COMPETITION AND INNOVATION IN WIRELESS MOBILE AND INTERNET SERVICE IN SAMOA: A CASE STUDY

A THESIS SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAI'I IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
Masters of Arts
IN
COMMUNICATION
AUGUST 2008

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ACKNOWLEDGEMENTS

I would like to express my deepest appreciation to my committee Chair, Dr. Dan Wedemeyer and my committee members Dr. Norman Okamura and Dr. Jenifer Winter whose advice and tutelage guided me on this academic endeavor. My studies at UH Manoa have been funded by the United States State Department and the East West Center and I thank them for their support. I would also like to acknowledge the assistance of all my interview participants, members of the Government of Samoa and the ICT sector as well as the Prime Minister of Samoa, Honorable Tuilaepa Sailele Malielegaoi for the gracious donation of their time and insights. Finally, I would like to thank the many friends and relatives whose unwavering love and support continues to see me through my academic journey and life.
ABSTRACT

This study explores competition in Samoa’s wireless mobile and internet service markets respectively. The research purpose was firstly to discern whether competition had been successful in those markets and secondly, to identify what the current issues being faced by policymakers, the telecommunications regulator, the service operators and users in relation to the competitive telecommunications market. It was found that competition had successfully stimulated innovative performance in the wireless mobile market but true competition had yet to be attained in the internet service market due to an exclusive license on the provision of wholesale data. Particular regulatory issues in this case included the lack of interconnection rate calculation and procedures and the exclusivity of licensing on international data gateways. In relation to size, it appears that a small population can sustain competition if the regulatory and business models are conducive to it. Recommendations and future areas of research are discussed.
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CHAPTER 1: INTRODUCTION

The role of information and communication technologies (ICT) as a direly needed catalyst for economic growth and development in the small island nations of the Pacific is well established in the literature (Hudson, 2006; Jussawalla, 1995). Scholars contend that ICTs are needed in these states to alleviate the widening digital divide between developed nations of the world and developing nations without access to ICTs severely impairing their ability to participate in the global economy and consequently, are at risk of getting “left behind” economically, technologically and socially (Mariscal, 2005). Improved access to ICTs would allow the region to fully benefit from the process of economic globalization, to reduce isolation and exclusion, and to leapfrog in development enabled by ICT, e.g. Distance education and Tele-health (Braga, 1997). ICT not only provides the region with vast opportunities but that the Pacific is ideal for taking advantage of what ICT has to offer (Asian Development Bank, 2003). To this end, many Governments in the region are putting efforts into developing their ICT sectors by launching National ICT strategies and introducing market reforms to establish competition in their telecommunications sectors (Rolfe, 2007).

Telecommunications markets in most island nations are traditionally comprised of monopoly provision of all communications services (voice, internet and data). Most of these market structures were inherited from former colonial governments and operated on the premise that isolated island nations were natural monopolies and best administered by government (Jussawalla, 1994). What exists in many Pacific island nations is a telecommunications infrastructure that is not structured to respond to the aforementioned
ICT opportunities in a timely fashion (Braga, 1997).

Prompted largely by reform efforts encouraged by international organizations such as the World Bank, Asian Development Bank (ADB), International Telecommunications Union (ITU), Asia Pacific Telecommunity (APT), within the last five years market reform in Samoa, Fiji, Tonga, Solomon Islands, American Samoa and Papua New Guinea has introduced competition in the mobile voice and internet service sectors, respectively. The basic justification for introducing competition into a telecommunications market is to stimulate growth in investment and innovation which, from a public interest perspective, are intended to result in better quality and priced service (van Cuilenburg & Slaa, 1995). In large developed countries, there are many examples where the introduction of competition has successfully stimulated innovation in telecommunications which have resulted in better pricing, quality and variety of services available to the public (van Cuilenburg & Slaa, 1995). However, needless to say, the challenges for introducing competition into an isolated, sparsely and mostly rural populated developing island nation are inherently different to those faced by large, populous, developed nations. To date, few researchers have addressed this highly apparent and critical need for strategies to help small isolated nations in the Pacific successfully restructure their telecommunications market to stimulate innovation. Furthermore, it is the small isolated nations of the world that can least afford costly regulatory, policy and industry mistakes. This study contributes to addressing that need by exploring competition and innovation in the telecommunications markets of the developing island nation of Samoa.
The remainder of this paper is organized as follows; the remainder of this introductory chapter outlines the definitions of some important terms in the research. A literature review in Chapter 2 forms the theoretical foundations of this study. Chapter 3 describes the research method undertaken in the implementation of this research. The findings yielded by the study are discussed in Chapter 4, followed by the analysis of the findings in Chapter 5 where the findings are related back to the literature. Finally the research is completed by the conclusions drawn from the analysis in Chapter 6. Areas for future research have also been identified.

DEFINITIONS

**Innovation**: This study defines innovation as defined by van Cuilenberg & Slaa (1995); *innovation* refers to innovative performance of the firm resulting in improvements in efficiency (as measured by reduced *prices*) or innovative performance resulting in new choices and added value services for the consumer (as measured by increased *variety* of service offerings, improvements in service *coverage* and *quality* of service).

**Competition**: The definition of *competition* in this study refers to the opening up of the telecommunications markets through removal of barriers, to allow *more than a single operator* to provide service to the public (Hudson, 2006). Practically this includes all enforcements of the necessary telecommunications legislation, as well the *regulation of competition* by delegated Regulator in a telecommunications market.
**Telecommunications:** This study takes a specific definition of telecommunications to mean wireless mobile telephony and internet services transmitted over distance whether through wireless, cable, radio, optical or other electromagnetic means. This study also takes the stance taken by van Cuilenberg & Slaa (1995) that telecommunications occurs in the public interest.

**South Pacific:** The 'South Pacific' refers to all the groups of islands in the South Pacific Ocean including Samoa, American Samoa, Tonga, Cook Islands, Fiji, Niue, Tuvalu, Tokelau, Vanuatu and Solomon Islands (Pacific Enterprise Development Facility & International Finance Corporation, 2003). Pacific economies share many cultural and economic characteristics and are similar in size and level of economic development (Olutimayun, 2002). This study will look at the situation of competition and innovation in telecommunications in Samoa only. Samoa was chosen primarily due to time and financial constraints for the researcher. It was also chosen because Samoa is at the forefront of telecommunications reform in the region which makes it a choice ripe for review. Additionally it has been the site of previous ICT research (Purcell & Toland, 2004) and is the most accessible of all possible sites for the researcher.
CHAPTER 2: LITERATURE REVIEW

In this chapter relevant academic and some practitioner literature have been reviewed to provide a theoretical foundation for this research. In particular, the goal of this literature review was to succinctly review literature in the areas of Liberalization of telecommunications, Innovation in telecommunications, and competition and innovation in telecommunications. Within those sections, particular emphasis is placed on establishing how competition and innovation have been defined and studied previously in developed and developing regions, and identifying those particular aspects of competition that have been found to stimulate innovation in telecommunication providers. This is followed by a section examining the situation of competition in telecommunications in the South Pacific in closer detail given that this study is set in a context not previously explored in Communications and ICT literature. The final sections of this chapter summarize the core findings of the literature review and introduce the research model which provides the theoretical foundations of this study.

COMPETITION IN TELECOMMUNICATIONS

In this section a definition of liberalization is sought, as well as an understanding on the different scales of liberalization (i.e. privatization). Literature examining the different types of regulation and the role of the regulator is reviewed with a focus on findings in the developing country context.
Liberalization and Privatization

Liberalization of telecommunications has been considered by researchers in Policy, Information Technology and Management literatures. Liberalization embodies the removal of barriers to entry into a market and has been defined as the opening up of the telecommunications sector to entry and fostering conditions for competition (Horwitz & Currie, 2007). It also refers to the introduction of private capital into the Public Switched Telecommunication Network (PSTN) (Wu & Chu, 1998). Therefore liberalization is characterized by 1) the opening the market for competition and 2) the expected influx of capital investment into the industry.

Traditionally, telecommunications monopoly licenses were held by Governments and sometimes the removal of barriers of entry into the market simply means a change of status from a monopoly carrier to a state owned enterprise in a competitive environment. Some countries have opted for privatization or the selling of the state telecommunications infrastructure asset to a private party (Horwitz & Currie, 2007). Both privatization and liberalization have had varied effects in the context of different countries.

The move towards a competitive market structure is usually motivated by stagnant growth in telecommunications due to the inefficiency of complacent monopoly carriers. In their analysis of the privatization experience in the developing country context of South Africa, Horwitz & Currie (2007) posit that “a monopoly in and of itself does not necessarily produce [reinforced monopoly power]... but monopoly without effective oversight or regulation almost invariably does.” Further to that, governments
recognize that an improved telecommunications sector is essential to achieving faster economic growth (Jayasuriya & Knight-John, 2004).

Types of regulation

Typically control in the telecommunications industry takes the form of sector-specific regulation or competition policy. As posited by Bourreau & Dogan (2001) asymmetric ex ante regulation which is that where the incumbent is regulated whereas its competitors are subject to little or no regulation, aims at preventing the incumbent from abusing its dominant position. This dominant position is usually the incumbent’s by virtue of its ownership of local loops and access switches or the ubiquitous local access networks. On the other hand, competition policy provides ex post control whereby all players are subject to the same rules. In general, most markets employ a mixture of both types of regulation.

Role of the regulator

Policy-making is typically separated from its implementation for the very reason that a market employs both a policy and regulatory function to enforce it. Most governments retain policy-making but then legislate for an established independent regulatory body to have oversight over the market. In describing the role and importance of oversight in the market, Hudson (2006) states that there is a need to determine whether there are disparities in access, quality of services or pricing that need to be addressed. Furthermore operators need to be held to their license obligations. In order to be effective regulators must be independent and have enforceable powers (Horwitz & Currie, 2007; Jain, 2006). Jain (2006) posits that aside from independence, effective
dispute resolution mechanisms and institutions are also important for successful competition.

In their assessment of regulation of the telecom sector in Ghana, Bodammer, Pirie & Addy-Nayo (2005) identified four concerns regarding regulation and attracting investment into the telecom sector in developing countries. These are firstly, the importance of a transparent regulatory environment in order to mitigate risks for investors, the independence of the regulator as discussed above. Furthermore, having unclear/harsh legal and regulatory environment will increase investment risks, and finally the absences of controls on anti-competitive conduct which further strengthen incumbent market power also discourage investment.

INNOVATION IN TELECOMMUNICATIONS

The purpose of this section was to look closely at literature that defines innovation and determines how it has been measured in both the general literature and then in specifically in telecommunications contexts.

Defining and measuring innovation

Innovation theorists from management, new product development and marketing literatures, posit that innovation is any profitably commercializable process, product, or technology which changes society, and the way people exist in the world (Miller, Miller, & Dismukes, 2005/2006). Betz (2003) has proposed three generic types of innovation: 1)
incremental innovation, 2) next generation innovation, and 3) basic (i.e., radical or breakthrough) innovation. Incremental Innovation is based upon extending existing technologies, emphasizing improvement of cost or features of existing products, services, or processes. Next-generation innovation makes a substantial improvement by integrating or combining a new technology into an existing innovation system, thereby achieving a much higher impact than incremental innovation, often exerting a “disruptive” influence. Basic/radical Innovation creates dramatic change in technology, processes, products, and/or services that considerably transforms existing markets and industries, or even gives rise to new ones. Therefore it might be appropriate to say that innovation occurs in degrees between incremental improvement and radical transformation.

Different measures have been used to assess the innovation performance of service firms. Most commonly, measures are typically financial and non-financial or results based, process measures or project measures. Financial or results based measures include revenue from new products, revenue from new platforms, and return on investment or project net present value (Mankin, 2007; Shapiro, 2006). Process measures are leading indicators that may be able to tell how the company will be doing in the future. Examples include number of projects in the pipeline, number of ideas that get funded and average time to market. Project measures look at the returns from specific innovation projects such as ROI calculated on a project by project basis (Mankin, 2007).

Innovation management practices, another reported measure of innovation, are defined as what companies habitually do to manage the process of carrying out an innovation. Examples from the literature include practices relating to innovation, barriers
to innovation, organization changes to promote innovation, drivers of new product
development and human resource strategies for innovation (Oke, 2007). In summary it is
succinct to say that while there is no shortage of innovation measures in the literature the
most common and practical measure of innovation is in terms of the resulting
improvements in price, quality and varieties of services.

Innovation in telecommunications

A useful and highly appropriate perspective on innovation in the context of
telecommunications is that posited by van Cuilenburg & Slaa (1995) who posit
innovation as being in the public interest. Innovation (in a telecommunications context)
that is in the public interest, by their (1995) definition enhances the freedom of
communication for citizens by providing more new communication products and services
at affordable and preferably lower prices.

