2008) and an additional 142 individuals participated in the semi-structured interviews and 21 focus group discussions to probe deeper into issues. Drawing on the survey and qualitative research methods, the report presents three case studies: *small and medium enterprises and telecommunications, gender and telecoms, and the linkages between telecommunications and household income.*

6. Basnett, B. (2008) *Social and Economic Impact of Introducing Telecommunications Throughout Vanuatu, Research Findings Report.* Pacific Institute of Public Policy, available at www.pacificpolicy.org

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2. Research methodology

This research follows a similar study undertaken by the Pacific Institute of Public Policy (PiPP) in 2008[1]. The quantitative research draws on a household level survey adapted from a study commissioned by the U.K. Department for International Development (DFID)[2]. The qualitative research included semi-structured interviews and focus groups to better understand the use of telecommunications by small and medium enterprises in Vanuatu; the gender dimensions of telephony access and use; and the role of telecommunications on household income. The field research was complemented by a communications programme to explain the purpose of the study and provide feedback from the 2008 findings.

Conceptual framework and literature review

This study builds on the conceptual and methodological framework developed by DFID (2005) to assess the economic impact of telecommunications on rural livelihoods and poverty reduction. The emphasis of the DFID study on livelihoods was particularly relevant for understanding the underlying socio-economic context and implications behind people's access and use of telephony. For full details of how the DFID conceptual and methodological foundations were adapted for this study please refer to the 2008 PiPP research findings report available online.

The 2008 research findings report also contains a literature review of the major studies pertaining to telephony in developing countries vis-à-vis market structure and regulatory framework, economic (macro and micro) impact of telephony and socio-cultural patterns of use and impact of telephony. The literature review noted that there is no uniform impact of telephony across developing countries and much rests on the socio-cultural context in which telephony is accessed. This study seeks to uncover the contextual details and their implications for social and economic well-being to deliver a better understanding of implications of telephony use in Vanuatu.

Quantitative Research Methods

Minor changes were made to the household survey this year (2009) to allow comparisons with the 2008 findings, and better track changes in patterns of use and the impact of telecommunications. The quantitative research methods build on the household level survey used by the DFID study. The strength of the DFID survey is its translation of the *Sustainable Livelihoods Framework* to understand the impact of telecommunications

1. Basnett, B. (2008) *Social and Economic Impact of Introducing Telecommunications Throughout Vanuatu, Research Findings Report.* Pacific Institute of Public Policy, available at www.pacificpoliyc.org

2. Souter, D., N. Scott et al. (2005) *The Economic Impact of Telecommunications on Rural Livelihoods and Poverty Reduction: A Study of Rural Communities in India (Gujurat), Mozambique and Tanzania,* Commonwealth Telecommunications Organization for UK Department for International Development.

on livelihoods. The survey provides a multi-layered understanding of patterns of use of telephony, and impact of such uses on assets (financial, social and human) and livelihood strategies. Because the DFID survey has already been tested in three different developing countries, the broader components of the survey, as outlined below, have been retained in the Vanuatu example. The survey comprises the following components:

- *Social Descriptors (individual and household characteristics)*: relationship to the household head, age, gender, education and composition of the household.
- *Livelihood Descriptors*: income of household members, property rights (access and ownership), material assets, livestock, and other economic status indicators.
- *Behaviour*: use of telephony in comparison to other forms of communication, access and ownership of telephony, nature of use, expenditure on mobile telephony and reasons for use.
- *Impact of phone use on livelihoods:* indicators for measuring vulnerability context (emergency), assets (financial, human, and social), and phone use in relation to other forms of communication.

However, some changes were made to the household survey ensure relevance to Vanuatu, and to simplify the questions to improve response rates. Changes made to questions on 'access to electricity' and 'principal sources of livelihood' serves as examples of how the DFID survey was made more relevant to the Vanuatu context. The DFID survey included a question on 'access to electricity' with responses relating to the frequency of access (e.g. none, occasional and constant). In Vanuatu, however, access to electricity should also include questions relating to sources of power such as diesel generator, solar, hydro and more. Specifying the form of access was important to understand how telephones were recharged and the specific constraints faced by individuals and communities in accessing telephony.

The DFID survey included a question on 'principal sources of household income'. It allowed respondents to list three major sources of income, type of occupation, and approximate annual income. This question had to be modified to ensure responses from rural respondents. The vast majority of rural populations in Vanuatu have subsistence based economies, and sources of cash income[3] are few and fluctuate seasonally. In such a context, it would have been difficult to ask respondents to list how much they earn per year. The modified question specified primary sources of livelihood in rural and urban areas, type of occupation, monthly income, and how many months a year income is earned. As per suggestions from the Vanuatu National Statistics Office, field researchers were also given ranges of income to help respondents who may find it difficult to respond to the question.

Finally, changes were made to the wording of many questions, and practical examples were included to clarify other questions that were difficult to understand.

The modified DFID survey was peer reviewed by Vanuatu-based experts with research background (refer to acknowledgements page for details).

The survey was translated into Bislama and piloted before being finalised. Efforts were made to ensure each survey did not take longer than 45 to 60 minutes to complete.

3. . The study only considers 'cash income' and not other forms of exchange (such as labour in kind) that are features of subsistence (also known as '*kastom'* economy in Vanutau).

Field research sites, data collection and data analysis

The household survey was carried out in twelve locations, representing a cross-section of Vanuatu rural and urban areas (see Table 4.1 below).

Table 4.1: Research locations

Rural sites	Urban sites
Isini Village, Tanna	*Freswota 1*, Port Vila
Lamnatu Village in Middle Bush, Tanna	*Blacksands*, Port Vila
Port Olry Village, Santo	*Chapuis East*, Santo
Levetlis, Pentecost	
Atabulu and Atangurua, Pentecost	
Lamen Bay, Epi	
Ngala, Epi	
Unpongkor, Erromango	
Port Narvin, Erromango	

The 2008 household survey was carried out in six research sites in urban and rural areas. Rural research sites were: Lamnatu (Tanna), Isini (Tanna), and Port Olry (Santo). Urban ones were: Freswota 1 (Efate), Blacksands (Efate), and Chapuis (Santo). These research sites were selected in consultation with experts based in the Department of Statistics, Reserve Bank, SHEFA Provincial Government Council and the Vanuatu Cultural Centre. Each of the settlements chosen has access to telephony (mobile and/or fixed line). Access to telephony is defined as having a telephone facility within a reasonably convenient distance at a price that is affordable in comparison to the real and opportunity cost of other forms of communication. Precise data on the number of fixed lines and number of mobile phone subscribers in each locality was not made available to the researchers.

As shown in Table 4.1 above, the 2009 household survey included an additional six rural research sites. Three of the new research sites are currently not serviced by either of the two mobile telecommunications carriers. Additional research sites (including those outside of the network coverage area) have been included to better reflect the reality for some living in rural Vanuatu.

The additional research sites were selected through discussions with the Telecommunications Regulator, the Governance for Growth Program (AusAID), Ministry of Infrastructure and Public Utilities and the National Statistics Office. The Telecommunications Regulator suggested including areas currently not covered by the mobile phone network and also suggested studying the case of the Torres islands, which is the most remote (by distance and lack of communications facilities) in the country. We decided against the latter for two main reasons: (a) we have selected research sites to reflect the diversity of rural and urban population as well as differential access to network coverage and (b) the household survey is on patterns of use and impact of access to telecommunications. Moreover, the inclusion of further research sites currently outside of the network coverage area would not represent the level of telecommunications coverage in Vanuatu. We would have had to make significant alterations to the questionnaire at the risk of not carrying out meaningful comparative analysis from research findings in 2008 had we included additional research sites where there is no network coverage.

A total of 767 individuals participated in the household survey. Our intention was to survey 70 to 100 percent of the total number of households as per the 1999 population census. But in practice our survey was contingent on willingness to participate, which made it difficult to stringently adhere to predetermined benchmarks. We were unsuccessful securing the intended response rates in Port Olry and Blacksands where the response rates were 40 and 31 percent respectively. Furthermore, we found that in certain research sites such as Isini and Lamnatu villages the population had increased significantly since the 1999 census, and there were more individuals willing to participate than anticipated. Finally, since the 1999 population census was carried out in the village of Ngala, there has been an inflow of people from neighbouring Lopevi village to escape vulnerability to natural disasters. Our research team spent a considerable amount of time counting the total number of households living in the area, and securing responses from 80 percent of the total population. The total population of Ngala village is 67 households and 272 individuals. The team also benefitted from support of the chief, area counsellor and local nurse who have helped considerably in carrying out the head count, and by encouraging individuals and households to participate in the survey. In this regard, despite not being able to follow the predetermined benchmark for each research site, we have been successful at securing the total intended responses from both rural and urban research sites as well as the aggregate level.

Table 4.2: Characteristics of research locations

The following table demonstrates geographic area, number of households and total population of the area, and characteristics of the area.

Research Site	Geographic Area (sq km)	Population as per 1999 census		Characteristics of locations and people living in the area	Total Number of Households Surveyed
		HH	Total		
Urban locations					
Freswota 1	0.4	95	561	-Many different islands -Located in Port Vila -Different occupations and economic status -TVL & Digicel	67
Blacksands	2.85	278	1862	-Mainly Tanna but also other islands -Different occupations and economic status -Located in the outskirts of Port Vila -TVL & Digicel, but TVL limited coverage	111
Chapuis East (1-2)	0.5	118	653	-Different islands -Different occupations and economic status -Located in outskirts of Luganville -TVL & Digicel	95

Research Site	Geographic Area (sq km)	Population as per 1999 census		Characteristics of locations and people living in the area	Total Number of Households Surveyed
		HH	Total		
Rural Locations					
Port Olry	1.362	238	1062	-Fishing and agriculture -Good Road links to Luganville -TVL and Digicel	76
Isini village, Lenakel	1.013	39	245	-Agriculture and non-farm income -Located adjacent to Lenakel town -Access to government services -TVL and Digicel	59
Lamnatu village, Middle Bush	1.862	30	179	-Agriculture, peanuts and vegetables suppliers -14km from nearest town -Dirt track and limited accessibility -TVL & Digicel	62
Atangurua/Atabulu village, North Pentecost	0.3348	26	153	-Agriculture and kava suppliers -Approximately 2-5km -Digicel	60
Levetlis village, Central Pentecost	0.2366	18	92	-Agriculture, kava suppliers -Currently outside of network coverage -App 5km from the main market centre	19
Unpongkor, Erromango	3.923	63	387	-Forestry and fishery -Limited access to transportation -Digicel	58
Port Narvin village, Erromango	0.5791	56	371	-Forestry and fishery -Boat only form of transport -Currently outside of network coverage	50
Lamen Bay village, Epi	1.439	55	259	-Agriculture and fishing -Access to transportation -Central link to Nothern Islands -TVL and Digicel	57
Ngala village, Epi	0.5	1	5	-Agriculture and fishing, peanut suppliers to Port Vila market -Boat only form of transportation -Village made up of the whole population of Lopevi, the volcanic island -TVL and Digicel both in certain spots	53
Total Households Surveyed:					**767**

The total number of respondents is considerably higher than the 2008 baseline survey. In 2008, a total of 185 respondents were randomly selected for the survey. The research

team had ensured there were at least 30 responses in each of the locations specified above. The selection of sample size was based on the minimum required to obtain statistically relevant data as per DFID 'Sustainable Livelihood Guidance for Conducting Research on Livelihoods', with consideration to the constraints posed by the sparsely populated geography of Vanuatu.

The findings of the 2009 study are not representative of Vanuatu as a whole. A true representation could only be obtained through pure random sampling to the natural distribution of the population of the country rather than purposive sampling of the locations where the study was undertaken. Nevertheless, the research sites reflect the diversity of rural and urban Vanuatu, and also minimises the impact of such factors as proximity of market and telecenter, predominance of particular types of economic activity, and island groupings in urban areas.

The main objective of the 2009 survey is to track changes in patterns of use and perceptions of implications of telephony use. The findings of the 2008 survey acts as a baseline to compare and contrast the 2009 findings. The 2009 study includes the surveyed areas of 2008. The questionnaire and interview guidelines (the latter especially for the case study on small and medium enterprises) are those that were used in the 2008 study. Nevertheless, conclusions based on strict comparisons are difficult to make because the 2009 survey includes a larger sample size and more research sites than the 2008 survey. In this respect, any comparisons that have been made serve as an indication of changes that have occurred.

Forty-one field researchers with prior experience conducting household surveys were selected to undertake the study in the field locations under supervision of the research team. Where possible the field researchers had also carried out the 2008 survey. There were a number of advantages of employing the same field researchers, including consistency and robustness of the research findings. The field researchers were well versed with the challenges of conducting household surveys such as understanding the questions before hand, approaching and encouraging respondents to respond, explaining questions in an understandable manner, ensuring responses corresponded well with the options made available in the questionnaire and were well recorded. Furthermore, instead of rotating the same field researchers from one island to another, the research team chose to use field researchers who were based in each island. This helped to ensure the costs were within the field research budget, and involved individuals who had a thorough understanding of the context in which they were carrying out the research.

Despite this, the research team confronted many challenges such as respondents' reluctance or inability to answer some questions (e.g. income) and inconsistencies in responses. For instance, many women and rural respondents found it difficult to answer questions that asked them to evaluate the impact of telephony on livelihoods. Many of these challenges were inherent to the problems faced in conducting household surveys in general and in developing countries in particular. Nevertheless, the research team managed these problems in a number of ways such as requesting the field researchers to cross check responses as and when appropriate, and stating the limitations of research findings in the report.

The methods for data analysis are, for the most part, consistent with those used in the DFID study. Most of the analysis is based on descriptive statistics such as percentage and mean/median for frequency and correlation analysis. The data analysis was conducted by the lead researcher with advice and support from those with sufficient background in conducting statistical analysis.

Case studies and qualitative research methods

The household survey provided a broader understanding of patterns of use and impact of telephony on livelihoods in rural and urban areas. However, by design the survey focused exclusively on households and not individuals, did not have a separate methodology for interviewing small and medium enterprises, and could not provide in-depth information on the impact of telephony on social groups and livelihoods. The study therefore combined the household level survey with qualitative case studies on gender dimensions of access to telephony, role of telecommunications on household income, and the impact of telephony on small-medium enterprises. The qualitative research methods were designed to triangulate and further explore the questions in the household surveys.

Each of the case studies drew from the survey outcomes but focused on qualitative research methods – semi-structured interviews and focus group discussions. The interviews allowed the interviewer and respondent to converse with one another on particular facets of telephony use and impact of such uses, enabled the interviewer to probe deeper into issues as and when required, and allowed respondents to elaborate on their responses (Pretty et al. 1995). Interview guidelines and questions were nevertheless used to clearly define goals and objectives of the interview process.

Focus group discussions acted as a forum for participants of no more than 6 to discuss their thoughts and experiences of issues identified by the research team and facilitated by the moderator (Fallon and Brown 2002).

A total of 142 individuals participated in the semi-structured interviews and 21 focus group discussions, with men and women separately, in each of the research sites.

The research team found focus group discussions the most challenging and yet the most enriching source of data collection. Because mobile telephony remains a topical issue, participants were willing to discuss and debate with one another about the benefits and costs of mobile telecommunications. Nevertheless, many of the participants expected to be interviewed individually and had a difficult time understanding the relevance or importance of having a moderated discussion on a topic.

Interestingly, rural respondents were more forthcoming in their response than urban respondents.

The research team used a number of strategies to put respondents at ease such as by involving moderators who spoke local languages, offering food and drink, sharing experiences, encouraging the respondents to express their concerns and thoughts. In rural locations the research team were better placed to ‘break the ice’ by attending custom and religious ceremonies. Taking time to get to know the participants and their families was important to gain the confidence of the members of the community and proceed with the research.

Furthermore, carrying out these focus group discussions was also a learning experience for the research team. Moderators facilitating the initial focus group discussions were accustomed to carrying out household level surveys, and many had a difficult time understanding what ‘elaborate’, ‘in-depth’, and ‘discursive’ answers entailed in practice. The transformation of moderators from seeking a ‘yes’ or ‘no’ answer to mastering the art of focus group discussions was a significant and rewarding learning experience.

Communication of research and findings

A key objective of this research is to stimulate dialogue between citizens, civil society, policy makers, donors, and private sector stakeholders on telecommunications policies. A number of communication outreach programs were therefore carried out in tandem with the 2009 household survey and qualitative research. These communications initiatives explained the research project and the findings from the 2008 study. Key issues and changes taking place in the telecommunications sector were also discussed by diverse audiences.

At the national level, a briefing paper[4], in both English and Bislama, was released to summarise the findings of the 2008 study. The findings of the 2008 study was also covered by local press and radio media[5].

The research team attempted, where possible, to communicate the key issues at public meetings in each of the field research sites. This proved particularly difficult in the urban and economically active rural research sites (such as Port Olry and Lenakel) where the population is larger, more mobile and not always interested in joining a large gathering. In such cases, the research and findings were communicated during focus group discussions so that participants had a clearer understanding of the purpose of the research, and had opportunities to voice their comments and concerns about the research project and telecommunication services. Copies of the Bislama and English version of the briefing paper were also distributed throughout research areas.

In the majority of the rural sites, the research team requested the chiefs and area councilors to pre-arrange a village gathering. In certain areas, arranging such a gathering was only possible once the team had built sufficient rapport with the community as well as the main persons in charge of making such arrangements.

Attendance rates generally correlated with other events taking place in the village. We found the best attendance was when the meeting occurred straight after church service or other celebrations. The team was conscientious about not imposing on the community's time and held these sessions only when invited to do so.

The community members were generally receptive to the study and appreciated the feedback, which in turn bears testimony of the importance of mobile telecommunications on the lives of ordinary citizens**.** Offering participants an opportunity to voice comments and concerns also encouraged participation.

User-relevant language has a critical bearing on the ability to communicate effectively. Communicating the research findings proved a valuable learning exercise for the research team. The more we conducted these sessions, the more effectively we were able to ensure the key messages were understood by the community members.

Capturing people's stories throughout the project also provided an effective means to further communicate the research findings to policy makers, telco providers and the general public.

4. PiPP Briefing 6 (2008) *Economic and social impact of introducing Telecommunications throughout Vanuatu,* Pacific Institute of Public Policy.

5. Daily Post (10 July 2009 and 4 August 2009), The Vanuatu Independent (10 July 2009 and 5 August 2009) and Radio Vanuatu (8 June 2009 at 7.45PM).

Community feedback from communications activities

There was a general sentiment of being left out in areas without coverage (Ngala, Levetlis and Port Narvin). Questions raised included: *How does the government decide which areas will have coverage and which not? What will the government do to provide network coverage?*

Many took the communications sessions as a platform to voice concerns in the hope that they will be raised at the policy-making level. For instance, participants in the village of Ngala, Epi complained that the public phone they had access to in the neighboring village was no longer in operation. In Port Narvin, community members were concerned that despite the economic activities taking place in the village, Port Narvin is still remote because of difficulties it faces in communicating with the rest of the country. A female participant said that although Port Narvin does not have network coverage, she still has access to mobile telecommunication services since Digicel started operating in Erromango (i.e. by walking to a location that has network signal - either 3 hours or a 45 minute climb up a steep hill). She no longer has to depend on tele-radio to communicate with her children who are away for school. Previously the only alternative was tele-radios, which were reported to be more expensive, less private and contingent on the schedule of a series of middlemen involved in connecting each call.

In areas with network coverage participants were concerned about unpredictable coverage as well as health and social ramifications of using mobile telephony. A common question that was posed to us was - *would the government consider giving a third license and would this in turn, further improve telecommunication services?* Many noted that since Digicel entered the market network coverage has increased substantially and telecommunication has become affordable compared to when TVL was the sole provider. In asking whether a third provider would be entering the market indicates an appreciation of competition in the telecommunication sector.

Unreliable network coverage was reportedly endemic even in areas (outside of Santo and Efate) that are classified as 'full coverage'. Participants in Atabulu, Lamen Bay and Lenakel spoke out about frequent disruptions to network coverage due to lack fuel to power the towers and/or susceptibility of the coverage to weather conditions.

Many participants in rural areas in particular complained about the high costs of maintaining mobile telephony. In some cases people pay more for credit than what was stated in the card (e.g. 200VT cards were often sold for 230 – 270VT) and costs incurred in charging mobile phones (ranged anywhere between 40VT – 100VT).

Common questions/comments posed regarding the health ramifications of mobile telecommunications were the following: *Does mobile cause cancer or cause heart problems? Is it true that you must not use the mobile torch late at night to go to the bathroom and/or change your clothes because Digicel will be watching you?*

Still others were concerned about the effect of mobile telephony on the family, for example the ease with which illicit, amorous affairs can be managed through mobile phones and the perceived link between mobile use and teenage pregnancy. This was a recurring issue raised throughout the field research.

In Atabulu and Middle Bush, prominent community members were concerned that mobile telephony was contributing to the decay of fundamental community values. '*Individuals wanting to discuss a community matter with a chief must request him in person. But, increasingly members are opting to use a mobile telephony and bypassing traditional notions of respect for the chief'.* Similarly, many reported the tendency for

villagers to request credit from relatives, who according to kinship lineages should not be approached. The concern about creating an environment of dependency was further reported as "*The community is losing its sense of self-reliance as a lot of community members are requesting credit and sending 'please call me' requests to relatives and friends. This places the onus on others to call or send credit instead of them finding the means to afford a call and reserving use of the device only during urgent circumstances'".*

In areas with low levels of economic activity, there was skepticism on the potential of mobile telephony to bolster economic growth. In Atabulu, one prominent leader questioned the rhetoric of improved telecommunication and economic growth: "*We do not have the resources with which to capitalise on mobile technology as there is insufficient economic opportunity that would provide a basis for improvisation. How can examples of telecom-led economic growth in other developing countries be of any relevance to us?"*

Furthermore, improved telecommunications was widely perceived as aggravating rather than improving livelihoods. '*Most people are spending a significant proportion of their meager savings on mobile*. *This money should remain and be circulating in our area to foster development. But instead, our savings are getting out of our hands, and worse still, Digicel profits do not remain in the country as Digicel is foreign-owned which means that our money ends up overseas*."

The significant expenditure on mobile voiced by communities points to a growing trend whereby mobile has become a vital accessory for communication. This places emphasis on individual responsibility in managing and controlling use and expenditure on mobile: "*Mobile has improved communication; however, it is consuming a significant portion of our savings".* The issue of management is at the fore for other negative social repercussions voiced such as '*mobile phone is breaking up families' and 'girls are getting pregnant even when in boarding schools because boys are contacting them through mobile.*

Overall, the communication briefings have given voice to community perspectives as well as providing an avenue for disseminating information on telecommunication issues.

Some participants wanted to know the benefits of investing their time to speak to with us when we were representatives of neither the government nor the two service providers. We have summarised the main issues in the general communications forums here in order to communicate them to both government policy makers and the two private sector service providers.

3. Quantitative findings

The quantitative findings demonstrate that access and use of telephony has increased almost universally in the last year since the liberalisation of the telecommunications sector. Access to telecommunications is helping rural and urban households to offset household vulnerabilities, maintain social relationships, and reduce household costs. At the same time, rural respondents are lagging behind in adopting innovative uses of mobile telephony to improve household livelihood.

Overview of findings from the household survey

The household survey was carried out in twelve locations (refer to chapter three for details on the methodology design) from which 767 respondents were selected, which represented 70 to 100% of the total number of households based on the 1999 population census. The survey sets out to find how households use telephony in rural and urban areas, and in turn, how such uses impact on household livelihoods. It identifies the linkages between contexts (rural/urban), patterns of use (including access and/or ownership of phones) and impacts on livelihoods (livelihood strategies and vulnerability of context).

Comparing and contrasting rural and urban households allows us to understand the impact on telephony in these geographical areas. This is particularly important in the context of the dual (urban-rural) economy of Vanuatu.

The study is a follow up of the 2008 telecommunications study, and traces any changes that may have occurred in behaviour and in the impact of telephony on livelihoods. The focus of the study is on telephony in general and on mobile telephony in particular. It does include some questions on the Internet to collect information on patterns of use and changes since 2008. The research findings are to some extent location and context specific. Nevertheless, the research locations present a cross-section of rural and urban households in Vanuatu and the findings provide valuable insights into other parts of the country.

Description of respondents and households

This section summarises the demographic description of respondents, household characteristics, and levels of household prosperity. The data collected serves as premise on which the latter two sub-sections on access to telecommunications and impact of telecommunications on livelihoods will be assessed.

The findings of the 2008 study are compared with the one for 2009 where appropriate.

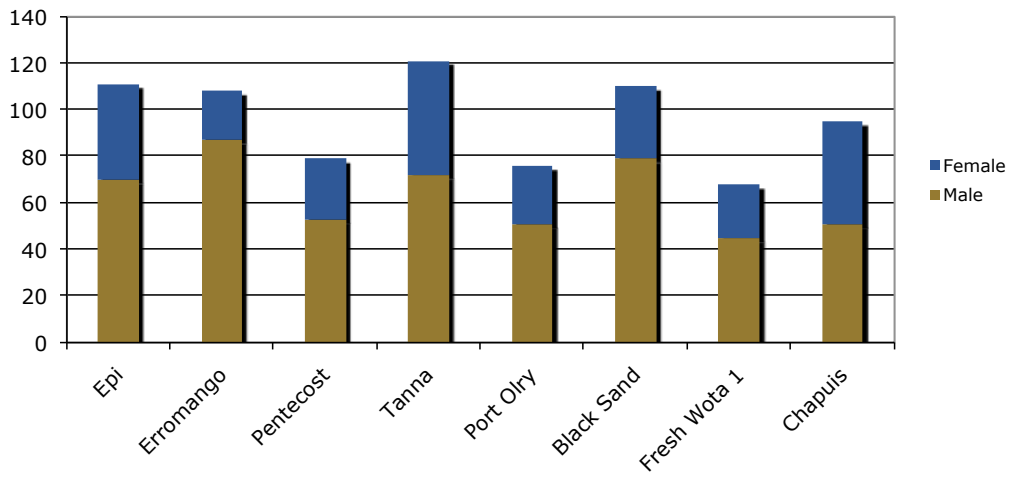
Demographic description of survey respondents

Approximately 65% of the respondents were rural dwellers and 35% lived in urban areas. Approximately 66% of respondents were men and 34% were women[1]. Table 3.1 and Figure 3.1 illustrate the distribution of respondents according to age, gender, and geographical distribution.

Table 3.1 Gender, age and geographical distribution of respondents

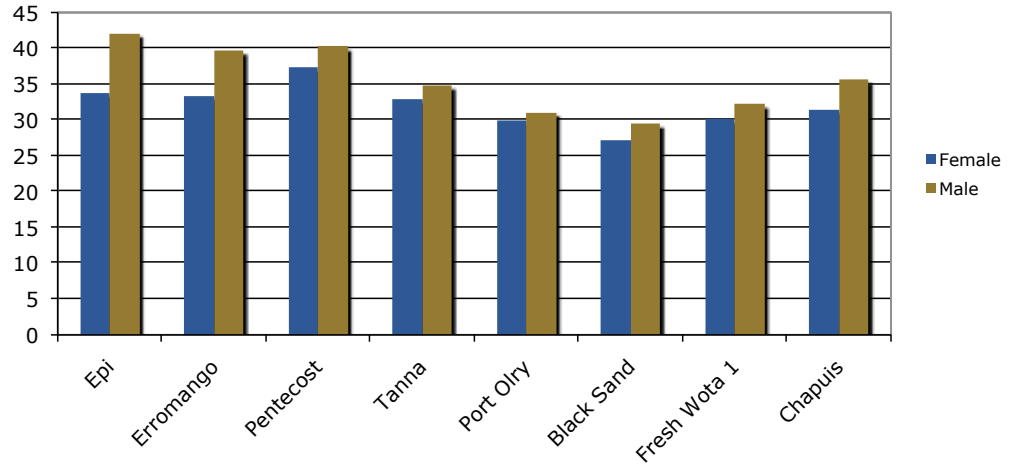
Island	Number interviewed	Average age	Male	Female
Epi	111	39	63%	37%
Erromango	108	39	82%	18%
Pentecost	79	40	67%	33%
Tanna	120	34	60%	40%
Port Olry	76	31	67%	33%
Rural	**494**	**37**	**67%**	**33%**
Black Sands	110	29	72%	28%
Fresh Wota 1	69	32	66%	34%
Chapuis	95	34	54%	46%
Urban	**274**	**32**	**64%**	**36%**
Male	507	36		
Female	261	32		
Total	**767**	**35**	**66%**	**34%**

Figure 3.1: Gender and geographical distribution of respondents



1. The survey was designed to capture equal numbers of men and women respondents, targeting adult members of households, irrespective of gender. Equal numbers of male and females were approached, however, the research team found men were more willing to participate and more forthcoming in their response than women. This is consistent with the response rate in the 2008 study where 62% of the total respondents (out of 185) were male and 38% were female. An equal number of women from rural and urban areas participated in the survey. The case study on gender and telecommunications (chapter five) further discusses the results of the survey along gender lines.

Figure 3.2: Average age of respondents



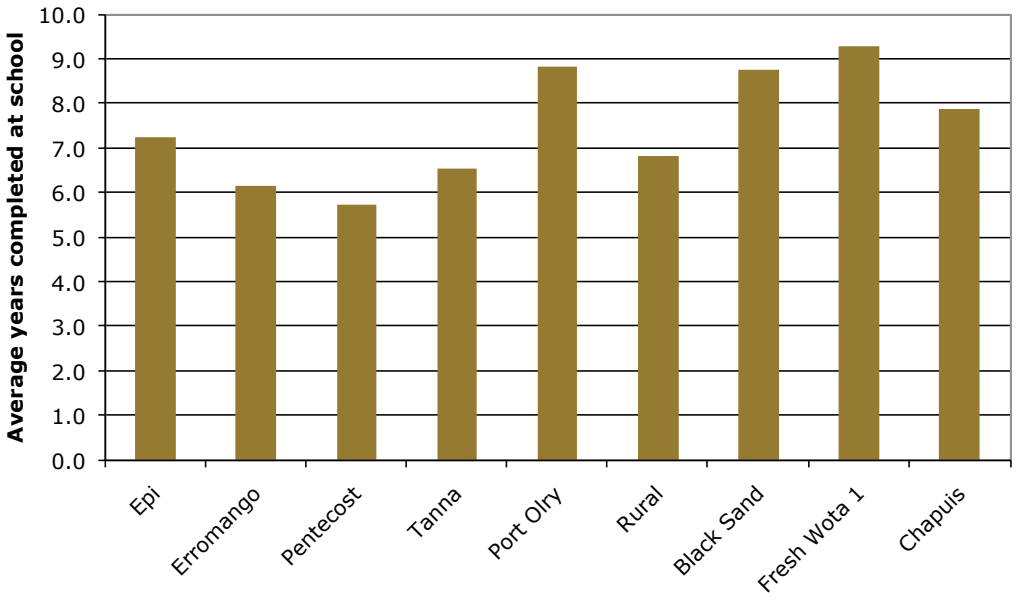
As illustrated in Figure 3.2 the average age of respondents is 32 years for women, and 36 for men, however there was a significant age spread. The youngest interviewed were teenagers, and the oldest octogenarians. Well over half of respondents were under 30.

Table 3.2 summarises the average levels of education of respondents. The percentage of respondents with 'no education' and 'primary education' is comparable between rural and urban areas. In general, those in urban areas have completed an average of 2 more years at school than those in rural areas. As expected, there is a higher percentage of urban respondents in secondary and tertiary education. Respondents have completed an average of 7.5 years at school. Tanna and Pentecost had the highest (12%) level of respondents that never attended school. Fresh Wota 1 had the highest (13%)proportion of respondents that had attended university.

Table 3.2: Average level of education

Island	No formal schooling	Primary school	Secondary school	Technical/ training centre	University	Average years completed at school
Epi	0%	69%	27%	2%	2%	7.2
Erromango	5%	79%	14%	1%	1%	6.2
Pentecost	10%	71%	19%	0%	0%	3.7
Tanna	12%	50%	36%	2%	0%	6.6
Port Olry	4%	39%	54%	3%	0%	8.8
Rural	**6%**	**62%**	**29%**	**1%**	**1%**	**6.8**
Black Sands	4%	36%	50%	5%	5%	8.8
Fresh Wota 1	0%	37%	47%	3%	13%	9.3
Chapuis	1%	60%	36%	2%	1%	7.9
Urban	**2%**	**45%**	**44%**	**4%**	**5%**	**8.6**
Male	4%	54%	36%	3%	3%	7.5
Female	6%	60%	32%	2%	1%	7.4
Total	**5%**	**56%**	**35%**	**2%**	**2%**	**7.5**

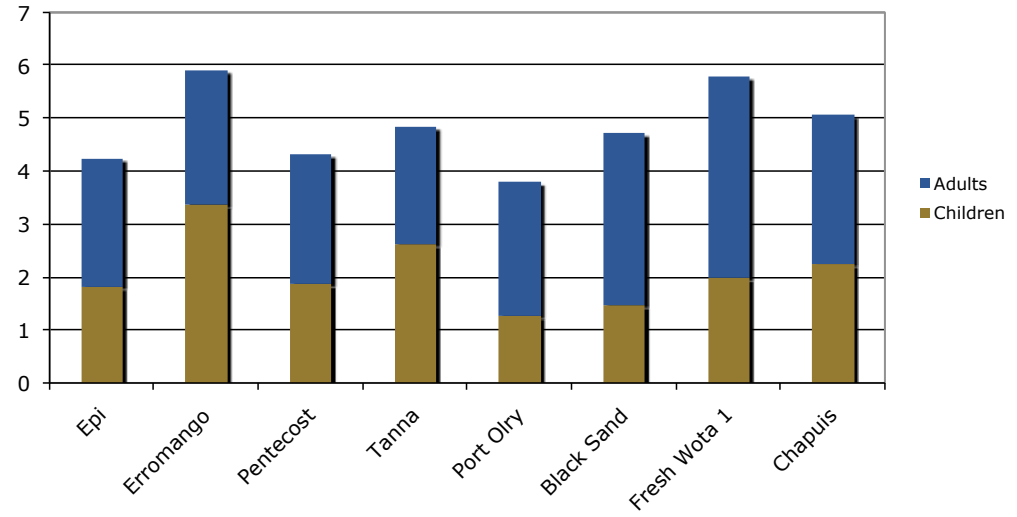
Figure 3.3: Average years completed at school



Household characteristics

The average household size is reported to be 4.8 with a mean of 2.7 adults and 2.1 children under the age of 18. Urban households are slightly larger (3.1 people per household) than rural households (4.7). This can be explained, in part, by the higher number of household members migrating to urban areas for education, in search for work, and/or following marriage. Figure 3.4 provides a graphical description of household composition by sample areas.

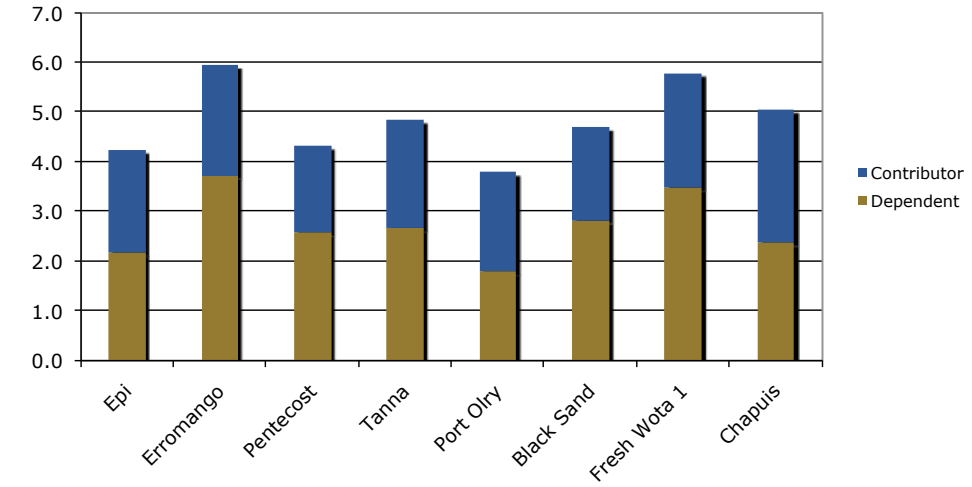
Figure 3.4: Composition of households



Households tend to contain more adults than children, although respondents reported that there were more dependents that economic contributors in the

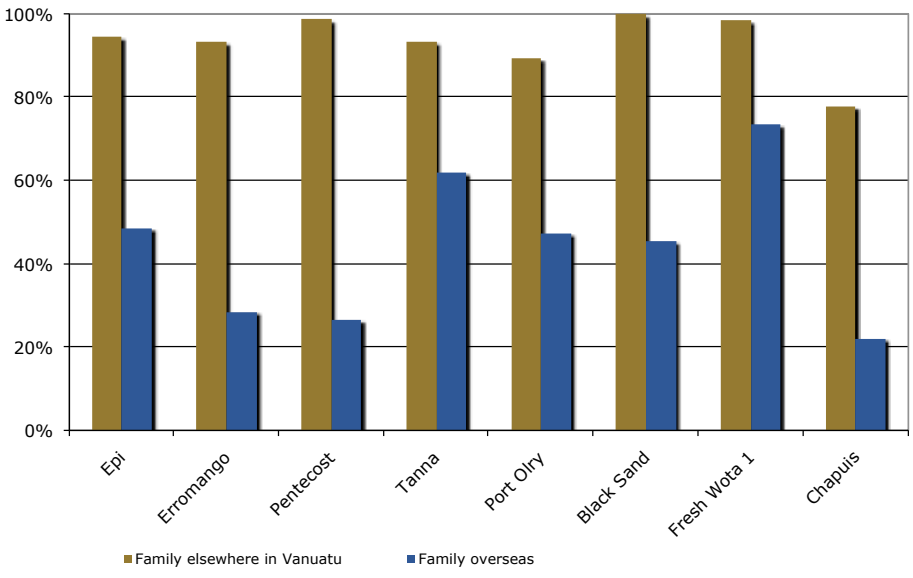
household. It was difficult to determine the size of the household, net contributors and dependents primarily because households were highly variable over time. In other words, respondents often understood households as parents and children. But it is common, for instance, for relatives and friends to stay in urban households over long periods of time and in doing so contribute to the household. Respondents frequently included other family members, aside from those stated in the total number of household members, when it came to questions such as 'how many members of your household are currently living outside of the household and contributed to the household'. This helps to explain why the composition of the household did not always match with the number of contributors and dependents.

Figure 3.5: Household contributors and dependents



In addition, migration, both within Vanuatu and overseas, is an integral part of life for the households that respondents lived in. As the Figure 3.6 demonstrates, almost every respondent had family living elsewhere in Vanuatu (95%), and around half had family living overseas (44%).

Figure 3.6: Migration within and outside of Vanuatu



Rural respondents who mentioned that they had family living elsewhere was particularly high in Tanna (62%), Epi (49%) and Port Olry (47%), compared to the remaining rural areas of Erromango (29%), and Pentecost (27%). The observed responses in Epi and Tanna are likely to be attributed to the high number of seasonal workers who are migrating to Australia and New Zealand.

Such high levels of geographical mobility are likely to result in demand for telecommunications and can explain the proliferation of mobile phone use since the market opened up in June, 2008. This will be discussed in greater detail in the case study on the implications of telecommunications on household income (refer to chapter six).

Rural and urban household prosperity

A number of indicators, both direct and indirect, have been used to establish levels of prosperity of households. Direct indicators are declared 'cash' income whereas indirect ones are access to, and ownership of, assets and access to services.

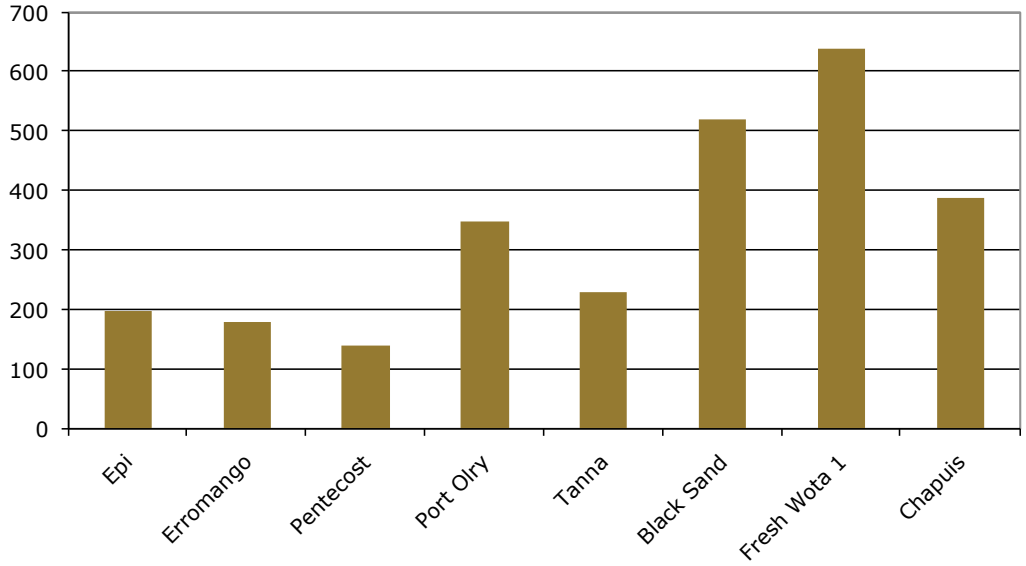
The average declared annual 'cash' income for all sampled areas are 310,000 VT (approximately 25,800vt/month). There are considerable differences in average declared income within and between rural and urban areas as see in Figure 3.7. Urban respondents are earning more than double (500,000vt/year) that of rural respondents (210,000vt/year). Unsurprisingly, the highest average household income is found in Fresh Wota 1 (640,000vt/year) and Blacksands (520,000vt/year). These areas are located in Port Vila, where majority of the population is most dependent on the cash economy. Respondents in growing and diversified rural economies such as Port Olry (350,000vt/year) have reported significantly higher income than more isolated and agriculture-dependent rural areas such as Erromango (180,000vt/year), Tanna (230,0000vt/year), and Pentecost (140,000vt/year).

Although the wider similarities and differences in declared income have remained roughly intact in comparison to findings from the 2008 telecommunications study, the average incomes within and between rural areas have been lower this year. For instance, declared monthly cash income was 35,000vt/month last year (approximately 420,000vt/year), respondents in urban areas reported earnings of 44,000vt, and reported earning in specific locations (such as Port Olry 57,000vt/month) was less than what it is now. The observed differences in declared income between the 2008 and 2009 are likely to be because sample sizes for the 2009 study were considerably larger and more representative of the populations being surveyed.

While declared income serves as a good measure of relative household prosperity, there are a number of caveats. The research team has found respondents are often reluctant and/or unable to respond to income questions. For instance, in the rural research areas, many respondents have pointed out that income from the sale of agricultural produces fluctuates significantly making it difficult to accurately respond to monthly or annual income related questions.

Given the above limitations, it was essential to complement declared income with other measures of household prosperity. The majority of respondents, and particularly those in rural areas, have reported economic transactions with family members living elsewhere in Vanuatu and/or overseas as an important aspect of household livelihood. But it has been difficult to quantify the inflow of cash income and other financial transactions from outside of the household. Urban households

Figure 3.7: Average income in Vatu (thousands) per year



typically receive food from rural areas whereas rural ones receive cash and other consumer items. Nevertheless, respondents were asked to what extent their households are financially dependent on household members living outside of the household (elsewhere in Vanuatu and overseas). Respondents were given four choices – not at all, a little, quite a lot, and a lot. The level of dependence was roughly equivalent in rural and urban areas as reflected in the last column of Table 3.3. Refer to the case study on mobile telephony and household income (chapter six) for further discussion on these issues.

Table 3.3: Migration and extent of economic dependence

Island	Not at all	A little	Quite a lot	A lot	Dependence
Epi	25%	54%	20%	1%	0.32
Erromango	46%	45%	8%	2%	0.22
Pentecost	28%	37%	25%	10%	0.39
Tanna	31%	47%	19%	2%	0.31
Port Olry	64%	20%	16%	0%	0.17
Rural	**38%**	**42%**	**17%**	**3%**	**0.28**
Black Sands	35%	47%	16%	1%	0.28
Fresh Wota 1	32%	53%	13%	1%	0.28
Chapuis	58%	33%	9%	0%	0.17
Urban	**42%**	**44%**	**13%**	**1%**	**0.24**
Overall	**39%**	**43%**	**16%**	**2%**	**0.27**

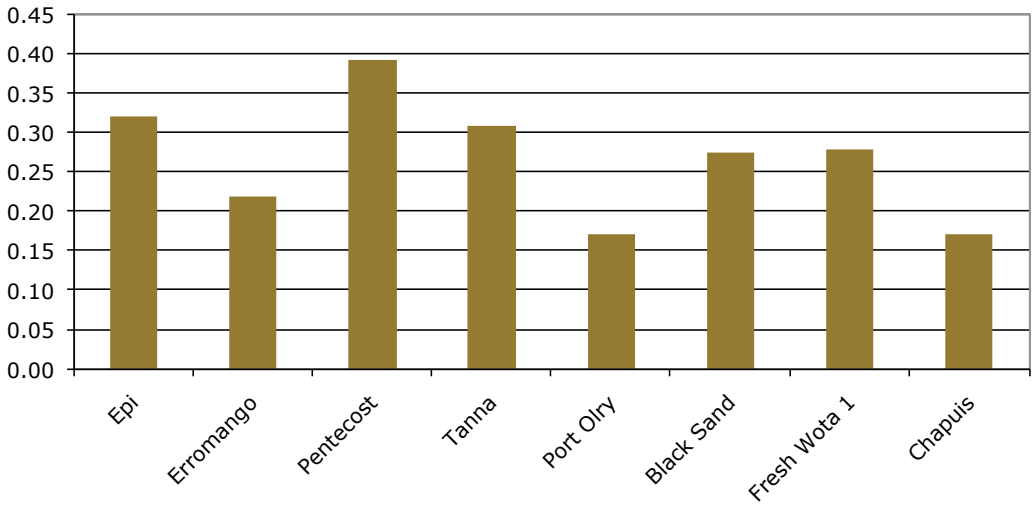
The final column serves as a rough measure of economic dependence of a group of people on others was calculated as follows:

$$D = (p_{a\ little} + 2 \times p_{quite\ a\ lot} + 3 \times p_{a\ lot}) / 3$$

D will be between 0 and 1, and the higher the value of D, the more dependent people in that group are dependent on other people. Respondents in Pentecost, Tanna and

Epi are the most dependent on financial contribution from friends and relatives living elsewhere. As pointed out earlier, the high rates of migration under the RSE scheme in Tanna and Epi are likely to have had an effect in levels of contribution and relative dependence. Dependence is shown graphically in Figure 3.8 below.

Figure 3.8: Migration and extent of economic dependence



Household possessions and access to household services also serve as useful indicators of both relative household prosperity and the relative value attached to different product and services (DFID 2006, pp.146). The survey revealed households generally have access to water but limited access to computers and fridges (refer to Table 3.4, which also shows marked differences in availability of services across rural and urban areas. The differences in access to electricity, television, and radio are particularly startling. For instance, only 40% of the rural respondents have access to electricity compared to 86% in urban areas. Interestingly, there was a significant decrease in access to fixed phone in comparison to the 2008 study when 68% of rural respondents and 85% cent of urban respondents reported access, compared to only 8% and 9% respectively in 2009. The field researchers explained fixed line as both public and private fixed line telephony.

Figure 3.9: Household ownership of transport

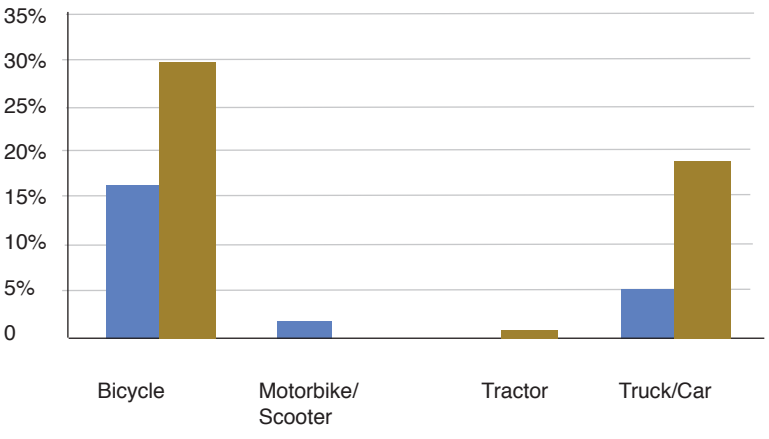


Table 3.4: Household services and consumer goods

Island	Protected water	Electricity	Fixed phone	TV	Fridge	Radio	Computer
Epi	93%	27%	7%	2%	5%	24%	2%
Erromango	63%	38%	8%	8%	7%	34%	1%
Pentecost	77%	11%	10%	0%	0%	6%	0%
Tanna	57%	45%	2%	1%	6%	12%	5%
Port Olry	83%	86%	13%	22%	11%	57%	4%
Rural	**74%**	**40%**	**8%**	**6%**	**6%**	**26%**	**2%**
Black Sands	75%	75%	2%	66%	21%	77%	13%
Fresh Wota 1	100%	99%	7%	88%	41%	69%	22%
Chapuis	97%	89%	18%	65%	36%	62%	16%
Urban	**89%**	**86%**	**9%**	**71%**	**31%**	**70%**	**16%**
Total	**79%**	**56%**	**8%**	**29%**	**15%**	**41%**	**7%**

On average, ownership of private transport is low (refer to Figure 3.9) with only 5% of rural respondents 10% of urban respondents owning a car or a truck. A higher percentage of individuals are likely to own a truck or a car in Port Olry (20%) and Freswota 1 (32%) compared to the remaining research sites.

There were considerable differences in frequency of access to electricity between urban and rural respondents (refer to Figure 3.10). The majority of the urban respondents living in Freswota 1 (99%), Chapuis (95%) and Blacksands (62%) have constant electricity. Rural respondents in Pentecost (87% none), Epi (68% none and 28% occasional), and Erromango (36% none and 59% occasional) are likely to have electricity occasionally at best. There are also differences in frequency of access to electricity within rural areas with the majority of the respondents in Pentecost having 'none' and those in Tanna (45% none and 46% constant) and Port Olry (54% occasional and 36% constant) having a mixture between 'constant', 'occasional' and 'none'.

Figure 3.10: Frequency of access to electricity

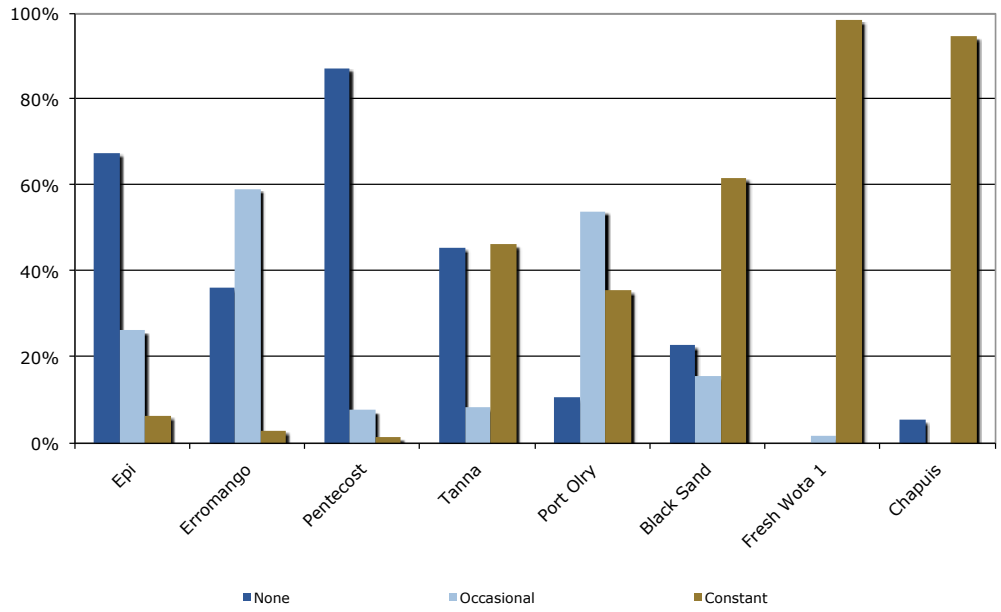


Table 3.5: Relative accessibility of the research sites

Island	Location	Type of road	Distance to market
Epi	Lamen Bay and Lamen Island	CC	<1km
Epi	Ngala	DT	<1km
Erromango	Port Narvin	DT	<1km
Erromango	Unpongkor	CC	<1km
Pentecost	Atabulu	CC	3km
Pentecost	Atagurua	CC	5km
Pentecost	Levetlis	DT	5km
Tanna	Isini	CC	<1km
Tanna	Lamlu	CC	20km
Efate	Black Sands	DT/CC	4km
Efate	Fresh Wota 1	CC	1km
Santo	Chapuis	CC	5km
Santo	Port Olry	CC	70km

NOTE: CC refers to compact coral whereas DT refers to dirt track.

The table above provides and indication of the relative accessibility of the research sites, measured in terms of proximity to the nearest market and the type of road servicing the area.

Access and use of telecommunications

This section summarises the findings on access, ownership, patterns of use and non-use of telecommunications in the sampled areas. The major findings and areas of change since the 2008 study are as follows:

- Access to mobile telephony increased from 81% in 2008 to 92% in 2009.
- Access to mobile telephony amongst rural respondents has increased by 23%. Even in areas without network coverage, respondents are bearing the direct and opportunity costs of finding signal in order to be able to use mobile telephony.
- Access and use of public phones has decreased by 44% with comparable decline in both rural and urban areas.
- The gap in frequency of use of mobile telephony between urban and rural respondents has decreased.
- Frequency of land line use decreased dramatically in both rural and urban areas.
- Use of mobile telephony has increased from an average of once a month in 2008 to a weekly in 2009.
- Respondents in both rural and urban areas are choosing to own a mobile telephony individually than to share with other members of the household.
- Increasing evidence of users switching from TVL to Digicel. Exclusive use of TVL has decreased from 57% in 2008 to 3% in 2009. Exclusive use of Digicel has increased by 29% since 2008. Only 8% of respondents are using TVL and Digicel in combination, of which majority are concentrated in Chapuis 1 and Freswota 1.

- The majority of respondents owned a mobile phone and had bought the handset themselves.
- Rural users tend to use mobile telephones primarily to make calls, receive calls, return calls, send missed calls and 'please call me' (a free SMS service offered by Digicel).
- An equal percentage of rural and urban users send 'please call me' messages. A higher percentage of rural users make 'missed calls'.
- On average urban users spend more on telecommunications than rural users do, but respondents in Erromango and Port Olry are likely to spend as much on mobile telephony as urban respondents.

Mediums of access to information and communication

The survey included questions to compare and contrast access to, and frequency of telephone use in relation to other mediums of information and communication. Respondents were asked to indicate which forms of information and communication they had access to (refer to Table 3.6). Access to private land line, e-mail and computer was negligible throughout the research areas. Access to radio and TV were much higher amongst urban respondents than rural ones.

The majority of respondents said they have access to mobile phone (92%). Access to mobile phone is slightly higher for urban respondents (97%) than for rural ones (89%). Access to public phone was significantly lower (34% in rural areas and 33% in urban). There were also marked differences in access to radio (40% in rural and 85% in urban), TV (8% in rural and 82% in urban), the Internet (4% in rural and 25% in urban), and computer (4% in rural and 26% in urban).

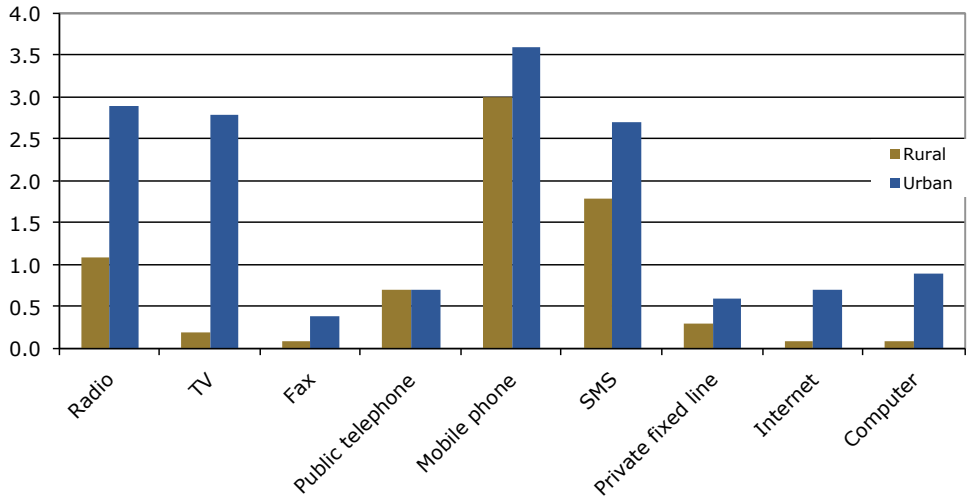
In comparison to the 2008 study, there has been a significant increase in access to mobile telephony in both rural and urban areas, and reduction in access to private and public fixed line. In 2008 approximately 77% of respondents had access to public telephone and 81% had access to a mobile phone. Access to public phone was comparable for both rural and urban respondents (77% and 78% respectively), whereas mobile phone was significantly higher in urban areas (95%) than in rural areas (66%).

Table 3.6: Mediums of Access to Information and Communication

	Radio	TV	Fax	Public line	Mobile phone	SMS	Private line	Internet	Computer
Epi	47%	3%	10%	58%	74%	65%	24%	3%	7%
Erromango	50%	3%	2%	29%	93%	48%	15%	3%	1%
Pentecost	15%	0%	0%	8%	89%	38%	1%	1%	0%
Tanna	26%	17%	12%	37%	98%	54%	5%	9%	7%
Port Olry	63%	16%	1%	29%	89%	86%	8%	1%	1%
Rural	**40%**	**8%**	**6%**	**34%**	**89%**	**57%**	**11%**	**4%**	**4%**
Black Sands	90%	80%	16%	41%	97%	90%	22%	21%	26%
Fresh Wota 1	87%	96%	18%	25%	97%	90%	16%	40%	38%
Chapuis	78%	75%	12%	28%	98%	83%	22%	18%	18%
Urban	**85%**	**82%**	**15%**	**33%**	**97%**	**88%**	**21%**	**25%**	**26%**
Total	56%	34%	9%	33%	92%	68%	15%	11%	12%
Male	58%	36%	9%	34%	92%	68%	15%	13%	13%
Female	51%	31%	9%	32%	92%	68%	14%	8%	10%
Total	**56%**	**34%**	**9%**	**33%**	**92%**	**68%**	**15%**	**11%**	**12%**

Respondents also indicated how frequently they used the above mentioned mediums of information and communication. Responses were recorded on a scale of 0 to 4 (0 = not used, 1 = less than once a month, 2 = more than once a month, 3 = weekly, and 4 = daily). The survey results demonstrate that, on average, respondents use telephony weekly (3.2), SMS less than once a month (2.1), and radio almost once a month (1.7). The frequency of uses of the remaining information and communication channels are very low – public phone less than once a month (1.0), fax (1.1), private fixed line (0.4), computer (0.4), and Internet (0.3). Figure 3.11 depicts the findings.

Figure 3.11: Frequency of use of information and communication channels



As the above graph shows, the use of these mediums of information and communication is generally much higher in urban areas than in rural ones. Urban respondents use on average Radio (2.9), TV (2.8), mobile telephony (3.6), and SMS (2.7) more frequently than rural respondents do. Nevertheless, in comparison to all the other mediums of information and communication, the use of mobile telephony is the highest (3.2) including in rural areas.

The findings are broadly consistent with those of the 2008 survey. Both rural and urban respondents reported using mobile telephony more frequently than they did in 2008 (2.9 on average, 3.4 urban, and 2.3 in rural areas).

Access and use of telephony

The survey included questions that focused particularly on access and use of telephony. Respondents were asked to indicate the extent of their access to telecommunications, as shown in Table 3.7. Out of the 767 respondents, 81% stated that they have 'high' access to telecommunications with fixed line and at least one mobile service provider. There are considerable differences between and within rural and urban areas. Within urban areas, only 25% of those in Blacksands have access to fixed line and 2 service providers in comparison to 100% of those in both Freswota 1 and Chapuis. In comparison, 24% of rural respondents have access to fixed line and two mobile service providers, and 46% fixed line and one service provider. With the exception of Tanna where 78% respondents have access to fixed line and two mobile service providers (i.e. high levels of access), the rural respondents reported low to medium access to telecommunications. In other words, when analysing all of the rural respondents, it was mostly Middle Bush area with 'high' access to telecommunications.

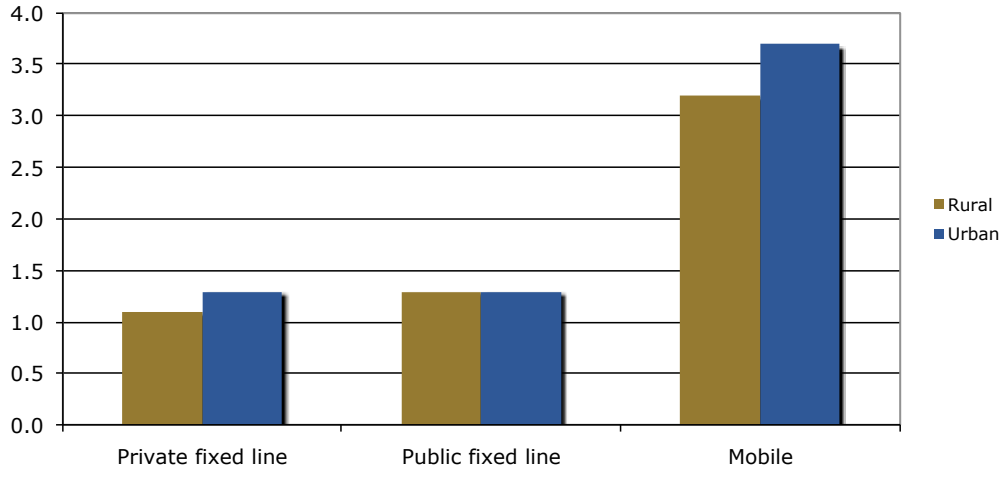
Table 3.7: Telephony service coverage in the research areas

Island	Fixed line only	Mobile coverage only	Fixed line + 1 mobile provider	Fixed line + 2 mobile providers
Epi	18%	7%	60%	15%
Erromango	0%	48%	52%	0%
Pentecost	0%	51%	37%	13%
Tanna	1%	0%	21%	78%
Port Olry	22%	0%	76%	0%
Rural	**7%**	**20%**	**46%**	**24%**
Black Sands	0%	0%	75%	25%
Fresh Wota 1	0%	0%	0%	100%
Chapuis	0%	0%	0%	100%
Urban	**0%**	**0%**	**30%**	**70%**
Total	**5%**	**13%**	**40%**	**41%**

Type of telephony was further disaggregated to see how often people used mobile phones in comparison to public and private land lines. Responses were recorded on a scale of 1 to 4 (1=never used, 2=monthly, 3=weekly, and 4=daily). As Figure 3.12 below illustrates, on average, respondents use mobile telephony (3.45 and on a weekly basis) the most frequently in comparison to public phones (1.3 and less than monthly) and private land lines (1.2 and close to never used). Respondents in rural areas used private land line and mobile telephony less frequently than their urban counterparts. Use of public land lines were comparable between urban and rural respondents.

The use of private land line is negligible in all of the research areas with the most frequent use (1.4 = rarely use) reported in Chapuis and Blacksands, and 1.0 (never use) in Pentecost, Tanna and Port Olry. Although respondents use public land line relatively more frequently than they do private land line, uses public land line remains low with most frequent use reported in Epi (1.4/rarely use) and lowest in Pentecost (1.1/never use). In comparison, the following research areas use mobile telephony the most frequently: Freswota 1 (3.9/daily), and Chapuis (3.9/daily) followed closely by Tanna (3.7/almost daily) and Port Olry (3.6/almost daily).

Figure 3.12: Frequency of use of different types of telephony



A comparison between the 2008 and 2009 findings suggests that rural users are 'catching up' in terms of frequency of use of mobile telephony vis-à-vis their urban counterparts. Frequency of public land lines has reduced significantly in both rural and urban areas.

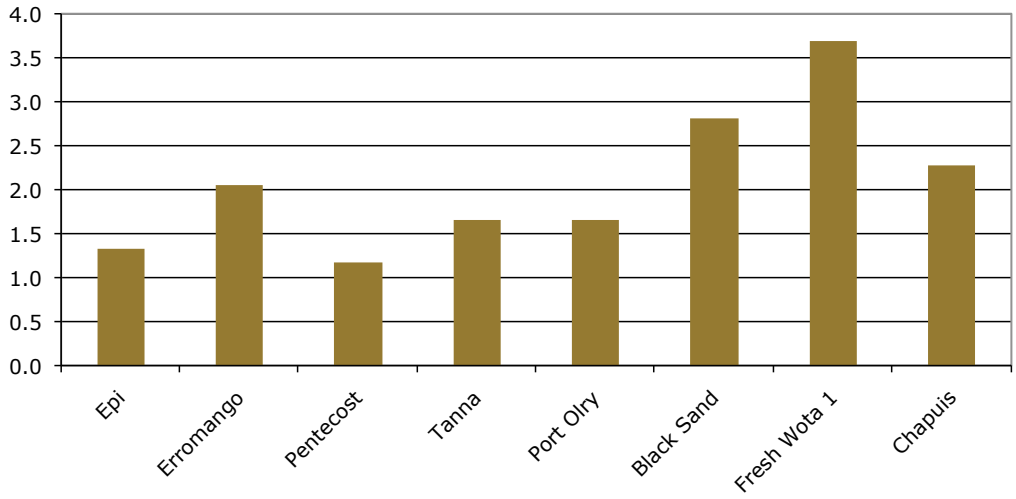
Overall frequency of use of mobile telephony has increased slightly from average reported use of 3.2 in 2008. But the observed gap in frequency of mobile telephony use between rural and urban respondents has decreased. In 2008, rural users were using mobile telephony almost weekly (2.8) and urban respondents almost daily (3.6). In comparison, in 2009, rural users are using mobile telephony at an average of 3.2 whereas urban users of 3.7. In 2008, both rural and urban users reported that they were using mobile telephony monthly (2.0). But in 2009, frequency of use of public land line has reduced to 1.3 for both rural and urban users.

Use of private land line has remained relatively stable since 2008, which is likely to be attributed to the high costs of installing land lines compared to purchasing a mobile phone. Moreover, private land lines tend to be concentrated in government offices and business houses.

Access and ownership of mobile telephony

Respondents with access to mobile telephony were asked if and how many of their household members owned a mobile phone (see Figure 3.13). Only 9% of the total number of households did not have a mobile phone. The average number of mobile phones per household is 2, and each of the surveyed areas have more than one mobile telephone with a range between 1.3 (Epi) and 3.7 (Freswota 1). Urban households have an average of 2.8 handsets whereas rural ones an average of 1.6. Freswota 1 had the highest number of mobiles per household (3.7) in the urban surveyed areas and Erromango (2.0) recorded the highest in rural areas.

Figure 3.13: Average number of mobile phones per household



The number of mobile phones per household has increased since 2008, when 23 % of respondents not have a household member who owned a mobile phone; and 71 per cent of mobile phone owners stated that their household owned more than one hand set. Furthermore, the 2008 findings suggested rural households were likely to share a mobile handset amongst household members whereas urban households had a greater propensity for individual ownership.

The potential explanation for the observed increase in mobile telephony per household in both rural and urban areas has been explored in the case studies on the implications of mobile telecommunications for household income and gender dynamics (see chapters five and six).

The survey also sought to find out when the first mobile phones were acquired in the household (see Figure 3.14). Two thirds (66 per cent) stated that they or a member of their household had first acquired a mobile phone in the past year. As expected, acquisition of mobile telephony is more prevalent earlier in urban areas than in rural areas (where the expansion of the mobile network commenced in July 2008). This is also consistent with the findings in the 2008 study where 80% of the respondents reported acquiring their first mobile phone less than one year ago.

Figure 3.14: Household acquisition of mobile telephony

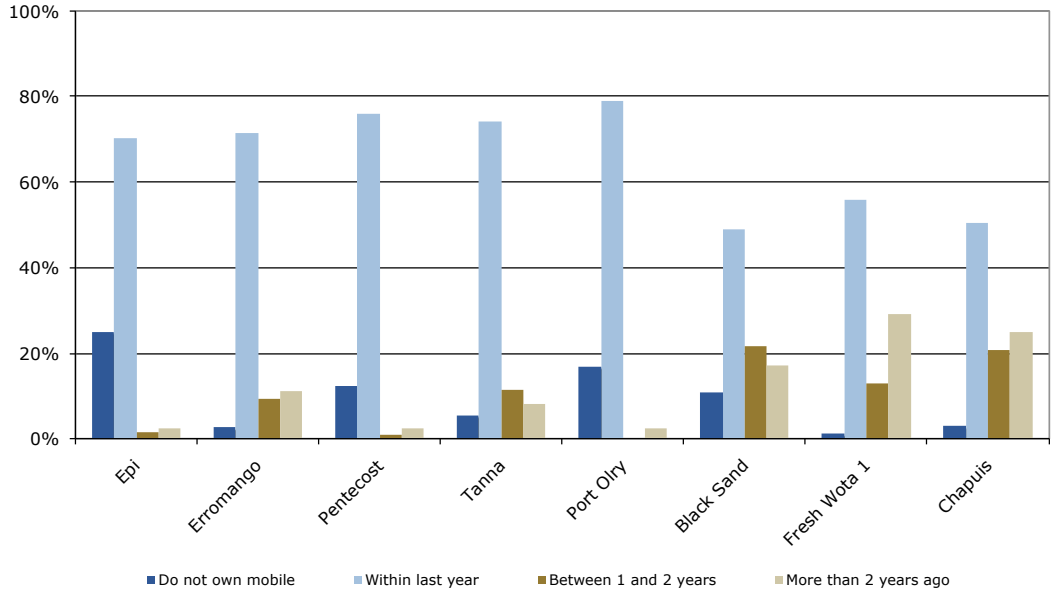


Table 3.8: Mobile service provider

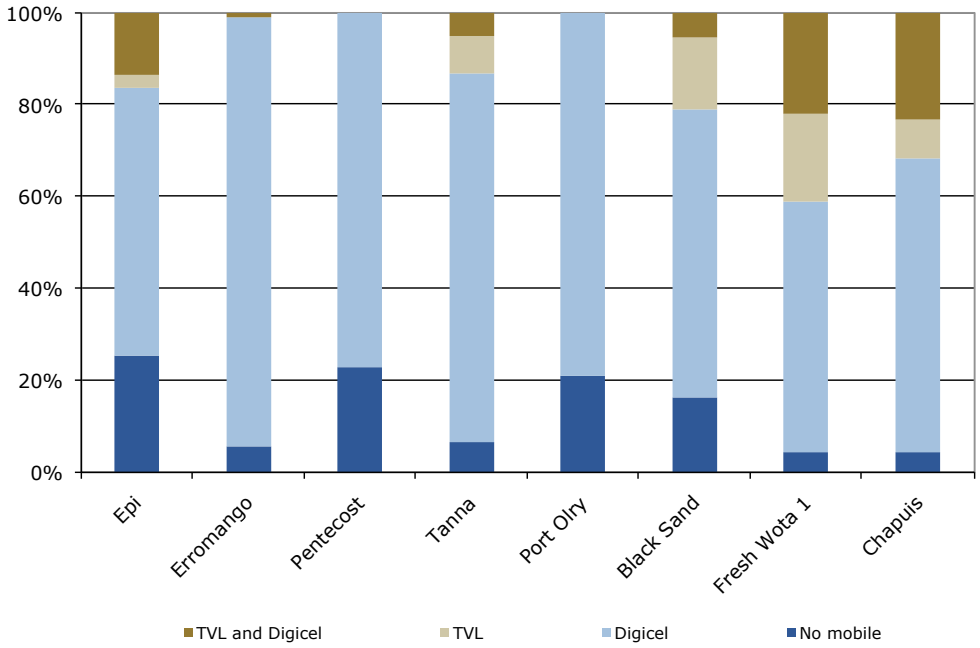
	Digicel	TVL	Both TVL and Digicel
Epi	59%	3%	14%
Erromango	93%	0%	1%
Pentecost	77%	0%	0%
Tanna	80%	8%	5%
Port Olry	79%	0%	0%
Rural	**77%**	**3%**	**4%**
Black Sands	63%	15%	5%
Fresh Wota 1	54%	19%	22%
Chapuis	64%	8%	23%
Urban	**61%**	**14%**	**16%**
Total	72%	7%	8%

Respondents indicated which service provider they used (refer to Table 3.8 and Figure 3.15). In rural areas, respondents with mobile phones predominantly use the Digicel network. This is especially the case on Erromango (93%), Pentecost (77%), and in Port Olry (79%) where almost all respondents reported using the Digicel

network exclusively. Some respondents on Epi and Tanna use either TVL or Digicel exclusively, and/or together. TVL is used more in urban areas than in rural, although it is still used much less than Digicel. An equal number of respondents use TVL in combination with Digicel compared to those who use TVL exclusively.

In the 2008 study 57% of respondents reported using TVL and 43% Digicel. The majority of the urban respondents (85%) used TVL whereas most rural respondents (88%) used Digicel.

Figure 3.15: Mobile service provider



The survey was modified this year to capture total number of respondents who are using both service providers. Nevertheless, a comparison between the two studies does suggest that respondents may be switching from using TVL exclusively to using Digicel exclusively, first, and a combination of TVL and Digicel, second.

The observed decline in the use of public phones (serviced exclusively by TVL) partly explains the decline in TVL use. Many of the respondents in the 2008 survey understood TVL as both public and private land lines. At the same time, the findings do suggest that a substantial number of telephony users have switched from TVL to Digicel.

Respondents were further asked how they or a member of their household first acquired a mobile phone (see Figure 3.16). The vast majority of the respondents (71%) had bought their mobile themselves as opposed to others (family or friend) purchasing for them (17%).

Interestingly, more people in rural areas such as Port Olry (90%), Epi (82%) and Erromango (77%) were likely to state that they bought the mobile phones themselves rather than those in urban areas such as Freswota 1 (63%) and Chapuis (74%).