The innovations associated with telecommunications are characteristically of a
technological nature and regard their availability, affordability, and quality of service. In
service improvements that were evidently innovations that resulted from intense
competition. These include a movement away from analogue to higher capacity digital
networks, a proliferation of value-added products such as Short Message Service (SMS),
Wireless Access Protocol (WAP) and other internet mobile services, extensive
advertising campaigns as well as reduced calling prices. Furthermore, mobiles could be
obtained immediately and mobile operators offered services such as pre paid card
schemes, multi-lingual customer services and easy international direct dialing facilities.
In this section, the researcher attempted to bring together the previously reviewed concepts and examine literature that studies the relationship between competition (and the regulation of it) and innovation in the context of telecommunications. An examination of telecommunications stakeholders is included in order to appreciate the complex nature of studying competition and innovation. A particular focus is given to developing country cases that might inform the situation in the South Pacific.

*Competition and Innovation in Telecommunications*

In a macro level statistical analysis of competition and telecommunications performance, van Cuilenburg & Slaa (1995) provide a useful model of looking competition and telecommunications performance. As illustrated in Figure 1, the authors posit that the interplay of competition and telecommunications performance is mediated by not only the policy environment but also by the socio-economic context.
In this research, which involved a statistical analysis of data collected about telecommunications performance from countries (mostly large developed nations) around the world, competition was found to have a significant positive influence on telecommunications performance (van Cuilenburg & Slaa, 1995). This study is an empirical validation of the positive relationship between competition telecommunications performance as measured by process and product innovation. Another valuable contribution of this study is that it recognizes the multi-stakeholder nature of the telecommunications sector and illustrates that for competition to stimulate innovation it involves managing a series of relationships between stakeholders that more often than not, have competing or conflicting interests.

*Telecommunications stakeholders*
As identified in the van Cuilenberg & Slaa (1995) model in Figure 1. **Government** is always a key stakeholder as they are usually the initiators of the liberalization effort and take on the important task of creating the appropriate legislation and the continuing function of policy making. **The telecommunications operators** are obviously an integral stakeholder being the dispensers of telecommunications services to market. Ideally, service providers innovatively compete against each other in a market and provide services to the end users, or customers. **Customers** is a broad term encompassing the consumers of telecommunications services and they can be individuals, business, organizations, residential and can also be classified in by location (urban/ rural), age group or gender. Last but most certainly not least, **the regulatory body** is key stakeholder who as defined in previous sections is responsible for enforcing the competition policy and creating a level playing field for the competitors as well as keeping the consumers interests protected.

In general, and especially in the case of developing countries, researchers posit that in an ideal competitive market each of the stakeholders above are inextricably affiliated with each other and forge relationships but they must operate independently in order for market forces to create a truly competitive market that stimulates innovation (Bodammer et al., 2005; Horwitz & Currie, 2007; Jain, 2006; Jayasuriya & Knight-John, 2004). The relationship between telecommunications stakeholders is conceptualized in Figure 2.
Impacts of the competitive threat on innovative performance

When competitors enter a previously monopoly market it is typical that the incumbent carrier has the upper hand since they own the infrastructure and hold the entire market base. However, He, Lim & Wong (2006) examine competitive dynamics in telecommunications mobile markets and posit that while incumbent firms possessing complementary assets and strong appropriability are typically in a formidable position, new innovative entrants can leverage complementary assets to enter along a new technological trajectory and then develop appropriability. The effect of new competitors on the rise appears as a threat to incumbents and directly affects innovation where the incumbent may adopt innovation more aggressively as this might be the only choice left for the firm (Bourreau & Dogan, 2001).
Impacts of regulation on innovative performance

Regulation, or rather regulatory bodies act as referees between operators and their actions have a direct bearing on innovation in competing carriers. According to Bourreau & Dogan (2001), regulation generally affects innovation activities via two channels. Firstly, price regulations (or more specifically, the regulation of interconnection charges and retail prices) alter industry profits, hence the incentives to innovate. Secondly both price and entry regulations change the terms of entry, and hence the innovation decisions regarding new entry. The effects appear to be different depending on the type of regulation for incumbents and new entrants. According to Lyon and Huang (1995), ex ante asymmetric regulation tends to create an environment where only the unregulated firm finds it profitable to innovate. Ex post mechanisms are expected to provide better incentives for innovation, at least to the incumbent firms who have more flexibility in their decision making under a competitive regime (Bourreau & Dogan, 2001). Conversely, regulation may reduce the incentives for the incumbent to innovate by reducing the opportunities to extract benefits from its innovation.

In regulating essential services such as interconnection and business practice, regulation such as rate of return regulation of interconnection prices can prompt uncertainty in the development process which can create barriers to innovation (Bourreau & Dogan, 2001). Furthermore, short review periods can disadvantage firms in long term business decisions. Therefore, it follows that types of regulation and frequency of reviews show provide certainty and predictability. Unbundling of essential services occurs in one of two ways. Firstly, the incumbent may be mandated to give access to its
physical lines for competitor\(^1\) use or secondly the incumbent may be required to provide a wholesale interconnection service to other operators\(^2\).

Other studies suggest that over-regulation can hinder innovation. Regarding the impacts of regulation on internet use in developing countries, Wallsten (2005) found that countries that regulate entry and internet pricing have fewer Internet hosts and users and have higher prices for internet access.

Though it is mostly implied, it is worth mentioning that a few researchers suggest that the relationship between competition/ regulation and innovation works both ways where innovation in the market also impacts the regulatory and policy environments (Horwitz & Currie, 2007). Which is important to note as a responsive regulatory body is vital for innovation to be fostered and sustained in a telecommunications market (Jain, 2006).

COMPETITION IN TELECOMMUNICATIONS IN THE SOUTH PACIFIC

This section aims to provide a sufficient understanding of the context in which telecommunications stakeholders in the South Pacific operate. Coverage of this background information includes; a general profile of telecommunications and competition in telecommunications in the South Pacific. This is followed by some information on Samoa, its economy and on the status of telecommunications reform in

\(^{1}\) Typically called “raw copper unbundling” or “copper line rental”

\(^{2}\) This option is called “bitstream access”
Samoa. These contextual categories are areas that the researcher deems important in highlighting the uniqueness of the South Pacific and Samoa to any other context in which a study of this sort has been carried out.

Telecommunications in the South Pacific

Many Pacific islands, through regional and international bodies such as the South Pacific Forum (SPF), South Pacific Telecommunications Development Program (SPTDP), and ITU, and through attendance at annual conferences such as Pacific Telecommunications Council (PTC), have made it clear that telecommunications improvement in the region is a high priority. It is equally clear that because of limited resources (much of which is bilateral Aid), high financial costs and competing opportunity costs present formidable challenges requiring negotiation throughout the decision-making process (Jussawalla, 1994). Some of the generic issues are discussed in following paragraphs.

In the majority of island nations, public telecommunications services are provided by government run or government owned entities that generally have a monopoly for all domestic and international communication (as is the case of Samoa) and are responsible for all government policy-making, licensing, spectrum management as well as regulatory functions. The reason for the high degree of control (Government levels of control are shown in Table 1. below) is in the fact that declining marginal costs yield increasing returns and consequently high economies of scale for Government.
This is problematic since these high economic returns are seldom re-invested for infrastructure/innovation in the sector. Usually, the high returns (usually from high international inbound tariffs) subsidize losses in the postal or domestic sectors. What results is a stagnant, outdated telecommunications infrastructure which services only lucrative portions of the population that becomes a sort of taxing agency for capital rationing (Jussawalla, 1994).

Recent trend of liberalization
Recent developments in telecommunications in the region indicate a trend of liberalization in wireless mobile markets in recent years. Governments in American Samoa, Samoa, Tonga, Fiji, Papua New Guinea, Solomon Islands and other island nations have all introduced competition legislation to remove barriers of entry into their wireless mobile markets. This is clearly a manifestation of recognition by the governments of the day, of the underdevelopment of telecommunications in the region and a need for reform. This reform is credited both to insightful leadership as it is to the funding and project implementation skills of ADB Bank who funded and project managed much of the sector reform in the many of the Pacific island nations (Asian Development Bank, 2003).

**Growth in mobile services**

The intended effects of these reforms are clearly to do with the link between telecommunications and development. The actual effects of these reforms are only just being seen. Large foreign telecommunications providers such as Digicel (Samoa, American Samoa, Tonga, Solomon Islands, Fiji, and PNG) and Mara Telecom (Tahiti) have set up shop and acquired licenses all over the Pacific.

This has spurred tremendous growth in wireless mobile penetration and service offerings in the islands. Few data is available but it is widely reported in the media that cell phone adoption rates have increased markedly in many of these island nations since the introduction of competition (Pacific Island Report, 2008). Further to that, similar increases have been reported in coverage, quality and range of services.
Internet market still stagnant

However, while this is the case in wireless mobile, fixed line penetration and internet connectivity remains stagnant (Hudson, 2006). Prices and choices for internet connectivity are very low in most Pacific islands with dial up still in prevalent use and much of the connection available and affordable to urban based businesses. It appears that, while competition, is acting as a catalyst for innovation, better service offerings and attraction of private capital in the wireless mobile markets, this is not the case in other related telecommunications markets such as internet and fixed line telephony. In the case of fixed line telephony, this might be explained by inefficiencies and poor management associated with monopoly providers (Hudson, 2006), however, in the case of internet service provider, the majority of whom operate in competitive markets, few explanations are available for the current lack of innovation, failure to stimulate better service offerings and inability to attract private capital into the market.

To date, there hasn’t been an assessment of the direct impacts competition has had on telecommunications performance (whether local providers have become more innovative as a result) and more importantly, whether it has translated into real benefits of price, service and coverage for the end users. Furthermore, it has been made clear in the literature that the South Pacific is unique to other previously explored developed and developing country contexts, it then follows then that the bottlenecks and catalysts are also likely to be different in as complex process as competition (and it’s regulation) stimulating innovation.
Summary of this section

The lack of resources and outdated nature of the empirical research and relevant statistics on telecommunications in the South Pacific region is unfortunately, an uncanny reflection of the historical situation of telecommunications development on the ground. What research does exist, suggests that island nations have for a long time had in place inefficient telecommunications market structures (mostly inherited from colonial pasts) and are too small, isolated and reliant on foreign aid to attract the foreign investment needed to sustain the competition required to stimulated the much needed technological and telecommunications innovation. Basically, that the region is very much in need. In need of investment, stimulus in technological innovation, but mostly in need of changes in perspective to tackle long harbored problems.

This makes the recent and increasing popularity of the competition regime a most timely and healthy trend. Hopefully. A key finding of this literature review is that while competition is empirically linked to innovation in telecommunications, there are mediating factors and these can easily have adverse effects on competition translating into innovative benefits. These factors, as identified in previous sections, and indeed the entire dynamic relationships/ processes involved in competition that is practically unexplored in the case of small developing island nations of the South Pacific.
SUMMARY

The review of literature reveals that the positive influence of competition on innovation in telecommunications firms is empirically validated. While there is undeniably a proven link between competition and innovation; the interesting questions lie in what it is and how it works. In other words, simply introducing competition into a market would probably not in and of itself, render the benefits of innovation and improved performance. According to the literature, there are several enabling factors that need to be considered in order for that to happen. The provision of telecommunications services in a competitive market involves several stakeholders, each playing necessary but often conflicting roles in order for the market to function effectively. These are identified as policy-makers, regulatory office, and service operators and of course, the end users or consumers. A key difficulty in competition successfully fostering innovation and consequently improved telecommunications performance is in managing these relationships between stakeholders. There are a number of factors that have been found to have significant bearing on this relationship. Ones found significant in this literature review include the type of competition policy that a market has in place, the types of regulations and the impartiality and enforceability of the powers of the regulatory body.

Regarding factors most significant in developing country case studies, the role of the regulator is found to be particularly important in the context of developing country case studies of Sri Lanka, Ghana and South Africa. Interconnection issues and impartiality issues are found to be particularly salient in the case of India.
In the South Pacific, the general issue is involved with restructuring a market that perpetuates inefficiency and stagnation into one that stimulates innovation and better telecommunications performance, and then making it sustainable in order to have it be the foundation of future economic growth. With the current trend of de-regulation, the specific issues in telecommunications are managing the current shift into a re-regulated environment. This is an apparent gap in the literature that is critical to the future development of telecommunications and sustainable economic future of the developing island nations of the South Pacific.

RESEARCH MODEL

Figure 3. Research Model for Competition and Innovation in Telecommunications
(taken from van Cuilenberg & Slaa, 1995)
Figure 3 taken from van Cuilenberg & Slaa (1995) is a basic research model for investigating competition and innovation in telecommunications. The underlying premise is that competition has a positive influence on telecommunications performance as measured by innovation (as indicated by the solid arrow from Competition to Telecommunications Performance). Mediating factors (indicated by the dashed arrows) in this relationship are competition policy and socio-economic context.

Figure 4. Research model of competition and innovation in telecommunications in developing countries.

The van Cuilenberg & Slaa model provides the foundation of the research model presented above in Figure 4. The model is an extension of van Cuilenberg & Slaa with the purpose of gaining a better understanding of the situation in the Pacific islands in mind. Regulation is included as a mediating factor since it is identified in the literature review to significant in developing country cases of introducing competition (Bodammer et al., 2005; Jain, 2006; Jayasuriya & Knight-John, 2004; Wallsten, 2005).
Arrows indicate the stakeholders and where they are typically involved in the competitive process. Government being involved at the policy making level. Telecommunications providers/ operators competing against each other with their telecommunications performance. The users also have a stake in this process as the clientele/ consumers of telecommunications service. The regulatory body is a stakeholder through its critical role in the creating and enforcing of regulations in the market.