Figure 3.16: Manner of acquisition of household mobile telephone

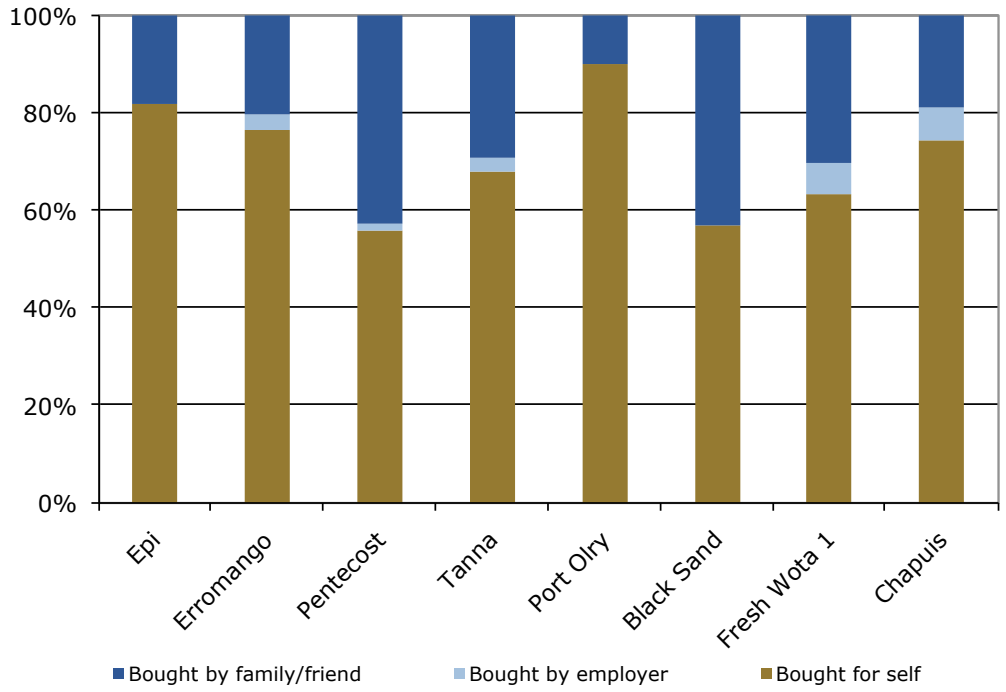


Table 3.9: Brand of mobile handsets used

	Nokia	Motorola	Samsung	Coral	Other
Epi	65%	8%	13%	10%	4%
Erromango	80%	4%	0%	2%	14%
Pentecost	63%	6%	8%	6%	16%
Tanna	61%	27%	0%	4%	8%
Port Olry	62%	20%	0%	13%	5%
Rural	**67%**	**14%**	**4%**	**6%**	**9%**
Black Sands	37%	24%	20%	4%	15%
Fresh Wota 1	46%	18%	15%	5%	15%
Chapuis	60%	25%	0%	3%	11%
Urban	**48%**	**23%**	**12%**	**4%**	**14%**
Total	**55%**	**17%**	**8%**	**7%**	**13%**

Respondents who owned a mobile phone were asked what type of handset they currently use (see Table 3.9). Most were not able to specify the model that they use. Nevertheless, the most common brand of handsets are in the following order: Nokia (55%), Motorolla (17%), Samsung (8%), Coral (7%), and others (13%).

Many of the participants (and female ones in particular) in semi-structured interviews and focus group discussions in rural areas said they had first acquired a mobile phone during a Digicel promotion selling discounted Nokia handsets (e.g. Nokia N1200 and N1209 were sold in rural areas for 1000VT). Others mentioned that they preferred Nokia because the battery life is longer, and they perceive Nokia to be more resilient than other brands.

The average expenditure of mobile handsets was 4,500VT with rural users spending on average 3,300VT and urban users 6,400VT (see Table 3.10). There are variations in expenditure on mobile telephony within urban and rural areas. Nevertheless, the level of economic prosperity seems to have a bearing on the amount that individuals have spent on mobile handsets. Respondents in Port Olry (rural) and Freswota 1 (urban) spent more on mobile telephony, on average, than respondents elsewhere.

Table 3.10: Average cost of mobile handsets

	Average price of mobile phone (VT)
Epi	2500
Erromango	2900
Pentecost	3400
Port Olry	4300
Tanna	3800
Rural	**3300**
Black Sands	6300
Fresh Wota 1	7500
Chapuis	5800
Urban	**6400**
Overall	**4500**

Patterns of use of various types of telephony

Along with levels of access to telecommunications, it is equally pertinent to understand how people use telecommunications and for what purposes. The survey included questions to elicit patterns of telephony use such as the nature of mobile telephony use, expenditure on telephony, and the purposes of telephony use. The evidence collected on expenditure on and patterns of telephony use also serve to compare and contrast across the three different types of telephony – public, private, and mobile. Focusing exclusively on mobile telephony use, respondents were asked to recall their last ten uses of mobile telephony (see Table 3.11).

Table 3.11: Last ten uses of mobile telephony

	Make call	SMS	Call back	Receive call	Give 'missed call'	Send 'please call me'	Music	Torch
Epi	78%	61%	70%	70%	68%	65%	31%	52%
Erromango	93%	56%	77%	85%	78%	82%	20%	90%
Pentecost	85%	67%	82%	84%	81%	75%	20%	62%
Tanna	94%	68%	92%	93%	85%	85%	38%	73%
Port Olry	84%	71%	51%	59%	50%	58%	12%	38%
Rural	**87%**	**64%**	**76%**	**79%**	**74%**	**74%**	**26%**	**65%**
Black Sands	94%	77%	53%	82%	60%	77%	44%	33%
Fresh Wota 1	91%	72%	62%	96%	72%	69%	53%	32%
Chapuis	91%	69%	78%	92%	64%	75%	48%	45%
Urban	**92%**	**73%**	**64%**	**89%**	**64%**	**74%**	**48%**	**37%**
Male	91%	67%	73%	84%	74%	76%	35%	55%
Female	85%	67%	68%	80%	64%	70%	31%	54%
Total	**89%**	**67%**	**72%**	**83%**	**70%**	**74%**	**33%**	**55%**

On average, respondents use mobile telephony to make a voice call (89%), receive a call (83%), return a call (72%), send 'please call me' message (74%), send SMS message (67%), use torch (55%), and listen to music (33%). The primary use of mobile telephony by urban and rural respondents is to 'make calls'. But urban respondents send more SMS messages and listen to music more frequently than rural respondents do. Moreover, the results suggest that use of SMS has increased since 2008 in both rural and urban areas, although the relative increase in use of SMS in rural areas is higher than those in urban. In 2008, only 48% of respondents used SMS in rural areas relative to 68 percent in urban areas.

Rural respondents use the torch facility more than urban ones. The results suggest a possible correlation between access to electricity and use of torch. Port Olry use torch (38%) the least compared to areas without electricity such as Erromango and Tanna where 90% and 70% respondents respectively said they use the torch facility on their handset.

An equal percentage of rural and urban respondents (74%) send 'please call me', messages but rural respondents (74%) send slightly more 'missed calls' than urban respondents (64%) do. Interestingly, the three rural sites that have the highest percentage of respondents who use missed calls to have their calls returned (at no cost to the originator) also have the highest number of respondents who use 'please call me'. The case studies on the implications of mobile telephony on household income and gender dynamics (refer to chapters five and six) will discuss the direction of flow of 'please call me' and social rules as well as concerns that have been formed around appropriate use.

Broadening the scope of enquiry respondents were asked to indicate their expenditure on and use of different types of telephony – public land line, private land line, and mobile (refer to Table 3.12). Respondents in both rural and urban areas indicated that they spend the highest on mobile telephony relative to public and private fixed line. As expected, urban respondents are likely to spend more on mobile telephony than rural respondents are. A higher percentage of urban respondents spend more than 1000VT on mobile telephony (62%) than rural respondents (45%) do. A slightly higher percentage of rural respondents (20%) spend less than 500VT than urban respondents (11%) do.

Table 3.12: Expenditure on mobile telephony

		Do not use	< 500 Vatu	500 – 1000 Vatu	> 1000Vatu
Private fixed line	Rural	92%	3%	2%	2%
	Urban	82%	8%	4%	5%
Public fixed line	Rural	69%	15%	10%	4%
	Urban	78%	13%	3%	6%
Mobile	Rural	7%	20%	27%	45%
	Urban	4%	11%	23%	62%

Amongst the rural areas, a higher percentage of individuals in Erromango and Port Olry spend 1000 VT or more on mobile telephony. A roughly equal percentage of individuals in Chapuis (71%) and Freswota 1 (74%) spend 1000VT or more on mobile telephony. It could be argued that at least in rural research areas, geographical isolation and/or level of economic prosperity could have had bearing on level of expenditure on mobile telephony.

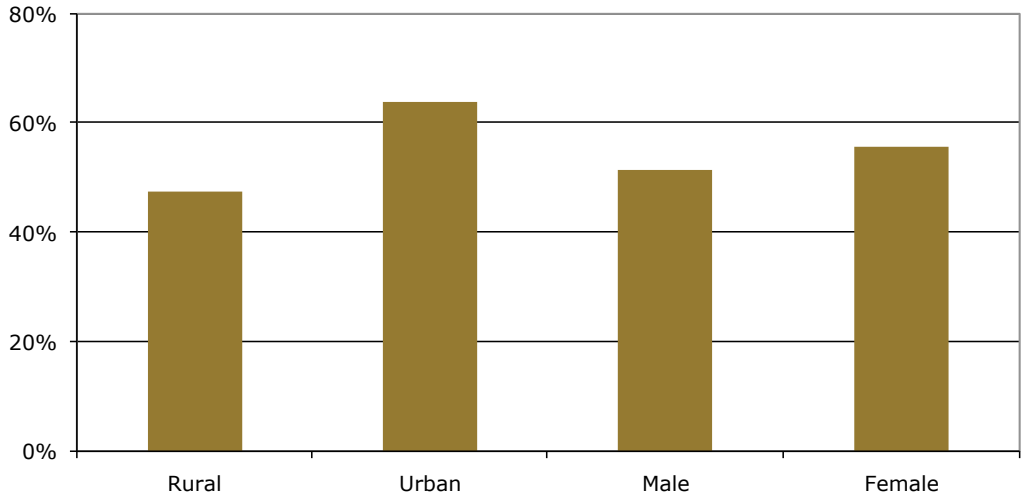
The findings are broadly consistent with the 2008 survey which found that on average, respondents were likely to spend more on mobile telephony than in other forms of telecommunications. Since 2008, however, expenditure on mobile telephony has increased for both urban and rural users. 40% more urban users and 32% urban spend 1000 VT or more on mobile telephony than they did in 2008. In other words, the proportion of increase in expenditure on mobile telephony is fairly comparable for rural and urban respondents.

The responses to this question were structured in such a way as to allow respondents a wide range of choices, and reduce the possibility of recollection related errors. Nevertheless, the major caveat was that it did not allow respondents to specify exactly how much they spend on mobile telephony per month. The focus group discussions and semi-structured interviews revealed a wider range of expenditure on mobile telephony in both rural and urban areas (refer to case study on mobile telephony and household income in chapter six).

Non-owners of mobile telephones

The survey also included questions addressed to non-owners of mobile telephones. There were 115 non-owners (15% of the sampled size) who participated in this segment of the study. There is little difference in the percentage of non-owners in rural and urban areas, 16% and 13% respectively. Non-owners tend to be concentrated in Port Olry (28%), Epi (24%), and Pentecost (20%) in rural surveyed areas and Blacksands (21%) in the urban areas. Out of the respondents without a mobile phone, roughly half said they are 'likely' or 'very likely' to buy a mobile telephone, as illustrated in Figure 3.17 below.

Figure 3.17: Likelihood of purchasing a mobile telephone



The respondents who said they are 'unlikely' to own a telephone in the near future were also asked a following question to enquire about the reasons for their response. The choices for responses were: too expensive, no network coverage, share with family and friends, do not like mobile, or other reasons.

Out of the 23 respondents who said 'unlikely', 8 perceive mobile telephony is too expensive, 6 are satisfied sharing with friends and family, and 6 do not like mobile telephony.

Impact of telecommunications on livelihoods

The two following sub-sections summarise evidence of the impact of improving access to telecommunications services on livelihoods. The focus is on vulnerability and three key assets – financial, social, and human (knowledge). In this study, these assets have been understood as income and savings, social networking and the acquisition of information and knowledge.

Several indirect and direct questions have been included in the survey to assess the impact of telecommunications on livelihoods. The findings suggest:

- The 2009 study has yielded more positive results on the impact of mobile telephony on household livelihoods than the 2008 study.
- In particular, respondents perceive mobile telephony is reducing household vulnerability, maintaining social relationships, and reducing household costs.
- Urban respondents perceive that mobile telephony is having a more significant impact on their livelihood than the rural counterparts.
- Urban respondents, more so than rural respondents, also point to wider and more innovative ways in which mobile telephony is impacting on household livelihoods.
- Both rural and urban users view telecommunications as critical for their economic activity and will find it difficult to continue if they could no longer use telephony.

Respondents were first asked a series of questions to indicate their perceptions of overall trends in livelihood context (see Table 3.13). This refers to perceptions of social and economic environment for them and their families over the last 2 years. Each of these questions sought responses on a five-point scale which indicate the following: "-1"= situation is much worse than it had been two years previously, "0" = there has been no perceived change, and "+1" = the situation is much better. The results as shown on the table below demonstrate that most respondents view their situation has improved very slightly in the last year.

Table 3.13: Perceptions of improvement in telecommunications & livelihoods

Issue	Rural	Urban	Total
Health of family members	0.35	0.30	0.33
Educational opportunities of children	0.39	0.43	0.40
Personal education	0.45	0.47	0.46
Security in the area	0.31	0.29	0.30
Household Income	0.36	0.28	0.33
Financial Support from family elsewhere	0.17	0.10	0.15
Relationship with family members	0.49	0.52	0.50
Relationship with friends	0.52	0.57	0.54
Quality of government services	0.04	-0.09	0.00
Access to telecommunications	0.48	0.55	0.51

Respondents reported that the following situation has gotten 'better' or 'much better' in the last two years: improved relationship with family and friends (85% agreed), access to telecommunications (80%), personal knowledge and education (79%), and educational opportunities for children (77% agreed). There have been some improvements in family health, neighbourhood security, and household income.

There is also a slight improvement in average levels of financial support received from family members living elsewhere. It would be tempting to try and use this to explain the other improvements described above, however, the data gathered in this part of the study is not able to support this hypothesis directly.

The only area where many respondents do not see improvement is in the quality of government services. While 30% stated that quality of government services have gotten "better" or "much better", 26% stated that it has gotten "worse" or "much worse". The perception that government services have gotten 'worse' was much more pronounced in the capital, Port Vila (Fresh Wota 1 and Black Sands), as well as on Pentecost. There may well be local reasons for this, which is beyond the scope of the present survey.

A much cited outcome of increased access to telephony is a reduction in travelling time. Interviews were asked about their perceptions of travelling time in the last two years. Results have been tabulated (see Table 3.14 below) on a scale of -1 to +1 (need to travel has decreased, no change, need to travel has increased).

Table 3.14: Change in travel time in last two years

Change in travel time in last 2 years	
Epi	-0.12
Erromango	0.15
Pentecost	0.19
Tanna	0.07
Port Olry	0.06
Rural	**0.06**
Black Sands	0.22
Fresh Wota 1	0.18
Chapuis	-0.07
Urban	**0.11**

Overall respondents felt that there has been little change in their need to travel in the last two years. However, rural respondents perceived their need to travel had gone relative to urban respondents. Furthermore, respondents in Chapuis and Epi perceived their need to travel has gone down more significantly than what was reported from elsewhere.

These findings are broadly comparable with those from the 2008 telecommunications study.

Interestingly, respondents in Chapuis had reported that their need to travel had increased in 2008 relative to those elsewhere.

The data presented above concerns the broad attitudes towards the social and economic context in which respondents live, and as such offer only limited indirect evidence concerning impact of telephony on livelihoods. Much more valuable evidence was derived when respondents were asked to directly evaluate the value of telephony to them and their households.

Perceptions of impact of telephony on livelihoods

Respondents were asked a detailed series of questions allowing them to evaluate the impact of telephony on them and their households' livelihoods. Responses were recorded on a scale of 0 to 1 (0= not applicable/no influence, 0.5= Influence, 1= Large Influence).

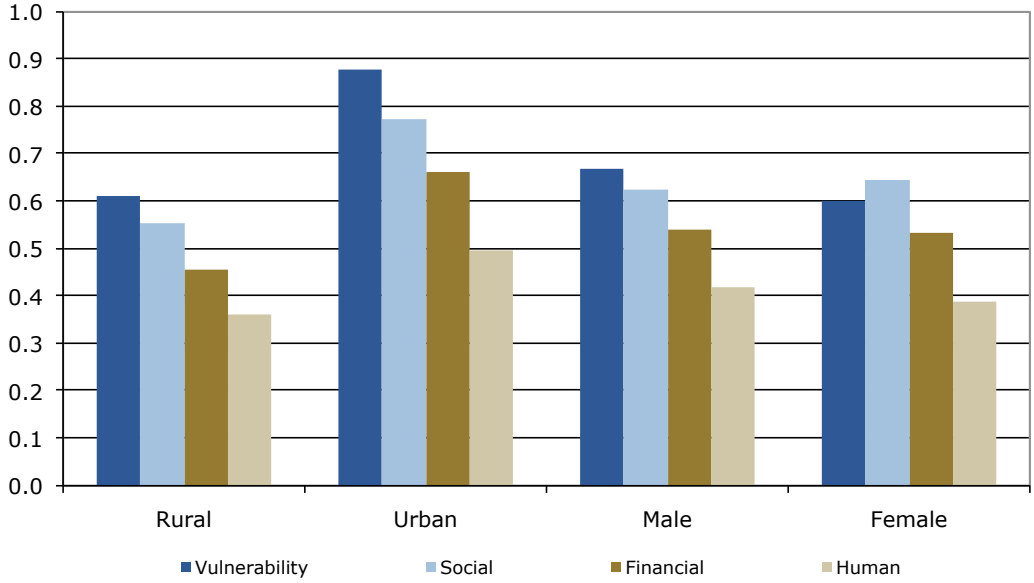
The results are depicted on Table 3.15 and corresponding Figure 3.19 on the impact of telephony on overall livelihoods. Overall, the responses range between little influence to influence - 0.36 to 0.88. The impact of mobile telephony is relatively positive on household vulnerabilities and social capital. In particular, respondents

perceive mobile telephony is helping in improving information regarding family events, increasing speed of communication, helping in time of emergencies, increasing frequency of communication with family and friends, and surprisingly improving access to family health. Respondents regard mobile telephony has had the least impact in communicating with government departments and finding out about legal requirements. At the same time, urban respondents are more likely to perceive that telephony has impacted positively on all four dimensions of household livelihood than rural respondents are.

Table 3.15: Impact of telephony on overall livelihoods

Livelihood Indicators	Rural	Urban	Male	Female
Vulnerability	0.61	0.88	0.67	0.60
Help quickly in emergency	0.61	0.88	0.67	0.60
Social	0.55	0.78	0.63	0.65
Increased social support from family	0.57	0.67	0.59	0.62
More frequent contact with friends and family	0.64	0.81	0.7	0.71
Improved information regarding deaths, marriages, births, etc	0.62	0.90	0.71	0.74
Better co-ordination with other group members	0.38	0.72	0.5	0.51
Financial	0.46	0.66	0.54	0.53
Reduced time travelling	0.52	0.75	0.67	0.67
Reduced cost of travel	0.50	0.72	0.57	0.58
Ability to check on availability of products before travel	0.40	0.66	0.49	0.50
Increased speed of communication	0.66	0.81	0.71	0.71
Less time needed to make business arrangements	0.46	0.64	0.54	0.49
Information regarding subsidies	0.22	0.43	0.31	0.27
Increased financial support	0.44	0.62	0.5	0.51
Human	0.36	0.50	0.42	0.39
Communication with government services	0.26	0.33	0.31	0.23
Information regarding education	0.44	0.57	0.49	0.49
Legal requirements	0.21	0.33	0.27	0.22
Better access to family health	0.53	0.76	0.61	0.62

Figure 3.18: Impact of mobile telephony on overall livelihoods



The range of response for rural respondents is between 0.66 to 0.21. Rural respondents perceived the impact of mobile telephony is particularly positive on the following:

- speed of communication (0.66)
- frequency of contact with family and friends (0.66)
- improved access to information about family events and deaths (0.62)
- helped quickly in time of emergencies (0.61)
- increased support from family (0.57)
- reduced travelling time (0.52)
- reduced cost of travel (0.5).

The range of response for urban respondents is between 0.90 to 0.33. The impact of mobile telephony is considered as particularly positive on the following:

- improving information regarding family events (0.9)
- helping in time of emergencies (0.88)
- increasing speed of communication (0.81)
- more frequent contact with family (0.81)
- better access to family health (0.76)
- reduce time to travel (0.75)
- reduce cost of travel (0.72)
- increased social support from family (0.67)
- ability to check on availability of products before travel (0.66)
- reduce time needed to make business travel (0.64)
- increase financial support (0.62)
- increase information regarding education (0.57).

In both the 2008 and the 2009 study respondents perceive the impact of mobile telephony has been particularly positive in aspects related to offsetting household vulnerability, relationship maintenance and reducing household costs. Rural and urban respondents have reported improved access to telecommunications are increasing contact with family, improving information regarding family events, reducing cost of travel, increasing speed of communication, and surprisingly, improving access to family health.

Nevertheless, there are at least two significant ways in which the 2009 findings differ from the 2008 study. First, the responses in the 2008 study ranged between not applicable to little influence. In other words, on average, respondents had not perceived mobile telephony had made a significant impact on their livelihoods. In comparison, the range of response in the 2009 study is low influence to relatively large influence, which suggests respondents perceive mobile telephony is impacting significantly on their lives.

Second, in the 2008 study, there were limited differences in response between rural and urban respondents. In the 2009 study, in comparison, urban respondents perceive impact of mobile telephony is far more positive on all aspects of household livelihood (vulnerability, social, financial and human capital). As outlined above, respondents have pointed to a wide range of ways in which mobile telephony are impacting on their household livelihood. These responses, unlike in the 2008 study, are not limited to relationship maintenance and reduction in vulnerability alone.

Such positive results are likely to be because respondents have had more time to assess the impact that telecommunications has had on their lives relative to last year when the study was carried out at a time when the telecommunication sector had just been opened up and a second mobile operator had first started business. The differences between perceived benefits of telecommunications in rural and

urban households is likely to be in the constraints that rural users potentially face in developing innovative strategies of using mobile telephony. Wider use of mobile telephony is likely to develop over time. This is consistent with the ways in which mobile telephony use has evolved amongst the women selling at the market in Port Vila, as will be discussed in the case study on mobile telephony and small and medium enterprises (refer to chapter four). Similarly, as will be pointed out in the case study on mobile telephony and household income (refer to chapter six), it is difficult to determine what the instrumental benefits of using mobile telephony for relationship maintenance are likely to be. Rural respondents may very well speak with their family and friends to maintain contact, but at the same time frequent contact may simultaneously facilitate economic transactions.

Table 3.16: Impact of mobile telephony on economic activity

	Could not continue	Could continue but with difficulty	No opinion/no difference
Epi	10%	71%	19%
Erromango	13%	53%	33%
Pentecost	9%	41%	51%
Tanna	1%	46%	53%
Port Olry	1%	74%	25%
Rural	**7%**	**57%**	**36%**
Black Sands	15%	39%	46%
Fresh Wota 1	4%	90%	6%
Chapuis	16%	63%	21%
Urban	**12%**	**60%**	**27%**
Male	8%	61%	31%
Female	10%	52%	37%
Total	**9%**	**58%**	**33%**

Along with questions to elicit implications on overall livelihoods, respondents were also asked how damaging they perceived it would be to their economic activity if they could no longer use telephone. Responses were indicated on a scale of 1 to 4 (1=will not continue, 2=could continue with difficulty, 3=no opinion, and 4=no difference). This was to allow respondents to define their own understanding of 'economic' benefits instead of using pre-defined ones, as done on the question above. The findings are summarised in Table 3.16.

The majority of respondents (58%) perceive they would be able to continue but with difficulty. There was little difference in response in rural and urban surveyed areas. 57 per cent of rural respondents said they could continue but with difficulty as compared to 60 per cent for urban respondents.

The finding from the 2008 telecommunications study is broadly comparable to the results above. Interestingly, there were more rural respondents (30%) who reported they 'could not continue' as compared to 8% for urban areas in the 2008 study. However, in the 2009 survey, a slightly higher, albeit comparatively small overall, percentage of respondents have stated that they 'could not continue' in urban (12%) compared to rural (7%). This suggests that while telephony is still regarded as critical for economic activities to continue, rural respondents do not perceive it to be as important as they were likely to have in 2008.

Impact of telecommunications on communication means and preferences

The study assessed the impact of telecommunications on information and communication flows. Information communication technologies (ICTs), including telephony, enable individuals and communities to interact more or less effectively with one another. Any new technology that is introduced enters into an established pattern of information and communication flows. While it may adopt or disrupt these flows, its impact will be closely related to them. An understanding of the established information and communication flows is therefore critical to assessing the impact and implications of new ICTs as they are deployed (DFID 2005, p.162). The survey included questions to establish priority information needs and channels used to meet them, and the impact telephony is having on existing forms of information needs and channels.

The findings are broadly consistent with those in the 2008 study, viz:

- Telephone followed by face-to-face communication, referral to local leader, village information centre, radio, and newspapers are the most preferred medium of information and communication flow throughout Vanuatu. While there are considerable differences across rural and urban areas, telephone is the preferred means of communicating in both areas.
- Telephone is valued most in communicating for social information, emergencies, and education, but has not been able to supplant face-to-face communication in business activity. Radio is used most widely for news and weather updates.
- Widespread access to telephone has reduced the use of letters and tele-radio in general and in rural areas in particular, but has made little difference on referral to local leaders, face-to-face communication, and use of newspapers.

Interviews were asked to rank the following types of information and communication flows in order or preference: face to face, local leader, radio, TV, newspaper, adverts, village information centre, telephone, Internet and SMS. The indicated responses were recorded on a scale of 0-1 (0=not important or no opinion, 0.5=important, and 1=very important). As Table 3.17 demonstrates, the responses interestingly ranged between not important/no opinion to important (0.15 to 0.62). In general, respondents perceive the following are 'not important/no opinion': Internet, TV, and advertisement. Newspaper, SMS, and radio are considered fairly important. Phone, face to face, local leaders, and village information centres were considered important. Phone and face to face were considered the most important form of communications.

There are considerable variations in responses between rural and urban areas. Urban respondents perceive the following to be the most important, in order of importance: phone, face-to-face, radio, Newspapers, TV, and SMS. In comparison, rural respondents perceive the following to be the most important, in order of importance: phone, face-to-face, local leaders, and village information centre. The following generated the most startling differences between urban and rural respondents: TV, Radio, newspapers, adverts, Internet, SMS and letters. Urban respondents view TV and Internet to be fairly important whereas rural ones thought the opposite. Such responses are likely be attributed, in part, because rural respondents lack access to TV and Internet compared to urban respondents.

But aside from these differences, face to face followed very closely by phone are considered the most important form of communication by both rural and urban

respondents. Urban respondents have ranked both mediums slightly higher than rural respondents have.

Table 3.17: Preferred information and communication channels

	Rural	Urban	Total
Face to face	0.57	0.67	0.61
Local leaders	0.52	0.51	0.52
Radio	0.24	0.61	0.37
TV	0.07	0.56	0.24
Newspapers	0.22	0.58	0.35
Adverts	0.17	0.41	0.26
Village information centres	0.45	0.44	0.45
Phone	0.61	0.65	0.62
Internet	0.05	0.32	0.15
SMS	0.25	0.49	0.34
Letters	0.24	0.40	0.30

The relative importance of face-to-face communication is also consistent with the case study on the implications of telecommunications for small and medium enterprises (refer to chapter four). As will be discussed greater detail in the following case study on small and medium enterprises, all of the entrepreneurs interviewed for the case study said telephony is a complement to, and not a substitute for, face-to-face communication. Face-to-face communication is essential for building and maintaining trust. Also, the informal nature of business activity in much of Vanuatu means much rests on established patterns of behaviours, which cannot be easily supplanted by new forms of information and communication technologies.

The range of responses given is comparable to the 2008 study (no opinion/not important to important). Face-to-face followed closely by telephone were considered the most important medium of communication. The similarities and differences were also comparable. Urban respondents had considered that local leaders were slightly more important than rural respondents did, but this is no longer the case in the current study. Nevertheless, any changes in preference between 2008 and 2009 were very minor.

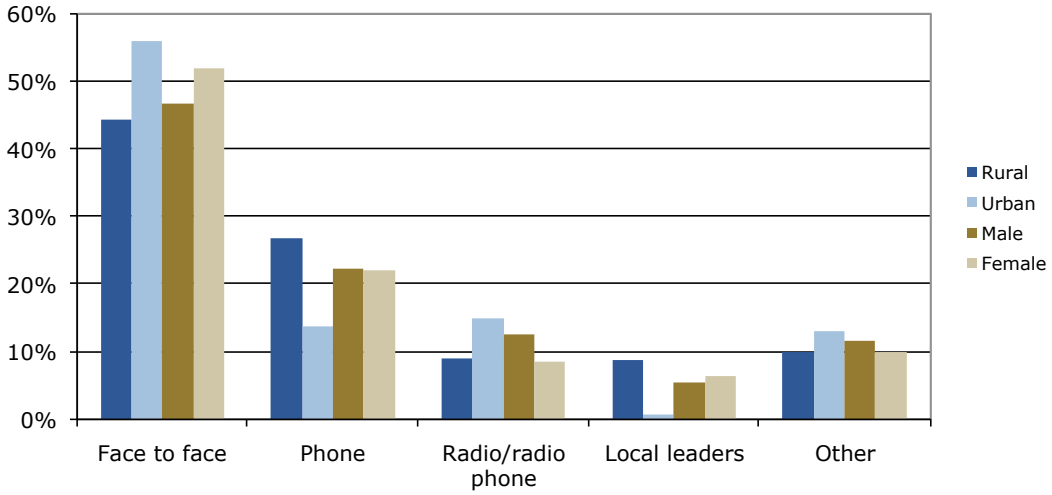
Respondents in the household survey were also asked to indicate the most commonly used means of accessing the following types of information and communication: business and agriculture, social information, emergency, governmental services, education, weather, and news.

Once again, sources of information and communication were: 1=face-to-face, 2=local leader, 3=radio, 4=TV, 5=newspaper, 6=Adverts, 7=village information centre, 8=telephone, 9=Internet, 10=SMS, and 11=letter.

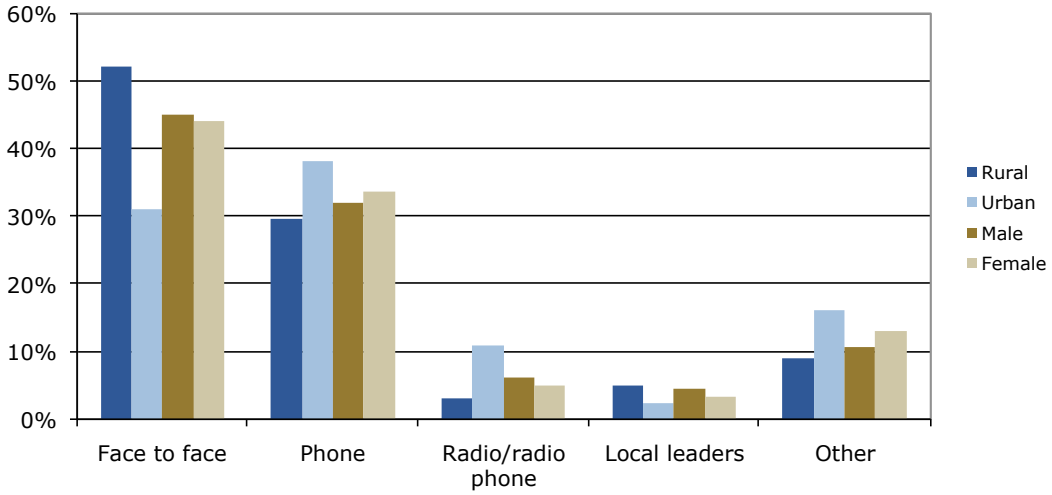
The results are depicted in the following series of Figures 3.19 (A) – (H). The figures only highlight those mediums which yielded the most significant results. The remaining is grouped together under ‘other’.

Figure 3.19 (A) – (H): Most commonly used means of accessing different types of communication and communication

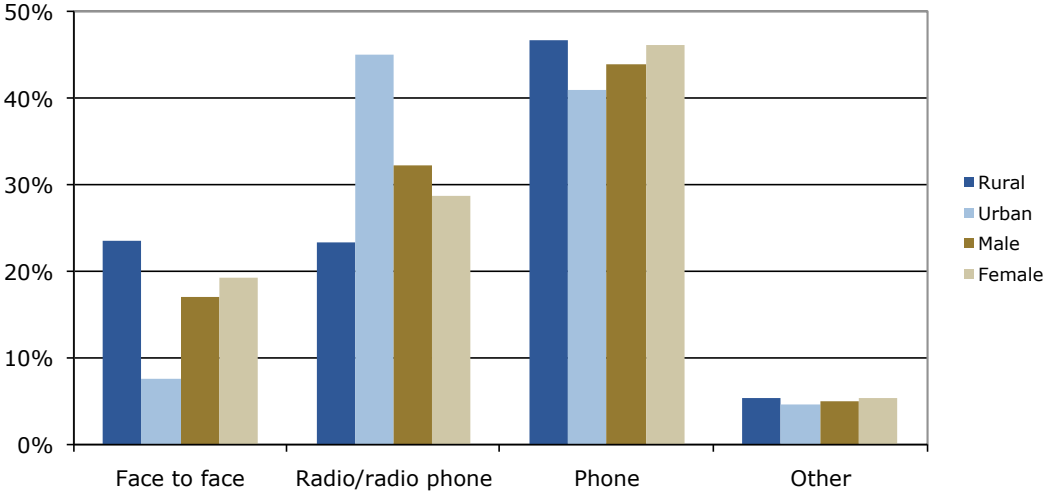
(A) Business and farming information



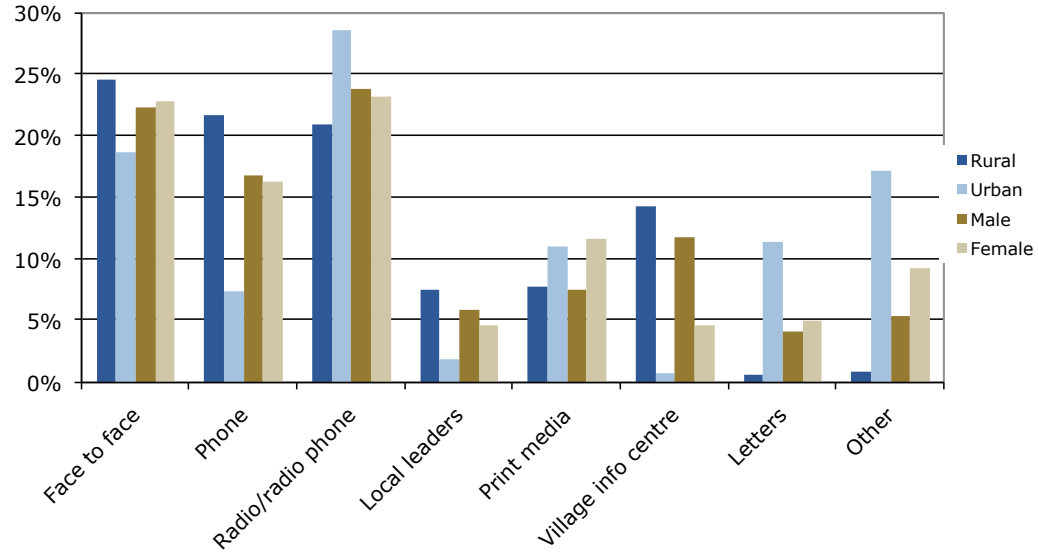
(B) Social information



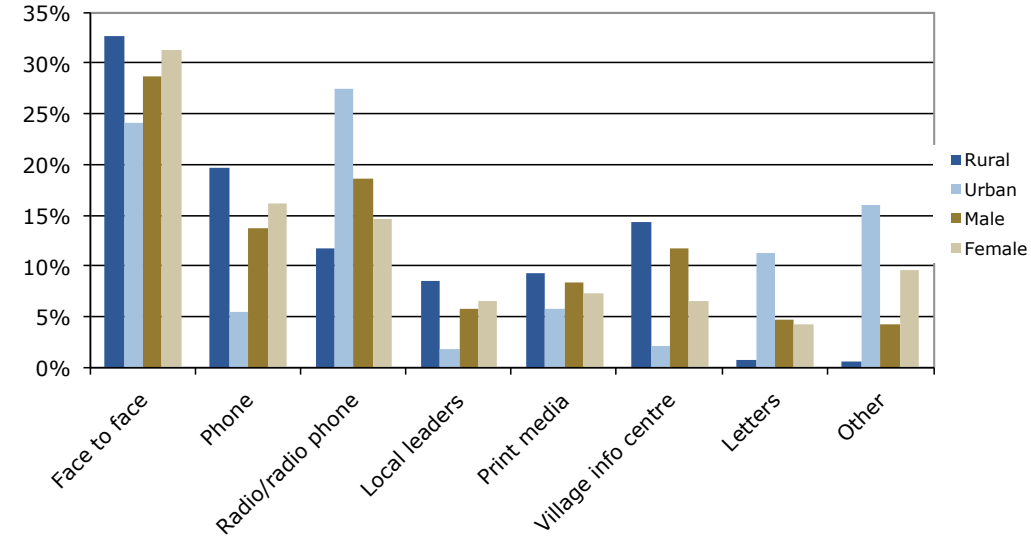
(C) Emergencies



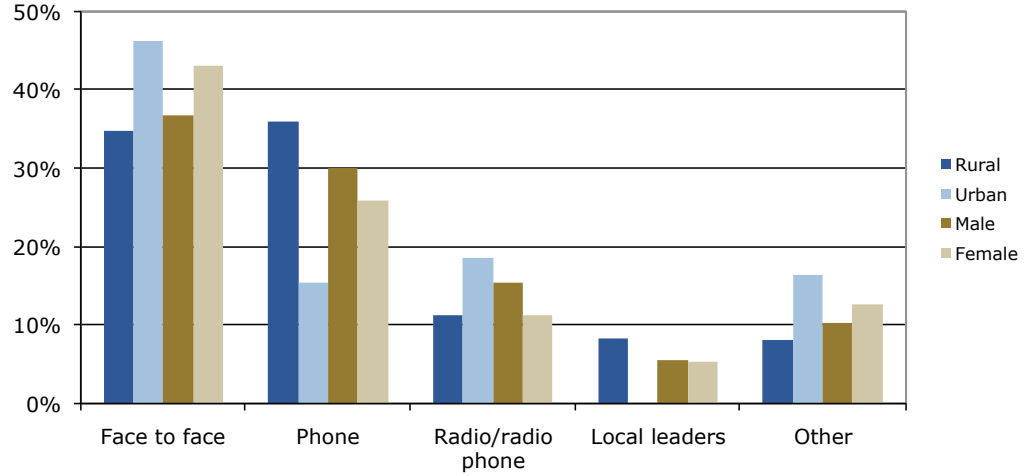
(D) Government services



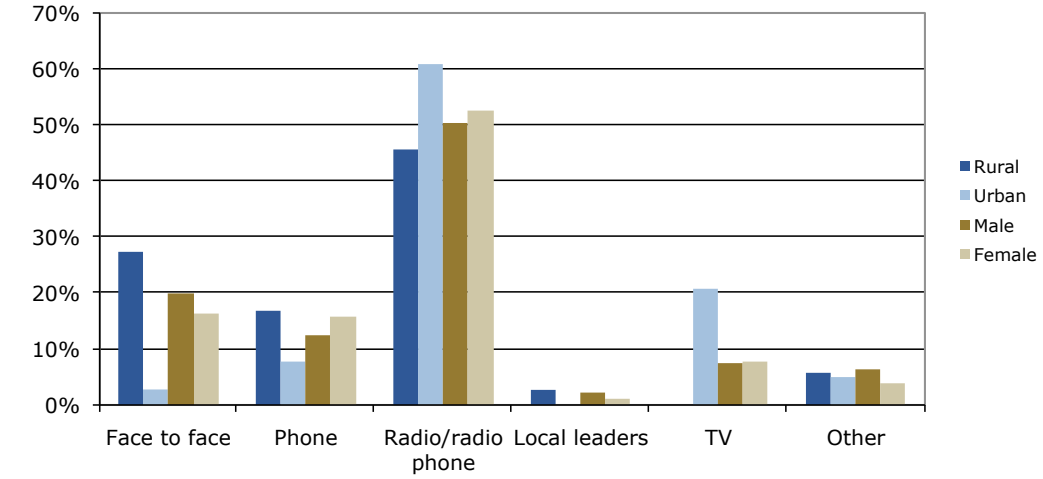
(E) Civil society organisations



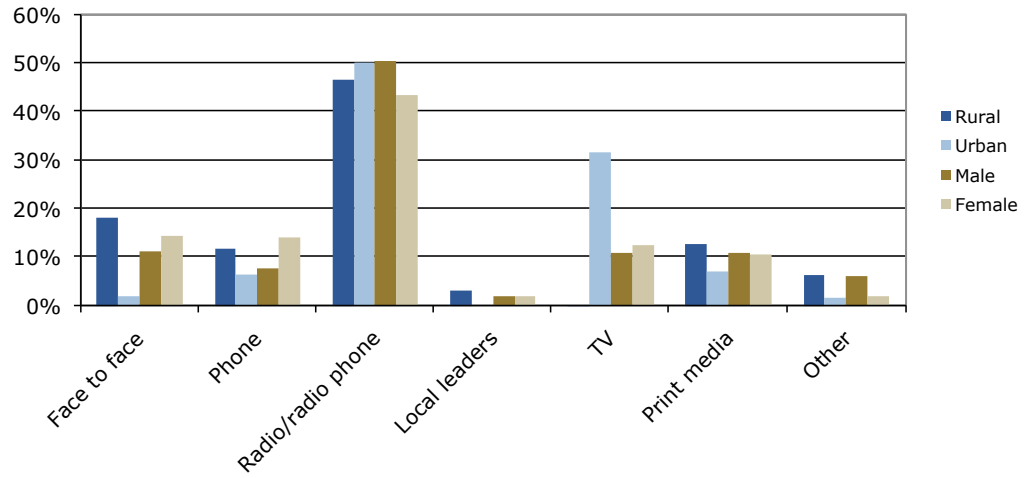
(F) Education



(G) Weather



(H) News



In general, respondents have ranked 'telephone' as the most frequently used means in communicating for emergencies, social information, education, and business and farming. Radio is used more often for accessing news and updates on weather. It must be noted that most respondents, rural ones in particular, in focus group and semi-structured interviews could not recall communicating for government services and civil society-related purposes. This could be because most government services and national level civil society organisations are housed in urban centres with limited reach to rural areas. Hence, respondents could have treated some of these questions as hypothetical rather than as describing current use.

Nevertheless, these results imply telephone is valued most for high priority and social/family information, but it has not supplanted face-to-face communication for business activity. The latter lends further support to the qualitative research finding that face-to-face communication is considered more important for business information and communication. Furthermore, because widespread access to telephone (mobile) remains a recent phenomenon, it still has not been tapped for disseminating news and weather related information.

There are both similarities and differences across rural and urban responses. For instance, both urban (47%) and rural (50%) users rely on radio equally to gain access to news. Comparable percentage of rural (59%) and urban (53%) respondents also use telephone in communicating for emergency purposes. For social information,

rural respondents rely on face to face (52%) first and telephone (30%) second, while rural respondents employed telephone and face to face roughly equally.

Rural respondents make more use of telephone (36% as compared to 15% for urban) for 'education' purposes. The rural respondents who participated in qualitative interviews and discussions pointed to the positive impact telephone is having on 'education' in qualitative interviews. They emphasised how phones are helping them in finding schools for their children in urban areas, checking on children going to school away from the household and tracking school fees payment.

The results thus far suggest telephony has been integrated into existing forms of information and communication flows. However, as Scouter et al. (2005) suggests, respondents prefer different mediums of information and communication for different purposes. The above findings are broadly consistent with the 2008 survey. One can observe a slight shift in communication for social information purposes. In the 2008 study, urban respondents relied on face to face first and telephone second, whereas rural respondents preferred telephony first. The opposite seems to be the case from the above findings. But the observed shift is not significant.

Table 3.18: Changes in information and communication patterns

	Letters and post office	Face to face	Newspapers	Local leaders	Radio telephone
Epi	-0.83	-0.17	-0.21	-0.08	-0.78
Erromango	-0.82	0.00	-0.30	-0.07	-0.64
Pentecost	-0.65	-0.22	-0.08	-0.04	-0.60
Tanna	-0.84	-0.37	-0.46	-0.20	-0.74
Port Olry	-0.33	0.26	-0.14	0.07	-0.11
Rural	**-0.73**	**-0.12**	**-0.26**	**-0.08**	**-0.61**
Black Sands	-0.72	-0.30	0.07	-0.15	-0.68
Fresh Wota 1	-0.74	-0.47	0.07	-0.35	-0.95
Chapuis	-0.80	-0.36	-0.02	-0.24	-0.22
Urban	**-0.75**	**-0.37**	**0.04**	**-0.23**	**-0.58**
Male	-0.73	-0.18	-0.13	-0.11	-0.63
Female	-0.74	-0.27	-0.20	-0.19	-0.55
Total	**-0.73**	**-0.21**	**-0.15**	**-0.13**	**-0.60**

Respondents were asked to indicate if the frequency with which they consulted the following sources of information and communication had changed since they started accessing telephone: letters and postal services, face-to-face communication, use of newspapers, referral to village council and local leaders, and use of radio telephone. Responses were recorded on a scale of -1 to 1 (-1= reduced a lot, -0.5=reduced a little, 0=no change, 0.5=increased a little, and 0.5=increased a lot).

The results are depicted in table 3.18. Responses have ranged between reduced to no change (-0.75 to -0.13). In general, interviews perceive telephone has reduced use of letters, and radio telephone. There has been little difference on referral to local leaders, newspapers and face to face communication. As expected, rural respondents and urban respondents perceive use of letters and radio telephone have decreased more substantially than urban ones do. For instance, in qualitative interviews, many rural respondents said prior to widespread access to telephone, news from their family and friends living in urban areas would be passed through written messages and then re-passed orally to those who were illiterate. This highly inefficient way of passing messages is largely being replaced by widespread access to telephone. These findings are consistent with those from the 2008 telecommunications study.

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4. Case study: Mobile telephony and small and medium enterprises

The introduction of telecommunications throughout Vanuatu continues to affect the value chain of business by reducing the costs of doing business (incremental) and expanding business opportunities (transformational benefits)[2]. However, the major beneficiaries of increased access to telecommunications are 'flyers'[3] who are willing and able to experiment with innovative uses of mobile telephony to expand their businesses.

In this case study, we consider the value chain of four enterprises in rural and urban Vanuatu and the role of telecommunications in addressing the bottlenecks faced by each enterprise. These enterprises are – kava, handicrafts, retail stores, agriculture/ fisheries. The study is a follow up of the 2008 study, and traces any changes that have occurred in behaviour and impact of telephony on small and medium enterprises.

The study demonstrates that value chain of products (product origin, size and location of the business), social cultural context in which businesses operate, and the level of entrepreneurialism together distinguish the information needs and constraints faced by each enterprise. At the same time, businesses rely on efficient information and communication channels to assess the demand for and secure the supply of their products. While the introduction of mobile telephony is reducing costs of doing business and expanding business opportunities, it is primarily the 'flyers' and 'risk takers' who are more able and willing to experiment with innovative uses of mobile telephony to expand their businesses.

In what follows, we first discuss the importance of focusing on telecommunications for small-medium enterprises in Vanuatu, and outline the theoretical and methodological framework employed. Next we analyse the similarities and differences in value chains across four enterprises selected for the purposes of this study, and the role of social cultural context and levels of entrepreneurialism in the information and communication constraints faced by enterprises. This will be followed by discussion on patterns of access and use of telecommunications, and implications of telecommunications for enterprises.

2. Incremental benefits refer to reduction in costs of doing business and transformational benefits refer to expanding business opportunities.

3. According to Grindle et al. (1994) and Mead (1989), 'flyers' enterprises run by true entrepreneurs who have taken up enterprise because they see opportunities for growth.

Context of the case study

The Government of Vanuatu has prioritised the promotion of the private sector, including small agricultural and non-agricultural enterprises, as part of its national development strategy to enable sustainable growth and increase rural incomes (see Government of Vanuatu, *Prioritised Action Agenda 2006-015*). The *Prioritised Action Agenda* outlines the need to create an environment in which economic opportunities can be generated as the core part of the national development strategy. Access to the necessary infrastructure and support services, including telecommunications, is a key part of this objective.

Grindle et al. (1989) and Mead (1994) provide useful definitions of small and medium enterprises in a developing country context like Vanuatu. According to these authors, small and medium enterprises can be categorised as 'survivalists', 'trundlers', and flyers'. Survivalists are enterprises run by those who have no choice but to take up the income-generating activity because they have no other source of livelihood. Trundlers are characterised by relatively static turnover is generally static with little or no desire or capacity to expand. Flyers are enterprises run by true entrepreneurs who seek opportunities for growth.

Small and medium enterprises have a critical social and development role to play in developing countries. They are crucial for the livelihood of many women and men. They may have limited macro economic benefits in terms of wealth creation, growth, innovation and exports. Nevertheless, small and medium enterprises provide economic flexibility by turning household income into local investment that may otherwise be lost in consumption, and also help individuals gain experience and confidence to enhance business development skills (Duncombe and Heeks 2002).

Lessons from other developing countries suggest information and communication asymmetries are one of the prime causes of market failure and the underdevelopment of small agricultural and non-agricultural enterprises. Improved access to telecommunications can decrease overall business and transaction costs, open new market and distributional channels and overcome access barriers to information about markets, prices and consumers (World Bank 2008).

This case study examines the value chain of four archetypical enterprises in Vanuatu (agricultural markets, kava, retail stores and handicrafts), maps the information and communication channels used, and assesses the extent, role, and importance of telecommunications (mobile and fixed line) for these enterprises.

Theoretical and methodological framework: value chain analysis and telecommunications

Value chain analysis explores the relationship between buyer and seller throughout the life cycle of products. Value chain analysis has been used as a development tool to promote pro-poor growth, given it can identify ways in which rural communities can be incorporated into the supply chains of goods sold for profit in the formal economy (Dolan, Humphrey and Harris-Pascal 1999).

The methodology for this case study builds on Kaplinksy's (2000) 'stages of value chain' and Schmitz's (2005) emphasis on understanding the context of value chain. Kapleasenky (2000) uses the value chain to map the sequence of activities required to make various products, including canned fruit and footwear. He argues that understanding the value chain, as well as the key areas of weakness and strength can assist businesses in improving their efficiency. He outlines design, production and marketing as the major stages of the value chain. Kaplinsky's general analysis can be adapted to this specific

research on the impact of telecommunications in business activities in Vanuatu.

Understanding the role of telecommunications at each of Kaplinsky's stages, and the importance of telephony in the production phase, can provide a real indication as to the value of telecoms in a product value chain.

Recognising the dynamic nature of value chains and the broader socio-political context in which any business activity is conducted in developing country contexts, Schmitz (2005) argues that value chain analysis should include three main features:

- The impact of geography and distance;
- The value added-aspect of each activity in the value chains; and
- The actors in the chain that have power over others and on what basis.

This necessitates focus on the stages of value chain outlined by Kaplinsky's model, constraints faced in communicating and acquiring supplies from rural and urban areas in each of the stages, and the identification of major actors and assessment of their relative influence in the supply process.

This case study aims to:

- Understand the value chain and the process by which goods are ordered, produced, transported, and sold to the customer;
- Document channels of information and communication used by small enterprises in this value chain;
- Explore the socio-cultural context in which businesses function and the flows of information and communication in the value chain;
- Identify the extent, role, and importance of telecommunications at each step of the value chain;
- Identify bottlenecks and other limiting factors to efficient communication and information flow;
- Understand business expectations of change in their use of telephony, particularly in the context of telecommunications liberalisation.

The case study draws on thirty nine in-depth interviews amongst those involved in the following, archetypical small and medium enterprises in rural and urban Vanuatu: Kava, handicrafts, retail stores, and agricultural/fishery produces. Appendix I provides details of the enterprises included in the study.

The semi-structured interviews have been complemented by a household level survey as well as surveys conducted in the agricultural market. The household survey included 767 respondents in twelve research locations, representing a cross-section of rural and urban Vanuatu (refer to chapter two of this report for details of research methodology). The focus of the survey was on how households exploit access to telephony and the impact of telephony use on livelihoods in rural and urban Vanuatu. It also included questions on the implications of access to telephony for small businesses, farmers and fishermen who together constituted the majority of enterprises who participated in the survey.

Furthermore, surveys were conducted amongst 168 sellers in the local agricultural markets of Lenakel, Port Vila, Luganville, Atabulu/Atangurua, and Lamen Bay to elicit information about the type of products sold by each seller and patterns of use of telephony.

Value chain, transaction costs and information requirements

Apart from the obvious differences in products sold, the value chain of the studied enterprises differed considerably. These differences, in turn, had implications for the information needs, asymmetries and transactions costs incurred by each enterprise in doing business. Three major sources of differences in the value chain included the following: product origin, location and size of businesses.

Product origin

There were considerable product origin related differences across enterprises. Retail stores in Port Vila specialising in grocery items depended on supplies from a number of wholesale stores. This was contrary to majority of the women who operated out of agricultural markets in Luganville, Port Vila, Ngala, Atanguru, and Lenakel and reported that they grew their own vegetables for sale. The retail stores therefore needed to be informed of, and monitor carefully, a wide range of factors in order to set prices.

To give an illustration, on average the women who were selling at the agricultural markets relied on the following main sources of information to set their prices[4]:

> *Costs of production + costs of logistics +customer preferences + cost of selling at the market + number of other women selling the produce in the market + types of products sold at the market + prices charged by other women selling the produce in the market.*

There was limited variation in any of the factors outlined above, meaning that information required for doing business was low. The women generally produced the same products each year as long as the cost of production was manageable and there was a demand for their product in the market. Of all costs incurred, the highest were for logistics – mainly transportation to and from the market. The respondents were, however, well versed with cost per trip, sharing with others versus coming free, and using a self-owned vehicle or one owned by a friend/relative. The cost of selling was a standard price charged by the municipality (in the case of Lenakel, Luganville and Port Vila) and by the committee of landowners (in the case of Lamen Bay). Variations in prices occurred primarily for seasonal products. Even then, many women sold these products during the season and respondents were generally charging the 'going rate' by making adjustments to the prices once they arrived at the market and assessed what others were charging.

In comparison, the information needs and constraints that the retail stores interviewed were considerably higher. The majority of the retail stores required the following information to determine the unit costs of their product and ensure profitability of their enterprise:

> *Customer preferences for products + stocks in the shop + availability of stocks from wholesale suppliers + price of each product + transportation + the price of each product sold by competitors.*

Furthermore, obtaining the information was complicated by the number of products sold, number of suppliers used, variations in prices and number of shops selling similar products, and changes in prices of products due to external factors such as the recent increases in the price of rice. For example, the retail stores generally relied on more

4. This is apart from those who are 'flyers' as will be discussed in the section on 'individual agency and levels of entrepreneurialism' as well as on 'impact of mobile telephony on businesses'.

than one wholesale store either in Luganville, Port Vila and/or locally to order general and specialised items. Deciding what to order from the general suppliers depended on keeping track of the prices on a regular basis.

Location

The location of the enterprises had a bearing on the value chains, such as on the relative accessibility to suppliers and customers, ease in making logistics related arrangements and more. To give an illustration, the transactions costs incurred in securing a supply of products for kava bar owners in Luganville (Santo) was considerably lower than those in Port Vila (Efate). The kava bar owners interviewed in Luganville relied on farmers living in surrounding villages of Santo to provide a regular supply of kava. Port Vila kava bar owners reported a number of constraints that could impact on regular supply of kava, including:

(a) Limited supply of kava in Port Vila and surrounding areas on Efate meant kava bar owners had to depend on suppliers from the other islands such as Tanna, Epi and Pentecost.

(b) According to two kava operators in Port Vila, there was an absence of wholesale kava suppliers coordinating with different kava suppliers in the outer islands to ensure a steady supply of kava.

(c) Inter-island shipping delays further complicated suppply of kava to Port Vila kava bar operators (refer to Appendix III - inter island shipping).

Similarly, there were noticeable differences between retail stores in Port Vila and those in the rural areas such as Ngala, Port Narvin, and Atabulu. Retail businesses in Port Vila had access to a wider range of wholesale stores in comparison to those in the rural areas. This was because the majority of the wholesale stores based in Luganville and Port Vila and selling to retail stores in the outer islands did not advertise their products extensively outside Port Vila. Information about wholesale stores, prices, types of products sold depended largely on word of mouth. However, as one of the wholesalers interviewed as part of the research stated: “those in the islands do not have the luxury of shopping and go with what they are most familiar with”. Most checked each other’s invoices extensively before deciding which wholesalers they would order from, but this nevertheless limited the pool of wholesale stores they were carrying out business with.

Size

The information constraints faced by *small* enterprises were different to those faced by medium ones. The majority of the small handicraft business interviewed in Santo and Port Vila are supplied by a small number of artists – those who come to sell their products directly and with whom the retail stores have established relationships. This means while costs of transportation and finding information about suppliers are minimal, diversity of products these businesses are able to sell is low.

In comparison, Volcanic Earth is a medium-sized handicraft and skin care business operating out of Port Vila and catering to the tourist and export market. The ideology behind starting the business was to sell a wide selection of locally sourced, chemically free products to Australia, New Zealand, and US. But this requires negotiating the quantity and quality of products at a distance with a wide range of suppliers based in Malekula, Tanna, Santo, and Efate as well as unpredictable inter-island shipment schedule.

Social and economic context of the value chain

The broader social networks and relationships in which enterprises were embedded influenced the type of information needs and transactions costs they incurred in doing

business. For instance, women in the rural markets of Lenakel, Lamen Bay and Atanguru were generally composed of those who either went individually and/or as part of a group from the same geographic location to sell at the market. In such a situation of repeated interactions, cooperation in sharing transport and/or in setting prices was critical for the viability of their businesses. However, all the women had to adhere by the implicit rule of selling their products at the 'going rate', and not reducing prices to clear stocks that remained unsold at the end of each market.

At the same time, social networks and personal relationships could also smoothen the costs of doing business. For instance, one of the kava bar owners interviewed in Luganville had started the business once he was transferred from Vila by the commercial bank branch where he worked during the day. As an outsider he found difficulty securing a steady supply of kava and depended on a middle man who was known to the farmers. In comparison, kava bar owners operating in Port Vila who relied on family members living in outer islands of Tanna and Pentecost to supply kava reported the main benefits of operating through such structures was the fact that the other family members also had a stake in the business as well as an active interest in maintaining familial relationships.

Similarly, one of the major costs incurred by handicraft store owners/managers was finding reliable artists who could supply them with handicrafts on a regular basis. But those who could rely on relatives and/or neighbors who either had access to existing networks of artisans and/or were themselves a part of the network did not incur the additional costs (direct and opportunity costs) of having to find artists when required.

The existing state of infrastructure and institutional set up also had an effect on information needs and bottlenecks to the efficient functioning of businesses. The multiple layers of transaction costs that Nancy Nambil, owner of the Nap store in Port Narvin faced in the absence of formal banking systems serve as illustrations (see Box 4.1).

Individual agency and levels of entrepreneurialism

The enterprises interviewed as part of this case study employed varying strategies to negotiate with and maneuver within the constraints that they faced – both individually (product origin, size and location) and within the broader social and economic constraints in which they were embedded. Grindle and Mead's classification of the small and medium enterprises in developing countries - survivalists, trundlers and flyers - serve as a useful analytical framework in which to understand these strategies.

The majority of the women selling at the markets relied on customers coming to the market to decide on prices and the quantity of products for sale. A common responses for why the women sold the products and at the prices they did were generally: "we started selling the products that we were growing, and depending on which products were more profitable, we started selling them more...the prices of our products are contingent on the going rate and are determined when we come to the market". The profits from the sale of products were enough to cover their expenses, and give them an incentive to continue returning. Only a few, 'flyers', actively sought to create and retain a customer base both within and outside the market (refer also to Box 4.3 of Isabella). Similarly, the fisherfolk who were selling fish (but not lobsters) from Erromango were generally selling irregularly because of the high costs of airfreight and the generally 'catch dependent' nature of their businesses. Refer to Box 4.2 for how the Fishery Cooperative in Port Olry were able to expand their customer base through greater collective action amongst one another.

The majority of the retail stores operating in rural areas surveyed as part of the study

Box 4.1: Social and economic context of the value chain

Nancy Nambil is the owner of Nap store in Port Narvin. She started the business in 2007 to pay school fees for her three children. She has been able to maintain a loyal customer base because the prices that she charges is lower than the ones charged in other, retail stores operating in Port Narvin. She orders primarily from wholesaler Punjas, which she believes sells cheaper and better products compared to those charged by the other mainly wholesale stores she is aware of. Nevertheless, she thinks that the biggest cost of doing business is lack of access to financial institutions. Every time she needs to make a payment to Punjas, she must make repeated calls to ensure that the prices have not changed from the previous invoice + wait for Punjas to call her back with the precise cost of the order + send the money with her husband on a boat to Ipota at a pre-negotiated round trip cost + have her husband pass the money to the lobster middle man + wait for the lobster middle man to send the lobsters to Port Vila + wait for the lobster middle man to arrange his business partner to deliver the payment of her order to Punjas once payment for the lobsters have been made.

Most of the rural areas included in this study have two sets of retail, grocery stores – cooperative and business. The cooperative stores started in the 1970s as a part of a broader initiative by the Department of Cooperative and Ni-Vanuatu Business at the national and provincial levels to provide access to basic necessities within close proximity, foster collective action, and generate a source of income for cooperative members. The cooperative stores have a policy of charging 25% of mark up costs per product. Generally speaking, most households in rural areas are members of the cooperative, receive a dividend at the end of each financial year depending on how much they had spent in the year, and therefore, have a stake in the business (Mr Jospeh Sowany, Director of Cooperatives, Port Vila, 15/07/2009). The newer retail stores wanting to penetrate the local market and compete effectively with the cooperative stores therefore have to closely monitor the price, type, and quantity of products sold at the cooperative stores, in addition to paying attention to the factors outlined in the above discussions under product origin.

sold items that were on regular demand, but were generally unreceptive to trialling new products and increasing the range of products that they sold. The wholesale stores (such as Punjas and LCC store in Santo and Port Vila) that were supplying products to the retail stores in the islands spoke of the difficulties of introducing new products.

> *My atypical conversation with customers in the islands generally constitutes of them reading out a list of products that they want based on their previous invoice, and my getting back to them about whether or not each item they have asked for is available. They rarely ask about new products, only if the product that they have ordered is no longer manufactured and/or sold in the store do I inform them of product change.*
>
> (Henry So, manager of LCC store, Port Vila, 13 June 2009).

Similarly, the majority of the retail store owners in the rural research sites mentioned that they preferred to order the same products each year, as long as there was demand for the product. Consumer demand for basic grocery items such as rice, tin fish etc. had not changed; most customers were brand conscious and preferred to continue consuming what they were accustomed to. Such 'unwillingness' to accept change can be attributed to institutionalised relationship between wholesalers based in Vila and retailers/customers based in the rural islands, on the one hand, and the risk aversion of the retailers/customers in the rural islands, on the other hand.

Nevertheless, a small pool of entrepreneurs interviewed were constantly in search of new products in order to establish and maintain a business edge. Other entrepreneurs had consciously crafted ways of offsetting information asymmetries and transaction costs that they incurred in carrying out business such as insecure supply of products,

Box 4.2: Entrepreneurialism and expansion of customer base

The Fishery Cooperative in Port Olry started in 2005, and has 57 members who sell fish to the cooperative. Each member must pay a 2,000VT membership fee. Non-members can also sell fish to the cooperative, but members receive a dividend at the end of the year. The rule is that the more a member supplies fish to the cooperative, the higher the dividend he/she earns. Prior to 2005, most of the fishfolk were selling the fish that they caught locally. The Department of Cooperatives explained the benefits of collective action in doing business and helped establish the business. The cooperative buys fish from the local fisherfolk at pre-negotiated rates (such as poulet and snapper for 370/kilo, mix fish for 200/kilo) and re-sells them at price range of 300 - 600 VT/kilo depending on the quality of catch and type of customer.

In the four years that the business has operated, the cooperative has established itself as the biggest suppliers of fish in Santo. It exerts considerable leverage over prices charged to customers and paves the way for negotiation over prices carried out by smaller suppliers. The cooperative had tried supplying fish to resorts in Vila, but the shipment costs were too high. But more importantly, the members prefer to focus in Santo because the tourism market is booming and there is increasing demand for Port Olry fish.

unpredictable and inefficient inter-island shipment amongst others. For instance, Tom Allick, the owner of the 'Golden Shower Recreation Center Nakamal' in Beverly Hills was receiving kava from a wide range of kava farmers from Ambae, Epi, Maewo and Pentecost. He differentiated the kava suppliers into two categories:

(1) those who he could depend on to provide reliable and quality kava at all times

(2) those who he could call upon at the last minute in case of short falls in kava.

Drawing on a wide range of kava suppliers from a number of islands, serviced by varying shipment companies was a useful way of offsetting against shipment problems and delays. Other kava bar owners interviewed in Port Vila had to capitalise on factors other than kava (such as food, alcohol, location of kava bar, reputation of the kava being sold) to attract customers on a regular basis.

Notwithstanding the differences in value chain between these enterprises, the structural constraints that they faced, and the functioning and efficiency of each of these enterprises relied on a steady flow of information and communication channels in various stages of the value chain. Kava bar owners, women selling at the market, and handicraft businesses needed to communicate with suppliers, clients, transport agencies and others on a regular basis.

Patterns of access, use and non-use of mobile telephony for business

Patterns of use of telephony include use of various types of telephony, use of telephony versus other means of accessing information, the purpose of telephony use, perceptions of service provision, expectations and reasons for non-use. The quantitative research findings in chapter three established that since the liberalisation of the telecommunications sector and the advent of competition in 2008, there has been near universal access to, and use of, mobile telephony throughout the research areas. Mobile telephony is the preferred mode of information and communication, and respondents have substituted mobile telephony for public and private fixed line. Patronage of TVL has reduced significantly and customers are increasingly using Digicel in both urban and rural areas. Individuals are more likely to use mobile telephony for communicating with friends and family, emergencies and business purposes.

The majority of the entrepreneurs interviewed for this case study were using mobile telephony. Surveys of individuals operating in the markets in Pentecost (30), Lenakel (42), Lamen Bay (10), Luganville (20), and Port Vila (66) were conducted in order to find the following information:

- main products sold by each respondent
- most profitable products sold
- whether or not he/she owns a mobile phone
- if no ownership, whether or not he/she has access to a mobile phone
- if using a mobile phone, which service provider
- if using a mobile phone, when did he/she first acquire a phone
- purpose of phone use
- whether or not he/she using a phone for business purposes
- reasons for use or non-use of phone for business purposes.

As demonstrated in Table 4.1 below, out of a total of 168 individuals who participated in the survey, 90% had access to mobile telephony out of which 74% own a mobile and 36% of the remaining could access one through family members and friends. Out of the total number of individuals who have access to mobile telephony, approximately 56% are using mobile telephony for a wide range of business purposes – from arranging transport to contacting potential and existing customers to sell their produce. Out of a total of 130 reasons given for using mobile telephony, the most common form of mobile telephony use was in arranging transport (42%), contacting customers (20%), and contacting suppliers (15%).

33 out of the 39 individuals who participated in the semi-structured interviews were using mobile telephony for business purposes. The six people who were not using a mobile telephone at the time of the study said lack of network coverage was the reason for non-use. Four of the remaining five had access to mobile telephony but were mainly using it to communicate with friends and family but not for business purposes. Only one of the respondents said that she has never used a mobile telephone.

Out of the thirty-three who were using mobile telephony, seven were using a combination of mobile telephony and fixed line; two were using mobile telephony and fax; one using more than one mobile service provider; and two using mobile telephony along with Internet for business purposes. According to the respondents, using a combination of fixed line and mobile and/or two service providers is a mobile telephony cost saving strategy. Respondents would choose one form of telephony over another depending on destination of call (whether to a land line and/or a mobile, TVL or Digicel). Due to interconnectivity charges, for example, using a land line to call another land line is significantly cheaper than using a mobile (especially Digicel) to call a land line.

All the respondents using mobile telephony said they prefer using mobile phones to private and public fixed line phones – mobile telephony is more accessible, portable and has wider network coverage. For instance, respondents in Port Narvin spoke at length about the difficulties of having to rely on tele-radio prior to accessing a mobile network. At the same time, respondents in Ngala mentioned that they have little choice but to depend on mobile telephony. The closest public phone was no longer in operation at the time of the study.

Table 4.1: Telephony use in rural and urban agricultural markets

Island	Number of people	Number of individuals with mobile	Number of individuals with access to mobile	Service Provider	Number of individuals using mobile for business purposes	Purpose of Mobile Phone Use for Business
Atangurua and Atabulu, Pentecost	30	17	13	Digicel	2	2 Transport
Lenakel, Tanna	42	17	18	30 Digicel 4 TVL	14	14 transport 1 communicating with laborers working in the garden
Lamen Bay, Epi	10	7	1	5 Digicel 2 TVL 1	6	4 transport produce to Vila 1 Order produce from Vila 1 Hire laborer
Luganville, Santo	20	20		20 Digicel	8	3 Arrange transport 2 Contact customers 2 Contact Suppliers 1 Make payment for produce
Port Vila, Efate	66	50	8	53 Digicel 3 TVL 2	54	44 Transport 24 Contact customers 17 Contact Suppliers 5 Shipment schedule 4 Replenish stock while at market 3 Prices (items not sold out) 1 Agricultural department 1 Members of Farmers Association

Respondents were using mobile telephony for at least two of the following purposes - arranging transport, contacting suppliers, facilitating ordering, confirming payment and others. Nevertheless, the extent and nature of use of mobile telephony was contingent on the value chain of their respective products, structural constraints faced in carrying out business, and entrepreneurial attributes of those carrying out the business. For example, three out of the four women interviewed who were selling at the market in Port Vila and using mobile telephony for business purposes said they relied on mobile telephony to pre-arrange transport and in doing so, reduce the costs (direct and opportunity) of taking their produce to the market. However, two of the women reported also using mobile telephony for ordering goods from outer islands and communicating with relatives and family members. In comparison to most of the enterprises interviewed, handicraft owners/managers are more likely to use mobile telephony for wider purposes ranging from ordering supplies and handicrafts from their suppliers, liaising with customers to ensure quality control, informing customers of new products on sale, taking orders from customers, and arranging and confirming payment of suppliers.

Respondents who participated in the semi-structured interviews were also asked to evaluate how their use of telephony has impacted on information and communication

channels used prior to their access to mobile telephony. The main information and communication respondents used prior to mobile telephony were the following: face to face, passing oral messages through others, written instructions/letters, public and private fixed phone, and tele-radio. Most of these communication channels have decreased significantly since the liberalisation of the telecommunications sector. This is consistent with the quantitative research findings reported in chapter three. Although there is an increasing trend for using a combination of fixed line and mobile phone (provided this is an option) in order to reduce expenditure on mobile telephony (refer to Box 4.3 for case study on John Nocklan).

Nevertheless, all of the respondents agreed telephony is a complement to, but not a substitute for, face to face communication. The informal nature of business activity in Vanuatu means much depended upon pre-existing relationships and established patterns of behavior that could not be supplanted by new forms of technology and communication. For example, all the rural retail stores mentioned that although most of the economic transactions (such as ordering, payment, and logistics) between themselves and wholesale stores in either Santo and Tanna are carried out through the

Box 4.3: Entrepreneurialism and incremental benefits of telecommunications

Isabella operates out of the Port Vila fruit and vegetable market, and took over the business from her father who started it approximately 45 years ago. Isabella targets the multi-racial clients who visit the market (such as Chinese and Australians), retail stores (such as Au Bon Marche and Center Point), and Chinese restaurants. She classifies her products into three: self-consumption, market, and retail stores/restaurants, and reserves the best quality for sale at the retail stores/restaurants (first) and market (second). She specialises in fruits and vegetables (such as okra, dwarf beans, and shallots) that are not commonly found in the other market stalls. She has been able to increase the range of products grown in the family farm by either following up on specific requests made by clients in Vila and/or by accepting seeds directly from clients.

Isabella uses private fixed line and more recently mobile telephony for her business. She has been using private fixed line to call her clients, and/or receive orders from restaurants and retail stores for many years. Nevertheless, prior to using mobile telephony, she had to carry an exercise book to take orders from her customers, note the delivery time, and bring the order to the market or arrange for delivery accordingly. But now, she not only calls her clients to inform of specific products they might be interested in, but her clients call her frequently to place orders. Isabella believes that the use of mobile telephony has contributed to her current earning of 105,000 VT – 120,000 VT/week from her market sales alone.

John Nocklan operates two retail stores in Lamlu, Middle Bush, Tanna, and sells range of products including food, household items, and clothes from a number of different wholesalers. He has been using a number of strategies over the years to attract customers to his store. He allows for flexibility in payment to retain a loyal customer base, which he feels is important to operate business in a close knitted community like Lamlu and make a profit at the same time. For instance, if customers are short of cash, he may exchange products he sells for another items such as chickens or mats.

John thinks having access to multiple types of telecommunications has been critical for increasing the efficiency of his businesses, reducing costs, and maintaining his customer base. John uses telecommunications throughout the ordering cycle – from placing orders, checking on the shipment schedule, to arranging for transport of the supplies from the wharf to Middle Bush. He has access to and uses TVL mobile, Digicel mobile, and TVL fixed line, and chooses one over the other depending on the destination of calls and weather conditions. Having multiple access to telecommunications has helped him maintain a good relationship with a wide range of wholesalers and meet customers' requests as and when they are made.

use of telecommunications, face to face visit to the wholesale store(s) at least once a year is critical for maintaining trust and confidence.

The retail stores rely disproportionately on the wholesale stores to deliver goods on time, minimise discrepancies in goods ordered versus goods delivered, provide options in case of shortfalls in goods ordered versus goods available, quality assurance, reduce fluctuations in and ensure competitiveness of prices charged. Similarly, according to Dharmesh Narayan, the manager of Punjas, one of the main ways in which his business has been able to develop a large customer base throughout Vanuatu, and in rural areas in particular, has been to form a large marketing team which visits the rural islands regularly to introduce Punjas' products to potential and existing customers. Although the advent of competition and widespread use of mobile telecommunications has facilitated business, face to face visits have been key in maintaining and expanding clientele base as well as introducing products that are not sold by the larger conglomerates operating in the rural areas.

Access to mobile telephony does not automatically translate into use of mobile telecommunications for business purposes. Out of 39 individuals who participated in the semi-structured interviews, three have access to mobile telephony but are using it solely to communicate with family and friends. As Table 4.1 helps illustrate, only 1% (17 out of 168) of the total women interviewed in the market said they do not have access to mobile telecommunications, whereas 44% have access but are not using mobile telephony for business purposes.

Apart from a few examples of individuals who participated in the study who said that they could not use their mobile phone due to lack of network coverage, the vast majority of such respondents mentioned one or combination of the following reasons for current non-use: use mobile telephony merely to communicate with family and friends, frightened to use mobile telephony regularly, and do not see the need to use mobile telephony for business purposes.

As Table 4.1 illustrates, an equal number of women sellers operating in urban and rural markets reported a lack of access to mobile telephony, however rural respondents were less likely to use mobile telephony for business purposes. As one of the respondents explained, there are more consumers willing and able to buy fruits and vegetables in urban areas of Luganville and Port Vila than in rural ones. Therefore, there are more opportunities for women selling at urban markets to use mobile telecommunications to expand their customer base than there are in rural areas. Similarly, many women selling at rural markets lack the financial and social capital required to access markets in urban areas. Financial capital includes ability to meet the high inter-island shipping and other logistics related costs associated with selling in urban areas whereas social capital includes access to kinship networks which can help in reducing such costs and/or sell the produces in urban areas on behalf of those operating in rural areas. Others view the most useful purpose of mobile telephony for business purposes is in pre-arranging transport, but because they already owned and/or were in regular face-to-face contact with owners of trucks, they do not need to use mobile telephony for business purposes.

Impact of mobile telephony on small and medium enterprises

The respondents to the household survey, market surveys, and semi-structured interviews were asked to evaluate the impact (or expected impact) of mobile telephony on their businesses. The responses suggest that competition in the telecommunications sector, and the subsequent increase in access to mobile telecommunications are

having 'incremental' and 'transformational' benefits on small and medium enterprises. Incremental benefits refer to reduction in costs of doing business and transformational benefits refer to expanding business opportunities. There is also considerable evidence to suggest that wider uses of and subsequent benefits to be attained from mobile telephony for business purposes are likely to develop organically and over time. At the same time, the extent to which entrepreneurs benefit from either incremental and transformational benefits of telecommunications is contingent on their relative entrepreneurial skills, and the social and economic constraints they face in experimenting with wider uses of telecommunication access.