Aspects regarding the competition policy, regulation, and telecommunications performance add to our understanding of the situation and are included in this research model. Factors included are those found to be particularly important in developing country cases of deregulation. Competition policy can be either ex post (all competitors subject to the same rules) or ex ante (only the incumbent provider is regulated). Competition can be between (presumably) foreign companies and local incumbents. Another factor regarding competitors is the degree of ownership the government chooses to have in its incumbent telecommunications provider. This varies between cases. Telecommunications performance is a direct reflection of innovation in the firm as measured by improvements in price, coverage, and the range and quality of services available to end users. Finally, the literature suggests that the effectiveness of the regulatory body is dependent on its independence, and its policies on interconnection, dispute resolution and tariffs.

This research model informed the research design, findings and conclusions of this study as detailed in the proceeding chapters. This study responds to the apparent
need for research investigating the policy/ regulation and dynamics of competition within telecommunications and ICT sectors in the Pacific islands.
CHAPTER 3: METHODOLOGY

INTRODUCTION

Being relatively exploratory in nature and broad in scope, qualitative case research was chosen as the most appropriate and feasible research method. The key goal of this research was to gain a better understanding of what the situation is in the Pacific in terms of competition and telecommunications. Following the conclusions of the literature review that competition in telecommunications markets in most Pacific island nations was in the infancy stages and within each market was a set of relationships and dynamics that were not well understood as they happened in Pacific, this research adopted a case study design as the most appropriate.

A statement of the problem follows this introduction, followed by a section describing the significance of the study, its purpose and specific research questions. The research design section of this chapter outlines the knowledge claims and the rationale for employing the chosen strategies in this study. Subsequent sections summarize the role of the researcher, the data collection and the data analysis procedures undertaken by the researcher. Finally, a brief discussion of issues of validity and reliability concludes the methodology chapter of this research.
STATEMENT OF THE PROBLEM:

The digital divides threatens the futures and economic livelihood of the islands as we continue to be starved of access to affordable, appropriate and reliable information and communications technologies. The potential costs of not taking advantage of the development opportunities afforded by ICT and telecommunications for the Pacific Islands are extensive. Problems of rural urban drift, brain drain of skilled local personnel to other countries are all related to the limited opportunities available in island nations. National budgets primarily based on agriculture reliant on limited natural resources face the problem of needing to diversify the national economic base. ICT and telecommunications services can be catalysts for growth in Tourism and new sectors that the Pacific Island nations need as new nuclei for economic growth.

Within the established issues of digital divide and the pending consequences of complacency, the more immediate problem for the South Pacific region with regards to competition and telecommunications performance is largely one of inexperience. In a meeting of the Pacific Islands Telecommunications Association (PITA) at Pacific Telecommunications Conference (PTC) 2008 in Honolulu, the most widely reported concern for telecommunications operators around the region was "Competition" and the challenges associated with it. Examples of these include regulatory issues such as agreement on interconnection and universal service, technological issues such as keeping technical staff up-skilled with the latest technologies in order to offer the most appropriate technical solutions at reasonable costs, as well as issues directly dealing with operators being more innovative such as the increased demand for customer care and
value added services, HR migration across to competitive carriers as well as exploring new markets.

As evident in the current trend of market reform to introduce competition into ICT/telecommunications sectors, there is no lack of awareness of the looming consequences of inaction; the more current issue facing the Pacific islands is introducing competition into telecommunications markets that have been historically monopoly served and government owned. The challenges involved in that shift and whether that shift has to date, been successful, beckon to be investigated.

PURPOSE

In direct response to the problem statement of this research, the main purpose of this study was two-fold. Firstly, this study attempts to explore the challenges currently being faced by policy makers, regulators, and telecommunications in the competitive telecom markets in Samoa, specifically its wireless mobile and internet service markets. Secondly, this research examines whether or not competition in those markets has been considered successful. The hope is that a better understanding of the issues being faced will inform recommendations for improving the situation described in the problem statement.
RESEARCH QUESTIONS AND OBJECTIVES

The research questions that guided this study's inquiry into competition in telecommunications markets in Samoa are listed below with sub-questions which illustrate dimensions of each main question that were explored.

1. What are the current issues faced by policymakers, regulators, service operators and consumers in Samoa’s wireless mobile and internet service markets, respectively?
   a. What difficulties are different stakeholders facing?
   b. What aspects of the current competitive/ regulatory regime encourage and/or impede innovation?

2. Has competition in Samoa’s wireless mobile and internet service markets been successful, so far?
   a. What are indicators of this (or lack of) competition?
   b. Who is benefiting from competition?

The research addresses the above questions using interview responses of certain stakeholders and the focus group responses of other stakeholders as well as qualitative and quantitative data obtained during archival research or during the site visit.
SIGNIFICANCE OF THE STUDY

The importance of tapping into the benefits of ICT for the Pacific can not be overemphasized and are widely reported on in the literature yet ironically there is a great dearth of academic research that helps to address that widely reported need. A contribution of this research is to help address that gap in the literature.

Furthermore, the findings of this research provide useful information which can improve strategies for telecommunications operators, inform policy makers and regulators region wide regarding market reform in their telecommunications markets. In this more practical sense, perhaps the more essential significance of this research is that it provides some insight for the Pacific island Governments, service operators, regulators and consumers, into their own situation. Ultimately the significance of this study is in it being a timely and useful resource to realize the potential of ICT for the Pacific.

RESEARCH DESIGN

QUALITATIVE KNOWLEDGE CLAIMS

This study explored competition in telecommunications in Samoa, from the perspective of the different individuals who play important roles in the competitive market. By definition, this study fits Creswell’s (1994) notion that “a qualitative study is defined as an inquiry process of understanding a social or human problem, based on building a complex, holistic picture, formed with words, reporting detailed views of
informants, and conducted in a natural setting.” The purpose of this study was to explore the current issues in the competitive telecommunications markets from several perspectives within the market and to examine whether competition in those markets was perceived as successful from those perspectives. Perceptions, by nature are subjective and are more suited to a qualitative, interpretive approach. Interpretivism is in contrast to Positivism which assumes the existence of an objective “truth” which awaits discovery, Interpretivism holds that there is no knowable truth about a phenomenon and in fact there are several subjective interpretations of a phenomenon that change over time (Creswell, 1998). Qualitative approaches are most appropriate in research that is exploratory, in which the variables are generally not known, and where the context is important for the study.

As is characteristic to the qualitative paradigm, the researcher interacted with participants in the study, minimizing the distance between the researcher and the researched in order to gain rich, “context bound” information from which themes were interpreted by the researcher utilizing inductive logic.

CASE STUDY RESEARCH DESIGN

A case study is that which “explores a single entity or phenomenon (“the case”) bounded by time and activity (a program, event, process, institution, or social group) collection procedures during a sustained period of time (Yin, 1989). Given that this research explores competition in telecommunications at the outset of the phenomena, in
an area previously unexplored – the Pacific islands, in particular Samoa, context is of utmost important making a case study approach very appropriate for this research.

Results of the literature review yielded a dichotomy of approaches in previous research looking at competition in telecommunications. There is a number of large scale, quantitative investigations of the impact of competition on innovation within service providers (Dekimpe, Parker, & Sarvary, 1998; Rouvinen, 2006; van Cuilenburg & Slaa, 1995) and then other researchers have conducted qualitative case studies typically concerned with broader issues of regulation and telecommunications policy within one country. The majority of investigations of competition in telecommunications in developing countries have been case studies (Bonciu & Williams, 2006; Horwitz & Currie, 2007; Jayasuriya & Knight-John, 2004). The use of the case study methodology not only allows the study to have more breadth and depth but it makes it comparable to existing case research in competition in telecommunications in developing countries.

Site selection justification

Samoa is the chosen site for the case study. Several reasons make Samoa an appropriate choice for this research. Firstly, Samoa is one of the first nations in the region to have introduced competition (January, 2007) in its wireless mobile market, and in its internet service market (1999) which make it a mature enough case, in that sufficient time has elapsed whereby an assessment of “success” is quite timely. Further to that, Samoa is the home country of the researcher so she is familiar with it, and has networks that make the feasibility of the study more possible.
Data collection methods used in this study was those particularly oriented towards exploration, discovery and inductive logic: field research (interviews and observation) and archival research. Advantages of these strategies of inquiry are detailed below.

Archival Research

Analysis of existing documents provides insight into the subjects’ ways of thinking and provides important background information necessary to build the context of the case study (Yin, 1989).

Observation

Advantages of observational research include that the researcher is able to observe relationships at first hand in natural settings. The researcher was close a “full observer” by Babbie’s (2004) definition in that the researcher’s engagement in the case was minimal.

Qualitative Interview

The primary source of data is interviews administered by the researcher on a site visit. Interviews afford the researcher control over the questioning process and interviewees can also provide historical information about the phenomena that might not be easily revealed through quantitative means (Creswell, 2003).

Focus Group

The use of the focus group as supplementary, as it is used in this research can be very useful. The interactive nature of focus groups allows for a richer data set to emerge.
Focus groups typically add to the data collected through other qualitative means, such as participant observations and interviews (Morgan, 1996).

ROLE OF THE RESEARCHER

The primary role of the researcher was to design and conduct the research, collect and analyze the data, and write up the findings. In qualitative research the role of the research as the primary data collection instrument necessitates the identification of personal values, assumptions and biases at the outset of the study. These are outlined below.

The researcher’s experience

My perceptions of de-regulation and telecommunications in the South Pacific have been shaped by my personal experiences both within the industry and as a citizen of Samoa. Born and raised in Samoa in a family where the importance of education and having pride in being a Samoan was ingrained from a very young age, I held the interests of Samoa as a nation close to my heart from a very young age. The majority of my academic endeavors have been directly related to ICT and development issues in Samoa and returning to Samoa to serve following my University graduation was a non-issue.

Since May 2005, I have been employed as a Business Analyst in SamoaTel, the incumbent telecommunications provider. In my position at SamoaTel, I was involved in interconnection and settlements where I dealt directly with SamoaTel’s partner domestic and international operators in the managing our interconnection relationships. Being an
employee of SamoaTel exposed me to the dynamic nature of the industry and SamoaTel's crucial role in not simply, service provision but enabling of the country's development. It most struck me how the relationships between different stakeholders in the industry (policy making bodies, regulation, operators, customers) was necessary for the functioning success of the market, yet the balance was delicate and a mismanaged relationship could be counter productive for some or all involved.

I believe this understanding of the context enhances my awareness, knowledge and sensitivity to many of the challenges, decisions and issues encountered by telecommunications stakeholders.

DATA COLLECTION PROCEDURES

The researcher used qualitative interviews, a focus group, observation and archival analysis to study competition in the wireless mobile and internet service markets, respectively, in Samoa.

Since August, 2006, the researcher has conducted archival research on telecommunications statistics, legislation and policy, infrastructure, and market structures as well as the historical development of telecommunications in the Pacific and particularly in Samoa. This preliminary research gave the researcher a grounded understanding of the context within which this study focuses and advised the formulation of the research questions. In particular the key stakeholders were identified which
allowed the researcher to compile a list of research subjects, and start scheduling and planning the site visit.

The researcher prepared for the study by attending and observing a meeting of the Pacific Islands Telecommunications Association (PITA) which was held in January, 2008, at the Pacific Telecommunications Council’s (PTC) annual conference in Honolulu. At the meeting, the researcher was able to gain a better understanding of the current situation and current issues being faced by telecommunications operators around the region. In addition, she discussed her study with several PITA member representatives who gave constructive feedback, which gave the researcher the opportunity to better focus the research questions and research instruments (interview questions, focus group questions).

Interview subjects were determined through a combination of purposeful sampling and snowball sampling. The intention of purposeful sampling is to select information rich cases to learn about issues in detail rather than obtaining generalizations, like that intended through statistical sampling (Yin, 2003). Accordingly, interview subjects are selected on the criteria that they are knowledgeable about the issues being researched rather than because they represent a generalisable sample of a population. The research model identifying different stakeholders in a competitive telecommunications market was used as a guide to purposefully select interview participants. Consequently, interviews were scheduled with representatives from the policy making, regulatory, service provision functions.
Since it was not feasible to adequately cover the perspective of all consumers in Samoa, a focus group of expert users provides some insight. In order to still include the perspective of consumers, it was decided that a focus group would be conducted with a group of high volume users of wireless mobile and internet services. Participants for the focus group were selected via purposeful sampling via mass emails soliciting participation. The participants were screened based on the volume and frequency of their use of wireless mobile and internet services. While it is obvious that the focus group is not a representative sample of Samoa’s population, given that the development and diffusion of telecommunications services is recent and limited, the researcher decided to focus on consumers that are at a later stage of adoption in order to who can adequately comment on the impacts of telecommunications on their lives.

Once the data collection instruments were finalized, the researcher obtained approval for the data collection stages from the Committee on Human Subjects from the University of Hawaii. Copies of consent forms and questionnaires are available in Appendix A. Further to that, all interview and focus group participants signed consent forms agreeing to take part in the study. Ten interviews were conducted all of which were conducted on a three week site visit to Samoa. Of these, nine were audio recorded and one was conducted via email. The interview questions were divided into two major categories, these being 1) what the key issues/ difficulties have been in the competitive market and 2) whether competition has been successful, if so for whom, and what were key indicators of that success. Some key issues and concepts identified in the literature acted as a guide, however, questions were eliminated, added or modified depending on factors such as the interview participants’ knowledge in a specialist area or time
constraints. In addition to interviews, the researcher collected relevant policy documents and reports from the participants, these included telecommunications/ICT statistical reports, national ICT development strategies, email policies, and internet and telecommunications related policies, telecom orders and regulations and court decisions.

Nine high volume users of wireless mobile and internet services participated in an online focus group which was conducted in an online discussion forum created by the researcher. The researcher posted questions asking on their perceptions regarding the wireless mobile and internet services they used and facilitated discussion between users. The online discussion took place over the course of seven days in order to give participants (mostly working professionals in Samoa) adequate opportunity to respond to questions and responses.

DATA ANALYSIS PROCEDURES

Collection and analysis of the data in this research were conducted simultaneously which is the "constant comparison data analysis method" common in qualitative research (Lewis-Beck, Bryman, & Liao, 2003). Also characteristic to the qualitative method, the analysis was based very much on “reduction” and “interpretation” of the data to identify categories and themes (Creswell, 1998).

The researcher applied systematic coding techniques using descriptive, interpretive and pattern coding, in an iterative process of refining data at different levels of analysis. Initially the code categories emerged out of the literature search and included
aspects of regulation such as interconnection, independence of the regulator and regulatory conflict resolution mechanisms. A complete list of pre-determined codes from the literature is available in Appendix B. Open coding was also used to identify themes and concepts that emerged strongly within the data. Data gathered from documents and observations informed the analysis of the relationships between stakeholders within the competitive environment. Upon completion of the site visit and the focus group the interviews and focus group responses were transcribed including “just the words” in order to provide a richer data set for analysis than if the researcher had just listened to the interview and extracted portions of the interview thought to be relevant at the time.

After developing code categories, the researcher coded the transcriptions, notes, focus group responses and archival data into these categories in two rounds of paper coding. Altogether ten code categories were identified. The complete list of codes is found in Appendix B. It is from analysis of this data that the researcher was able to come up with the findings which relates relevant themes to the research questions posed by this research.

ISSUES OF VALIDITY

Patton (2002) advocates the use of triangulation by stating “triangulation strengthens a study by combining methods. This can mean using several kinds of methods or data, including using both quantitative and qualitative approaches.” To this end, data was triangulated (interviews vs. documents) in order to strengthen the internal consistency of this study. Descriptive validity refers to the factual accuracy of the
account as reported by the qualitative researcher (Johnson, 1997). In order to strengthen
the descriptive validity in this study, the researcher asked all participants for an account
of facts concerning events, rather than relying on just one account. Interpretive validity is
obtained to the degree that the participants' viewpoints, thoughts, intentions, and
experiences are accurately understood and reported by the qualitative researcher.
Member checking in the interview process helped to ensure that interpretive validity in
this study. Theoretical validity is the degree that a theory or theoretical explanation
developed from a research study fits the data and is, therefore, credible and defensible.
To ensure the theoretical validity of this study, theory is given importance from the
inception of the study in its research model which forms the basis for the analysis and
eventual conclusions of this study.

As is the nature of qualitative and in particular case research to be bound by its
context, the findings may not be entirely generalisable to other markets or other
countries. This is acknowledged here.
CHAPTER 4: FINDINGS

This chapter reports the findings obtained through analysis of documents found in archival research as well as interviews, and focus group data.

Integral to understanding the findings as they relate to the research questions is an in depth description of the case study site. Therefore, the first section of this chapter includes important contextual information about Samoa and particularly, the current situation on the telecommunications market in Samoa. Key ICT indicators for Samoa are presented followed by descriptions of the current situation within Samoa’s wireless mobile and internet Service markets in terms of the types and level of services. Profiles of the current service providers and a description of Samoa’s policy environment are also included. Key telecommunications and ICT legislation are reviewed.

Once a clear understanding of the case is established, the two proceeding sections present the findings in relation to the research questions. The first of these (Research Question 1 – What are the current issues faced by policymakers, regulators, service operators and consumers in Samoa’s wireless mobile and internet service markets, respectively?) is presented in section 2 of this chapter and is organized by interview participant. So the responses of the regulator are presented followed by those of the policy makers, service operators and the users. The final section of this chapter is organized similarly presenting the responses of each stakeholder as they pertain to the second research question (Research Question 2 - Has competition in Samoa’s wireless mobile and internet service markets been successful, so far?)
TELECOMMUNICATIONS IN SAMOA – THE CURRENT SITUATION

BACKGROUND INFORMATION

Samoa

Samoa is located east of the international dateline and south of the equator, about halfway between Hawai‘i and New Zealand in the Polynesian region of the Pacific Ocean. The total population is approximately 180,000 residing on two main islands both approximately the size of Oahu, Hawaii. More detailed information regarding Samoa’s Topography, Economy, Infrastructure and Population can be found in Appendix C.

Economy of Samoa

Pacific economies are the smallest, most isolated economies in the world and consequently are relatively poor compared to economies of developed countries (Asian Development Bank, 2003; Pacific Enterprise Development Facility & International Finance Corporation, 2003). Like many Pacific island economies, the economy of Samoa has traditionally been dependent on development aid, private remittances from overseas and agricultural exports (Government of Samoa, 2005). Agriculture employs two thirds of the workforce with the manufacturing sector, primarily processing agricultural goods. Tourism is also an expanding sector. The Government of Samoa is implementing an extensive National ICT Strategy which is in line with the Governments intention to invest in technology and telecommunications as a critical enabler for the future livelihood of the islands as stated in its published development strategy.
(Government of Samoa, 2005). This being the case, Samoa like many nations in the region, recognizes ICT as an important enabler for growth in its economic and other sectors.

ICT INDICATORS

Teledensity – Fixed and Mobile

<table>
<thead>
<tr>
<th></th>
<th>PSTN</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED LINES</td>
<td></td>
<td>17,044</td>
</tr>
<tr>
<td>GoHomeZone</td>
<td></td>
<td>3,130</td>
</tr>
<tr>
<td>Payphones</td>
<td></td>
<td>156</td>
</tr>
<tr>
<td>Total Fixed lines (SamoaTel)</td>
<td></td>
<td>20,330</td>
</tr>
<tr>
<td>MOBILE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digicel Mobile</td>
<td></td>
<td>70,000</td>
</tr>
<tr>
<td>GoMobile</td>
<td></td>
<td>12,000</td>
</tr>
<tr>
<td>Total Mobile lines</td>
<td></td>
<td>82,000</td>
</tr>
<tr>
<td>SAMOA</td>
<td>TOTAL PHONE LINES</td>
<td>102,330</td>
</tr>
</tbody>
</table>

Table 3. Telephone Density (# phones per 100 people)

<table>
<thead>
<tr>
<th></th>
<th>57 phones per 100 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teledensity (Fixed and Mobile)</td>
<td></td>
</tr>
<tr>
<td>Mobile teledensity)</td>
<td>45 mobile phones per 100 people</td>
</tr>
</tbody>
</table>

Table 2 shows the breakdown of total number of telephones (fixed and mobile) in Samoa with the majority of connections being newly established mobile phone lines. Current teledensity in Samoa stands at 57 phones per 100 people, the majority of this being mobile phones (47 per 100) as evident in Table 3.
### Internet Statistics

#### Table 4. Number of internet users (accounts)

<table>
<thead>
<tr>
<th>Source</th>
<th>Accounts/ Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSL - Number of accounts:</td>
<td>2050 accounts</td>
</tr>
<tr>
<td>World ICT Stats¹:</td>
<td>6000 users</td>
</tr>
<tr>
<td>Digicel Mobile Web + GoMobile Go Surf users (GPRS users)</td>
<td>2000 (Approximately)</td>
</tr>
</tbody>
</table>

As shown in table 4, the state of internet service is comparatively low with the number of connections estimated at 6000 which works out to be equivalent to 3 internet users per 100 people. Of the total number of users, approximately 2000 are mobile internet users.

#### CURRENT STATE OF THE INDUSTRY - SERVICES

**Fixed line domestic and international calling services**

Growth has been very stagnant in the fixed line services in Samoa, with growth from year to year and coverage being fairly incremental and extending to only some of Samoa’s coastal residential areas. Bolstered by wireless local loop efforts to extend the coverage to rural users fixed line, today, the penetration of fixed line has reached approximately 14% of the population.

Both international and domestic calling services are available through this infrastructure with prices that were relatively high and fixed until competition was introduced in October, 2006. The local loop is exclusively used by SamoaTel and there is currently no re-sale of the fiber throughout the country for either fixed line or

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broadband internet. SamoaTel offers limited broadband services; these are discussed in internet services.

**Mobile Wireless**

The following account of the unfolding of events in Samoa's Wireless Mobile market is according to Samoa's Prime Minister, Tuilaepa Sailele Malielegaoi (personal communication, July 6, 2008)

Mobile services were first offered in Samoa in 1997 by Telecom Samoa Cellular Ltd (TSCL), a subsidiary company owned by Telecom New Zealand and the Government of Samoa. TSCL Service was provided through an analog infrastructure and was limited to urban areas and the main island of Upolu. TSCL had a license to exclusively operate mobile services in Samoa for ten years. When the Government decided to open up the market for competition it passed the Telecommunications Act of 2005 in which the Office of the Regulator was established and it was enabled that three licenses to operate GSM services would be tendered out by the Government of Samoa. An agreement was reached with TSCL to forgo the rest of its exclusivity period in exchange for one of the GSM licenses. Another of the licenses was awarded to the incumbent Local Exchange carrier, SamoaTel Ltd and the third was issued to Digicel Samoa Ltd which was a combined effort by an established Telco in the Caribbean – Digicel Ltd – and Samoa’s largest ISP Computer Services Ltd (CSL). Not long after the licenses were issued, Digicel bought out TSCL and the Government granted Digicel Samoa a three month head start by allowing them to launch their GSM product in October of 2006, before SamoaTel owned GoMobile launched its network in January, 2007.
Since the launch of GSM in Samoa, the uptake of mobile wireless services has grown remarkably taking teledensity rates from around 25% to 57% in less than one year. Since its launch, GoMobile has acquired close to 30,000 subscribers on its mobile network, according to one interview participant. Digicel launched its 3G network in October 2006 with a subscriber base of about 25,000 CDMA users and extended its coverage to 99% of the country which grew its subscriber base to approximately 80,000.

The majority of the traffic generated by these subscribers is voice traffic to other mobiles, fixed lines and international lines encouraged by the dramatic decrease in calling tariffs. Text messaging is also a popular application used primarily by younger users in as a cheaper means of communicating with their friends than calling. In terms of other data traffic, there are services available such as GoSurf and Digicel’s GPRS services that allow users to connect to their internet on their mobile phone but this is available only in urban areas, limited to slow data speeds of about 60kbps and is primarily in use by young professionals, the majority of whom work for the carriers themselves.

Internet Service

There are three providers of internet service in Samoa, and they have been in operation since the late 1990s in an open and competitive market. All three ISPs secure wholesale internet through SamoaTel’s internet gateway. The majority of customers are on dial up, basic rate ISDN, with some customers on Broadband offered through leased data circuits or DSL enabled Ethernet. Most customers Broadband and DSL are Corporate/ Business customers in urban areas who firstly have coverage and secondly can
afford the relatively expensive tariffs. Charging is still done on a per-minute or per megabyte download basis making.

Value added services such as ATMs and EFTPOS are both initiatives driven and maintained in the private sector by banks themselves, sometimes in collaboration with local ICT companies. There are currently efforts by current ICT providers and carriers to test and deploy wireless broadband, primarily to urban/metropolitan areas with the intention to eventually offer it to outer populations.

A complete chronology of Samoa's telecommunications history is available in Appendix D.

Submarine Cable

There is currently no submarine fiber cable connecting Samoa with other countries. There is much speculation in industry and the media after government has publicized its intention to get Samoa connected to submarine fiber cables coming either from Australia or from American Samoa who have confirmed plans to connect. Some have suggested deployment plans as soon as mid 2008.

SERVICE PROVIDER PROFILES

Local Telephone Exchange Carriers

SamoaTel Ltd
Formerly the Ministry of Post and Telecommunications, SamoaTel, 100% Government of Samoa owned corporation, was established in 1999 with the Telecommunications Services Act 1999 with its main function of being to provide efficient landline services, international gateway services and postal services. It is a large local asset and employer in that it currently owns the entire fixed line infrastructure which provides service all around the islands and employs about 200 people in its telecommunications business and 50 people in Postal.