As part of the household level survey, respondents who reported they have their own businesses and have access to telephony (approximately 33 % of the 767 respondents) were asked to evaluate the impact of telephony use (mobile and fixed line) on a series of business related indicators shown in Table 4.2 below. Responses have been recorded on a scale of 0 to 1 (0=no influence/not applicable, 0.5=influence and 1=large influence).

Table 4.2: Implications of telecommunications for business

	New clients	Better Market prices	Reduced Costs	Increased sales	Transport and logistics
Epi	0.46	0.65	0.66	0.54	0.65
Erromango	0.31	0.33	0.30	0.29	0.41
Pentecost	0.80	0.50	0.28	0.56	0.76
Tanna	0.42	0.55	0.52	0.47	0.69
Port Olry	0.45	0.35	0.39	0.43	0.54
Rural	**0.46**	**0.51**	**0.46**	**0.45**	**0.64**
Black Sands	0.54	0.41	0.38	0.50	0.75
Fresh Wota 1	0.50	0.42	0.81	0.72	0.75
Chapuis	0.53	0.48	0.51	0.58	0.62
Urban	**0.52**	**0.46**	**0.52**	**0.58**	**0.67**
Total	**0.48**	**0.50**	**0.49**	**0.49**	**0.65**

Overall, responses have ranged between 0.48 and 0.65, with 'transport' and logistics' having the most influence and 'new clients' the lowest influence. Nevertheless, respondents perceive that access to telecommunications has had influence on each of the business related indicators. At the same time, urban respondents perceive telephony as having more of an influence on the following four of out the five business indicators than rural respondents do: new clients, reduced costs of travel, increased sales, and transport and logistics. Rural respondents perceive telecommunications is having a greater influence on finding out about market prices than urban respondents do.

There are also considerable differences within rural and urban research areas. Amongst the urban respondents, those in Freswota 1 are likely to state higher influence of telecommunications on each of the business indicators . In particular, telecommunications is reducing the overall costs of doing business, increasing sales, and in pre-arranging transport and logistics. Within the rural research sites, respondents in Epi followed closely by Pentecost are more likely to state higher influence of telecommunications on each of the indicators than those residing elsewhere. Respondents in Pentecost perceive impact of telecommunications has been particularly positive in finding new clients and in pre-arranging transport and logistics whereas those in Epi consider telecommunications is helpful in finding out about market prices, reducing overall costs of doing business, and in pre-arranging transport and logistics.

Respondents in Erromango perceive telecommunications has had the least influence

on each of the business indicators. According to focus group discussions and semi-structured interviews, this is likely to be attributed to two main factors: 1) respondents in Port Narvin do not yet have secure access to mobile network coverage and are therefore less likely to use and so evaluate the benefits of using telecommunications for business purposes; and 2) respondents in both Port Narvin and Unpongkor perceive mobile telecommunications has helped but not substituted for lack of secure access to transportation (such as inter-island transport) which are deemed critical for doing business.

There are differences and similarities in the findings between the 2008 (baseline study) and the 2009 studies. In 2008, on average, responses on perceived influence of telecommunications on the five business indicators ranged between 'no influence' to 'little influence' (0 to 0.4). Respondents reported use of telephony had 'little influence' in arranging transport and logistics, but had no influence on 'new clients', 'better market prices', 'costs' and 'sales', but little influence on 'help with transport'. In other words, 'incremental benefits' of telecommunications use was highlighted as having the most significant influence.

Similar to the 2009 findings, there were differences between rural and urban areas with urban respondents more likely to report higher influence on each of the business indicators compared to rural respondents. Rural respondents perceived telecommunications had the highest influence in 'pre-arranging transport' whereas urban respondents perceived help in finding 'new clients' was more significant.

These findings, therefore, suggest greater experience with mobile telecommunications has allowed users to better evaluate the influence of telecommunications on business, and experiment with and benefit from wider uses of telecommunications. At the same time, many rural users are still lagging behind in experimenting with innovative uses of telecommunications compared to their urban counterparts.

The findings above are also comparable to those for market surveys. In 2008, 75% of the women selling at the market in Port Vila had started using mobile telephony during the first two months that Digicel commenced operation (July 2008). But the majority were either using mobile telephony for communicating with friends and family and/or pre-arranging transport to and from the market. In comparison, in Lenakel, the majority of those interviewed had never used a mobile phone in their lives. Findings from the 2009 study suggests that women selling at the market in Port Vila and Luganville were experimenting with broader uses of mobile telephone for business purposes whereas those in Tanna started accessing mobile telephony for the first time. This suggests that individuals are likely to be receptive to experimenting with elaborate uses of mobile telecommunications once they are able to assess the benefits of doing so.

All of the entrepreneurs who participated in the semi-structured interviews and using mobile telecommunications for business purposes at the time of the field study in May – July 2009 agreed mobile telephony was reducing the transaction costs and information asymmetries in carrying out business. For instance, the women respondents selling agricultural products said arranging transportation is their highest overall cost. Access to mobile telephony has allowed them to contact drivers more easily and reduce both the direct (traveling costs) and opportunity (savings of time) costs of doing business.

The kava bar owners depending on supplies of kava roots from outer islands said that access to telephony has improved communications with kava suppliers, intermediaries and shipment agencies. Similarly, the retail stores based in rural islands said mobile telephony had facilitated and reduced costs incurred in placing orders.

At the same time, only a few 'flyers' are also using mobile telephony and/or multiple access to telecommunications since the introduction of competition to further strengthen their existing and extensive network of clients and suppliers. The example of Isabella operating out of the Port Vila market, and John Nocklan owner of retail stores in the Middle Bush, Tanna serve as examples (see Box 4.3 above).

In the 2008 study there was little evidence of any transformational benefits of telecommunications liberalisation, largely because majority of the respondents had just started using mobile services. However, when asked if and how they expected mobile telephony to benefit their business in the future, respondents in Port Vila and Luganville in particular said they expected customers to order fruits and vegetables directly from them. In this way, they would be able to establish business niches and increase the profitability of their enterprise. In comparison, at least 15 out of 33 interviews during this year's (2009) field research pointed out how mobile telephony led to the following, unprecedented changes: expansion of the number of suppliers and clients, increase in the range and amount of products sold, ability to check on prices and ability to contact relevant government departments for support. Box 4.4 (below) provides illustrations of how telephony is being used to expand clientele base, find new suppliers, increase the volume of order, and check on prices.

Certain entrepreneurs (or flyers) have also maximised on the spillover benefits of using mobile telephony. Mobile phone charging businesses have emerged throughout the surveyed areas to serve users without access to electricity. Some of the retail stores interviewed in the rural islands have discussed how the sale of mobile pay-as-you-go credit is increasing profit through the revenue generated from the sale and also attracting customers to the shop. Refer to Box 4.5 (below) for an illustration of the spillover effects of mobile telecommunications.

Furthermore, some respondents are also using mobile telephony to substitute and/or maneuver around wider constraints faced in rural areas. For instance, in the absence of formal banking systems, the cooperative store in Unpongkor (Erromango) is working in partnership with a wholesale[5] store in Port Vila to facilitate the flow of funds between Port Vila and Unpongkor. Depending on the direction of the transfer, those wanting to transfer funds can deposit the amount to either the cooperative store or the wholesale store. The stores call each other to inform of transfers. Customers can pick up the payment at either end within a few hours of the transfer. The two stores charge an administrative fee of 500VT per transfer. Participants in the semi-structured interviews and focus group discussions mentioned how helpful the informal channel had been during shortfalls in cash, emergencies, and in depositing revenue generated during sandalwood season in the bank rather than under the mattress, amongst others. The example of Rosita Tuvur in Box 4.5 serves an illustration of the spillover benefits of such an arrangement for other retail stores operating in Unpongkor.

The discussion thus far suggests that with experience, users will themselves generate wider uses of telephony for business purposes. Nevertheless, lessons from other developing countries suggest the government, civil society organisations, and development agencies can integrate telecommunications into existing rural and urban development program. In particular, in many African and South Asian contexts, telecommunications have been employed as a medium for disseminating information and knowledge to small and business enterprises (refer to Box 4.6). In Vanuatu, this remains an under capitalised area of development intervention.

Access to formal banking facilities remains concentrated in the urban centres in Vanuatu.

5. We have been requested not to identifying the name of the wholesale store for confidentiality purposes.

Box 4.4: Transformational benefits of mobile telephony

Jenny Tamkela has been selling artifacts, baskets and hand printed clothes at the handicraft market in Luganville for the past two years. She started as a sales assistant to another handicraft owner, and began her own business once she felt confident with her business skills and savings she had accumulated. She has spent the last two years building a network of suppliers who are reliable and also flexible enough to experiment with what is in vogue amongst the tourists visiting Luganville. Jenny has been using mobile telephony since last year to order the artifacts that are in high demand. Mobile telephont has also helped her liaise for the first time with female relatives in Pentecost who supply her with good quality Pentecost baskets regularly.

Daniel Namori has been operating three retail stores in Lenakel. He also owns a bakery and a sells chickens. Although Daniel has access to both private land line and a mobile phone, he uses the mobile the most as he is constantly on the move making arrangements for his multiple businesses. Daniel uses telephony for the following purposes: place orders, check on prices, check on shipment schedules and cargo delivery, converse with intermediaries, and take orders directly from customers. Since having access to mobile telephony, Daniel has been able to make regular enquires about any new products being offered and their prices. In this way, access to mobile telephony has helped in offsetting the distance between Lenakel and Port Vila, reduced prices and increased his customer base too.

Joe and Jenita Tumnu co-own and manage a retail store in Atabulu, Pentecost. They must rely heavily on telecommunications for placing orders, making payments and ensuring the profitability of their enterprise. Each ordering cycle consists of at least five calls at the beginning to place the order, check on the product availability and total payment to be made, arrange a relative to make the payment on their behalf, inform the wholesale store of the time of payment, and verify payment has been made and order processed. The husband and wife must then make five to six calls to check which ship is due to leave Port Vila for Atabulu, what time it is due to leave, which route, and inform the wholesale stores to place the order accordingly. Prior to the advent of mobile telephony in Atabulu, Joe and Jenita had to rely on the public phone located in the airport, at least 30 minute walk from the village. Each ordering cycle consumed more than two whole days waiting to use the phone, and making multiple calls to wholesale stores, middlemen to process payment, wharf, and shipment companies.

According to Joe and Jenita, the profitability of the enterprise has increased due to reduction in the transactions costs incurred in making a phone call, and being able to maximise on the options to speak more regularly with and receive calls directly from wholesale stores. But more importantly, they have been better able to maintain relationship with a range of wholesale stores, monitor prices and products on a regular basis, and offer customers cheaper and more items compared to the other four stores in the village.

Simon has been operating a lobster business out of Ipota, Erromango for 9 years. He buys lobsters from neighboring villages such as Port Narvin and sells it to high-end hotels and restaurants in Port Vila. A relative in Vila helps him deliver the lobster to clients, and send the payments back to him in Erromango. Communication with his suppliers (lobster farmers), intermediaries and clients remains a major problem. Until recently, he only had access to the tele-radio at the airport which was not always available for use. Sometimes clients would place an order, but there would be no lobster supply. At other times, there would be sufficient lobster supply, but the clients would have pre-ordered from elsewhere. Lobsters also have a short life span once caught, which makes timely delivery all the more important. Simon primarily uses mobile telephony to get in touch with his suppliers, customers, and intermediaries in Vila. Mobile telephony has also helped him to check on the going rate of lobster in Vila and make adjustments to his prices accordingly. Neverthleess, he has to ride a horse to the nearest access point which is 9km away, every time he wants to make or is expecting a call. Simon expects better network coverage in Ipota would help him: coordinate better, increase the supply of lobsters, and supply regularly to a wider range of clients.

Box 4.5: Spillover effects of mobile telecommunications

The two retail store interviewed in Ngala, Epi mentioned that one of his highest and most regular source of revenue comes from the sale of Digicel calling credit cards. Ngala is outside of the network coverage zone, but there is one point, close to the shore where a very low signal was available at the time of the field study. The villagers managed to find the spot once the only public telephony within a two hour radius of the village stopped functioning. It was reported that weak signals meant 200VT worth of calling credit allowed users to convey not more than 10 words at a time. Cost saving strategies such as using SMS, and receiving rather than making calls are rarely available. Demand for 200 VT calling credit cards is fairly inelastic because mobile telephony is the only form of communication available in the village, and users had yet to experiment with electronic re-fills at the time of the field study. The three retail stores in the village have colluded with each other to sell 200 VT calling credit cards for at least 230 VT. The rationale is that the cards are sold to the retail stores at 184VT per unit, barely enough to cover costs of transportation to and from Lamen Bay. When calling credit cards are in short supply, the retail price increases up to 270VT and still sell.

Rosita Tuvur owns a small retail store in Unpongkor, and sells rice, tin fish, sugar and other items consumed regularly by the households in the village. She orders predominantly from the same wholesale store in Port Vila (LCC) having carried out an extensive research on quality and reliability of a range of wholesalers supplying to Unpongkor. Initially her biggest problem was that she did not have a long standing relationship with the LCC store and had to make the payments in advance before her order was processed. There are no financial institutions operating out of Unpongkor, and she would have to rely on multiple and often unreliable channels to make payments in advance. But since the advent of mobile coverage and the arrangement between the wholesale store and cooperative store in Unpongkor, she is able to make payments directly and minimise on the leakage of funds.

The major commercial banks (ANZ, Westpac, and BRED) do not have obligations to extend banking services to customers in rural areas[6]. The ANZ bank offers 'mobile banking' facilities in rural Efate. On Tuesdays and Wednesdays, the mobile banking staff travel to approximately 30 villages in Efate to open new accounts, collect deposits and enable withdrawals. At the time of this study ANZ had approximately 300 such rural accounts (overall total number of accounts is approximately 30,000). The National Bank of Vanuatu (NBV), an entirely state-owned enterprise, has 22 branches across the country. At the time of this study, the NBV was in the process of opening two additional banks in Ipota (Erromango) and Port Olry (Santo). The NBV is taking a number of steps to improve the service and profitability of its rural banking operations. The bank is working with Digicel (primarily) and TVL to convert all the rural 'offline' branches into online ones[7] (that is connect them to the central banking system). The most important requirement for being online is access to secure mobile and Internet services. GPRS and VISAT systems allow the banks to communicate directly with each other and the headquarters in Vila. NBV is also working with the Asian Development Bank to extend financial services in remote areas. Instead of setting up new branches, the focus will be ensuring that each bank branch operate as a hub to facilitate agents. Agents will be equipped with equipment to facilitate EFTPOS[8] transactions. At present, the NBV is investigating trailing such a system in three offline branches in Nguna, Pele and Eton (rural Efate). The implementation of these plans will be contingent upon secure network coverage and in building effective partnerships with the telecommunication companies, as well as access to electricity (refer to Appendix IV - rural electrification).

6. Interview with Shane Smith, General Manager, Westpac Banking Corporation, Port Vila, 2nd July 2009.

7. John A. Aruhuri, Head of Rural Banking, National Bank of Vanuatu, 3 July 2009.

8. Electronic fund transfer at point of sale.

Mobile banking services have developed internationally (see Box 4.5) and serve as an example to both the government and private sector in Vanuatu as possible means of addressing the constraints to businesses and individuals in rural areas.

Box 4.5: International examples of mobile transfer of funds

There are a number of ways in which mobile telephony is being used to transfer funds and substitute for a lack of access to formal banking systems in many developing countries. For instance, in countries where airtime can be transferred directly from one phone to another by text message, individuals can load credit onto their phone, and then send it to someone on the spot who in return gives cash to the recipient.

Mobile service providers such as M-PESA in Kenya, Wizzit in South Africa and Gcash and Smart Money in the Philippines have also set up mobile payment systems that allow real money, rather than just airtime, to be transferred from one user to another.

Once a customer has signed up to the mobile money account, she/he can hand cash to a mobile operator's vendor to credit money into the account, and withdraw money from another agent who first checks if there is sufficient balance in the account. The system also allows customers to transfer money via text message. The recipient receives a code that he/she can claim back in the form of cash from an agent.

A recent study by the World Bank suggests that the high number of mobile telephone users and airtime sellers provides a fertile ground to bring financial services to those who dont have access to formal banking services across developing countries.

Source: Report on telecoms in emerging markets, *The Economist,* September 26th-October 2nd, 2009.

5. Case study: Gender and telecoms

The gender gap in ownership of mobile telephony has decreased in urban areas but has increased in rural areas - rural men are still more likely than rural women to own a mobile phone. Women in rural areas are more likely than men to use mobile telephony for 'relationship maintenance' purposes because of gender disparities in decision-making processes in the household, and the lack of income generating opportunities available to women in rural contexts.

This case study presents findings from quantitative and qualitative research on the social and economic implications of telecommunications liberalisation for men and women in rural and urban Vanuatu. The research draws on a household level survey conducted in twelve communities representing a cross-section of rural and urban Vanuatu (refer to chapter two for details of the research methodology). The household survey sample size was 767 households. The survey data has been disaggregated, enabling an analysis of the gender differences in patterns of use of services and the impact of telecommunications on women and men. The qualitative data has been gathered through semi-structured interviews and focus groups discussions with approximately 142 male and female participants from the research areas.

The major findings of the research are:

- The gender gap in ownership of mobile telephony has decreased in urban areas but increased in rural areas.
- Women are experimenting with a wider range of uses of telecommunications compared to 2008. Lower literacy rates no longer pose as a significant barrier for women to access low-cost services such as SMS.
- There are little differences in the type of information and communication channels men and women prefer accessing. However, women have a higher propensity to use mobile telephony for accessing social information or for 'relationship maintenance'.
- Such differences in men and women's use of mobile telephony in rural areas is likely to be a product of intra-household division of labour as well as allocation of resources and/or women's lack of income generating opportunities.
- There are little differences in how men and women use mobile telephony in urban areas because women are more likely to be involved in a wider spectrum of income generating activities, on par with men.
- Mobile telephony is having a greater impact reducing women's use and dependence on pre-existing information and communication channels compared to men.

- Both men and women considered telecommunications as having more of a significant impact on household livelihoods (vulnerability, social, financial and human capital) compared to 2008. However, men consider the impact of telecommunications has been most significant in reducing household vulnerability, whereas women consider impact on social capital has been more important.

- Women associate the negative aspects of mobile telephony with increases in male infidelity and health related problems. Men consider telecommunication is eroding '*kastom'* (or customary beliefs and practices), triggering inter and intra-community conflicts, and encouraging illegal and clandestine behaviour.

This case study suggests that policy makers be cognisant of the gendered impact of telecommunications liberalisation, and ensure concerns of men and women are equally taken into account in policies relating to telecommunications liberalisation.

In order to present the research findings, this chapter has been divided into six sections. It begins by outlining the rationale behind examining the linkages between gender and telecommunications, and the research methods employed to conduct this case study. This is followed by summary of research findings on gendered patterns of access and ownership of telephony; patterns of use of telephony; and perceptions of the benefits and costs of greater access to telecommunication services.

Rationale behind the case study

Gender inequality remains a paramount concern for policy makers in Vanuatu. The government's commitment to the *Convention on the Elimination of All Forms of Discrimination against Women* (CEDAW) at the international level, and implementation of the *National Children's Policy 2007-2011* serve as examples of policies aimed at greater gender inclusion. In spite of these efforts, macro-level indicators and studies suggest the interests of women are lagging far behind men (Rosalind and Toka 2004). The UNDP's (2006/7) gender-related indices for Vanuatu suggest gender inequalities in income earned, number of positions held in parliament by women and more[9].

Micro-level and ethnographic research[10] in Vanuatu points to considerable variations in the gendered experiences of men and women in both rural and urban areas. For instance Marcus Cox et al (2007) points out that while participation of women in comparison to men in mainstream politics is low, there is considerable variation at the inter-island level with some island communities more receptive to accepting women in leadership positions than others. Similarly, research on gender and land related issues points to differences in men and women's access to land in matrilineal and patrilineal communities (Naupa and Simo 2006). These studies caution against treating men and women as homogenous groups, and extrapolating macro-level data to explicate gender based disadvantage at the intra-household and community levels in rural and urban areas.

Lessons from other developing countries suggest that policies aimed at increasing access to telephony does not 'trickle down' equitably. Gender based inequalities in patterns of use and access to telecommunications and ICTs in general, has been a major concern within the development community (see: World Bank 2005, UNDP and UNIFEM 2004).

9. . http://hdrstats.undp.org/countries/data_sheets/cty_ds_VUT.html

10. . See: Jolly 1994, AusAid 2006, Naupa 2005, Erikson 2006 amongst others.

At the same time, ethnographic research on telecommunications in developing countries points to ways in which pre-existing relations between men and women interact with and shape access and use of telephony. For instance, Skuse and Cousins (2008) point out changing intra-household economic relations and the increase in female-headed households have translated to women having greater access to telecoms than men in urban South Africa.

Being sensitive to macro-level gendered inequalities, combined with a more contextualised analysis of variations in gender experiences within and between rural and urban Vanuatu is critical for assessing the gendered ramifications of telecommunications.

Research methods

The case study is a follow up to the 2008 study and draws on a combination of quantitative and qualitative research methods to elicit the impact of telecommunications liberalisation on men and women.

The quantitative research is based on a household survey of 767 respondents in twelve research locations (on six islands) in rural and urban Vanuatu. The data was disaggregated along gender and geography to analyse patterns of differences and similarities in responses. Chapter three of this report discusses the quantitative research findings in detail. This section focuses on the gender dimensions of the research findings on patterns of ownership and use, and perceptions of the impact of telecommunications services on livelihoods and existing information and communication flows.

The qualitative research draws on 21 focus group discussions and 42 semi-structured interviews conducted in twelve research locations with a combined total of approximately 142 participants. Refer to Appendix II for a list of focus group and semi-structured interviews. The qualitative research methods for this case study focused specifically on the following issues from a gender perspective:

- Household revenue and expenditure patterns and decision making processes
- Access and ownership of mobile telephony
- Everyday uses of mobile telephony
- Social and cultural symbolism behind mobile telephony
- Perceptions of impact of mobile telephony.

The emphasis has been on comparing and contrasting responses by age, gender, location and economic wellbeing. Respondents were also asked directly if they perceived any difference in patterns of telephony use by household members of opposite gender.

The focus group discussions provided a forum for participants to discuss their thoughts and experiences of issues identified by the research team and facilitated by the moderator (also see: Fallon and Brown 2002). The semi-structured interviews were about building rapport with the participants and gathering information about their individual and household socio-economic backgrounds, and patterns of access and use of telephone.

The qualitative research methods focused on open-ended questions to allow the interviewers to probe as and when needed, and the respondents to open up about their experiences and thoughts. The research team discussed the above outlined issues both separately and together, with male and female users of telephony of various ages in rural and urban areas. The focus was at the household and extra-household levels, looking into resource allocation processes, socio-cultural meanings and value of mobile telephony, and their gendered implications.

Given the sensitivity of much of the responses sought, each respondent was selected

by the researchers and based on his/her willingness to participate. Many of the respondents had participated in the household level survey. A wide variety of individuals were interviewed based on a combination of the following characteristics: gender, age, marital status, level of education, occupation, location, and positions in communal hierarchy.

The focus of the questions were on 'mobile telephony' as opposed to telephony in general because of the following reasons: (a) fixed line and mobile telephony are both covered by the household-level questionnaire; (b) mobile telephony has distinctive characteristics (such as accessibility) that merit attention; (c) the policy changes in the telecommunications sector is targeted specifically at increasing access to mobile telephony.

Demographic characteristics of respondents

As detailed in chapter three, the field survey was conducted with a total of 767 adult respondents, aged 18 years and above, in rural and urban areas of Vanuatu. There was an equal distribution of respondents in rural and urban areas. 66 per cent of the respondents were male and 34 per cent female. This is consistent with the response rate in the 2008 study where 62% of the respondents were male and 38% were female.

The survey was designed to capture an equal number of men and women respondents, targeting adult members of households, irrespective of gender. An equal number of male and female respondents were approached; and where possible, an equal number of male and female enumerators were employed with the assumption gender of the enumerator may have a positive influence in securing gender parity in response rate. Gender sensitivity in approaching and facilitating responses from women respondents constituted an important component of the training of enumerators for the 2009 telecommunications study. In spite of these efforts, the research team found that the imbalance in gender of respondents was because men were more willing to participate and more forthcoming in their response than women. There could be many reasons for this low response rate amongst women, for example the female response rates in rural sampled areas such as Epi were probably because many of the women in Ngala were not accustomed to interacting with outsiders and conversing in Bislama.

Figure 5.1: Average age of female and male respondents

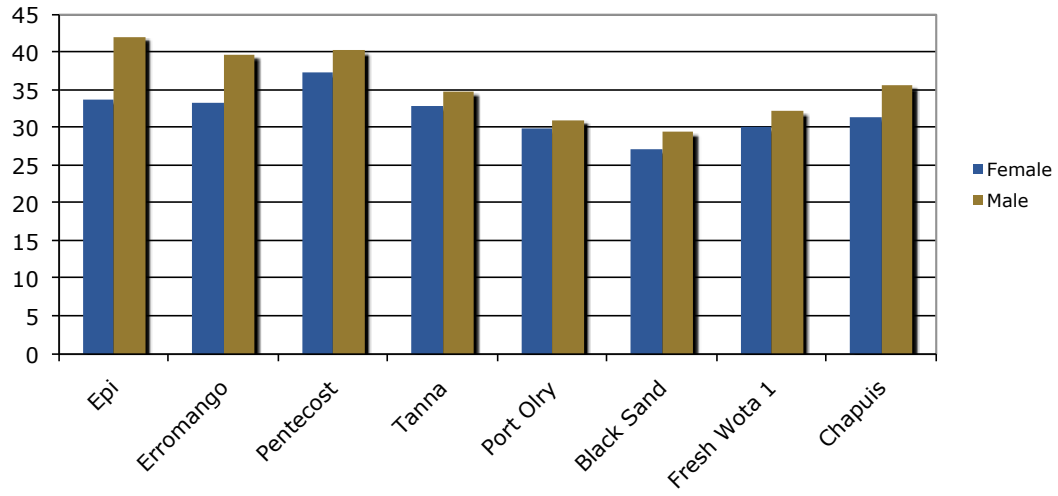
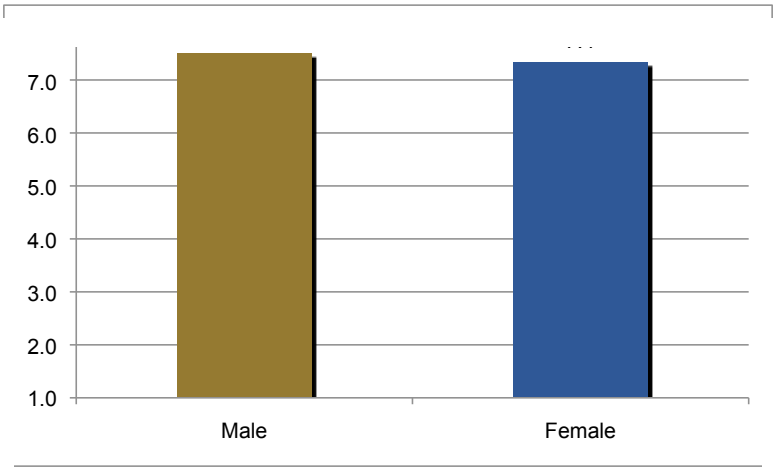


Figure 5.1 disaggregates the age of respondents along gender and geographical lines,

and depicts that the average overall age of respondents was 32 for male and 36 for female. The average age of male of respondents in rural areas was 38 and 32 in urban areas. Female respondents were slightly younger, with average age in rural areas 33 30 in urban areas.

Figure 5.2: Average number of years of school completed by men and women



As Figure 5.2 demonstrates the average years of school completed by men and women are roughly comparable, with male respondents having completed marginally more years of schooling.

Table 5.1: Declared annual income in Vatu (thousands) per year

	Male	Female	Total
Epi	240	130	200
Erromango	200	99	180
Pentecost	160	92	140
Port Olry	380	340	350
Tanna	260	170	230
Rural	**240**	**170**	**210**
Black Sands	560	450	520
Fresh Wota 1	620	660	640
Chapuis	430	340	390
Urban	**530**	**440**	**500**
Mean	**330**	**260**	**310**

The data on declared income has been disaggregated by gender, and the findings are depicted in Table 5.1 above. The caveats of using declared monthly income as an indicator to measure economic well-being have already been highlighted in the chapter three (see p.20). This, nevertheless, does serve as an indication of economic well-being between men and women both at the aggregate level, and also in rural and urban areas. As expected, at the aggregate level, women earn significantly less than men with women earning on average 260,000 a year and men 330,000. Similarly, women earn less than men in both rural and urban areas on average. Surprisingly, women are more likely to earn more than men in Freswota 1. The gender disparity in men and women's declared annual income is particularly acute in Erromango and Pentecost where women earn approximately 50% less than men do. This is also consistent with the focus group discussions with men and women in these areas where both genders

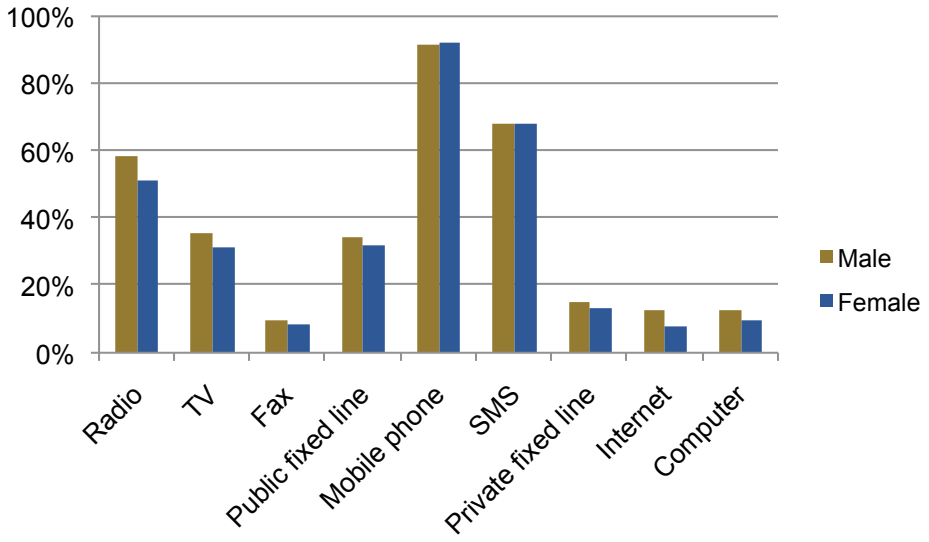
suggested that the income generating potential for women is significantly lower than those for men, and that men manage and control majority of what constitutes as the 'household income'. As the discussions in the proceeding sections will further highlight, similarities and differences in declared income have an influence on women's access and ownership of income.

Patterns of access and ownership of mobile telephony

The household survey included questions to find patterns of access and ownership of telephony. Respondents were asked to indicate which of the following forms of information and communication they had access to: radio, TV, Fax, public telephone, mobile telephone, SMS, private land line, E-mail, and computer. Section 5 summarises the major findings of the household survey and shows that the vast majority of respondents have access to mobile telephony; however, access to private land line, e-mail and computer is negligible throughout the research areas; and access to radio and TV are much higher amongst urban respondents than rural ones.

When disaggregated along gender lines, as is illustrated in the Figure 5.3 below, male respondents have slightly more access to the following mediums of information and communication vis-à-vis female respondents: radio (7 percent more), TV (5 percent more), public fixed line (3 percent more), Internet (5 percent more), and computer (3 percent more). An equal percentage of men and women have access to mobile telephony (92%), SMS (68%), and fax (9%). As pointed out in Chapter 5, this represents a significant rise in access to mobile telecommunications and SMS since 2008, for both men and women alike.

Figure 5.3: Access to information and communication mediums



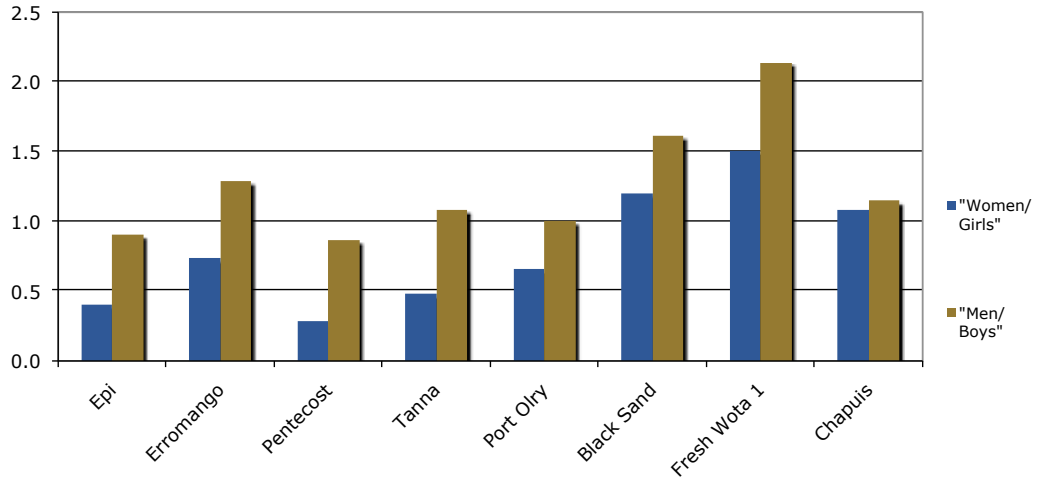
As part of the household survey, respondents were asked to list the total number of mobile handsets per household as well as the gender of the household members who owned a mobile phone. Chapter three revealed that on average, there are 1.6 mobile phones per household in rural areas whereas 2.8 per household in urban areas. As shown in Table 5.2 and Figure 5.4 below, there are gender disparities in ownership of mobile telephony. There are more men than there are women who own mobile phones in both rural and urban areas. At the same time, there are more respondents, men and women, who own mobiles in urban areas than there are in rural areas. This suggests

that both gender and geography are important in determining ownership of mobile telephony.

Table 5.2: Gender disparities in patterns of ownership of mobile telephony

Number of phones in household	Average	owned by women and girls	owned by men and boys
Epi	1.3	0.4	0.9
Erromango	2.0	0.7	1.3
Pentecost	1.2	0.3	0.9
Tanna	1.7	0.5	1.1
Port Olry	1.7	0.7	1.0
Rural	**1.6**	**0.5**	**1.0**
Black Sands	2.8	1.2	1.6
Fresh Wota 1	3.7	1.5	2.1
Chapuis	2.3	1.1	1.1
Urban	**2.8**	**1.2**	**1.6**
Total	**2.0**	**0.8**	**1.2**

Figure 5.4: Gender and ownership of mobile telephony (number of phones)



The average number of mobile phones per household in urban areas remained relatively stable from 2008 (2.7 in 2008 and 2.8 in 2009). However, in rural areas the number of mobile phones per household increased substantially from 1.1 in 2008 to 1.7 in 2009. Out of a total of 278 mobile telephones owned by the 168 households surveyed in 2008, men owned 59% of the mobile telephones while women owned 41%. Interestingly in 2008, the gender disparities in ownership of mobile telephony were greater in urban areas than in rural ones. Women owned 40% out of 78 mobile telephones in rural areas but only 27% out of 200 mobiles in urban areas. In 2009, while access to and ownership of mobile telephones has increased substantially in urban and rural areas, there has been a decrease in gender gap in ownership in urban areas and an increase in rural areas. These results suggest that the uptake of the new technology is generally led by men.

In the rural research sites in 2008, individuals (male or female) owned mobile telephony and extended varying access rights to other members. The vast majority of male and female respondents said they preferred to own a mobile phone rather than to share

one. Nevertheless, only a limited number of women participants who either exerted considerable control over and/or earned an independent income owned a mobile phone. Even in relatively affluent rural areas such as Port Olry participants in both male and female focus group discussions said they considered having access to a mobile phone a social and economic necessity but multiple ownership a luxury that only well off households could afford.

The focus group discussions and semi-structured interviews carried out in rural areas this year (2009) suggests that while women's relative bargaining power and influence in household decision making processes continues to have a bearing on patterns of ownership of mobile telephony (Refer to Box 5.1), both men and women purchased a mobile phone after observing the benefits of using one and/or when the costs of acquiring mobile telephony reduced. Digicel has carried out special promotions on handsets on multiple occasions throughout the research areas (refer to the case study on household income in chapter six).

Box 5.1: Intra-household decision-making processes and women's ownership of mobile telephony

Anna Abel is 39 years old and lives in Port Narvin, Erromango with her husband, and two sons. Three of her sons currently live outside of Erromango. Joseph and Roger are in secondary school in Tanna whereas Anna's brother has adopted Cyro and he lives in Port Vila. Anna is employed full time as trainer/manager of the Rural Training Centre (RTC) and voluntarily assumes the position of the chairperson of the women's savings and loan society. Anna is the only household member who earns a regular income, which she uses to purchase monthly food items consumed by the household and pay for three of her children's school fees and living expenses. Anna is the only one in the household with a mobile phone. She uses it to communicate with the rural training centres association (VRDTCA) in Port Vila, Department of Cooperatives in Tanna and her three sons who currently live away. She allows her husband and her eldest son to use the mobile phone only once in a while - usually when she is not expecting to use.

Nelly is 35 years old and lives with her husband and three small children in Ngala, Epi. She works as a nurse in the Ngala dispensary while her husband is employed as the manager of the cooperative store and owns a transport business. Nelly and Ram pool their monthly income for recurrent household expenditures (e.g. food items, kerosene) and keep the remaining in separate purses. Both Nelly and her husband Ram own a mobile phone each. Ram uses it to order supplies and fuel, and check on shipments. Nelly contacts the health post in Lamen Bay on a regular basis and in emergencies, and ensures her monthly salary has been deposited on time.