Services offered: SamoaTel is the largest communications provider in Samoa offering fixed line service to both business and residential customers. Furthermore, they offer corporate solutions to corporate clients (PABX, dedicated lines), international (long distance) call services, calling cards, pay phones, and credit card calling services.

Long Distance Carriers

SamoaTel Ltd. Profiled above.

SamoaTel has the exclusive rights to operate an international gateway through which it connects with New Zealand, Australia, and the United States of America via Satellite. It also connects via Microwave links with American Samoa.

Digicel Samoa Ltd. Profiled below.
Digicel currently long distance and have their own international gateway through which they can only send and receive Digicel originating and terminating traffic.

Wireless Mobile/ Cellular

Digicel Samoa Ltd.

![Figure 6. Digicel Samoa Logo](image)

Digicel Samoa Ltd and affiliate of Digicel worldwide, bought out Telecom Samoa Cellular Ltd in August of 2006 taking over their CDMA network from Telecom New Zealand. Digicel Ltd and the Government of Samoa own Digicel Samoa. Since their launch in November of 2006, they have dominated the mobile industry in Samoa with up to 70,000 subscribers to date with competitive pricing, cheap phones and extensive coverage.

*Services offered*: Prepaid and Post-Paid Calling, International Calling, SMS Messaging, Picture Messaging, internet browsing (WAP), and international roaming.

GoMobile

![Figure 7. GoMobile Logo](image)
Owned by incumbent landline provider, SamoaTel (profiled above) and launched in January 2008 to compete with Digicel. GoMobile’s network has more limited coverage than Digicel but competes aggressively on the marketplace with competitive pricing and its selection of phones.

*Services offered:* Prepaid and post-paid calling, international calling, SMS messaging, internet browsing (WAP)

**Internet Service Providers**

*Computer Services Limited (CSL):*

![CSL Logo](image)

*Figure 8. Computer Services Ltd. Logo*

Established in 1977, CSL was the first IT Company in Samoa. It became an ISP in 1998 and remains the largest ISP provider in Samoa offering broadband to its corporate customers and dial up to central business districts and area’s with fixed line connections. Originally government owned, CSL is now a private company. They also offer internet solutions to corporate customers, software and hardware support as well as running an internet café in Apia. CSL is a registered service provider for DELL in the region. Their main office is at Lotemau Centre, Apia, Samoa.
Lesamoa.net

Figure 9. Lesamoa Logo

Lesamoa.net is a part of Lesa’s Telephone Services which was established in 1988. Lesamoa.net became an ISP in 1997. In addition to being an ISP, they also offer internet café services and specialize in sales and services of most types of Telecommunication Equipment, PABX Systems, Telephone, Fax and Office Equipment.

iPasifika

Figure 10. iPasifika Logo

iPasifika was established in 1999 as an ISP and also offer IT training, software and hardware and maintenance services. Their main office is at Matautu, Apia, Samoa.
Regulator

The Office of the Regulator was set up pursuant to the *Telecommunications Act 2005* (the Act), which was aimed to liberalizing the telecommunications market in Samoa. As per the Act, the Regulator is a three-year term and a person appointed by HOS on the advice from Cabinet. The Office of the Regulator is independent of the Ministry of Communications and Information Technology (MCIT) and is in charge of managing all issues relating to the telecom market including the determination/approval of tariffs, issuing of licenses to the different service providers, implementing the procedures and regard to the telecom networks and equipment, regulates interconnection between carriers, manages disputes between different service providers. He has the powers to make orders which have the same effect as a court order.

The current telecommunications regulator is an Australian, John Morgan, appointed in the middle of 2006.

Ministry of Communications and Information Technology

According the Ministry’s Charter its role is to facilitate, lead and implement the Government of Samoa’s vision for Communications. Its main functions are policy development and implementation and Spectrum monitoring and management for postal, telecommunications and broadcasting industry in Samoa. The ministry’s policy with regards to the telecommunications market is outlined below

Samoa National Communications Policy
Samoa's National Communications Policy (Government of Samoa, 2006) is the authoritative document in the regulation of the telecommunications sector. It sets out government’s development objectives for the sector, and it lays out the implement strategies by stipulating the obligations of the carriers, the market structure, and the regulation checks in place for the operation of the industry.

The current policy stipulates the following policy objectives and implementation strategies

**Policy Objectives**
1. Prices and Subsidies should be set at lowest attainable level
2. Accessibility of Services. Ensuring that there is Universal Service available to rural areas, all residential areas and service to education, health institutions.
6. Regulation. Exercise minimum regulation to maintain competitive market.
7. Human Resource Development. Raise skill level in the industry and ensure there is a wide range of professional skills available.

**Implementation Strategies**
1. Industry Structure. Ensure competition is introduced into the telecommunications market.
2. Range of Services. Provide adequate telecommunication network capacity to meet standard service requirements for standard telephone service, facsimile, internet, tie lines between offices, value added services such as EFTPOS and ATMs, data services on mobile wireless.
3. Prices. Set prices at an appropriate level.
4. Accessibility of Services. Community service obligations of providers should be explicit on licenses. Service should be available at public venues and to key centers.

5. Market Structure. Grant licenses to potential service providers, introduce competition through an open, transparent and competitive tender process.

**Deadlines**

<table>
<thead>
<tr>
<th>Service</th>
<th>Date of Liberalisation</th>
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<tr>
<td>Basic Voice:</td>
<td>By 2009</td>
</tr>
<tr>
<td>Cellular Mobile:</td>
<td>2004</td>
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<tr>
<td>International:</td>
<td>By 2009</td>
</tr>
<tr>
<td>All Others:</td>
<td>Immediate to Medium Term</td>
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7. Customer Protection. Provide criminal sanctions for unethical behaviour

8. Performance Monitoring. Regular monitoring of license obligations


Legislation

The following list of legislation reports relates to the Telecommunications sector in Samoa.

- *Telecommunications Act 2005*: The Telecom Act of 2005 set up the regulator and liberalized the Telecommunications industry in Samoa

National ICT Secretariat

The National ICT Secretariat was established under legislation as an independent body under MCIT responsible for the roll out of Samoa’s National ICT strategy. The Secretariat takes an integrative approach to implementing the strategy in that it’s actions are intended to be implemented within an integrated framework of stakeholders including government policy makers, private sector, NGOs, and the public. The details of the strategy are outlined below with a particular focus on Legislation and Infrastructure for the purposes of this study.

National ICT Strategy

Samoa’s National Strategic Plan for Information and Communication Technology (2004-2009) Transforming Government, Business and Civil Society, manifests the government’s intention to roll out “ICT to the entire country together with capacity-building to integrate ICT to the delivery of existing public and private services ensuring …that Samoan people have the opportunity to participate in the Information Society.” It sets out the main priorities, objectives and tasks, main principles, provisions and directions of the national ICT policy. The policy objectives under “Infrastructure” in
summary focus on creating formal ICT legislation, introducing competition, using ICT in
development and social sectors, improving access, continuing to seek aid for
infrastructure development, improving local technical know how about new technologies
and promoting business efficiency and growth. Strategies to implement these objectives
are very promotional, strategic and leadership oriented such as adopting approaches,
promoting partnerships with local companies to stimulate the private sector, developing a
change management strategy which promotes the training of local staff on
communication networking, infrastructure and the value of a customer focused approach.

Under legislation, the strategies for creating a regulatory framework are to focus
on creating a fair competitive environment, making optimum use of existing ICT
investments, allowing network operators freedom to build their own backbone and local
access, facilitate deployment of infrastructure for advancement of ICT, review
government policies to ensure they encourage competition, and promote the self
sustained development of ICT solution providers in such areas as training, software
development and service houses by awarding no less than 30% of all IT contracts by
government to local providers.

Feso’ota’i Centers

An initiative lead and funded by the Government of Samoa and the Asia Pacific
Telecommunity (APT) has seen the deployment of eleven ICT centers around Samoa, the
majority of these being in rural areas and are run by women’s communities where these
are located. The idea is to provide basic telecommunications service to these areas as a
point of access and an educational tool for rural populations for ICTs.
RQ.1. WHAT ARE THE CURRENT ISSUES FACED BY VARIOUS STAKEHOLDERS INVOLVED IN COMPETITIVE WIRELESS MOBILE AND INTERNET SERVICE MARKETS IN SAMOA?

This section reports the findings as pertaining to the first research question of this study. From the data gathered, the current issues faced by various stakeholders in the competitive market are identified. While the similar issues are faced by more than one stakeholder, for parsimony’s sake, these are discussed separately for each stakeholder and this section is organized accordingly.

GOVERNMENT

Role of MCIT

According to the CEO of the Ministry of Communications and Information and Technology, its role has evolved significantly in the past few years:

The role of MCIT, we are the Government Dept or Ministry in charge of developing policies in terms of telecom development in the country. This includes things like deducing competition, establishing the office of the regulator, separation of functions because if we go back to prior to July 1999, we had 1 government department responsible for policies, regulation and service provision. That was called the Ministry of Post and Telecommunications formerly known as Post Office, at that time the Dept of Post and Telecom was responsible for providing service, Postal and Telecommunications. Everything was regulated in the industry at the time. Introducing policies in regards to any telecom matter at the time. In July, 1999 that was when the first step of the reform took place. That’s when the Dept. of Post and Telecom was split; it was when the Ministry of Post and Telecom was established – July 1999 – at the same time Samoa Communications Ltd. was established. The Government gave SCL a license to provide postal and telecommunications service for ten years, exclusively. So soon in 2001 and 2002 the Government saw the need to further develop and reform the communications sector and so it approached the World Bank for funding of a project to further develop Telecom which lead to the start of the Telecom and Postal Sector reform project, that’s funded under a World Bank
Loan. And this was signed in Washington DC in May of 2002; the project was then launched in April, 2003. Under that project we started off with developing new... let me go back... one of the first things was to develop and update the policy in terms of telecomm and postal develop. With the World Bank we developed and sent it to cabinet for approval our communications sector policy.

**Competition policy**

According to one Government interview participant the market reforms were introduced:

Because the Government saw the need to further develop ICT and telecommunications for the development of the country in terms of economic and social growth. The government at the time realized and believed that in order to develop telecom or ICT it has direct links with the development of other sectors. This intent was embodied in the *Telecommunications Act 2005* which was passed through parliament in June 2005 which revised the existing legislation which dated back to 1972.

As a direct result of that, Government achieved a separation of functions. Previously the Government of Samoa owned the monopoly provider, regulated the industry and created the policies for telecommunications. After the Act was passed, an independent regulator was created, competitive operators entered the market and Government maintained the policy making function.

**Universal Service**

In line with the requirements of the Act, an issue of current concern to the Ministry is Universal Service:

We [with the Regulator] are jointly working with them in setting up a universal access policy and also, a universal service access fund, which will fund any development to areas where there is no service. Because even with the mobile
phones that are widely used there are a few black spots where there is no coverage and those are the areas that the operators need some assistance/subsidies to extend service so that people there can have access.

**Security**

Another concern referred to by Policy makers are the inherent security risks that come with improved communications as being a major concern.

Some of the negatives [associated with the] internet, there is a lot of Spam problems and unsolicited, like pornography material and this comes with internet everywhere so we’re also looking at developing legislation to counter that. Sometimes it’s a difficult thing to control and monitor because it mostly starts from outside, but we also want to make sure that nothing is starting from inside Samoa going to the outside world. And of course the emails can have negative impacts of defamation, fraud things like that. New cyber crimes...students have access to mobile phones and they can have access to cars and credit and of course, young children may be vulnerable to older people calling.

**Dominance of Digicel**

According to a representative of the Office of the Regulator, Digicel now has the “dominant position” in the wireless mobile market. This is also concern for policy makers as pointed out by one interview participant:

We know Digicel loves going to court; we’ve seen the number of cases that they’re involved in all the countries they’ve been involved in, in the Caribbean. So it’s nothing new to them, they’re used to going to court, they love taking the regulators to court. But in our view it’s not something good. So Digicel are aware that Government is not happy with what they’re doing, taking people to court, especially the Regulator. The Government has funded the court costs. The QC’s that were brought over, so it’s a concern to us. Plus the fact that we don’t want overseas companies to come in and dictate... we gave them the license. It comes down to the decision and work of the regulator who is probably the highest paid officer in town. So with the additional costs that have been incurred in court, it’s a lot more that we’re paying.
Exclusive licensing on International Gateways

Related to that, is the issue of allowances or privileges awarded to SamoaTel by virtue of it being a government owned entity. An interview participant from the Ministry had this to say regarding further liberalization of International data gateways which SamoaTel currently has an exclusive license to operate:

It’s something that we are very carefully considering because of what’s happening in this court case and the effects of this liberalization on SamoaTel. We want to make sure that no one is suffered from these policies, so we’re just trying to come up with a balance. Make sure that we open up the gateways, and that it’s fair and that no one company suffers and the others reap the benefits from it. Because of what Digicel is doing is entering the Pacific. Also in American Samoa, I heard they bought Blue Sky, it gives us a lot of difficulties between considering opening up a gateway between here and American Samoa because it will have more impact to SamoaTel. I mean SamoaTel has a lot of traffic, and if we give Digicel an opportunity to open up a gateway it will be more suffering to SamoaTel.