Irene is a full time mother and lives with her six year old son in Lamen Bay, Epi. Her 19 years old daughter and 13 years old son are going to secondary school in Port Vila and live with her cousin sister there. Irene's husband has been working in New Zealand since March 2008. Irene's husband remits funds back home every three months – either through a trusted friend and/or brings when he visits. Irene manages all the household finances while he is away. She generally allocates the remittance he sends for regular household expenditures, school fees, and saving. She has already bought a solar panel from the savings she has accumulated. Her husband gifted her a new mobile phone from New Zealand. She uses the mobile communicate with her husband and children and monitor the payment of school fees.

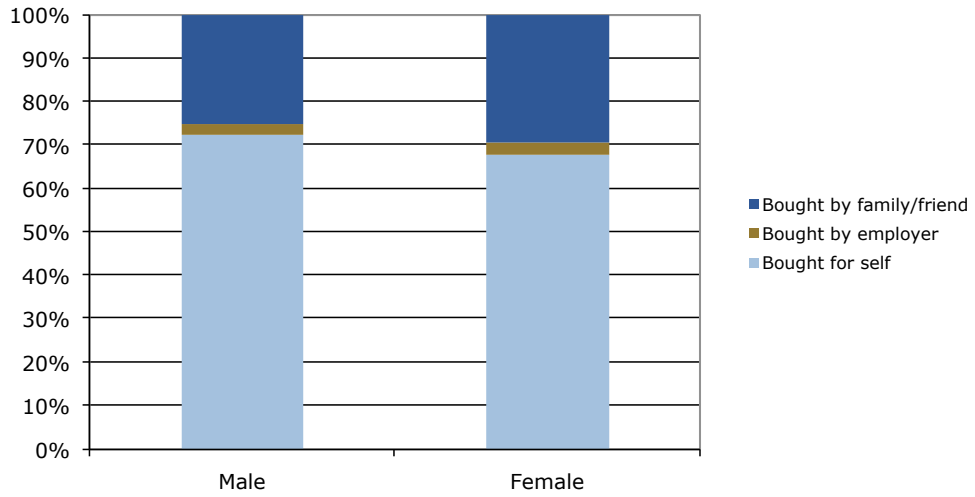
Apart from a few exceptions, the majority of male and female respondents gave a number of overlapping and contrasting reasons for why they prefer to own rather than to share a mobile phone. Participants in male and female focus group discussions in Ngala, Epi said sharing limits the ability to receive calls, and use at convenience. Owners of mobile phones expressed anxiety over the possibilities of borrowers misusing their phones

and/or using or redirecting calling credit. Male participants in Port Olry and Port Narvin highlighted the ways in which women's ownership of mobile telephony has helped men contact women while they are away for hunting or fishing purposes, get in touch rapidly during emergencies (e.g. shortage of fuel and poor weather conditions while in sea), and liaise with buyers and/or middle men on their behalf. In comparison, three of the five women in the focus group said they decided to purchase a personal mobile handset because when there is only one in the household, the husband tended to treat it as his personal property. Women's access and use of men's mobile phones was reported to be a constant source of conflict at the household level.

Nevertheless, the above observed gender disparities in mobile telephony ownership can be attributed to two main factors. First, Epi, Erromango and Pentecost included research locations (Ngala in Epi, Port Narvin in Erromango and Levetlis in Pentecost) that are currently outside network coverage zones. Respondents spoke of the difficulties and the costs associated with finding a reliable connection. In such situations, as two respondents explained, it made economic sense to share a mobile handset even if it meant women had to accept that the mobile would be 'owned' by a male household member. Second, according to focus group discussions with men in Atabulu (Pentecost), Unpongkor (Erromango), and Middle Bush (Tanna), women are less likely to own a mobile phone because they are engaged in limited, independent income earning activities and are, therefore, dependent on men to purchase a mobile and/or to buy credit.

Respondents have also indicated the following ways in which they first acquired a mobile telephone: purchased by respondent, purchased by family or friend, and purchased by employer. The findings are illustrated in the Figure 5.5, and suggest that an equal number of men and women have purchased their first mobile phones themselves. Women are only slightly more dependent on family and friends to purchase a mobile on their behalf than men are.

Figure 5.5: Acquisition of mobile telephony



Broadly speaking, women's low income generating potential, and therefore relatively lower purchasing power, helps explain the observed gender disparities in ownership of mobile telephony. This was also consistent with findings from the focus group discussions and semi-structured interviews where women respondents who are also owners of mobile telephony said they bought a mobile themselves through earnings from running market stalls, and/or salary from formal employment. Asking their husbands to purchase a mobile handset was considered a last option.

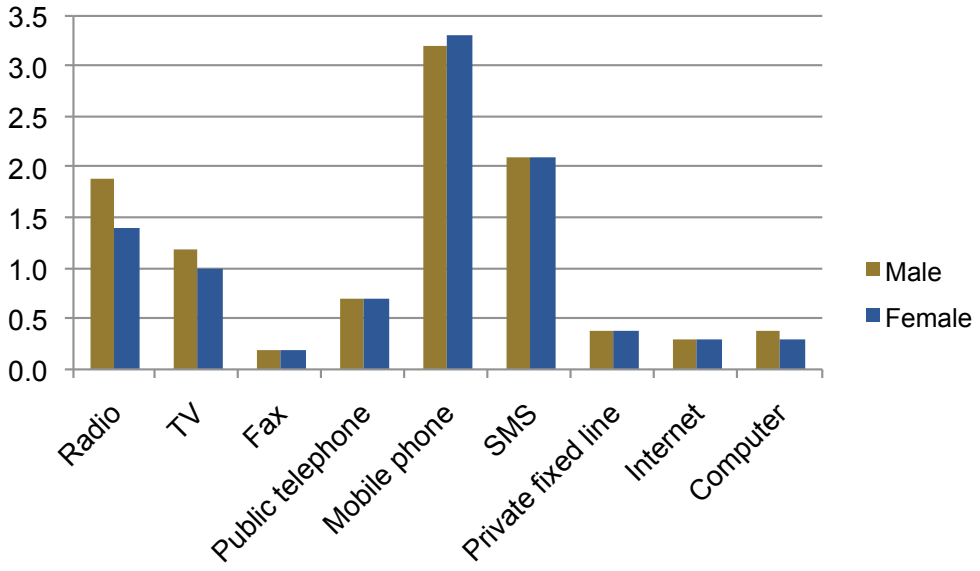
Patterns of mobile use by men and women

The household survey included a series of questions to elicit responses on patterns of use of mobile telephony. These included questions on frequency of different types of telephony use, expenditure patterns on mobile telephony, nature of mobile telephony use, and purpose of using a mobile telephone.

Respondents have indicated how frequently they use the following mediums of information and communication: radio, TV, fax, public fixed line, mobile phone, SMS, private fixed line, Internet and computer. Responses have been recorded on a scale of 0 to 4 (0 = not used, 1 = less than once a month, 2 = more than once a month, 3 = weekly, and 4 = daily). As Figure 3.9 in chapter three illustrates, the survey results demonstrate that, on average, respondents use mobile telephony weekly (3.2), SMS less than once a month (2.1), and radio almost once a month (1.7). The frequency of uses of the remaining information and communication channels are very low – public phone less than once a month (1.0), fax (1.1), private fixed line (0.4), computer (0.4), and Internet (0.3). Figure 3.1 in chapter three depicts the findings.

The Figure 5.6 below disaggregates these findings from a gender perspective, and shows that male respondents access the following types of information and communication channels slightly more frequently than women respondents do: radio (1.9 for men compared to 1.4 for women), TV (1.2 for men compared to 1.0 for men), computer (0.4 for men compared to 0.3 for women). There is gender parity in frequency of access to fax (0.2), mobile phone (3.2), private fixed line (0.4), and Internet (0.3). These findings suggest that overall, there are little gender differences and inequalities in frequency of access to information and communication channels, including on mobile telephony.

Figure 5.6: Frequency of access to information and communication mediums

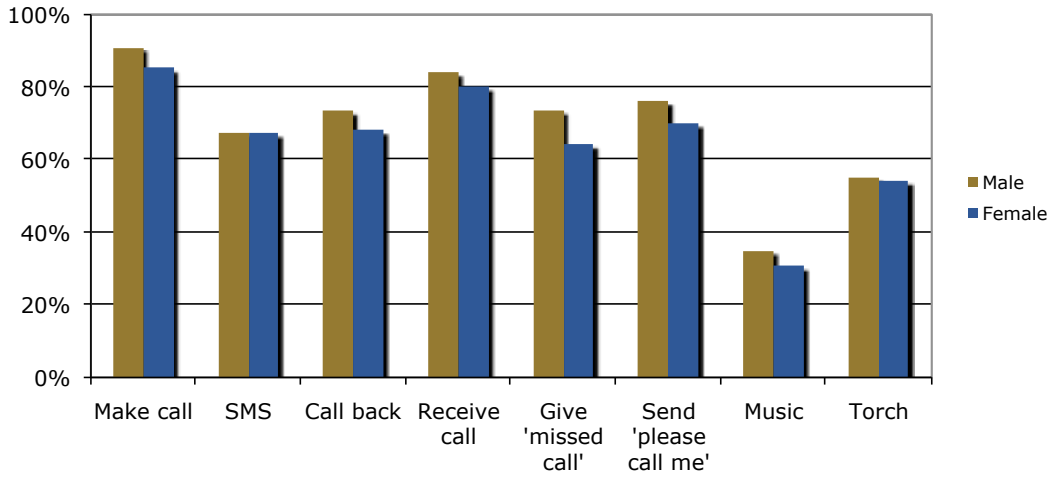


In the focus group discussions, women and men were asked if they knew what the Internet was and whether or not they have used and/or expect to use the service in the future. The differences in responses have been along rural and urban lines rather than on gender per se. The majority of the men and women respondents in rural areas have never heard of 'the Internet', and even if they had, they did not understand what the benefits of using it would be. In comparison, in urban areas, male and female respondents are likely to have had prior experience using the Internet, but only a few

have accessed the Internet through their mobile telephones (a service introduced by Digicel prior to July 2009). For instance, the youth participants of the focus group discussions in Blacksands and Freswota 1 said they are well versed with the procedure for and limitations in accessing the Internet through mobile phones, but their access is limited due to the high costs of purchasing handsets that support Internet services and costs of using the Internet.

Focusing exclusively on mobile telephony use, respondents were asked to recall their last ten uses of mobile telephony. The findings, as depicted in the Figure 5.7 below, suggests that women are less likely than men to use mobile telephony in the following ways: make call (14 per cent less), call back (5 per cent less), receive call (4 percent less), give missed calls (10 percent less), send 'please call me' message (6 percent less), and listen to music (3 percent less). There is gender parity in use of mobile telephony for SMS and torch purposes. These findings are comparable to those in the 2008 household survey. Men were more likely to use mobile telephony for a wider range of purposes than women were. However, the observed gender gap in use of SMS seems to have reduced in 2009. SMS is a cheap means of communicating limited information as compared to voice calls. Literacy remains a paramount barrier to rural women using mobile telephony for SMS purposes. Nevertheless, research in other developing countries suggest basic functions such as 'please call me' can help send the message across and manage the costs of using a mobile (Horst and Miller 2006, Milne 2006).

Figure 5.7: Last ten uses of mobile telephone



Respondents were asked to indicate how much they spend on the following types of telephony: public land line, private land line, and mobile. As depicted in Table 5.3 below, both men and women respondents are least likely to use private and public fixed line. Even when they do, expenditure on these forms of telephony is 500 VT or less per month. Both men and women are more likely to spend 1,000 VT or more, and therefore, spend more on mobile telephony than they do on other forms of telephony. However, men spend slightly more on mobile telephony on average than women do. 55% of the male respondents as compared to 43% of female respondents have indicated that they spend 1,000VT or more per month on mobile telephony. The gender disparities in male and female earnings are likely to influence the observed differences in expenditure patterns on mobile telephony. In other words, women spend less on mobile telephony on average than men because they earn less than men do.

Table 5.3: Expenditure patterns on mobile telephony

	Do not use	< 500 VT	500 – 1000 VT	> 1000 VT
Private fixed line				
Male	87%	5%	3%	4%
Female	87%	6%	3%	3%
Public fixed line				
Male	72%	15%	9%	4%
Female	73%	15%	6%	5%
Mobile				
Male	5%	16%	23%	55%
Female	7%	19%	31%	43%

The responses to this question were structured in such a way as to allow respondents a wide range of choices, and reduce the possibility of recollection related errors. Nevertheless, the major caveat was that it did not allow respondents to specify exactly how much they spend on mobile telephony per month (refer to chapter three for detailed discussion). The focus group discussions and semi-structured interviews revealed a wider range of expenditure on mobile telephony in both rural and urban areas (refer to the case study on mobile telephony and household income in chapter six).

Respondents in the household survey were also asked to indicate the most preferred means of accessing the following types of information and communication: business and agriculture, social information, emergency, governmental services, education, weather, and news. Sources of information and communication were: face-to-face, local leader, radio, TV, newspaper, Adverts, village information centre, telephone, Internet, SMS, and letter. As shown in Table 5.4, there are minimal gender differences in the most preferred means for accessing the information as mentioned above. Both men and women prefer using phone for emergencies; and a combination of phone and face to face communication for inquiring about social information and education. Men and women prefer face to face communication in seeking information regarding farming and business as well as civil society organisations. However, both prefer using radio for accessing news, finding out about weather patterns and government services.

As pointed out in chapter three, the findings suggest that telecommunications is integrating into rather than replacing existing patterns for accessing information and communication. Furthermore, men and women prefer different types of information and communication for different purposes such as telephone for emergencies but radio for finding out about news, government services and weather.

Women and men who participated in the semi-structured interviews and focus group discussions were posed a series of questions on patterns of mobile telephony use. The emphasis was on comparing and contrasting responses by age, gender, location and economic wellbeing. Respondents were also asked directly if they see any difference in how household members of the opposite sex use mobile telephony.

The responses suggest gender differences in use of mobile telephony are particularly pronounced in rural areas. For instance, out of 19 individuals interviewed in Pentecost, Tanna and Erromango (9 women and 3 men), 10 said that women use mobile telephony for relationship maintenance whereas men prioritise mobile use for business and emergency matters. Men who participated in focus group discussion in Atabulu, Pentecost recalled similar differences in men and women's use of telecommunications and proceeded to classify women's use as 'unproductive' and men as 'productive'.

Table 5.4: Most common means of accessing different types of communication

(A) Farming and business information

	Face to face	Phone	Radio	Local leaders	Other
Male	47%	22%	13%	6%	12%
Female	52%	22%	9%	7%	10%

(B) Social information

	Face to face	Phone	Radio	Local leaders	Other
Male	45%	32%	6%	5%	11%
Female	44%	34%	5%	3%	13%

(C) Emergencies

	Face to face	Radio	Phone	Other
Male	17%	32%	44%	5%
Female	19%	29%	46%	5%

(D) Government Services

	Face to face	Phone	Radio	Local leaders	Print media	Village information centre	Letters	Other
Male	22%	17%	24%	6%	7%	12%	4%	5%
Female	23%	16%	23%	5%	12%	5%	5%	9%

(E) Civil Society Organisations

	Face to face	Phone	Radio	Local leaders	Print media	Village information centre	Letters	Other
Male	29%	14%	19%	6%	8%	12%	5%	4%
Female	31%	16%	15%	7%	7%	7%	4%	10%

(F) Education

	Face to face	Phone	Radio	Local leaders	Other
Male	37%	30%	15%	6%	10%
Female	43%	26%	11%	5%	13%

(G) Weather

	Face to face	Phone	Radio	Local leaders	TV	Other
Male	20%	12%	50%	2%	7%	7%
Female	16%	16%	53%	1%	8%	4%

(H) News

	Face to face	Phone	Radio	Local leaders	TV	Print media	Other
Male	11%	8%	50%	2%	11%	11%	6%
Female	14%	14%	43%	2%	12%	10%	2%

The differences in men and women's use of mobile telephony were particularly apparent during the communication and feedback session in Port Narvin, Erromango. Approximately 50 community members attended the session with men in powerful positions at the intra-village level (such as village chief, area counsellors, respected elders, influential businessmen etc.) voicing the majority of the queries and concerns. Participants were particularly concerned about the lack of network coverage in the village. Questions and comments were related to why the government had decided to extend telecommunication services in other parts of Erromango but not in Port Narvin; the implications the lack of telecommunications is having on livelihood in the village; how Port Narvin is being 'left out' of the information and communication revolution in the country.

Only one woman spoke out, and said that access to network coverage, however insecure, has helped mothers in her position to reconnect in unprecedented ways with children and family members who live outside of the village; find out when school fees are due and make payments on time. Tele-radio was the only form of information and communication women had access to prior to mobile network coverage. Women prefer mobile telephony because they no longer have to wait in long queues, can call more often, are not dependent on pre-specified tele-radio operating times, and can speak directly with the person on the receiving end instead of depending on a tele-radio staff to mediate conversations.

Nevertheless, absence of network coverage has increased women's work burden by forcing them to walk 45 minutes and/or three hours to the only two access points. This journey is made in addition to everyday household duties, and limited women's abilities to make and receive calls when they want as well as during emergencies. Similarly, as one of women participants in focus group discussions in Unpongkor, Erromango pointed out:

> *when you ask men to compare men's mobile use with women's they will undoubtedly say women spend more time and money on mobile phones. But we [women] will say the opposite about men. The main difference is that women and men have different priorities. We use mobile phones to stay in touch with families, friends and children who live away. Men use mobiles for business purposes, to chat about politics, and check on shipment schedule.*
>
> Ellen Natigo, focus group discussion participant in Unpongkor, 24/06/2009).

Nevertheless, the responses from women teachers, nurses and others engaged in other full time, formal employment living in rural areas suggest women are not inherently inclined to use mobile telephony for 'relationship maintenance purposes' alone. The observed gender differences in mobile telephony use is emblematic of gender relations in the household - division of labour and decision making processes. In other words, as the examples in Box 5.2 suggest, gender division of labour in much of the rural areas is such that men monopolise the generation of income in the household, women's work remains undervalued, and respondents are yet to assess the value of using mobile telephony to promote women's work.

In urban research sites, responses suggest gender division of labour within and outside the household is more fluid, and relations other than gender influence the ways in which men and women use mobile telephones. Out of the 13 interviews in Freswota 1 and Blacksands, seven respondents said female members of the household use mobile telephony more frequently than males. Only two said female members of the household use mobile telephony for 'relationship maintenance purposes' alone. Men and women who are involved in businesses such as driving taxis, managing retail shops, bungalows amongst others are using mobile telephony more frequently than other members of the

household to communicate with clients, suppliers, employees and others. Furthermore, young women are reported to be using mobile telephones as frequently as young men do to send text messages, listen to music, play games, as well as establish and maintain relationships with members of the opposite sex.

Box 5.2: Gender division of labour & mobile telephony use

Franciska Bani works as a receptionist for Evergreen resort in Tanna and lives in Isini village with her husband and eight members of his family (five adults and two children under the age of 2). The majority of the family members are employed – the husband is the local agent for Air Vanuatu, the sister-in-law is a waitress in Whitegrass Resort, and the brother-in-law works for a Lenakel based construction company. Each of the seven adults of the household has a mobile telephone, which they bought themselves from their independent incomes. Franciska does not see any gender differences in use of mobile telephony and says that much depends upon the type of work that individuals in her household do and how important mobile telephony is for their employment. Francisca uses her mobile to contact family and friends but also to make reservations for the Evergreen resort. Similarly, her husband uses his mobile to contact customers and Air Vanuatu staff based out of Port Vila.

Mary Whyte lives in Unpongkor, Erromango with her husband and three young children. She is a full time mother but sometimes bakes cakes and cookies to sell locally when she is short of pocket money. Her husband, the 'bread winner' of the household, catches lobster and also sells sandalwood once a year during peak seasons. Her husband owns a mobile telephone that Mary can occasionally use with his permission. Mary finds there are distinct ways in which she and her husband use mobile telephony. Mary is originally from Pango, Efate and uses her mobile to contact relatives and friends in Port Vila. Her husband uses the mobile primarily to get in touch with either the businessman in Unpongkor who purchases lobsters to re-sells to high-end resorts and hotels in Port Vila and/or a relative who facilitates lobster sales on his behalf in Port Vila.

George Rongo is a local politician and supplier of kava and agricultural products to markets in Port Vila. George lives in Atangurua with his wife and two young children. His wife sells regularly at the road market in Atangurua, and also weaves baskets and mats to sell occasionally to visitors who come to Atangurua. George owns a mobile phone and uses it to liaise with relatives who sell the kava and agricultural products on his behalf; send yam, taro and other root crops to political and business associates; and send and receive updates on the latest political developments. His wife borrows his mobile sometimes to contact her relatives and friends in Port Vila and Luganville. According to George, she does not use the mobile for business purposes because she does not need to pre-arrange transport to sell locally. Most of her clients order mats and baskets from her face-to-face when they are visiting Pentecost.

Gendered implications of access to telecommunication services

This sub-section draws on quantitative and qualitative research findings to understand the gendered implications of access to telecommunication services on mediums of information and communication, livelihoods, and gendered perceptions of costs and benefits of telecommunications.

Gender and impact of telecommunications on information and communication flow

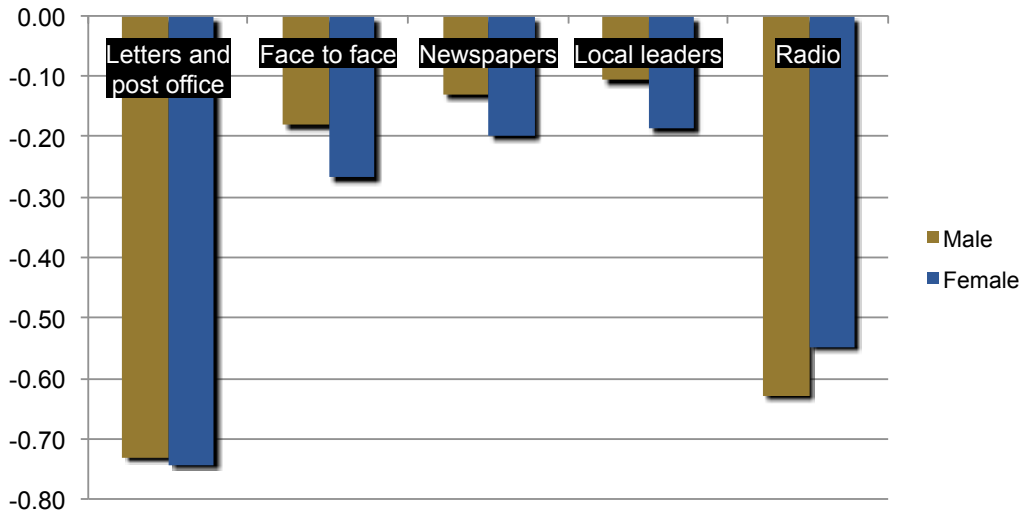
The household survey included questions to elicit responses on the implications of access to telecommunication services on existing patterns of information and communication. The rationale behind these questions was to generate data on whether

telecommunications had adapted to or disrupted pre-existing forms of information and communication.

Respondents were asked to indicate if the frequency with which they consulted the following sources of information and communication had changed since they started accessing telephone: letters and postal services, face-to-face communication, use of newspapers, referral to village council and local leaders, and use of radio telephone. Responses were recorded on a scale of -1 to 1 (-1= reduced a lot, -0.5=reduced a little, 0=no change, 0.5=increased a little, and 0.5=increased a lot).

As Figure 5.8 below illustrates, responses ranged between -0.73 to -0.11 for male respondents and -0.19 to -0.74 for female respondents. In other words, women respondents are marginally more likely than men to perceive access to telecommunications as reducing the frequency with which they consult other forms of information and communication channels.

Figure 5.8: Changes in information and communication attributed to telephony



In particular, women are more likely than men to consider access to telecommunications has reduced the frequency to consult: face-to-face communication (0.09 less than men), newspapers (0.07 less than men), and local leaders (0.08 less than men). In comparison, men are more likely to consider telecommunications has reduced the need and therefore frequency of consulting radio and radio telephone (0.08 less than women) compared to women. Both men and women equally perceive telecommunications has reduced the need to consult letters and post office (-0.73 for men and -0.74 for women).

Gender and impact of telecommunication services on livelihood

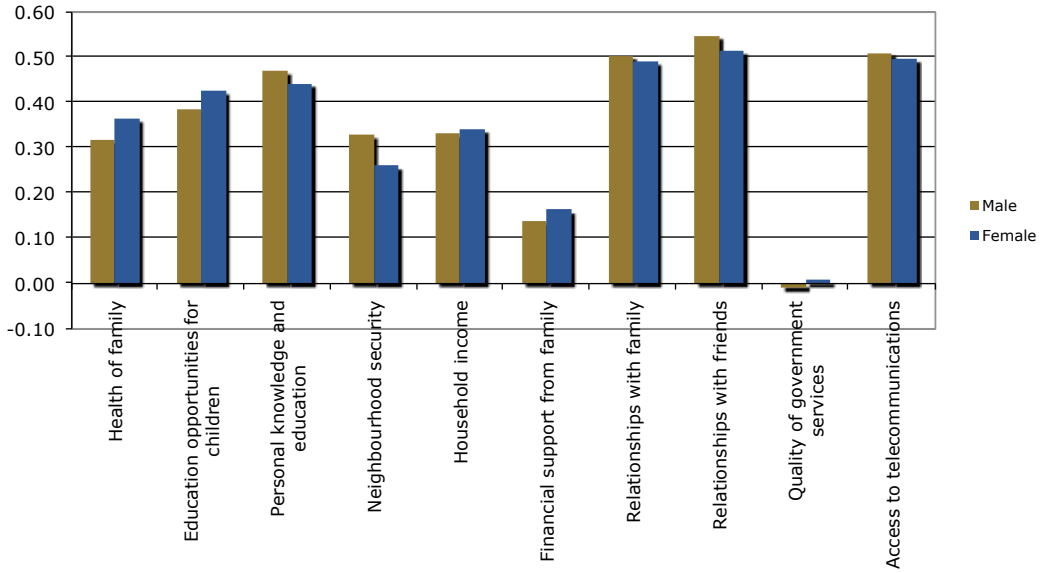
In examining the gendered implications of access to telecommunication services on livelihood, vulnerability and three key assets – financial, social, and human (knowledge) – have been considered. These assets have been understood as income and savings, social networking and the acquisition of information and knowledge. The household survey included direct and indirect questions to decipher the gender implications of telecommunications.

Respondents were first asked a series of questions to indicate their perceptions of overall trends in livelihood context. This refers to perceptions of social and economic

environment for them and their families over the last 2 years. Each of these questions sought responses on a five-point scale which indicate the following: "-1"= situation is much worse than it had been two years previously, "0" = there has been no perceived change, and "+1" = the situation is much better. The results as shown on the table below demonstrate that most respondents view their situation has improved very slightly in the last year.

As Figure 5.9 below illustrates, both male and female respondents perceive relationship with family and friends as well as access to telecommunications has improved whereas financial support from family has remained intact in the last two years. Women respondents are more likely to point out that the health of family (by 0.04 more than men) and education opportunities (0.05 more than men) have improved in the last two years. In comparison, men are more likely to perceive that personal knowledge (0.03 more than women), neighbourhood security (0.07 more than women) have improved more than women do. While women find that quality of government services has not changed (0.00) in the last two years, men perceive that it is has actually decreased (-0.01).

Figure 5.9: Perceptions of change in livelihood



A much cited outcome of increased access to telephony is reduction in travelling time (refer to Figure 5.10). Interviews were asked about if they have experienced any changes in the need to travel for social, health, education and economic purposes in the last two years. The responses have been tabulated on a scale of -1 to +1 (need to travel has decreased, no change, need to travel has increased). On average, male respondents perceive their need to travel has increased slightly more (0.10) than female respondents do (0.04). When the data is further disaggregated by geography, as the figure below illustrates, rural women are more likely to perceive that their need to travel has reduced (-0.01) compared to urban women (0.14), rural men (0.10), and urban men (0.09) feel there has been a slight increase.

Figure 5.10: Perceptions of change in need to travel for social, health, education and economic purposes

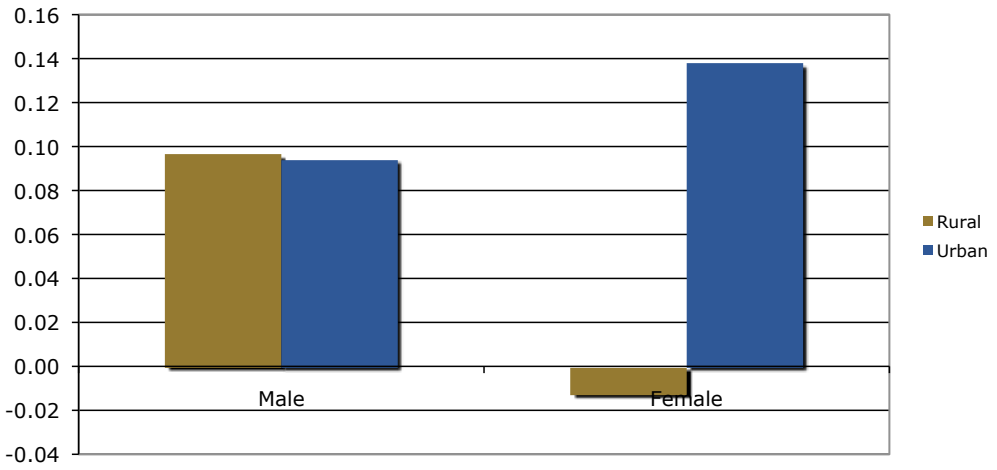
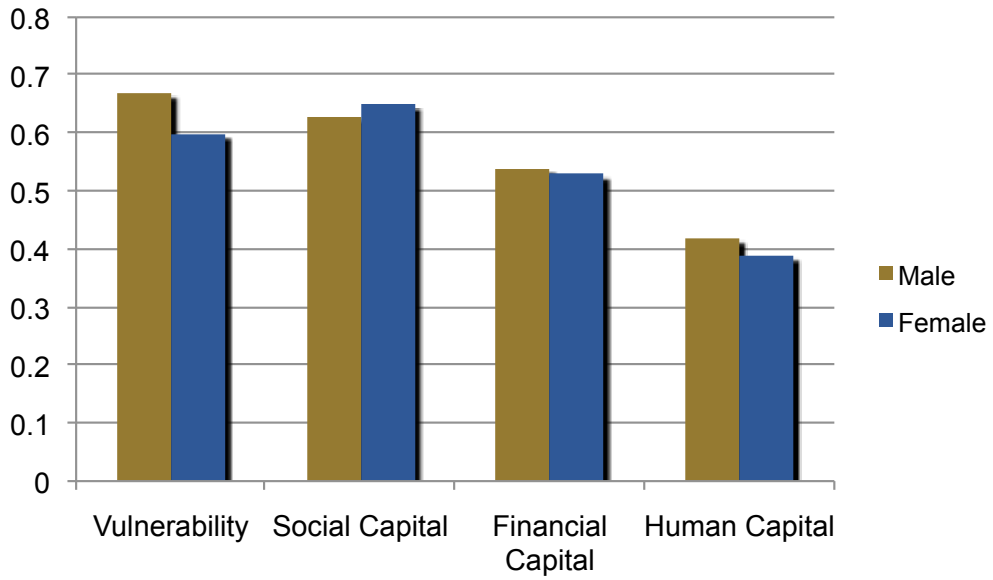


Table 5.5: Impact of telecommunications use on livelihoods

Impact of telecommunications use on livelihoods	Male	Female
Vulnerability	**0.67**	**0.60**
Help quickly in emergency	0.67	0.60
Social	**0.63**	**0.65**
Increased social support from family	0.59	0.62
More frequent contact with friends and family	0.7	0.71
Improved information regarding deaths, marriages, births, etc	0.71	0.74
Better co-ordination with other group members	0.5	0.51
Financial	**0.54**	**0.53**
Reduced time travelling	0.67	0.67
Reduced cost of travel	0.57	0.58
Ability to check on availability of products before travel	0.49	0.50
Increased speed of communication	0.71	0.71
Less time needed to make business arrangements	0.54	0.49
Information regarding subsidies	0.31	0.27
Increased financial support	0.5	0.51
Human	**0.42**	**0.39**
Communication with government services	0.31	0.23
Information regarding education	0.49	0.49
Legal requirements	0.27	0.22
Better access to family health	0.61	0.62

Respondents were asked a detailed series of questions allowing them to evaluate the impact of telephony on them and their households' livelihoods. Responses were recorded on a scale of 0 to 1 (0= not applicable/no influence, 0.5= Influence, 1= Large Influence). The results are depicted on Table 5.5 and corresponding Figure 5.11 on the impact of telephony on overall livelihoods. Overall, both men and women respondents perceive telecommunications is having a positive influence on all the four dimensions of livelihood considered in this study: vulnerability, social capital, financial capital and human capital. Responses for men ranged between 0.42 (human capital) to 0.67 (vulnerability) whereas women's were 0.39 (human capital) and 0.65 (social capital).

Figure 5.11: Impact of telecommunications on livelihoods



In other words, both men and women agree that telecommunications is having the least positive impact on human capital although men are more likely to consider that the impact is more positive than women do. Men consider the impact of telecommunications use is particularly positive in offsetting against household vulnerability whereas women consider telecommunication is having more of a positive impact on social capital.

Female respondents perceive the impact of telecommunications use was particularly positive on the following sub-categories, in order of influence:

- Improved information regarding deaths, marriages, births etc. 0.74 (0.03 higher than men)
- Increased speed of communication 0.71
- More frequent contact with friends and family 0.71 (0.01 higher than men)
- Reduced time travelling 0.67
- Better access to family health 0.62 (0.01 higher than men)
- Increased social support from family 0.62 (0.02 higher than men)
- Help quickly in emergency 0.60 (0.07 lower than men)
- Reduced cost of travel 0.58 (0.01 higher than men)
- Better coordination with other group members 0.51 (0.01 higher than men)
- Increased financial support 0.51 (0.01 higher than men)
- Ability to check on products before travel 0.50 (difference in response)

In comparison, men consider the impact of telecommunications has been particularly positive on the following sub-categories ranked in order of influence:

- Increased speed of communication 0.71
- Improved information regarding deaths, marriages, births etc. 0.71
- More frequent contact with friends and family 0.70
- Reduced time travelling 0.67
- Help quickly in emergency 0.67
- Better access to family health 0.61
- Increased social support from family 0.59
- Reduced cost of travel 0.57
- Less time needed to make business arrangements 0.54 (difference in response)
- Increased financial support 0.50
- Better coordination with other group members 0.50.

These findings suggest that both men and women consider the impact of telecommunications has been positive on a wide range of dimensions of livelihood. There are minimal differences in responses by gender for each of the sub-categories constituting the four major dimensions of livelihood. Nevertheless, women generally consider the impact of telecommunications has been marginally more positive than women do. The most important difference in responses by men and women was women consider telecommunications has allowed them to 'check on products before travel' whereas men consider telecommunications has reduced 'time needed to make business arrangements'.

There were considerable differences between the 2008 and 2009 survey findings. Most importantly, the responses in 2008 ranged between not applicable/no opinion to little influence. There were marginal differences in responses by gender. In other words, on average, male and female respondents did not think that telephony was making a significant impact on their livelihoods. The only indicators that yielded some positive influence were social and financial capital. In particular, both male and female respondents thought telephony was aiding in increasing contact with family, improving information regarding family events, reducing cost of travel, increasing speed of communication, and surprisingly, improving access to family health.

Such differences between the 2009 and 2008 surveys are likely to be attributed to the following factors:

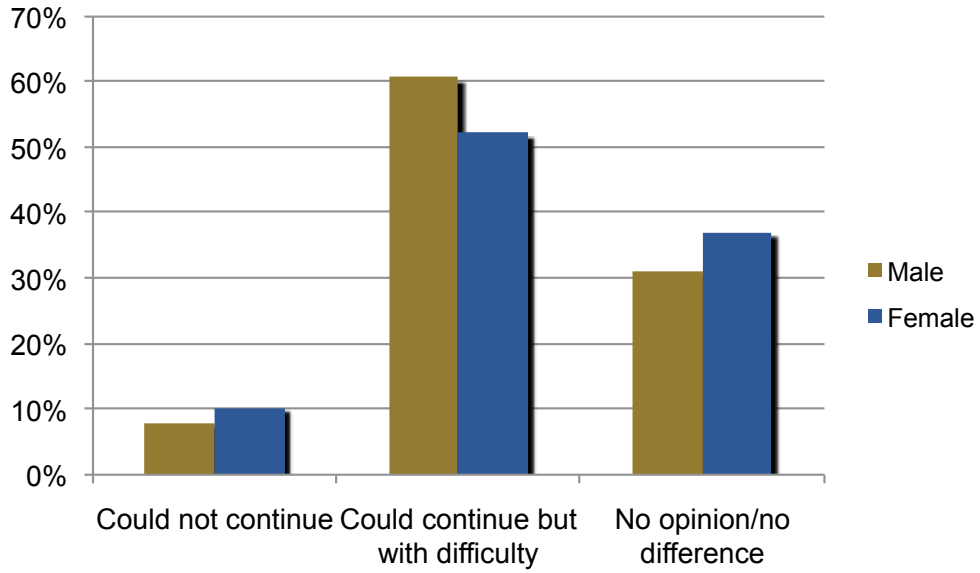
- Widespread and affordable access to telephony at the time of the survey was a recent development for men and women in both rural and urban areas at the time of the 2008 survey. While respondents were able to identify how their access to information and communication had been impacted by telephony, they found it more difficult to evaluate the impact of mobile telephony on other aspects of their livelihood.
- The use of telephony throughout the research areas remained limited to certain purposes (i.e. ones that have yielded more significant results such as improved information regarding family events).
- Furthermore, most respondents, in qualitative interviews, expected telephony to have a large impact certain key indicators such as 'help in time of emergency'. For instance, respondents in rural areas thought mobile telephony could be used to call for an ambulance if a family member were fall ill; find information from doctors about basic precautions to take before the ambulance arrives; and more. But this question only sought responses about experiences and not expectations of benefits.

In this respect, respondents have had more time to experiment with and evaluate the impact of using telecommunications for a wider range of purposes since the survey was carried out in 2008.