The issue of privatization of SamoaTel is also a chief concern in the decision making regarding policies:

SamoaTel is still a government company and we’re doing consultancies for the privatization of SamoaTel and the separation of SamoaPost from SamoaTel. Once it’s privatized, then they’ll compete on a level playing field. But right now it’s still a government entity and we also need to consider that. Government depends on it for its budget through the dividends from SamoaTel and if it suffers then the Government will not be getting those funds.

When asked about the low growth rates in the ISP market, one interview participant stated that it was related to the exclusivity of licensing in international gateways as well as to cost, and limited penetration in the landline market:

Well it relates to the international gateway liberalization that we just spoke about. I know internet service was introduced in 1995 and then 1997; Samoa.ws was established and then came iPasifika and LTS, so they have been in the market for 10 years. And as you say, there hasn’t been significant growth, it has been very slow. Reasons from our point of view are first of all the cost. Cost of computers
and equipment to the users and also Internet costs. These are bandwidth costs and this is why we’re considering opening up and giving out licenses to the ISPs. Because right now, SamoaTel provides the internet gateway to the ISPs and so the ISPs have to charge a higher rate to the user to pay the gateway operator and get some mark up from that. So I think that’s one of the key reasons why Internet access is expensive. I know the prices of computers have come down a bit. I think it’s a question of affordability for users in general. And the other question is one of access. People in the rural areas have computers but there is no access. No landline access. Although the GPRS service that is offered by the GSM operators is available in the rural areas, but it’s expensive. Not always reliable at times, I’ve been told. But the old land line, copper or fiber is quite reliable, but it’s not available to over half the country. People have machines at home but then they can’t get access to an ISP because of that. Further to that, the costs of the international bandwidth, because there is only one provider. So that means that if the ISPs are given their own licenses to provide internet gateways then maybe the prices will come down. It’s something for us to consider in the future.

REGULATOR

Pursuant to the Telecommunications Act 2005, the Office of the Regulator was set up in 2006:

The Office is basically split up into two operating divisions. You have one that is responsible for spectrum management and provision of technical services to other government departments as requested. The second is regulatory service which includes regulation of telecommunications licensing and so on, provision of consumer protection services. That is supported by two administrative groups, one major administration group for invoicing and accounting, we do our own accounting and purchasing, what have you in house. And we have a legal analyst who provides support for this office and for MCIT. At the present time we have a total of 3 staff in spectrum management and four others in various other functions, plus [the Regulator].

The Regulator pointed the need for more competition in more areas as a key issue for the continued development of Samoa’s Telecommunications market.

There is a definite need for continuing competition or more competition in more areas as we spoke about a few minutes ago, but competition in mobile certainly has improved some of the service offerings available to the market. However it remains as one medium there are more mediums of communication that need to
be looked at. I believe the access to broadband is going to become more and more important to people. And that is not being addressed in the current situation. [This is] partially because of exclusivity in SamoaTel licenses of international and internet which is a real bottleneck. Firstly it's too expensive for the user on the street and secondly the capacity is not there to support the international links that should be available. We're working hard to get that policy liberalized so that anybody who wants to bring in international data can do so under any conditions. The more people the merrier because in that case you get more competition, and there is a very good chance that the prices will go down because you have to sink or swim. It's a market situation. Not only that, quality is an issue now in many cases. Competition again you'll have to look at maintaining a reasonable level of quality on the origination links... and it's not a cheap level of investment so, but there are people who want to get into that business and right now it's being stifled. I'm hoping that under the present legal and regulatory environment the minister of communications has the authority to place any limits on any licenses in terms of what they can do, and restrictions on the number of licenses that can be issued. We definitely need more competition in the international IP area and there are people gearing up to look at that. We're being hampered by SamoaTel exclusivity and like I said I'm hoping that will be liberalized by the end of this year.

**Co-location** has been identified as an issue from an environmental perspective:

We're having a lot of problems getting people to agree that it is technically or economically feasible. And that's something that we're working on trying to provide a little bit more education to the companies involved because in many cases the sharing of facilities can result in another source of income... because the competition is going to be there regardless. It seems to me a little bit short sighted and cut off your nose and say no you can't lease anything from us. In areas such as sites, and towers and mountain tops we are in the process of working with the Ministry of Natural resources and others to enforce co-location where at all practical. Because the environmental impact of having two towers is ridiculous, you don't need to. So that's a slightly different issue rather than in town, or co-location in a building.

After the inability of the operators to reach agreement on Interconnection rates, the Office of the Regulator established inter-rim rates:

The Telecom Act requires be cost based and should be negotiated between the companies on a commercial base. That's the way it should happen. Unfortunately with SamoaTel and Digicel have been unable to agree, they approached this office in late 2006 and asked us to establish them. So at this point, rates are established here. But they should be done by more effective communication between the two, but there is no cooperation.
After three months, the Regulator issued an order that stipulated updated interconnection rates. These rates were challenged in the courts and the decision had far reaching implications for many involved:

[The decision is] favourable to Digicel. So it means that the interconnection order that was made by the office of the regulator is disallowed. It’s back to the interim rates. Now the interim rates are very much favourable to Digicel so Digicel is earning easy money from SamoaTel. SamoaTel is screaming for some relief, as a result of the case. So the office of the regulator is doing some research in order to improve the situation for SamoaTel, and I think according to the regulator, Digicel has agreed that there is some discrepancy with the rates being used. So SamoaTel is paying out much more than it should be.

According to the Act, the calculation of interconnection rates, is to be cost based, however, as noted by the Regulator there are issues regarding cost calculation:

[Interconnection rates] should be cost based. The international standard would be to use forward looking cost of some kind, as a basic, and then use long run incremental or long run average incremental costing to determine the cost of provision of an extra unit over let’s say five to seven years, that’s what has been applied here. And that is what I believe most countries around the world are doing that. I believe it’s the fairest to both sides. Many people like benchmarking. There’s a big problem with benchmarking in finding any country similar to Samoa in size, terrain and other conditions that have cost based rates. Most of these have fallen through from Cable and Wireless and Vodafone where they’ve gone in and a very one sided set of rates that have been in place for a long time. They may have been some guide path coming down to narrow the difference between mobile and fixed. But those are not cost based they’re really not relevant to Samoa because the Act says they’ve got to be cost-based. Benchmarking is a good check to see if what you’re doing in cost seems in reason with other countries, you can’t use rates from anywhere else to directly relate to here because the conditions are so remarkably different.

Regarding the ISP market, the Regulator attributed the lack of growth to a lack of bandwidth and a low penetration of fixed lines throughout the country:

It’s not just SamoaTel controlling the gateways and offering a price that’s probably a little bit higher than it should be, it’s also just lack of satellite capacity. SamoaTel have told me several times that they’re trying to expand the international capacity by satellite but there is just no bandwidth. It’s not just
SamoaTel; there are some anti-competitive issues in the background. The main problem is a lack of bandwidth. Also, the number of fixed lines in Samoa is declining, SamoaTel for whatever reason have been reluctant to expand fixed lines out to the community so that means the ISPs don’t have the bigger access, and it’s not growing for them.

Though, as acknowledged by the Regulator, there are efforts being put into resolving that such as submarine fiber cable proposals and WiMAX operations:

There are two proposals for underwater cable being kicked around. Either one of those could resolve the short term. The SPIN cable is promoting the French, serves to create a real opportunity for business in the long term and that will have a 20 to 25 year and I think it will be a great opportunity if and when it get’s here. ISPs haven’t grown too much because they (for the last several years) depend on dial up access. They are looking at supplementing [their current business] with WiMAX operations. I believe that is going to allow them to get a little spurt of business, unfortunately it’s still plugged in the International side. But that’s definitely underway right now. One ISP has applied for and received licenses for WiMAX and another one is thinking about it. I see that as one of the bigger areas of growth is in the ISP type services. If anyone wants to put an internet café, well you can do that without a license as long as you get your interconnect from an ISP, you don’t need a license for the radio or for the internet café. If you start to provide service to others with your own interconnect services then you need an ISP license.

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SERVICE OPERATORS

Wireless Mobile Operators

Upon being asked what aspects inhibited their ability to provide innovative service, operators responded differently. One operator claimed that the “level playing field” had not yet eventuated which impeded their ability to compete effectively:

International inbound traffic is still regulated, whereby the Incumbent has the ability to do refile, yet, as a competitor we don’t have the same rights. Clearly this disadvantages our ability to compete on the playing field. I think other barriers, there are some other aspects that need to be looked at in terms of the competitive model, and I think that Government continues to look at that. There seems to be a little bit of over regulation on some things. For example data is exclusive to the
incumbent. There is no play for us in that space. Clearly we have the ability and we’re very interested. The regulatory and legal environment prohibits us from doing so. This will stop us from delivering data to rural Samoa and that’s the growth pattern in most developing economies, is the uptake of the internet in rural economies.

On the contrary, another interview participant stated that allowances given to SamoaTel were warranted given the historical development of telecommunications in Samoa:

What you’ve got to understand is that with the introduction of competition, the background is that there has always been a monopoly and that’s the case in Samoa and Telecom services along with postal services (when it wasn’t a company) were subsidized and with the corporatization of SamoaTel, I think that it’s vital and it’s important that you’ve got some leeway for the monopoly. When you say, okay we’re going to introduce competition now, you can’t just say to the monopoly — we’re going to drop you in the bucket and that’s it, if you swim you swim, and if you drown you drown. So I think the exclusive licensing bit was important and it was right for the Government to do that. Mind you they’ve now opened up an international gateway for Digicel, allowing them to receive their traffic. Which if you look at it as an objective spectator it’s an unfair advantage to them as well. They got to be introduced into the mobile market first, 3 months ahead of us. We had no mobile services, but they bought a company that was already a mobile provider so I guess this little, and I call it little because it’s going to expire next year, protection that we were afforded was necessary and I don’t think that it impedes much on them... they should be happy that they’ve got leeway as well. They’ve got some advantages that we haven’t been given and it’s worked out well for them and once next year comes along, we don’t know what’s going to happen. We’re talking about market reform, and it is being liberalized, the liberalization of the market has already started so really, I don’t know why they complain.

There was some concern from SamoaTel that it was being forgotten that they are a local asset and Government and the people of Samoa have a vested interest in it:

Maybe the only comment I’d like to make in public interest, is that people should start realizing that SamoaTel is a Samoa owned company and I know that that’s bad in relation to the services, but you’ve really got to check where your loyalties are. This is a company that was founded by the Samoan Government, and it’s for the Samoan people and all the money stays in here. As a matter of national interest you should be looking at ways to improve it... Everyone is attacking SamoaTel at present even the Government is, but everyone should get behind
SamoaTel and improve what SamoaTel already has. I mean, it’s their company. And I know at times it’s frustrating but it’s theirs.

Operators also showed concern at the current state of Samoa’s economy as being a future challenge:

I think the biggest one is the state of the economy in Samoa. Currently, although it has not been stated by our government, or any of the people that are monitoring Samoa – the IMF, ADB, World Bank and even the Central Bank of Samoa, the economy is in pretty bad shape. I would say that we would actually be close to recession. I think the uncertainty caused by some of the recently published events in the media and coupled with the post SPG downturn has seen significant slow down to the economy in such a way that it is quite detrimental to business. So I actually think that that is the biggest challenge that our company faces, because people cannot spend money on telecommunications that they don’t have.

Another challenge perceived by operators is staying informed of technological trends and how those might impact telecommunications markets globally and in Samoa:

Also, changing technology. Obviously VOIP, VOIP totally changes the whole telecommunications meridian. It’s a total mindset change basically VOIP is a technology which never envisaged interconnect and charging mechanisms which is basically the bones of telecommunications model. So when you take that and you change it, that’s probably the biggest risk, not only for this company but for all telco companys. And they need to start having a play in the VOIP market and hence WiMax makes sense for us long term strategically.

Internet Service Operators

A key issue for ISPs is the low penetration of landlines throughout Samoa. This limits access to internet in many parts of the country since connection is primarily provided through dial up means.

People in the rural areas have computers but there is no access. No landline access. Although the GPRS service that is offered by the GSM operators is available in the rural areas, but it’s expensive. Not always reliable at times, I’ve been told. But the old land line, copper or fiber is quite reliable, but it’s not available to over half the country. People have machines at home but then they can’t get access to an ISP because of that.
The exclusivity of SamoaTel’s license in providing international gateway services leaves ISPs at the mercy of SamoaTel’s charging, which according to ISP operators has been a major factor in restricting their ability to provide and extend their service offerings and lowering their prices:

SamoaTel has refused to review internet wholesale pricing therefore making the internet expensive. With SamoaTel entering the ISP market, this has placed so much suspicious on how SamoaTel is handling our service calls (we have a history of emails proving the unsatisfactory level of service), and conflict of interest in pricing etc... the current SamoaTel broadband ADSL pricing is much cheaper than ISP broadband plans. ISP also do not have access to the fiber cable around the country as SamoaTel will not wholesale this – hence preventing ISP to provide and extend coverage and added value services to the country.