Along with questions to elicit implications on overall livelihoods, respondents were also asked how damaging they perceived it would be to their economic activity if they could no longer use telephone. Responses were indicated on a scale of 1 to 4 (1=will not continue, 2=could continue with difficulty, 3=no opinion, and 4=no difference). This was to allow respondents to define their own understanding of 'economic' benefits instead of using pre-defined ones, as done on the question above.

As Figure 7.12 illustrates, men (61% of total male respondents) are more likely to point out that they would be able to continue but with difficulties compared to women (52% of total female respondents). A slightly higher percentage of women (37%) have no

Figure 5.12: Impact of Mobile telephony on economic activity



opinion/no difference and said could not continue (10%) compared to men. Out of the total male respondents, 31% said no opinion/no difference and 8% said they could not continue.

The above findings are comparable to those of the 2008 survey. where the majority of male and female respondents perceived they would be able to continue but with difficulty. Interestingly, there were a slightly higher percentage of women respondents who thought they would not be able to continue.

Perceptions of the costs of using mobile telephone

The majority of the participants in qualitative interviews and discussions perceived that mobile telephony is not a zero sum game and that the benefits of mobile telephony also come with social and economic costs. However, men and women gave distinct and overlapping interpretations of the 'dark side' of mobile telephony.

Respondents pointed to the many advantages of having access to mobile phones that were similar to those found in the household survey. Telecommunications are aiding individuals in making business transactions, emergencies, maintaining and reconnecting with relatives who live elsewhere. But "hemi kakai mani" (it eats up our money) is a common sentiment expressed by male and female respondents in both rural and urban areas. The women participants in the focus group discussion carried out in Unpongkor pointed out that expenditure on mobile telephony is a constant source of conflict between husbands and wives, especially in households where the women have to depend on husbands to provide them with credit. Separately, respondents with higher cash income expressed anxiety over the 'added financial' burden of having a mobile telephone (refer to the case study on mobile and household income in chapter six).

Furthermore, two recurrent themes that were raised in all of the focus group discussions with women (more so than with men) was the implications of mobile telephony on marital and familial relations and the health repercussions of using a mobile phone. For instance, the participants of the focus group discussion with women in Ngala, Epi were concerned that mobile telephony caused brain cancer and harmed growing children.

Participants in focus group discussions in Unpongkor, Erromango and those in Port Olry, Santo discussed incidents in the village where mobile telephony was used by married men to approach other women. It was reported that teenage girls away in boarding school had used mobile phones to get in touch with boyfriends and resulted in teenage pregnancies. Male participants in focus group discussions in Unpongkor, Erromango felt adolescent girls should have restricted access to mobile telephony, two of the five men in focus group discussions in Blacksands, Efate felt mobile telephony has helped them keep a tap on their adolescent daughters. According to participants in the focus group discussion with women in Port Olry, infidelity has always existed in the village, but illicit affairs have become more noticeable since the popular uptake of mobile phones.

At the beginning of the field work in Lamnatu village, the chief had gathered all the villagers to publicly reprimand a couple who had started a love affair without his prior approval. According to the chief, in instances where there is mutual attraction between a girl and a boy, kastom dictates that the two families must publicly acquiesce to the relationship with approval from the chief first, before the couple can proceed with their courtship. Senior members of the boys' family must inform the chief and offer customary mats and pigs to members of the girl's family. The chief felt young men and women are using mobile telephony to contact one another directly and, therefore, bypassing norms and rules enshrining respect and authority of the chiefly structures.

The major focus of discussions with men was the role mobile telephony is playing in the erosion of varying interpretations of *kastom,* communal harmony, and encouraging illegal and clandestine behaviour. For example, the chiefs of Lamnatu village, Tanna and Ngala village, Epi expressed anxiety over young men returning from working in New Zealand saving pornographic images on their mobile handsets and distributing to friends and relatives in the village.

The male participants in focus group discussions in Pentecost felt that the introduction of mobile telephony is degrading community norms and traditions in two significant ways. First, cash constrained users in rural areas are sending 'please call me' on a regular basis to employed relatives in urban areas. This is increasing the financial burden on wealthier relatives and introducing a 'culture of begging' in the community. Second, there is an inherent contradiction between how information is passed through mobile telephony and is meant to be communicated through customary channels. Kastom dictates that information be passed to senior members of the community verbally (i.e. the person wanting to pass the information must meet with the senior members in person) and/or in writing (the latter only in instances where the person wanting to pass the information is away from the village). Furthermore, community members must understand communal hierarchy and observe appropriate ways of passing information. For instance, only certain, recognised individuals and/or families are allowed to speak and consult with the chiefs directly. By enabling individuals to speak directly albeit remotely, mobile telephony use does not allow for these traditions and cultural norms to be upheld.

Such sentiments are not restricted to respondents in rural areas. For instance, the main point of discussion amongst the male, youth of Freswota 1 was how telecommunications advertising (and Digicel in particular) was perceived to be ill-suited for Vanuatu. Similarly, the male youth who participated in the focus group discussions in Blacksands felt that while the Internet is an important source of information on global affairs, access to mobile telephony is unregulated. It was suggested that young men and children often download pornographic images from the Internet and use mobile phones to distribute them.

Other respondents were concerned that mobile telephony is triggering conflict and

communal disharmony. For instance, there has been a protracted, legal battle between different communities/tribes over land titles in Unpongkor, Erromango since Digicel negotiated an agreement to construct a mobile network tower and pay royalty to certain tribes and not to others. As one of the respondents, belonging to one of the nine contesting tribes who have been recently commanded by the supreme court to evacuate and find settlement elsewhere, explained in an interview:

> *This is my mother land, I was brought up and raised here. How can I consider access to telecommunications is positive development when it is asking individuals like myself to divorce ourselves from the most valued commodity in our lives – land – and has resulted in inter-community conflict.*
>
> Joe Mete, son of chief William Mete, 26/06/2009.

Along similar lines, in February 2009 a man dismantled a mobile tower in South Tanna after his community had formally granted approval to and received royalty payment from Digicel. According to Jonny Miahi (who is originally from South Tanna but now resides in Isini village), the land where the tower was built was designated for planting taro, which traditionally bars the land from being used for other purposes. The man from South Tanna who allegedly dismantled the tower believed that his ancestors were angry for allowing the tower to be built on taboo land, and would take his grand father's life in an act of revenge if he remained silent. The dismantling of the tower has caused friction within the community especially no decision has been made to replace it[11].

According to informants in Erromango, illegal smuggling of sandalwood has allegedly increased since the introduction of mobile telephony. Local gangs collude with owners of ships by using mobile phones to coordinate the harvest and transport of sandalwood during offseason periods, and without the knowledge of landowners.

Similarly, it was reported through the focus group discussions that gangs in Blacksands either own and/or work in partnership with bus drivers to orchestrate burglaries in Port Vila neighbourhoods.

It is beyond the scope of this research project to carry out any in-depth analysis of these gender differentiated responses.

What the findings do suggest is that the above responses reflect broader gender division of roles and responsibilities at the household and community levels, and that perceptions of 'masculinity' and authority are viewed by some as coming under threat by the widespread use of mobile telephony.

11. Also refer to 6th February, 2009 issue of the *Daily Post.*

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6. Case study: Telecommunications and household income

The recent explosion of telecommunications in Vanuatu suggests people in both rural and urban areas are willing to invest significant amounts on mobile telephony. Although rural users spend disproportionately high amounts on mobile phone use relative to urban users, mobile telephony may be triggering an increase in rural household productivity rather than leading to a reduction in household income.

This case study presents findings from quantitative and qualitative research on twelve research sites in the islands of Epi, Erromango, Tanna, Pentecost, Santo, and Efate (refer to chapter two for detailed description of research methodology). It examines whether the use of mobile telephony is increasing or is decreasing household income in Vanuatu. The focus is particularly on rural areas, but also draws on experiences and perceptions of urban users for comparative purposes.

The major findings of the study are as follows:

- there is close to universal access and use of mobile telecommunications in the research areas;
- rural participants were likely to spend a higher proportion of their household income on mobile telephony relative to urban respondents;
- mobile telephony is reaching saturation point in urban areas as the opportunity costs of using mobile telephony increases relative to benefits;
- urban respondents were likely to be more price sensitive and develop greater number of strategies to reduce expenditure on mobile telephony than rural respondents;
- rural respondents faced more constraints in developing strategies to reduce communication costs; and
- mobile telephony is likely to be triggering an increase in rural productivity, and enhancing rural and urban distribution of resources.

In what follows, the chapter will provide the rationale for carrying out the study, outline research methodology employed, and discuss the key findings of the study. The findings of the study suggest that the telecommunication sector must be regulated to ensure rural users have improved access to telecommunications services and are not overcharged for use.

The government and civil society could help rural users reduce the costs associated with mobile phone use by empowering them against potential abuse, and disseminating information about strategies developed in different rural areas to reduce overhead costs of using mobile telephony.

Rationale for the case study

The proliferation of mobile telecommunications in developing countries suggests users at the 'bottom of the pyramid' are willing to spend significant amounts on telecommunications (Parlad 2006). Nevertheless, an emerging concern amongst policy makers and researchers alike, working in and around telecommunications policies in developing countries like Vanuatu, is the impact of telephony use on household revenue and expenditure patterns.

In particular, how much do individuals and households spend on telecommunications? And do increase in expenditure on telecommunications results in subsequent increase in household revenue and/or force households to substitute other household expenditures critical for household well-being for telecommunications use? The latter may include goods and services consumed by the household such as kerosene, school fees, purchased food amongst other household necessities.

Debates on the implications of telecommunications use on individual and household budgeting patterns remains polarised. Research has shown that use of mobile telecommunications increases overall household income by reducing the need to travel (Scouter et al. 2005), reducing household vulnerabilities (Skuse and Cousins 2006, 2008), improving business efficiency and opportunities[1], and offsetting the lack of complementary infrastructure. With regards to the latter, for example, mobile banking is reported to be helping the 'unbanked' transfer funds more easily and transform savings into investments (Whishart 2006, Porteous 2006)[2].

Telecommunication service providers in developing countries like Vanuatu have introduced a wide range of innovative services for cash-strapped consumers and discovered 'fortune at the bottom of the pyramid'[3] at the same time. Some of these services include: pre-paid systems, multiple access points, variable call tariffs, electronic re-fills, low-cost handsets amongst others.

Cash-constrained consumers too have devised a number of 'strategies' in an effort to manage expenditure on mobile telecommunications. Zainudeen, Samarajiva et al. (2006, pp.3) define 'strategic' use as the conscious decisions about use of telecom services in such a way as to minimize costs or improve utility. Strategies can be both long-term, relating to the overall decision to invest in a phone or not, and which mode to use, as well as what are termed 'short-term' strategies, relating to the everyday use of the telephone. For instance, shared use of mobile telephony constitutes a prominent way of using and managing expenditure on mobile telephony (Tall 2004, Skuse and Cousins 2008, and Aminuzzaman, Baldersheim et al. 2003). To give a few country or region-specific examples, Miller (2006) highlights ways in which low-income individuals in Jamaica use features such as 'call me back' to improve and expand the flow of financial support from more well-off relatives[4]. Along similar lines, Donner (2005) documents the widespread phenomenon of 'beeping' in Uganda where pre-negotiated messages are

1. Refer to the case study on telecommunications & small and medium enterprises.

2. Wishart, N. (2006) *Micro-Payment Systems and their Application to Mobile Networks: An Assessment of Mobile Enabled Financial Services in the Philippines*, INFODev, GSM Association and IFC.

Porteous, D. (2006) *Enabling Environment for Mobile Banking in Africa, Report Commissioned by the Department of International Development*, Bankable Frontier Associates, Boston.

3. Pralhad, C.K. (2006) *Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profits,* Wharton Publishing House, New Jersey.

4. Miller, D. (2006) 'The Unpredictable Mobile Phone', *BT Technology Journal,* Vol.4, No.3, pp.41-46.

conveyed without the beeper incurring extra cost[5]. Skuse and Cousins (2007) find poor households in urban South Africa exploit access to multiple mobile telecommunications and variable tariff rates in order reduce expenditure on mobile telephony.

In comparison, skeptics are concerned about the possible impact of mobile telephony on the budget of cash-strapped consumers, the high costs of mobile telephony use, and the lack of strategies available to low-income consumers to reduce communication costs.

A cross country study carried out by de Silva & Zainudeen (2007) on mobile telephony expenditure patterns amongst low-income users found about a quarter of the poorest Sri Lankans reported that direct access to mobile phones has *worsened* their ability to earn or save, and that majority of the participants of the study did not perceive access to telecom had increased the earning and cost saving potential. This is likely to be because low-income individuals use mobile telephony predominantly for 'relationship maintenance' purposes which may not result in direct, financial contribution to the household. The study found over 80% of respondents from Pakistan, India, Sri Lanka, the Philippines and Thailand used mobile phones to keep in touch with family or friends while less than 15% used mobiles for business purposes.

Zainudeen, Samarajiva et al. (2006) also examine the strategies that shoestring users have developed in an effort to reduce expenditure on mobile telephony. The findings suggest that although incentives to reduce communication costs is the highest amongst users, the short term strategies remain low because of a series of constraints that users face. For example, low-income users may face educational barriers in substituting voice calls for SMS, even if the latter is less costly.

Studies have also considered the impact of telecommunications use on household consumption patterns, including those that are perceived as basic household necessities. For instance, a recent, cross-country, comparative study on household income and expenditure patterns relative to expenditure on communication (Ureta 2005) finds that low-income countries are likely to spend a greater proportion of their income on communication costs relative to higher income countries. Expenditure on communication costs generally plateau with increasing levels of economic development of a country[6]. This is likely to be because the opportunity cost of using a higher percentage of income is higher than its benefits. Such findings are also consistent with Diga's (2007) qualitative research in Uganda. While lower income households may not prioritize mobile telephony use over household necessities, mobile telephony constitutes a significant proportion of household income[7].

Researchers have also shown that while significant achievements have been made in reducing telecommunications services for users in low-income countries, affordability remains a key concern (Barrantes et al. 2007[8] and Milne 2006). Milne (2006) suggest

5. Donner, Jonathan. (2005). *The rules of beeping: exchanging messages using missed calls on mobile phones in sub-Saharan Africa.* Presented at the 55th Annual Conference of the International Communication Association, New York.

6. Ureta, S. (2005) *Variations on Expenditure in Communications in Developing Countries: A Synthesis of Evidence from Albania, Mexico, Nepal, and South Africa (2200-2003),* Department of Media and Communications, London School of Economics & Political Science, UK.

7. Diga, K. (2007) *Mobile Cell Phones and Poverty Reduction: Technology Spending Patterns and Poverty Level Change Among Households in Uganda*, Masters' Thesis, School of Development Studies, University of KwaZulu-Natal, South Africa.

8. Barrantes, R., A. Aguero, H.Galperin, and A. Molinari (2007) *Affordability of Mobile Services in Latin America,* IDRC, Communica, InfoDev, and Lirne.net.

this is particularly so when the direct and indirect costs of accessing mobile telephony either prevents people from owning a mobile and/or using it only in emergencies, and/or discourages individuals from making as many calls as they need to even if they own or access a mobile telephony. For example, through a cross-country study carried out in Latin America, Barrantes and Galperin (2008) find that the poor generally pay a cost premium for using prepaid subscriptions that allow better expenditure control. While affordable handsets and the calling-party-pays system allow a significant number of low-income Latin Americans to become mobile subscribers, the current tariff structure has an inhibiting effect on service consumption by the poor. Affordability remains the most significant barrier to extending the reach of mobile services, as well as the range of services used by the poor[9].

In light of the above, this case study examines the following issues with regards to the implications of mobile telephony on household budgeting processes:

1) Level of access and ownership of mobile telephony;

2) Frequency and purpose of mobile telephony use;

3) Household expenditure patterns;

4) Expenditure on mobile telephony vis-à-vis other household consumption goods and services;

5) Strategies used to reduce expenditure on mobile telephony; and

6) Implications of mobile telephony use on household income and household consumption patterns.

The following are three important reasons for considering the impact of mobile telephony on household budgeting processes in Vanuatu, viz:

(a) Follow up on one of the most important and recurrent concerns highlighted by policy makers as well as participants throughout the 2008 telecommunications study. There was a consensus that with the introduction of mobile telecommunications throughout the country, mobile telephony was no longer a superfluous, luxury good but an important part of living in the modern world. At the same time, research participants as well as policy makers alike were concerned that households may be forced to trade-off expenditure on household necessities with those on mobile telecommunications.

(b) Document the social and economic changes taking place since the introduction of telecommunications in the country in light of global telecommunications and development concerns.

(c) Provide support in evidence-based policy making to accompany telecommunications liberalisation.

9. Barrantes, R. and H. Galeperin (2008) 'Can the Poor Afford Mobile Telephony? Evidence from Latin America', *Telecommunications Policy,* Vol.32, No.8, pp.521-580.

Research methods

Both quantitative and qualitative research methods have been employed in conducting the field research for the case study. The quantitative research method draws primarily on the household survey (refer to chapter two). Along with questions to elicit response on patterns of access, ownership and use, the survey also includes questions on the when they first acquired a mobile phone, the cost of the handset, form of payment, and expenditure on mobile telephony per month.

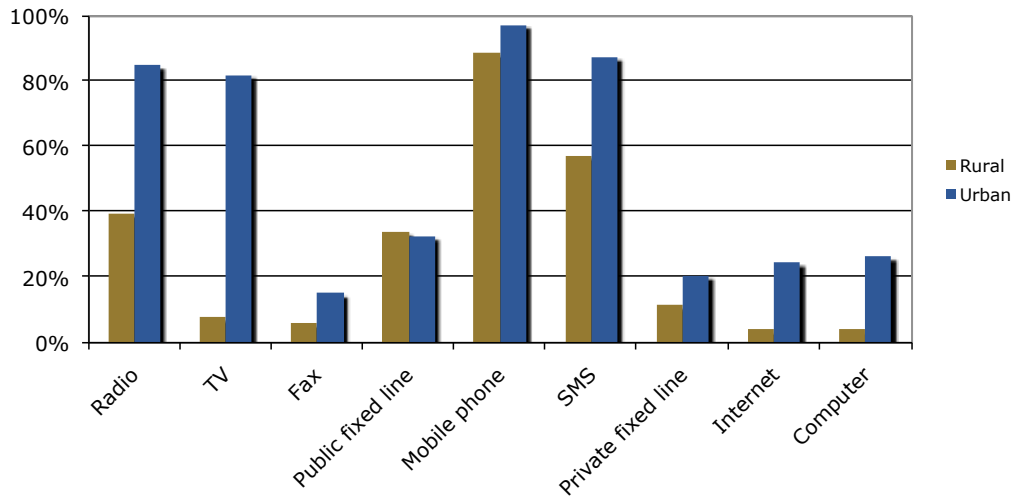
The qualitative research included semi-structured and focus group discussions with over two hundred participants. The semi-structured interviews and focus group discussions included a number of questions/interview guidelines to decipher if and how respondents were managing expenditure on mobile telephony. This was carried out through the following direct and indirect ways – comparing total, recurrent household expenditure with expenditure on mobile telephony; asking respondents to rank expenditure on mobile telephony vis-à-vis other, household expenditures; asking respondents directly if and how they watched how much they spent on mobile telephony; asking respondents directly if they felt that they had saved and/or spent money since using mobile telephony; asking respondents who they financed expenditure on mobile telecommunications and whether they had to substitute consumption on household goods and services for mobile telecommunications.

Research Findings

Close to universal access to and use of mobile telephony in the surveyed areas

The vast majority of respondents who participated in the study have access to telecommunications. As the Figure 6.1 bellow illustrates, 92% of the respondents have access to mobile phone. This figure was higher in urban areas (97%) in comparison to rural ones (89%). Nevertheless, and in comparison to findings from the telecommunications and household survey in 2008, there has been a steady increase in access to mobile telephony in the surveyed areas, and those in rural areas in particular. In 2008, 81% of the total respondents reported to having access to mobile telephony of which 95% were in urban areas and only 66% in rural areas. Access to public phone had decreased since the 2008 survey. In other words, as discussed in chapter three, respondents in both rural and urban areas are substituting the use of public telephone for mobile telephony.

Figure 6.1: Access to information and communication services



One of the more interesting findings of the 2009 study has been that even in surveyed areas, which are currently classified as 'without network coverage' – Port Narvin (Erromango), Levetlis (Pentecost) and Ngala (Epi) – respondents still report having access to mobile telephony more than other forms of telecommunications such as tele-radio and public land line. In Port Narvin, respondents are willing to walk either 45 minutes and/or three hours to two locations where they were able to receive signal. Similarly, in Ngala, there are only two locations in the entire village where a signal could be obtained.

Such high levels of mobile phone use (despite the constraints) can be attributed, to a large extent, on the malfunctioning of the public phone in closest proximity to Ngala (in the village of Maata, approximately 40-45 minutes away) and the tele-radio in Port Narvin. In other words, mobile telephony is in effect the only form of telecommunications in these villages.

At the same time, qualitative interviews in these research locations confirm that there is widespread consensus that even if alternative mediums of telecommunications co-existed alongside mobile telephony, mobile telephony would still be preferred and used more frequently than other forms of telecommunications.

Rural respondents are likely to spend a higher proportion of their income and overall household expenditure on mobile telephony than urban respondents

The household survey and semi-structured interviews included a number of questions to decipher trends in expenditure on mobile telephony relative to household income and overall household expenditure. The household survey helps compare declared, cash income with expenditure on airtime and on mobile telephony handsets.

As discussed in chapter three, the average, annual cash income for all the twelve sampled areas was approximately 25,800VT/month. There are considerable differences in average declared income between rural and urban areas. Urban respondents reported earning more than double (41,666 VT/month) the decalred income of rural respondents (17,500VT/month).

The average expenditure on handsets for mobile telephony was 4,500VT in the sampled population, with rural users spending 3,300VT and urban ones 6,400VT. Furthermore, respondents in both rural and urban areas indicated that they spend the highest on mobile telephony in comparison to public and private fixed line. As expected, urban respondents are likely to spend more on mobile telephony than rural respondents are. A higher percentage (62%) of urban respondents spend more than 1000VT on mobile telephony than rural respondents (40%) do.

In other words, even though urban respondents earn twice that of rural respondents, 45% of rural respondents are spending as much on mobile airtime as urban respondents. But, rural respondents spend 50 % less on mobile handsets than urban respondents. The findings suggest that the higher the cash income, the higher the expenditure on mobile telephony. On average, urban respondents earn a higher income and spend more money on mobile telephony than rural respondents. This also suggests that on average, rural and urban respondents spend an equivalent proportion of declared household income on mobile telephony.

Average findings, however, mask considerable variations in income and expenditure patterns within urban and rural areas. When we compare and contrast income and expenditure patterns between specific rural and urban areas, we find that rural respondents are more likely to spend a higher proportion of their income on mobile

telephony than urban respondents do. This is particularly visible when comparing Freswota 1 (Efate), the most affluent research area, with Pentecost, the least affluent research area. The declared income for Freswota is 53,333 VT/month and for Pentecost is 11,666 VT/month. This suggests that respondents in Freswota are likely to earn almost five times more than those in Pentecost. The average expenditure on mobile telephony handsets in Freswota is 7,500 and in Pentecost is 3,400. This points out that respondents in Freswota are likely to spend only twice as much on purchasing mobile telephony as those in Pentecost. In Pentecost, 28% of respondents spend 500VT – 1,000 VT per month on airtime for mobile telephony while 57% spend 1,000VT or more. In Freswota, 10% spend 500 VT – 1,000 VT whereas 74% 1000 VT or more. Despite the declared income in Pentecost being almost five times less than that in Freswota, a majority (57%) of respondents spend 1,000 VT or more on mobile telephony.

The major caveats to carrying out such comparisons have been discussed in chapter three (see p.20), and include the difficulties in accurately recording income and expenditure on mobile telephony. Nevertheless, the findings do serve as an indication of the differences in income earned by rural and urban households relative to expenditure on mobile telephony.

The individual, semi-structured interviews asked respondents to list their major household expenses, and break down their expenditure on mobile telecommunications by day, week and month. The reliability of the data gathered is not without problems. Expenditure is variable, and recollection memory may be limited. Perhaps the best way of generating a more accurate account would have been to ask individuals to keep detailed diaries. Notwithstanding these caveats, the benefits of having these questions have been that respondents are more likely to offer detailed accounts of their expenditure patterns in comparison to their earnings.

The qualitative interviews suggest that urban respondents are likely to consume a wider range of goods and services than rural areas. However, expenditure on mobile telephony constitutes a smaller component of overall household expenditure for urban respondents compared to rural ones. Box 6.1 serves as illustrations of atypical differences in responses between urban and rural respondents.

In comparison to urban respondents, rural respondents are using mobile telephony for limited purposes, frequency and features. For the majority of rural respondents in semi-structured interviews and focus group discussions alike, ‘communicating with family and friends’ has been cited as the most important and for many the only form of mobile telephony use. The only exceptions are owners/managers of small and medium enterprises who use of mobile telephony to check on shipment, pre-arrange transport, place orders, facilitate payment amongst others. Even then, as is pointed out in the case study on telecommunications and small and medium enterprises (see chapter four), the uptake of mobile telephony for the wider range of business purposes in lagging behind in rural areas. Most of the rural respondents are using mobile telephony on a weekly basis. By and large, the use of mobile telephony was limited to receiving calls, making calls, and sending ‘please call me’ messages once credit was running low.

As previously discussed, rural respondents are spending disproportionately higher on mobile telephony use. Furthermore, only a few respondents had solar, generator and electricity in their household, and therefore, majority of them had to pay between 40VT and 100 VT per charge. Although respondents generally agreed that management of mobile telephony as a personal decision, mis-management is cited as more of an issue of concern in rural areas compared to urban ones. Out of 24 individuals who participated in the semi-structured interviews seventeen have reported that they face difficulties in managing expenditure on mobile telephony and that mobile telephony constituted one of the highest, recurrent household expenditure.

Box 6.1: Proportion of household expenditure on mobile telephony

Mary Whyte lives in Unpongkor, Erromango with her husband and three young children. Her husband catches and sells lobsters. Mary is a full time, stay at home mum. Mary's regular household expenditure includes: food, school fees for two children attending primary school, kerosene, and logistical expenses incurred in exporting lobster to Port Vila.

Her monthly expenditure is broken down into the following:

- Household groceries (such as rice, sugar, curry powder, oil at 500 – 600VT/day) = 15,000 to18,000 VT
- Fuel (fishing) and Transport (to Port Vila) incurred in lobster business = 3,500
- Washing and bathing soap (80VT per soap per day) = 2,400 VT/month;
- Kerosene (1 bottle per two days at 80VT/bottle) = 1,200 VT
- School fees (2 in primary school at 1,300VT/term each, 3 terms per year) = 866 VT

Mary shares the mobile phone with her husband who purchased it for 1000 VT through a sale promotion in January, 2009. Mary and her husband use the mobile phone at least twice a week to contact their friends and relatives on Efate. Her husband also uses it to communicate at least once a month to arranges the pick up and delivery of lobsters in Port Vila. Mary does not know exactly how much she and her husband spend on mobile telephony per month, but purchases 200VT credit every time they want to chat on the phone. The calling credit is usually finished after every call. They generally call and occasionally ask their relatives and friends to return the call when they run out of calling credit. Furthermore, they recharge their mobile phone battery at least once a week and pay 100VT per charge (400VT per month). Based on this pattern of use, Mary's household spends approximately 2,000 VT – 2,800 VT per month on mobile telephony, which constitutes the third highest expenditure item in the household.

Loti Bulerong is 32 years of age and lives with her husband and two young sons in Blaksands. Her two sons study at the primary school. Loti manages the family owned retail store and her husband bakes and sells donuts at Malapoa College. Loti meets all the household expenses with profits from the retail business while her husband uses the proceeds from donut sales as his personal income/pocket money.

Loti's major, monthly expenses include:

- Food: 10,000 VT
- Travelling: 10,000 (6,000 VT for business and remaining for personal)
- School fees: 6,000 (12,000 per term per child, three terms per year)
- Lease for the land: 5,000 VT
- Others: send 2000 VT to father who lives in Ambrym
- Electricity: 1,200 VT
- Water: 700 VT

There are two mobile telephones in the household – one owned by Loti and another by her husband. Her husband pays his mobile expenses through profits from the donut business.

Loti uses mobile telephony two to three times a day for the following main purposes: pre-arranging transport for delivery of cargo for her retail business, placing orders for calling credit cards from Digicel, and communicating with family and friends in Malekula and Ambrym. She generally makes calls for urgent and store-related matters, and spends between 1,000 – 1,5000 VT per month on mobile telephony, which is the fourth highesthousehold expenditure item.

In focus group discussions and semi-structured interviews, urban respondents have stated a wide range of purposes of mobile telephony use, and use mobile telephony on an everyday basis. For instance, the sixteen individuals who have participated in semi-structured interviews in Freswota , Blacksands, and Chapuis have reported the following reasons for mobile telephony use: communicate with family and friends within and

outside of the urban setting in which they reside, use during emergencies, employment and business reasons, prayer/religious purposes and political liasion. Each respondent reported at least two of the above mentioned reasons as the most frequent use of mobile telephony, which included but was not exclusive to using mobile for communicating with friends and family. Furthermore, most of the respondents (fourteen) said that they use mobile telephony (call, pick up, text and more) from three to fifteen times a day.

While the majority of respondents consider having a mobile phone has increased their overall recurrent expenditure, mobile telephony is not perceived as a significant component of total household expenditure. Eleven out of the fifteen respondents have ranked expenditure on mobile telephony as least or less expensive compared to other household expenses such as rent, school fees, food, and electricity. A common response was along the lines of "I think I would rank mobile the last. I always make sure that I meet my family needs first. The priority expenses are school fees, food, electricity, travel and then maybe mobile expense" (Rina Inhu, Freswota, 1/08/2009). Five respondents, including two unemployed youth, reported mobile telephony as their highest personal expenditure item.

The causes of mobile telephony related management issues can be classified into three – self-generated, temporal, and/or external. With regards to the former, for example, two of the female respondents in Blaksands mentioned that when they do not properly budget for mobile telephony and call indiscriminately, they often have to dip into their food budget. However, for respondents to continue using mobile telephony such re-allocation of household budget would have to be rare.

Others have pointed out that their expenditure on mobile telephony have generally plateaued since the time they first purchased it. Any fluctuations in the amount spent were generally temporary and had to be substituted by reduction in other expenditures. For example, one of the respondents in Blacksands who runs a business of renting out houses in the area, said that he had been spending more than double his usual budget on mobile telephony because he had been renovating one of the houses and needed to use his mobile to liaise with contractors. The relatively higher expenditure on mobile telephony was nevertheless saving him on the need for repeated travels to check on the contractors on site. He also expected his mobile expense to return to regular (1,500 VT/month) once the renovation was complete (Tasaruru, Blacksands, 06/08/2009).

Others attribute management problems to the social obligations triggered by mobile telephony use. For instance, one of the respondents in Blacksands who has a well-paid job observed a significant increase in expenditure patterns on mobile telephony, which he attributed

> *not to the costs of buying credit, but the expenses that I have to meet from the calls I receive. Since acquiring a mobile telephony I have been bombarded with requests from family members in the islands. Most recently, I have had to pay off a family member's 30,000 VT worth of debt, and loan money to another relative to start a fishing business.*
>
> Jack Luan, 29/07/2009, Blaksands

While the majority of urban respondents who are employed and earning a steady income have reported similar experiences since having acquired a mobile phone, they point to a number of ways that they are managing these requests, which in turn constitutes as part of the broader pool of strategies developed over time to reduce expenditure on mobile telephony.

Urban respondents are likely to be more price sensitive and employ a greater number of strategies to reduce expenditure on mobile telephony.

The vast majority of urban participants in the semi-structured interviews have been employing combinations of the following strategies in an effort to reduce expenditure on mobile telephony:

- *Budget for mobile telephony:* One of the most common ways of managing expenditure on mobile telephony was by pre-determining a ceiling on expenditure and ensuring this ceiling is not exceeded. For instance, participants of a focus group discussion in Blacksands considered the most effective and frequently used means of recording expenditure was keeping a tab on the amount of re-fill cards purchased in a pre-determined amount of time.

- *Dual SIM cards:* Some respondents mentioned that they have a handset which allows them to use TVL and Digicel SIM cards simultaneously. In light of the relatively high interconnectivity charges between Digicel and TVL, they choose to use one SIM card over another depending on the destination of call[10]. One of the respondents from Freswota mentioned that although he has invested quite significantly on purchasing a the dual SIM handset (30,000VT) the investment paid off within a few months because there is an equal distribution of Digicel and TVL users in his frequently contacted list of persons (Kila Abel, Sound Engineer for Study 1, 5 July 2009). This is also consistent with the household survey finding that urban users are more likely to use a combination of TVL and Digicel than rural respondents (refer to chapter three).

- *Multiple forms of telecommunications:* Respondents who are formally employed in the commercial banks, retail stores, and/or other businesses use private fixed line to make phone calls during the working day as a conscious strategy to reduce expenditure on mobile telephony.

- *Monitor prices and promotions:* Nine of the sixteen participants in semi-structured interviews mentioned that they generally purchase 200 and 500 unit re-fill cards, and only purchase refill of 1000VT or more when the particular network that they subscribe to are offering special promotions that double the amount of the re-fill card. A few reported that although they are unable to afford dual SIM handsets they had trialed both networks before making their final decision, based on: network coverage, network used by colleagues, friends and family members who they contacted frequently, costs per call, special promotions offered etc.

- *SMS texting*: The majority of young and/or unemployed participants of the focus groups and semi-structured interviews said they rely on using SMS text messaging to manage their overall expenditure on mobile telephony. One of the female participants in focus group discussions with youth in Luganville said she makes use of the TVL promotion 'SMS club' and can send out 'hundreds of texts' at marginal/no costs. She frequently sends and receives jokes as well as inspiration notes from her friends and peers.

- *Manage 'please call me' and request for credit:* As the discussion in chapter three highlighted, there was an equal percentage of urban and rural respondents

10. It must be mentioned that there was no respondent who mentioned that he/she carries two separate phones to access either Digicel or TVL services depending on the destination of the call.

sending 'please call me' messages - these are free for the sender. However, individuals who are employed and living in urban areas received more please call requests than they send. Senders were primarily unemployed and/or not earning a steady income in rural areas. An expectation of reciprocity only exists amongst those who are employed. Respondents in urban areas have discussed various ways in which social obligations have been exacerbated since the advent of mobile telephony, and highlighted strategies to reduce the need to return the call by: screening whose calls they would accept, pre-judging the urgency of the call, and/or deciding whether or not to return the call depending on the number of 'please calls me' received.

The strategies employed to manage expenditure on mobile telephony by rural participants in semi-structured interviews, and focus group discussions are as follows:

- *Budget expenditure on mobile telephony:* as with urban users, one of the most common ways of managing expenditure on mobile telephony is to set a ceiling for expenditure and ensure that this was not breached.

- *Budget talk time:* Most of the respondents minimise on the amount of time and money they spend per call by speaking quickly, getting to the point, and reserving phone calls for important purposes only.

- *Send 'please call me' and request for credit*: Respondents in focus group and semi-structured interviews agreed that there was a discernible direction of 'please call me' and requests for credit from rural households to friends and relatives who are employed and living in urban areas.

- *Save on the need to charge:* Respondents also turn off their mobiles when they are not expecting a call (e.g. while in the garden or asleep) in order to reduce battery consumption.

- *Multiple access to telecommunications:* A few respondents in Unpongkor (Erromango) and Lamen Bay (Epi) who have access to mobile telephony as well as fixed line (public and even fewer private) use mobile telephony to receive calls and fixed line to make calls, and/or choose which medium to use depending on destination of call.

- *Making use of special promotions:* Approximately half of the respondents mentioned that they purchased their first and/or second mobile telephones for another household member when Digicel offered a special promotion on handsets. All of the respondents said they made maximum use of 'free line' when Digicel was allowing each subscriber to make unlimited calls to another subscriber.

- *Handsets*: While urban respondents generally said they wanted mobile handsets with sophisticated features (but in many cases could not afford to purchase them), rural respondents preferred a simpler mobile (common models were Nokia 1200 and 1209) as long as the cost of handset remained low. A torch was a favourable 'extra', but respondents reiterated the most important purpose of using a mobile phone was to be able to communicate. A wider range of features offered was not a major concern of rural respondents.

Refer to illustrations of innovative strategies of mobile telephony use documented in Box 6.2.

Box 6.2: Innovative means of financing continued use of mobile telephony

Steven is 22 years old, from Unpongkor, Erromango, and has been using a mobile telephone since September 2008. He used to drive a taxi in Vila, but has returned to Unpongkor to manage his family-owned sandalwood business. His friend currently drives the taxi and sends approximately 50% of the profit back to Steven. Steven's girl friend is originally from Pentecost, is a student at Malampoa College, Port Vila. Her family is involved in the kava business. The soil in Unpongkor is not conducive for growing kava, but the demand for kava, especially for Pentecost varieties, is very high. Steven's girlfriend's father sends two bags of Pentecost kava (80kgs/bag) every two months by ship for Steven to supply to kava bars in Unpongkor. Steven sends all the profits from Kava sale back to his girlfriend's father through trusted friends who are travelling to Port Vila. In return, his girlfriend's father sends mobile phone credit electronically (i.e. mobile to mobile transfer) to Steven. Steven uses the credit to call his girlfriend every two days, and to check on the driver to manage his taxi from a distance. According to him, all of these transactions would not have proceeded as smoothly had he not have had regular access to mobile telephony.

Many of the women participants in the focus group discussion in Atabulu (Pentecost) are weaving baskets and selling them to a business lady based in Port Vila. All of the women learnt how to weave at a young age. Most of the baskets were made and sold locally. A friend who was working in North Pentecost gave them a contact number for the business lady in Port Vila who re-sells baskets from Aneityum, Futuna and Pentecost in high-end stores in Port Vila. The participants have formed a weaving group and weave baskets and send them every two months via airfreight. The Port Vila based business lady collects the baskets personally, pays for the costs of the freight and pays the women 1000 VT per basket. The women use income from the sale of the baskets primarily to finance their expenditure on mobile telephony. The women spend between 2,000 to 5,000 VT on mobile costs, with approximately 50% of this going to pay for battery charging. One of the participants mentioned that neither the basket business nor the regular use of mobile telephony would have been possible without secure access to network coverage.