Policymakers claim to be aware of this situation and are looking towards changing that:

Right now, SamoaTel provides the internet gateway to the ISPs and so the ISPs have to charge a higher rate to the user to pay the gateway operator and get some mark up from that. So I think that’s one of the key reasons why internet access is expensive. These are bandwidth costs and this is why we’re considering opening up and giving out licenses to the ISPs.

This sentiment is also shared by the Office of the Regulator who believes the exclusive license situation inhibits both price and capacity of internet service:

Firstly it’s too expensive for the user on the street and secondly the capacity is not there to support the international links that should be available. We’re working hard to get that policy liberalized so that anybody who wants to bring in international data can do so under any conditions. The more people the merrier because in that case you get more competition, and there is a very good chance that the prices will go down because you have to sink or swim.

For the smaller of the ISPs, size and access to funding has been seen as a constraint:

Well, the constraint for us is obviously our size, the company is owned by myself and my wife, and we’re financed by debt financing or by us selling some assets in NZ or Samoa so it’s a bit difficult. But, things have changed for the better recently with the Venture Capital. That’s become another option because debt
financing is a bit more difficult, because in the long run it's what we prefer, because at the end of the day, we get all the benefit.

**USERS**

With regards to wireless mobile services, key issues reported by users are mostly service related. These include dropped calls as well as the annoyance of promotional texts:

I experience dropped calls often, but I don't complain - after Telecom's limited service, Digicel is a miracle as far as the call quality is concerned. I think a real negative point for me with Digi is how they flood the market with their promos thru mass texting. I swear I cannot stand how I get 5 texts a day about texting CASH to whatever number and be in to win, and text whatever to whatever number. It's just plain annoying. I've gotten the same feedback from everyone I know who is a Digi customer. I think the idea of mass texting may have backfired on them - instead of creating an excitement for a new promo, people are discouraged by the frequency of texts and don't catch on to the new promos.

GoMobile:
* Delayed texts. Obviously getting texts people sent 2 hours earlier.
* The annoying 2 texts you get after reloading. One being, "You get 0 free SMS". Okay, I got it the first 100 times I topped up.

Some have reported bad customer service experiences with one of the operators:

GoMo experience: Poor customer service. I was trying to buy a new phone this one time and was trying to get them to explain to me what phones were available were and what they did and which was th best option. And the girl there couldn't. At all. Some of them also give very short, abrupt answers that are very unhelpful. "Do you have this model?" No. "Do you know when your next order will be here?" No. So to save time when I went the second time, I didn't bother asking. I went with my instincts. Thank God I'm always right ;)

As far as network coverage goes they still have a LONG way to go. I can't get good service at home when I answer/call out. I have to leave my phone in certain parts of the house to be able to receive and send texts. (I live about five mins from town.) Customer service definitely needs improvement as well - everytime I go to get a printout of my bill, I wait for almost half an hour for someone to help me
while there are at least 6 people sitting around doing nothing - apparently it's not their job.

The largest reported issue for users in terms of internet use has been the reliability of service:

Work - It doesn't happen often but when the server is down NO ONE can do their work, it's scary who dependent we all seem to be on the internet nowadays! CSL is good though, in that they usually notify us when they have to fix something and they usually do this over weekends when no one's at work. Home - takes too long to connect, load up pages - sometimes whole emails are lost when there's an error.
RQ.2. HAS COMPETITION RESULTED IN INNOVATION AND IMPROVED TELECOMMUNICATIONS PERFORMANCE IN WIRELESS MOBILE AND INTERNET SERVICE IN SAMOA?

The findings as related to whether competition has been successful for Samoa are reported in this section from the perspective of the different interview participants are reported here. Particular attention is paid to what indicators of this success have been and what this success has been attributed to.

**WIRELESS MOBILE MARKET**

**Positive success indicators of competition**

The introduction of competition into the wireless mobile market in Samoa is described by a success by all of the interview participants. The main indicator of this is the telecommunications coverage and consequently teledensity. According to one of the policy makers:

After mobile phone competition was introduced with GSM technology, the growth really picked up. It's quite amazing the jump in mobile phones from 30,000 towards the end of 2006 and now we’re close to 100,000, definitely over 80,000 mobile phones in early 2008.

Population coverage was probably at best 30 to 45%. Clearly, now we are seeing 95% population coverage by our network and the competitor is closely following that aspect of success.

More people have access. It’s also helping them in their daily lives and in their business, helping them to communicate with the relatives in US, NZ, Australia. There are also the social benefits to business in the rural areas.

Amongst operators, indicators of success were the improvements as related to the product and service offerings brought to market to try and win the customer over:
Another improvement is also the level of service in terms of the quality of service, prior to Digicel it was TDMA technology, now we’re using the latest GSM with EDGE GPRS overlay for data. Use of that technology has truly opened up the types of products that are available to the market. You know, MMS (multimedia message service) Blackberry, which is like the technology that was only available to select first world countries/ networks. [Also we provide innovative] first to market products, one of our most successful ones has been our Credit U functionality which allows one user to send credit to another user on our network.

These price and service related benefits were also reported by other interview participants:

Also in terms of prices, there is a choice for people to go to Digicel or SamoaTel. We see a lot of packages a lot of new services and new features like text and some free weekend texting and promotion and reduction in international prices as well.

Also, one of the benefits of these new GSM services is that a lot of people from overseas will come in and be able to use their mobile phones using roaming, so no need to buy a new phone, or a SIM card, some buy SIMs

In relation to that, others agreed that the general level of customer service has gone up since competition was introduced:

In the past the notion of customer care or customer service was very distant. Clearly both providers, our provider in particular is providing 24 hour care. I understand our competitor is also providing significant hours of customer care. What that means to the users is that obviously any time you need information, country codes for international calling, understanding functionalities on your phone. You are able to call any of these free numbers and do so.

According to interview participants this is beneficial in the long run for Samoa:

That level of professionalism is going to help us in the long term. They’re raising the standard and the fact that they’re recruiting locals which is pretty damn good. I think that’s another positive. They’re not just bringing in expats from overseas that may not have a vested interest, but really trying to identify the locals that have the skill set, and that has been a great benefit for Samoa.

As a result of the improved access to communications, competition has “given people a choice [and has been] very useful to many families that have never had the chance to have landlines. People have saved by using the phones they don’t have to come
all the way to Apia, so they’ve saved in terms of transportation costs.” This has particularly been the case in rural areas and on the big island of Savaii. An interview participant retold an account where significant savings were made by rural villages directly attributable to their improved access to telecommunications service.

There was a group of forty three in Sagone who wanted to go to Pago and of course they needed permits, so what they did was they used the fax and photocopy [at the Feso’ota’i center in Savai’i]. They photocopied the front page of the passports and the application for visa, they filled it in, they used the webcam to take their current photos and they used the fax to send it all to Pago and within a week they received all their permits. So none of them had to catch the bus or the boat, they didn’t need to find some talo and ta’amu to bring to the family here⁴. The savings would have been nearly over $3000 tala, if you look at their bus fare, airfare and spending money to stay here for at least a week until they received a permit.

Negative indicators of competition

However, it was not all good news, as pointed out by one of the interview participants:

There is a down side, is basically with this increase in competition and increase in the types of services and the availability of mobiles you see the average customer, because we don’t earn regular income like customers in markets overseas. Basically what’s happening with all these mobiles in places and the cheap cost for the mobile handset the money that could have been used for health purposes and other purposes are now going towards the mobile, even with cheap rates you’ve got people that can’t really afford to have a mobile paying more and more to get calls and services from the mobile company. So I guess everything has its pros and cons and that’s one of the negative effects of the competition in the mobile market.

Other interview participants raised concern on the impacts of the widespread availability and ease of communications had on Samoa’s national culture and that reveal

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⁴ Talo & ta’amu are root crops which are considered staple foods in Samoa. It is very common (sometimes expected) when visiting family to bring food crops from their plantations when they come to visit.
that from a social/cultural perspective competition might not have been beneficial for Samoa:

For example, should the family have a PC, in the evenings when you’re supposed to have prayers… the kids will still be online doing their Bebo and it’s time for the evening prayer. That can impact on our tradition of evening prayer or the kids might come to use the cyber café in town and catch the last bus home and not be home to do the 6Fe’aus.

Also with use of the cell phones, unnecessary usage, it’s affecting the social lives, especially in the churches. I’ve been to funerals where you hear mobile phones ringing all the time. It’s disruptive and annoying. Even at my church, I brought it up that we should put a ban on mobile phones in church; it affects the worship.

Has it been a benefit to have all this advertising and cultural things that people have complained about? Can some of these people afford them or is it creating problems within the family? I can’t really say. So that’s a completely different problem.

Another area of concern is the price of domestic calling which has increased since competition:

What I know that people don’t know is that they are paying a lot for it. Which is something that we didn’t anticipate, of course the dream is that we have as many phones as possible but we lower the prices. That hasn’t been the position. Unfortunately, but I think people are enjoying the phones than the costs to them are … it outweighs the cost that they’re paying. I think it’s a lack of awareness, they don’t know what they’re paying.

INTERNET SERVICE

One interview participant indicated that competition in the internet service market had not been beneficial for the average Samoan because the cost was still not affordable to the average Samoan.

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5 Bebo.com is a widely used social networking site, similar to MySpace.com
6 Fe’au is the Samoan word for chores.
The average Samoan cannot afford an average cost of about 180 month for internet alone which is on top of the telephone bill, because you need both. And currently the cost of wireless is still very high. So providers of wireless are focusing on businesses and the private sector and not the average Samoan because it's too expensive.

From the perspective of ISPs, the constraints they face in terms of bandwidth costs and limited access to users, has forced them to be more innovative in terms of finding the markets:

Right now our typical customer is the home based... so it's really quite residential but that's changing quite a bit with our Wi-Fi. And the only reason for that has been it's been really difficult to convince the government departments to move away from CSL whether for historical reasons or whatever, which is fine. So we've had to go outside of that area and advertise on the radio to really get after the other users...You can't just become petulant because you don't get the ones you want. There are a lot of people here in Samoa and with our Wi-Fi offering, people just want Wi-Fi now.

The potential for market growth in the ISP Market is debated between participants: One operator stated:

I think the numbers as they are now are relatively flat, the ARPU per mobile phone is relatively low and the reason for that is that the economy that the people are deriving income from is relatively flat and what is needed is some new nucleus for growth and how this can happen for example is with tourism if the country starts going to tourism then you have websites then you have the pull through effects, what you need is a catalyst for the next stage of innovation and that's what starting to happen and it will be telecommunications that will drive that change and I think Samoa is poised to be on that development journey and it's about to start now.

Whereas others see more potential for growth and see the bottleneck, being in the policy:

I think it's a policy issue. The current regime in terms of importation of computers is highly restrictive, the duty is somewhere like 8% and on top of that the GST is like 15% so the GST and Duty actually drives the entry level pricing for PCs out of the normal Samoan's reach. That's the biggest barrier other than anything. I think as Samoa ascends towards WTO... and hopefully lifting of tariffs on imported things like computers, clearly that should reduce the price allowing more people to have access to the internet thereafter.
According to users, their positive experiences are mostly associated with the improved coverage, new features, and better prices offered by operators:

I love some of the services Digi offers - Call Me, Credit U/Me, internet and more (sorry can't remember what they are). Call Me is extremely helpful when you're out of credit and NEED to contact someone. I've had a flat tyre twice and used Call Me to contact someone to help me. The same with Credit U. Those are my 2 favorites. Internet is also a convenient one, but not as easily accessed by those lack-of-credit customers such as myself :)

GoMo: free texting all year long (before it finished), free weekend texting, cheap rates.

The service was excellent, no other mobile provider could compare. The promos were new to market and extremely innovative. The Customer Service was the best, because they actually solved people's mobile phone problems and gave customers the impression that they really cared.

Regarding internet service, mostly people are happy with the level of service they receive at work and on GPRS since it is such an improvement on their residential dial up connection. As one focus group respondent stated, "Speed is much better than dialup which I used before. Wimax a little bit faster than EDGE." Another reported the level of service they receive from their ISP to be very adequate:

Work connection - great. And CSL has regular follow-ups to their clients, see how everything is going. We just had our latest visit from them last week. Service is good too - whenever we need help at the office, someone is almost always available right away.
CHAPTER 5: ANALYSIS

Analysis of the data using data coding techniques allowed the researcher to identify key themes from the data. These themes represent issues that come up consistently between different stakeholders. Themes often overlap and are often perceived differently, at times conflictingly between stakeholders. These themes are presented in this chapter.

THEORETICAL DISCUSSION

Two key themes that emerged regarding the impact of competition on innovation in Samoa’s wireless mobile and internet service markets were the discussion of the eventuation of the “level playing field” and whether competition for Samoa had resulted in benefits.

The level playing field

The notion of the level playing field is one that came up several times through the duration of the study and refers to removal of any legislative protections or allowances given to one operator and not to another and is also argued to be the intent of competition. Some of the operators contested whether the “level playing field” had in fact eventuated and even the regulator agreed that more competition is needed in more areas if competition is to result in better pricing and better service in more places. SamoaTel’s exclusive licenses for international data were often stated as evidence that the playing field is not yet level. Interestingly it was also pointed out that in the liberalization of the wireless mobile market; Digicel being afforded a three month head-
start after having bought out an existing mobile service carrier might also be seen as an unfair advantage.