Charlie is 32 years old, from Unpongkor (Erromango), and has been using mobile telephony since Digicel started operations in Unpongkor in July 2008. Charlie makes his living by catching lobsters and selling them to a middle man who then supplies them to high-end resorts and hotels in Port Vila. He has been sending fish and sometimes lobsters to his relatives in Vila for many years. Since he started using mobile telephony, he sends fish more frequently to his relatives who then pay for the airfreight and send him calling credit in return. He spends approximately 5000 VT per month on mobile telephony and says the majority of this is paid through calling credit sent by relatives.

In general, urban respondents were more able to discuss at length the different strategies employed to reduce expenditure on mobile telephony. The majority of the respondents agreed that their expenditure on mobile telephony had gone 'out of control' when they had first purchased it, and outlined at least one of the above mentioned strategies they had developed over time to manage expenditure. Interestingly, the rural respondents were not employing such measures as price and promotion monitoring or sending text messages. It may be of benefit to increase awareness of potential cost saving measures especially in rural areas.

Rural respondents face more constraints in developing strategies to reduce communication costs.

To a large extent, the following factors either increase rural users' communication costs and/or hinder them from developing strategies to reduce expenditure on mobile telephony: network coverage, competition, electricity, access to multiple forms of telecommunications, geographic isolation, costs of credit, literacy rates, and social relations around 'please call me'.

Network coverage: Users incur high costs in accessing telecommunications in Port Narvin (Erromango), Ngala (Epi) and Levetlis (Pentecost), areas currently without network coverage. For instance, In Ngala (Epi), there are only two access points close to the shore. The quality of the coverage was reportedly low, and respondents stated repeatedly that a 200VT re-fill card would allow them to communicate no more than 10 words. There were reportedly significant differences in the strength and reliability of network coverage, often subject to weather conditions as well as having and sufficient fuel or well functioning solar panels to power the mobile towers. Problems with network coverage in rural areas have also been raised in the media such as in Daily Post (e.g. issue no. 2632, 15/05/2009).

Competition: The majority of rural respondents (with the exception of Lamen Bay) relied on Digicel and so they were not in a position to monitor the prices of the two service providers (and therefore benefit from competition in the telecommunication sector) in the same way that the urban respondents could. In addition, because in many cases the destinations of rural calls are to urban TVL customers, there is an extra cost related to interconnectivity charges (i.e. it costs more to call a number of the competitors network).

Electricity: Lack of access to electricity is increasing the costs of using mobile telephony in rural areas. The only respondents who did not report havign to pay for mobile phone battery changing were located in Lenakel and in Port Olry, where there is general access to mains electricity supplied by UNELCO. Most of the rural respondents outside of Lenakel and Port Olry were paying anywhere between 40 and 100 VT per charge, and charging between one to four times a week. According to focus group discussions with women in Atabulu (21/06/2009) up to 50% of total mobile telephony expenditure is related to battery recharging. Refer to Appendix IV for discussion on rural electrification.

Multiple forms of Telecommunications: The public phone and/or tele-radio were reported to be no longer functioning in Port Narvin and Ngala. According to the Chief Executive Officer of TVL (Mr Jacky Adbebeau, 2/7/2009) fixed line services in rural areas are not profitable for the company. The advent of fierce competition in the mobile sector and the subsequent reduction in profits in urban areas (most profitable market) has meant TVL has limited the provision and maintenance of fixed lines in the rural islands. In cases where private land lines are made available to the pubic it can cost up to 50VT to receive a call. These factors reduce the financial viability of accessing multiple forms of telecommunications.

Geographic isolation: There tends to be a gap in information, understanding and using promotions offered by the service providers because the majority of the rural areas are isolated geographically from the urban centers where much of the special promotions are advertised. Even in areas like Port Olry that are close to urban centers, participants of the male and female focus group discussions had not understood the difference between the costs per call charged regularly and those during special promotions. This is compounded in areas like Ngala and Port Narvin where lack of access to secure network coverage means respondents could not easily access promotional texts notifying customers of special promotions.

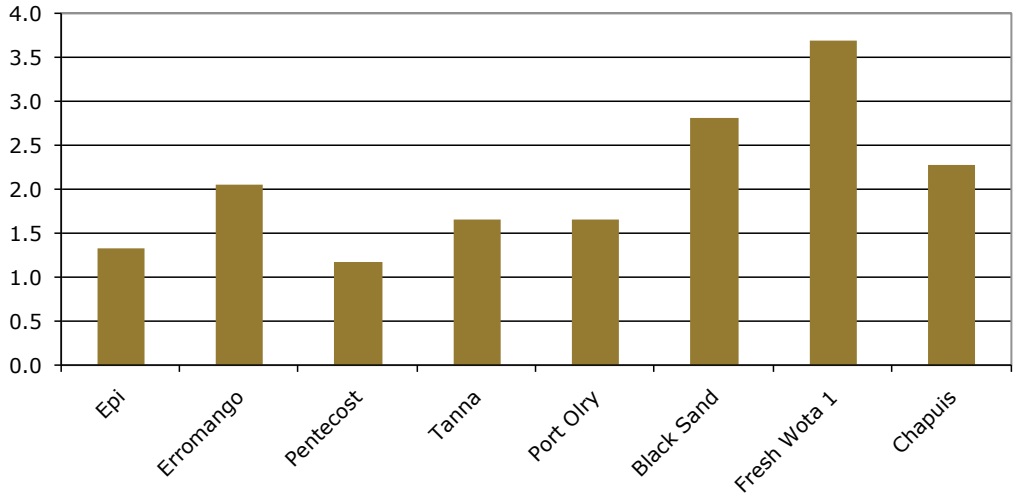
Costs of credit: Retail stores in Port Narvin, Unpogkor, Ngala, and Middle Bush generally sell 200 VT re-fill cards. The majority of the rural respondents mentioned that they prefer to buy cards of this value because it is affordable and does not require significant disposal income. At the same time, some respondents complained 200 VT of credit did not give them enough airtime. According to Nokia (2005) per unit cost of small amounts of re-fill (e.g. 200 VT in Vanuatu) is likely to be considerably higher than larger ones. But this is the price that users pay to be able to buy small amounts.

Furthermore, the majority of respondents (outside of Port Olry) mentioned that 200 VT value cards are rarely sold in retail stores at the stated value. For example, the three retail stores operating in Ngala had colluded to sell 200VT flex cards for no less than 230VT. According to Nokia (2005), 70% of the pre-paid process can be reduced by replacing pre-paid vouchers with electronic re-fill solutions. Port Olry and Lenakel were the only two areas where electronic re-fills were introduced at the time of the field work. Two of the retail store managers mentioned that electronic re-fills were more community friendly because customers can receive the exact amount of credit they pay for and have more flexibility to purchase the amount of credit that they want (i.e. not restricted to a predetermined value of a re-fill card).

Social relations around 'please call me': Although there was a discernible flow of 'please call me' and requests for credit transfer from rural to urban areas and to those earning a steady income in particular, there were a number of social rules determining when and who should receive these requests (refer to the case study on telecoms and gender relations in chapter five for further discussion).

Notwithstanding these constraints, the research findings also suggest that rural respondents are likely to be less price sensitive than urban ones. One of the major ways in which low-income users in developing countries manage expenditure on mobile telephony is by sharing access amongst multiple users. The majority of respondents, whether in rural and/or in urban areas, own mobile telephones and have multiple mobile telephones in the same household. The household survey demonstrated that urban households own, on average, 2.8 handsets, while rural households own, on average, 1.6 handsets (refer to Figure 6.2). Moreover, the number of handsets per household is likely to increase with increase in sources of income (refer to discussion in chapter three).

Figure 6.2: Average number of mobile phones per household



Mobile telephony is potentially triggering increases in rural productivity

Participants in focus group discussions and semi-structured interviews were posed a number of questions on the impact of mobile telephony expenditure on household budgeting processes. There are considerable differences in responses across rural respondents, which in turn were a reflection of varying sources of livelihood in the research areas. For instance, respondents in Ngala (Epi), Atabulu/Atanguru (Pentecost), and Middle Bush (Tanna) are more likely to struggle in meeting the costs of using a

mobile phone regularly in comparison to respondents in Erromango and in Port Olry, Santo. Respondents in the former research sites are more likely to report regular incidents of having to re-allocate some of their grocery budget to meet the costs of mobile telephony.

The comparison between Ngala, and Port Olry serves as illustration of how expenditure on mobile telephony is contingent on economic livelihood. The major sources of livelihood, for instance, in Ngala are copra, kava, peanut, and cocoa. Copra is only sold two to three times a year to a single buyer in Santo, and prices are subject to considerable volatility. Access to markets for the other products is precarious because of inadequate ships servicing the area and the high costs of travelling to the nearest market to sell the products physically. In comparison, respondents in Port Olry generate livelihood through the sale of the following products – copra, fishery, fruits and vegetables and beef. Each of these products in turn have secure markets, within and outside the village. For example, copra is sold directly to a number of buyers such as Coconut Oil Project Vanuatu (COPV) and UNELCO. The Fishery Cooperative in Port Olry bought fish from the local fishermen and sold them in high quantities to all the major resorts operating in Santo and to the fish market in Luganville (Refer to the Case Study on Small and Medium Enterprises). Fruits and vegetables are also sold to the growing number of tourist bungalows operating in Port Olry, and the beef to the retail cooperative and re-sold in smaller quantities locally. Similarly, the economic livelihood of the population of Port Narvin and Unpongkor in Erromango rely on the sale of rare sandalwood (only available in Erromango) and high quality seafood such as lobsters to high-end resorts and hotels based in Port Vila.

At the same time, respondents made it clear that they are only willing to substitute household necessities such as soap and sugar to purchase a phone credit re-fill card in the short term. In the longer term, respondents point to different ways in which they have reduced variously defined understandings of 'unsustainable costs' of mobile telephony, and are either intensifying existing production and/or developing new ways of meeting the costs of using mobile telephony regularly. For instance, female participants of focus group discussions in Pentecost (21/06/2009) who also ran market stalls on the side to meet shortfalls in household income said that they have increased the number of times they go to sell at the market and the range of products that they sell since mobile telephony became a part of their regular expenditure. Box 6.1 provides three illustrations of varying strategies that respondents have developed to sustain the added costs of using mobile telephony.

There are three main, interrelated ways of explaining the argument that mobile telephony may potentially be triggering increases in rural productivity.

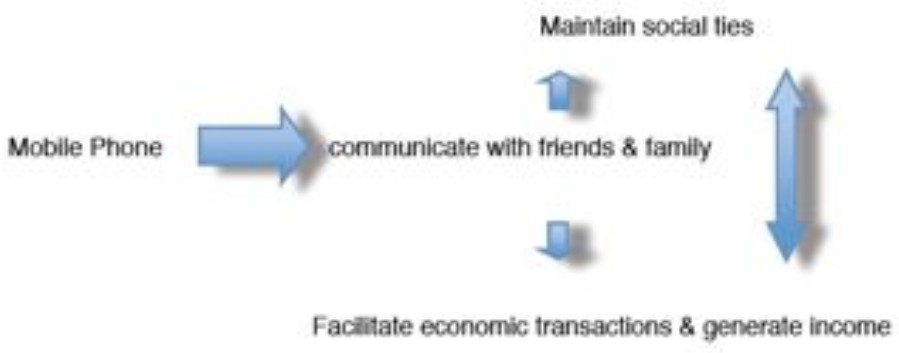
Much of the discussion about mobile telephony use and expenditure in developing countries assumes that income is finite. Therefore, it is argued that mobile telephony either facilities in the increase of or directly reduces household welfare. The latter is by forcing households to substitute household necessities for expenditure on mobile telephony. The findings from this case study instead suggests that, all things being equal, rural respondents who participated in this case study may be producing below their production capacity and that the introduction of mobile telephony may be triggering a subsequent increase in individual/household productivity. The findings from the Diagnostic Trade Integrated Study (2008) serve as explanation for these findings. It argues that the rural economy is classified into subsistence and cash crop production. Income from cash crop production is integral for individuals and households to be able to access basic necessities such as education, health, electricity amongst others. At the same time, households are embedded in subsistence modes of production and the need to secure subsistence first influences intra-household decision over allocation

of land, labor and capital (factors of production). Rather than the 'subsistence effect', however, the major impediments to the development of cash crop production in the rural sector are infrastructure and financial services. It follows then that rural productivity has potentially been increased by the introduction of mobile telephony and the subsequent improvement in communication channels across rural and urban areas.

The Diagnostic Trade Integrated Study (2008) goes on to argue that the need to pay for school fees and make certain basic transactions primarily motivate farmers to sell their crop. As expenditures are irregular (school fees once in three months), farmers' selling patterns are also not regular. Furthermore, income does not always equal expenditure. Because farmers sell irregularly and in bulk, there is often surplus income. But lack of accessible means of transforming income into savings and investment implies that surplus income does not lead to productive use and is often 'buried for safe-keeping'. Based on this and for the purposes of this case study, it could be argued that the introduction of a recurrent expenditure such as mobile telephony may actually be motivating rural respondents to increase productivity (even if incrementally). Furthermore, in research sites such as Erromango where farmers sell in bulk and irregularly because of lack of access to markets and financial institutions, respondents have more disposable income than expected which in turn is spent on mobile telephony.

At the same time, it could be argued that if the most widely cited used of mobile telephony is communicating with friends and family, how is this contributing to increases in productivity? The finding that mobile telephony is often used for what Moyal (1992) calls 'relationship maintenance' is also consistent with other developing countries (see Scouter et al., Vodafone 2005). But Zainudeen et al. (2006) point out, it is difficult to ascertain the exact purpose of a telephone call, and that 'relationship maintenance' may very well have instrumental albeit economic outcomes (refer to Figure 6.3). Similarly, many respondents in rural areas in particular communicate with friends and family in urban areas for the purposes of maintaining social ties and simultaneously for facilitating or expanding economic transactions. Both go hand in hand in the sense that a certain stock of social capital is potentially a pre-requisite for individuals to gain trust in maintaining and/or expanding economic transactions.

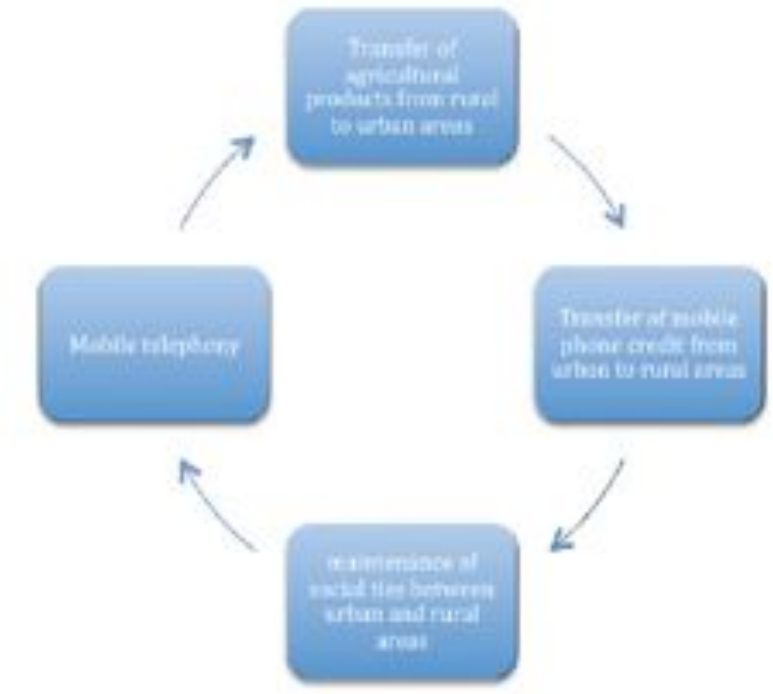
Figure 6.3: Instrumental uses of mobile telephony



For instance, the vast majority of respondents in Ngala, Epi are using mobile telephony first and foremost to communicate with friends and family living in Luganville and/or Port Vila. The majority of the population in Ngala are "subsistence farmers" and generate their incomes from the sale of agricultural products. But, inter-island travels are too costly for the farmers to be directly involved in selling products in urban areas. They rely on relatives to facilitate the process on their behalf. In this respect, respondents in

Ngala use mobile telephony to stay in touch with family and friends in order to maintain social ties and simultaneously generate an income. In other words, there is an element of fluidity between communicating for social purposes and economic ones. There are also a number of respondents who are using mobile telephony to arrange transfer of agricultural products (and therefore economic transactions) from rural to urban areas in exchange for mobile phone credit, which in turn is used to maintain social ties as illustrated in Figure 6.4 below.

Figure 6.4: Intrinsic uses of mobile telephony



Instead of using mobile telephony to facilitate inter-island economic exchange for the purposes of increasing household income and savings, these respondents are actually using mobile telephony to facilitate greater use of mobile telephony in the future.

It could also be argued the use of telecommunications for 'intrinsic purposes' are examples of the introduction of mobile telephony leading to wasteful or unproductive behavior. For example, the participants of focus group discussions in Pentecost felt that there is little 'economically backward' areas such as Pentecost can do to benefit from increased access to telecommunications. A certain level of pre-conditions (such as complementary infrastructure, established linkages with markets, and wide range of products to sell) is required for individuals and entrepreneurs maximise access to telecommunications. Instead, access to telecommunications is perceived to be increasing the profits of foreign telecommunication companies that are rarely going to invest back in the community, whilst increasing the financial burden of not only rural households but also the urban households that many rural household depend on to finance their telecommunication use.

On the other hand, it could be argued that such transactions and patterns of mobile telephony use expose a lack of economic activity taking place in the rural economy. There appears potential for rural households to increase production beyond current levels and the access to mobile telecommunications may be serving as a trigger for increased productivity.

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7. Conclusion and recommendations

This research has demonstrated that telecommunication liberalisation and the advent of competition in the telecommunication market is leading to almost universal access to mobile telephony.

Widespread access to and use of mobile telephony is helping rural and urban households to offset household vulnerabilities, maintain social relationships, reduce household costs, narrow gender gaps in ownership and access, reduce costs and increase the profitability of small and medium enterprises, and expand rural productivity. Nevertheless, the report also suggests:

- a lack of complementary infrastructure;
- gender specific concerns and constraints in using mobile telephony;
- significant costs associated with finding reliable mobile network coverage; and
- a lack of appreciation of using the Internet and high costs associated with Internet services.

Recommendations

The following recommendations address the major issues that continue to pose significant challenges to maximising the benefits of the recent liberalisation of the telecommunications sector in Vanuatu.

Recommendation 1: Improve complementary infrastructure to fully realise the benefits of increased access to telecommunications, including roads, shipping and electricity.

Recommendation 2: Disseminate examples of how mobile telephony can benefit small and medium enterprise development, in particular drawing on international practices relating to electronic and mobile funds transfer.

Recommendation 3: Target women with information campaigns to encourage use and better understanding of mobile telephony to assist in mitigating gender inequalities.

Recommendation 4: Empower rural users to voice against potential abuse, and problems with mobile telephony network coverage through a targeted information and communication program. Disseminate information about strategies developed in different rural areas to reduce the overhead costs of using mobile telephony.

Recommendation 5: Carry out further research to investigate how mobile telecommunications can facilitate the redistribution of resources to rural areas.

Recommendation 6: Drawing on examples from other countries, investigate private sector initiatives together with public-private partnerships to encourage greater use of the Internet and address issues of affordability.

Recommendation 7: Update this research project in twelve months time to track changes and include further research into the areas identified above.

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Appendix I
SME case study participants

	Name	Type of Business	Use of Telephony for Business	Type of Telephony Used	If yes, For what purpose? If not, why not?
1.	Isabella	Fruits and Vegetables, Market Port Vila	Yes	Personal mobile	Ordering, marketing, sales and payment
2.	Deborah	Kumala, banana and taro chips, Market, Port Vila	No	Personal mobile	Use a mobile but for communicating with family
3.	Lita	Fruits and root crops, Market, Port Vila	Yes	Personal mobile	Ordering
4.	May	Fruits, vegetables, root crops and plastic bags, Port Vila	Yes	Mobile + Public land line (Uses mobile telephony more often)	Logistics Ordering (orders goods from Tanna)
5.	Tavau	Kava bar, Port Vila	Yes	Personal mobile	Suppliers Logistics Ordering
6.	Krasia Molsu	Kava bar, Port Vila	Yes	Personal mobile	Logistics Ordering (Kava supply from uncle in Pentecost)
7.	Partelomy	Kava bar, Port Vila	Yes	Personal mobile	Suppliers, logistics and ordering (Pentecost)
8.	Tom Allick	Kava Bar, Port Vila	Yes	Personal mobile	Logistics Ordering Deal with a number of suppliers in Ambae, Epi, Amewo and Pentcost
9.	Meriam Collin	Retail store, Port Vila	Yes	Use husband's mobile	Logistics Use husband's mobile to call transport sometimes.
10.	Vulivosi Dalesa	Retail store, Port Vila	Yes	Personal mobile	Logistics Sometimes but mainly for personal reasons
11.	George Meto	Retail Store, Port Vila	Yes	Personal mobile	Logistics and Ordering (of Digicel for flex card delivery)
12.	Jacobeth Wilson	Retail store, Port Vila	Yes	Personal mobile, private fixed line and internet (Uses mobile more often)	Logistics and Ordering (Along with basic grocery items, also sells firewood and island kakai from North Efate. Uses mobile phone to get in touch)

13.	Linda	Handicrafts (Volcanci Earth), Port Vila	Yes	Personal mobile, internet, and private fixed line	Ordering Logistics Also uses the internet for marketing products
14.	Richard	Handicrafts, Port Vila	Yes	Personal mobile	Suppliers Ordering Marketing Sales
15.	Juliette Pita	Handicrafts, Port Vila	Yes	Personal mobile	Ordering Sales Customers place order of paintings and when ready, can
16.	Marie	Handicraft, Port Vila	Yes	Personal mobile	Suppliers Logistics Ordering Sales Payment Liaise with suppliers in the islands, make arrangements for payments, negotiate with hotels to make payments.
17.	Jerry Iopa	Retail store, Lenakel	Yes	Personal mobile & fax (payment to wholesale store)	Ordering Payment Place orders with wholesale stores, and confirm payment made.
18.	Michael Yati	Retail store, Lenakel (also sells DVD)	Yes	Mobile + Land line (use land line mostly b/c cheaper)	Order Payment Logistics (transport from wharf to Vila) Also uses fax to confirm payments at NBV to suppliers
19.	Richard Waiwai	Agricultural market, Lenakel	No	Personal mobile, has both TVL and Digicel depending on destination of call	Have access to mobile phone but use to communicate with friends and family
20.	Nabib Nakat	Agricultural market, Lenakel	No	None	Never used mobile phone
21.	Evelyn	Agricultural Market, Lenakel	NO	None	Use phone but to communicate with friends and family.
22.	Gabriel	Kava bar, Lenakel	No	None	Suppliers are in South Tanna but they do not have mobile coverage and/or public phone. Good example of potential benefits of mobile telephony in the future, contingenet on network coverage in South Tanna.

23.	Daniel Namori	3 retail stores, Lenakel Also has bakery store and taxi to help with transport.	Yes	Mobile + private land line Alternates between the two depending on coverage, price.	Suppliers (sells diversity of products from different suppliers and uses phone to maintain this) Logistics (check on cargo) Ordering (also checks on types of products and not just on quantity) Payment (checks on prices)
24.	John Nocklan	2 retail stores, Middle Bush Peanut farmer supplying to Port Vila market	Yes	Mobile + public land line + fax	Order supply for retail store and also plastic bags from Wilco for peanuts Track payment Logistics (check on shipment)
25.	Dominique Nakou	Kava bar owner in Vila but operating out of Middle Bush	Yes	Personal mobile	Order supply directly from farmers Payments (confirm payment once supply is received)
26.	Dick Andrews	Tanep Cooperative, Ipota	Yes	Mobile	Order Payment
27.	Nancy Nambil	Retail Store, Port Narvin	Yes	Mobile	Orders cargo Logistics (shipment) Payment (cargo and transport)
28.	Ben Malcolm	Cooperative Store, Port Narvin	Yes	Mobile	Order Payment Logistics (check the intricacies of logistics and incremental albeit substantial benefits of access to telecoms)
29.	Henry Atemelo	Cooperative store, Unpongkor	Yes	Mobile	Order Logistics Payment (example of the spill over benefits of mobile telecommunicatons)
30.	Rosita Touvur	Retail store, Unpongkor	Yes	Mobile	Ordering Logistics Payment (evidence of Henry Atemelo)
31.	Simon Nauta	Lobster Middle Man, Ipota	Yes	Personal Mobile and tele-radio	Coordinate with farmers supplying lobsters Pre-arrange transport Take orders Communicate with middlemen Payment
32.	Jenny Tamkela	Handicraft, Luganville	Yes	Mobile	Suppliers Ordering
33.	Kirby Abel	Kava, Luganville	Yes	Mobile	Monitor staff

34.	Morris Algate	Fishery Cooperative, Port Olry	Yes	Mobile	Supply (fishermen inform Order (inform hotels and resorts about supply)
35.	Frank Rummald	Cooperative, Port Olry	Yes	Mobile	Supply (farmers call before killing their bullock to see if supply already available)
36.	Louis-George	Retail Store, Ngala	Yes	Mobile	Order Logistics (check on shipment)
37.	Ram Tomat	Cooperative Store, Ngala	Yes	Mobile	Order Logistics (check on shipment)
38.	Lemaoa Apia	Agriculture, Lamen Bay	No	Borrow's from a family or a friend	Use a phone to communicate with friends, family and/or for emergency purposes but not for business.
39.	Tasso	Retail Store, Lamen Bay	Yes	Private land line and mobile	Order Logistics (check on shipment)

Appendix II
Semi-structured interviews

EFATE	29 July – 6 August, 2009
Blacksands	
Loti Bulerong (female, 32 years old, retail store owner)	1 August, 2009
Leisau (female, unspecified, house assistant)	6 August, 2009
Tasaruru (male, unspecified, rent house manager)	6 August, 2009
Douglas (male, 24 years old, part-time unskilled labour)	6 August, 2009
Jack Luan (male, unspecified, lending officer at commercial bank)	29 July, 2009
Ennar Robert (female, 28 years old, kitchen supervisor at a restaurant)	1 August, 2009
Focus group (women)	1 August, 2009
Focus Group (men)	7 July, 2009
Focus Group (youth)	6 July, 2009
Freswota 1	
Meriam Leisei (female, 29 years old, house girl)	22 July, 2009
Rina Inhu (female, 25 years old, part-time assistant at a guest house)	22 July, 2009
Noel Tabito (male, 32 years old, lending officer at commercial bank)	7 August, 2009
Kiki (male, 20 years old, unemployed)	13 August, 2009
John Botleng (male, 24 years old, unemployed)	13 August, 2009
Evelyn Isack (female, 33 years old, sales assistant at Jupiter)	13 August, 2009
Kila Abel (male, early 30s, sound engineer)	5 July, 2009
Focus group (women)	16 August, 2009
Focus group (men)	16 August, 2009
Focus group (youth)	5 July, 2009
EPI	**9 – 13 June, 2009**
Lamen Bay	
Communication at Vermali nakamal	9 July, 2009
Atis Jack (male, 50s, owners of kava bar)	12 June, 2009
Welawo Tasso (male, 50s, owner of paradise sunset guest house & manager of RSE scheme liaison business)	12 June, 2009
Willy Graham (male, 37 years old, Air Vanuatu Agent and chief of Lamen Bay)	13 June, 2009
Irene (female, mid 30s, full time mother)	13 June, 2009
Ngala	
Communication at Nakamal	10 June, 2009
Nelly (female, late 30s, nurse at the local dispensary)	11 June, 2009

Sophie (female, early 20s, full time mother)	11 June, 2009
Focus group (men)	11 June, 2009
Focus group (women)	10 June, 2009
SANTO	**14 – 16 June, 2009**
Luganville	
Undisclosed (female, mid 20s, employed at a real estate agent)	16 June, 2009
Undisclosed (female, mid 30s, full time mother)	16 June, 2009
Undisclosed (male, mid 30s, works at the airport)	16 June, 2009
Focus group (youth)	16 June, 2009
Port Olry	
Focus group discussion & communication (women)	15 June, 2009
Focus group discussion & communication (men)	15 June, 2009
PENTECOST	**18 – 21 June, 2009**
Atabulu and Atangurua	
Communication at Nakamal, Atangurua	19 June, 2009
Communication at Nakamal, Atabulu	21 June, 2009
Purity Dovo (female, 36 years old, sells at the market)	19 June, 2009
George Rongo (male, early 30s, farmer)	19 June, 2009
George (male, 29 years old, wife primary school teacher)	19 June, 2009
Tahi (male, 36 yo, carpenter and sells agricultural products & poultry)	19 June, 2009
Esther Wai (female, 64 years old, and sells at agricultural market)	19 June, 2009
Focus group (women, Atabulu)	21 June, 2009
Focus group (men, Atabulu)	21 June, 2009
Levetlis	
Communication at Nakamal	20 June, 2009
ERROMANGO	**23 – 29 June, 2009**
Unpongkor	
Communication at nakamal	23 June, 2009
Mary Whyte (female, early 30s, full time mother, husband lobster fisherman)	24 June, 2009
Lavina Whyte (female, late teens, student at secondary school in Malapoa College, Port Vila)	25 June, 2009
Steven George Iviong (male, early 20s, manages family sandalwood business and owner of taxi in Port Vila)	26 June, 2009
Jason Mete (male, mid 40s, area counsellor)	26 June, 2009
Focus group discussion (women)	23 June, 2009
Focus group discussion (men)	23 June, 2009

TANNA	7 – 10 July, 2009
Isini Village/Lenakel	
Franciska Bani (female, 24 years old, receptionist at Evergreen Resort)	10 July, 2009
Tony Kiao (male, 42 years old, local artist/painter)	10 July, 2009
Melani (female, 21 years old, TAFEA guest house assistant)	10 July, 2009
Lorinie (female, 208 years old, primary school teacher)	10 July, 2009
Focus group discussion (women)	10 July, 2009
Focus group discussion (men)	17 July, 2009
Lamnatu, Middle Bush	
Communication at the Nakamal	8 July, 2009
Grace Lulu (female, 45 years old, baby sitter)	8 July, 2009
Jinneth Yanimul (female, 25 years old, primary school teacher)	9 July, 2009
Joe Nocklan (male, 38 years old, construction worker)	9 July, 2009
Ben Tau (male, 49 years old, primary school teacher)	9 July, 2009
Focus group discussion (women)	8 July, 2009
Focus group discussion (men)	8 July, 2009
NATIONAL LEVEL INTERVIEWS	2June – 12 Nov 2009
Mr. Jacky Audebeau (CEO, TVL)	2 July, 2009
Mr. Shane D. Smith (General Manager, Westpac Banking Coorporation)	2 July, 2009
Mr. John Aruhuri (Head of Rural Banking, National Bank of Vanuatu)	3 July, 2009
Mr. Henry So (Owner/manager, LCC store)	3 July, 2009
Mr. Joseph Sowany (Director, Department of Cooperatives and Ni-Vanuatu Business)	6 July, 2009
Mr. Patteson Torboe (Team leader of rural banking, ANZ Banking Corporation)	8 July, 2009
Mr. Wilson Vuti (Director General, Ministry of Infrastructure and Public Utilities)	10 July, 2009 12 November, 2009
Mr. John Crook (Telecommunications Regulator, Ministry of Infrastructure and Public Utilities)	2 June, 2009 11 November, 2009
Mr. Parmesh Narayan (Manager, Punjas Ltd)	13 July, 2009
Mrs. Dorosday Kenneth (Director, Department of Women's Affairs)	8 September, 2009
Mr. James Ryan (Principal Economist, Utilities Regulatory Authority) Mr. Leo Moli (Principle Energy Officer at the Energy Unit)	9 October, 2009
Mr. Benjamin Jesse, Senior Energy Officer (Electrical Engineer), Energy Unit	15 October, 2009
Mr. Anil Singh, Owner, MV Moika	6 October, 2009
MV Dinh 1 Management	6 October, 2009
MV Malekula Management	9 October, 2009
Marine Consultancy Service Management	9 October, 2009
MV Southern Star Management	9 October, 2009

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Appendix III
Inter island shipping

Two of the recurrent problems highlighted by retail businesses in rural areas are unreliability of inter-island ships and the frequent 'leakage' of products during shipment. The table below provides an overview of access to inter-island ships in nine of the research locations (outside of Port Vila and Luganville the two main ports in Vanuatu)[1].

Research Site	Access to inter-island shipping
Levetlis, Pentecost	MV Geddie is the only ship that services Levetlis, albeit not regularly. According to interview with the Captain of Southern Star who has considerable experience working in Pentecost, the ships avoid servicing Levetlis because of easterly winds, and the population size is too low. The respondents in Levetlis pointed out that it is only recently that MV Geddie started servicing Levetlis directly. The respondents had to carry their kava (including kava for sale) across to central Pentecost in order to have access to shipping services.
Atangurua and Atabulu, Pentecost	MV Sarafenua, Dinh 1 and Tina 1 are the main ships servicing the area. The most regular is Tina 1, and stops on the western side of the island en-route to and from Santo.
Port Olry, Santo	There are no ships servicing the area. Those wanting to transport their cargo must access the port in Luganville. However, Inter-island shipping is not a major concern. There are well established linkages with markets in Luganville.
Lamen Bay, Epi	Lamen Bay is one of the major hubs for domestic ships. Lamen Bay is located en-route from Port Vila to Santo, and there is significant delivery and pick up of cargo to serve as an incentive for the inter-ships to come regularly. There are approximately ten stops per week. The main ships servicing Lamen Bay includeTina1 (2 stops), MV Malekua (one stop), and MV Freedom (major vessel servicing the area).
Ngala, Epi	Brooklyn used to stop in Ngala once a week while making a round of Epi. But, it is temporarily out of services. The other ships servicing the area - MV Brooklyns, and MV Malekula - are irregular.
Isini village, Tanna	Isini village profits tremendously from being adjacent to Lenakel – the third busiest port after Port Vila and Luganville. The main ships servicing the area are Moika (twice a week), MV Southern Star (twice a week), Dinh 1 (inconsistent), MV Malekula (at least three times a week). MV Malekula has been contracted by UNELCO and Digicel to transport fuel to Lenakel.
Lamnatu, Middle Bush, Tanna	Lamnatu is landlocked. Those wanting to transport cargo must go via vehicle to Lenakel.
Unpongkor, Erromango	Ships stop the most frequently, albeit still irregularly, in Unpongkor compared to the other areas. The current ships servicing the area are MV Southern Start and Moika. MV Southern Star was under new management at the time of the field research (July 2009), and had plans to service Unpongkor more frequently.
Port Narvin	MV Southern Star, MV Malekula and Moika are the main ships that service the area. MV Malekula only comes when there is bulk cargo. Moika had ceased service in the area two to three months ago during the time that the field work of this study was being carried out. It was not, however, clear whether or not this was permanent or temporary. According to the staff working at MV southern star and Moika the cargo for Port Narvin is often too few (usually 15 – 20 cartons) unless the people pool their cargoes together. Furthermore, there are strong easterly winds which pose significant risks to ships wanting to travel to the area.

1. The information in the table have been compiled and triangulated through discussions with community members in the each of the locations, and staff working for the shipment companies.

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Appendix IV
Rural electrification

The Government of Vanuatu recently established a new independent power and water sector regulator – the Utilities Regulatory Authority under the *Utilities Regulatory Authority Act No.11 of 2009*. The URA is responsible for regulating services, upholding service standards, market conduct and consumer competition.

Although currently 80 percent of the total population of Vanuatu lives in the rural islands, the government has been unable to extend provision of electricity to most rural areas. Electricity is currently provided in the four main areas – Port Vila, Luganville, Lenakel and Lakatora under long term concessional agreements with private company UNELCO. The concessions provide UNELCO with the exclusive right to generate, distribute, and supply electrical power to consumers within the specified areas.

Rural communities continue to rely on kerosene and generators to meet their basic energy requirements. Recently a a number of steps to have been taken to regulate the the utilities sector, introduce competition, subsidise costs for rural users, and explore different options for providing electricity, viz:

- The URA is initiating a full review of the level and structure of tariffs for all concession areas. The review is assessing the structure of tariffs for all concessions as well as the efficient cost of providing electricity in Vanuatu and the associated revenue requirements for UNELCO. The review is ongoing and it is difficult at this stage to pre-determine the outcome of the review in terms of how best to effect an improvement in services and reduction in the costs of those services.
- The power supply concession in Luganville which commenced in 23 January 1990 is due to expire on 31 December 2010. The Government is intending to retender the concession, and the process is meant to start by November 2009. If an international company were to win the tender, the URA will be in a better position to assess UNELCO's performance. It is also anticipated that competition pressure may lead to a reduction in tariff prices.
- The policy of uniform tariffs stipulates consistency in tariff prices throughout Vanuatu. However, Tanna and Malekula consumers remain subsidized by those in Port Vila and Luganville.
- The URA is working closely with the Energy Unit in preparing and implementing an 'Access Power Investment Program' to expand access to electricity outside the concession areas. The Government has been encouraging investment in a number of renewable energy projects such as Sarakata Hydro Power with another hydroplant construction to be constructed in Malekula and funded by the Chinese government. While hydropower electricity has higher establishment costs compared to diesel power, tariff costs are lower. Nevertheless, the use of hydropower for rural electrification is limited because the costs of establishment is high and natural factors such as population size, and geographical features reduce its commercial viability. The viability of alternative options (such as copra power mill at Port Olry) has yet to be fully explored.

The information have been complied through discussions with the following members of Utilities Regulatory Authority: James Ryan (Principal Economist), Carmine Piantedosi (Chief Executive Officer), and Leo Moli (Principal Energy Officer).

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