Policymakers claim they are aware that the market as it currently stands is not truly “competitive” however is taking it’s time to ensure that no party is given an unfair advantage by a premature step towards full liberalization. In particular, there is concern about the livelihood of SamoaTel, in an aggressive competitive environment. Being a government owned entity, Government has a stake in the livelihood of SamoaTel and consequently privatization is being considered and consequently deterioration of the value of SamoaTel as a sellable asset is of concern.

Benefits for Samoa

There is a general consensus that competition in wireless mobile services at least has been beneficial for the Samoan people evidenced by the vast improvements in access to mobile service and considerable reductions in call costs. Furthermore, it is widely agreed upon that these improvements in service/access/affordability are connected to growth in other sectors and the development of Samoa’s economy. However an interesting point is made by one of the operators that while the improvements in telecommunications service are necessary for economic growth, a competitive market does not, in and of itself lead to economic growth. Indeed, access to telecommunications service is an enabler for improvements in a country’s economic and social livelihood but it is also driven by many other factors. Some of these as identified in this study are access to computer equipment, education and awareness about the benefits of technology both from an industry perspective and at a greater societal level. There is some concern that
while competition policy is enabling wireless mobile and internet service to be physically available to the public, the policy with regards to importation of computers, technology education and telemedicine continues to inhibit Samoan businesses, schools, medical service providers and individuals to utilize these services. There are limited efforts currently being made to address these areas such as the SchoolNet program and Feso'ota'i Centers however; it can be argued that the liberalization of the market is occurring at a faster pace than the demand for these service is being created.

Summary

In accordance with the original premise taken from van Cuilenberg & Slaa (1995) that competition leads to innovation, in this study, the removal of barriers in the wireless mobile market served to create competition and increase innovation in the market as defined as improvements in price, service and variety of services. Contrarily, “competition” in the internet service market did not lead to similar benefits. While this appears to in some way invalidate the claim that competition leads to innovation, on closer inspection this is not the case. The definition of “competition” in this case refers to the removal of barriers to allow more than a single operator to provide service o the public. As discovered in this case, in the internet service market, while there is open entry into the service provision to the public, the supply of wholesale internet to each of those internet service providers is provided solely by SamoaTel meaning there is no “competition” by the definition held in this study in the wholesale provision of internet service, only on the retail side. It would follow then the removal of exclusive rights of
SamoaTel to monopolize the international data link would create competition and result in better improvements in price and services.

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**INTERVENING VARIABLES**

**REGULATION**

The role of regulation in this case has been substantial. The changing of the rules in order to allow for there to be more than a single operator took place through the creation of the Telecommunications Act 2005 and various court orders issued by the Office of the regulator. Particular aspects of regulation which played a role in this case were, as described above exclusivity of licensing, co-location, universal service. A discussion of specific regulatory issues is presented in the following paragraphs.

**Licensing of international gateways**

Under the current regime, SamoaTel has exclusive licensing of International gateways as part of its license privileges awarded in 1999. This exclusivity runs out in 2009 yet there has been much lobbying by Digicel and some of the ISPs to liberalize international gateways before then claiming that it is an unfair advantage to SamoaTel. Interestingly SamoaTel believe they are providing the international gateway service in a manner that is adequately meeting the international gateway demands of the country. On the contrary, internet service operators, policymakers and the regulator believe that the service can be provided more efficiently and at better prices and that in fact, the current bandwidth requirements of the country are not being met by the satellite capacity currently garnered by SamoaTel. SamoaTel makes the argument that one main operator
has more purchasing power than several smaller operators which would likely result in the cost of international capacity increasing. Further to that, a SamoaTel representative argued that it’s exclusive license for international data is a small protection offered against the competitive might against Digicel Samoa which it’s share of advantages when it bought out existing monopoly provider Telecom Samoa Cellular and entered the wireless mobile market three months ahead of GoMobile which was a brand new carrier.

**Interconnection**

As stated by policymakers, the regulator and the operators themselves, interconnection has been difficult and ongoing issue which has had far reaching implications in the industry. As described in previous chapters, due to an inability of the wireless mobile operators to come to an agreement on interconnection rates, the Office of the regulator issued an order which established interim rates. The court case that followed was a costly exercise for SamoaTel, the Government of Samoa and consequently the people of Samoa. However, it highlights several areas that need redress. Firstly is the dire need for an established way to appropriately calculate interconnection rates and interconnection practices in Samoa. Clearly, this is a core area that the regulator needs to be adequately experienced and qualified and have good information to make decisions about.

**Socio-Economic Context**

Regarding the role of “smallness” in this case, it appears as though there is little effect of the Samoa’s small rural socio-economic context on the competitive market
stimulating innovation in the services. While there are obviously limits on the number of competitors a market can sustain, new pricing structures and technologies have allowed for new business models that have enabled markets that were traditionally seen as not being lucrative to sustain competition.

Universal service and rural demand

The issue of universal service is viewed by government and the regulator, not surprisingly as one of necessity for the development of Samoa. Also unsurprisingly, the operators of mobile wireless and internet service see universal service as an uneconomic venture that is overly idealistic but makes little business sense. Wireless Mobile services are available to 95% of the country, so to a very large extent there is Universal service in wireless mobile services. While, prima facie, this is good news, as one operator pointed out, Samoa has two full networks (approximately, 84 base stations) for a population of 180,000 people. The long term economic sustainability of both networks depends on the propensity of the population served by the networks to spend money on these services. Samoa being, currently a primarily agricultural economy, a very valid question that then arises is whether or not there is really a perceived need for such technology by a population of mostly rural farmers. Furthermore, Operators argue that the lack of demand in rural areas is in fact a policy issue due to tariffs for computer and technological equipment remaining high keeping computers out of the average Samoan’s price range. This is especially the case of internet services that are currently available only few areas aside from urban Apia and remains too expensive for most Samoan users that aren’t businesses. Even in mobile wireless services, while it is undisputed that more
people have access to mobile phones and own them, for many rural users the monthly average revenue per user (ARPU) remains below five tala which means many of the base stations are in fact not making money.

RESEARCH IMPLICATIONS

This research explores competition and innovation in wireless mobile and internet services in Samoa. Stakeholders in competition and intervening variables were identified and discussed. By examining a previously unexplored area of research this study contributes to the existing body of telecommunications literature and provides a framework to examine competition and innovation in other cases.

Some more practical implications are listed below in the form of recommendations.

**Regulatory recommendations**

- Shortening of exclusivity periods to allow only for genuine re-balancing
- Establishment of clear interconnection cost calculation and procedures
- Establishment and enforcement of co-location contracts
- Establishment of clear dispute resolution mechanisms
AREAS OF FUTURE RESEARCH

A further implication of this research is the possibilities it opens up in terms of areas of future research. The replication of this study in another Pacific island context with this study as a point of comparison would render some interesting results about competition in telecommunications in the region.

As identified in this study, improved access to wireless mobile and internet service does not lead to economic growth if there are no uses or perceived needs being met. It then follows that there is a need for research investigating innovative uses of ICTs, particularly for rural residents that make up the majority of Pacific island populations. Further to that, research taking a closer look at the social and cultural impacts of ICT would contribute to that understanding and increasing ICT usage in the Pacific.

On a more practical level, the need for research on the establishment of clear regulations and procedures for markets transitioning from monopoly to competitive structures is apparent.
CHAPTER 6: CONCLUSIONS

This case study intended to investigate the case of Samoa in regards to the introduction of competition in its wireless mobile and internet service markets, respectively. The conclusions and areas for future study are identified in this chapter.

The enactment of the *Telecommunications Act 2005* manifested the Samoan Government’s intention to liberalize its telecommunications industry. The resultant competitive landscape includes two wireless mobile providers, three internet service providers, an independent regulator and a policy making body.

Referring back to the original research model of this study, removal of barriers in the wireless mobile market did lead to innovation in the market and consequent improvements in price and services. In the same vein, while the internet service market has supposedly been competitive since the 1990s, their remains a monopoly on the wholesale internet bottlenecking the stimulation of innovation in that market.

Looking at particular intervening variables, the majority of the issues as identified by each of the stakeholders interviewed in this study are regulatory in nature. Particularly, the areas of interconnection, universal service, exclusivity of licensing and their contribution to the eventuation of the “level playing field” have proven to be especially complex.

In general, the findings of this study serve to validate much of the existing research on competition and innovation in telecommunications. Some useful implications for both future research and practice can be derived. As an exploratory study this study
serves as a platform to not only understand competition and innovation in wireless mobile and internet service in a small island nation but more importantly to for successful telecommunications markets to be attained.
APPENDICES

APPENDIX A. CONSENT FORMS, INTERVIEW & FOCUS GROUP QUESTIONS

Participant Information Sheet

Competition and innovation in small developing countries: The case of Samoa

Researcher: Filifotu Vaai
School of Communications, University of Hawaii at Manoa

1. Ten selected individuals from the telecommunications sector in Samoa will participate in this research.
2. Identified interviewees are free to decline to participate in the research.
3. Interviewees are free to withdraw, without explanation, at any stage of participation in the research should they so desire. However, this should be before 31 July 2008.
4. Your participation in this research will involve filling out a consent form and participating in an interview that will take approximately 1 hour and 30 minutes to complete.
5. A transcript of the interview can be provided to the interviewees for approval within one month after the interviews are conducted.
6. Although not anonymous, the data will be kept confidential.
7. No other person, apart from the researcher and her thesis committee, will have access to the data. Only aggregated data will be presented in the final research report. None of the individuals or companies will be identified.
8. The interview records will be destroyed one year after the completion of the research.
9. The complete research report will be submitted for marking to the School of Communications.
10. It is envisaged that the study will be reported upon at relevant telecommunications conferences and in academic publications.
11. The findings of this research are intended to help the telecommunications sector by providing a better understanding of the salient factors in successfully implementing competition into telecom markets in small developing countries such as Samoa.

If you have any questions regarding this research project please contact Filifotu Vaai at filifotu@hawaii.edu or at phone number: (Samoa) +6857599805 (Hawaii) +18083517257

If you have any questions regarding your rights as a research participant, please contact the UH Committee on Human Studies at (808)956-5007, or uhirb@hawaii.edu

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Consent to Participation in Research

Competition and innovation in telecommunications in small developing countries: The case of Samoa

I have been given and have understood an explanation of this project. I have had an opportunity to ask questions and have them answered to my satisfaction.

I understand that any data or information which I provide will be kept confidential and accessible only to the researcher, IRB and her supervisor. I understand that the questionnaires will be destroyed one year after completion of the research report.

The published results will not use my or my company’s names and no opinions will be attributed to me in any way that will identify me or my company.

I understand that my company will receive a report of the findings of the research upon completion of the research.

I agree to take part in this research. However, I understand that I am free to withdraw at any stage of participation, without explanation.

Signed

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Name of Participant (Please print clearly) Date

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Position of Participant (Please print clearly and avoid abbreviations if possible)
Background Information

The following interview is administered for the purposes of the assessment of the researcher’s thesis towards the completion of her Masters in Communications and the University of Hawaii at Manoa, Honolulu, Hawaii.

Against the background of already competitive internet service market and the recent liberalization of wireless mobile services in Samoa, this study looks at the influence the introduction of competition, and the regulation of it, has had on innovation in the wireless mobile and internet service market markets in Samoa.

Definitions

Competition: refers to the removal of entry barriers into the market.

Innovation: refers to improvements in operational efficiency resulting in better pricing and quality of service, more types of services and better coverage.

Instructions

Please answer the following questions in your capacity as an individual in a management position in an internet service provider.
Interview Questionnaire 1 – Wireless Mobile Service Operator

1. How do you gauge your success in the market? What are key success indicators for you as the CEO?

2. What do you perceive as the challenges or barriers to innovation for Digicel?

3. What do you think the motives were for the Government of Samoa introducing competition into the wireless mobile market, and do you think it was a well timed decision for Samoa?

4. What do you perceive as the role of the telecommunications regulator in the telecommunications market?

5. Do you feel the current competitive regime encourages innovation in the telecommunications market, and if so/not how does it/no?

6. Do you think the telecommunications environment in Samoa is attractive for foreign investors? Why or why not?

7. What particular aspects of the regulatory/competitive regime do you feel impede Digicel’s ability to provide better quality, cheaper and more services?

8. Is the opening up of the telecommunications market beneficial to Samoa? Why? How?

9. What do you perceive as the impact of further liberalization for Samoa, like that of the international gateway?

10. What is Digicel’s role in the internet service market? Do you see this role changing?

11. What future challenges does Digicel face for it to stay successful in the competitive market?

12. What are Samoa’s priority needs in terms of creating and sustaining a successful telecommunications market (defined as one that provides effective, reliable, affordable, universal service)?
Interview questionnaire for ISP Operators

1. What do you perceive as innovation in the ISP market?

2. Do you see CSL as an innovative firm? How so?

3. How do you gauge your performance in the market? What are key performance indicators for you as the CEO?

4. Is the ISP market competitive?

5. What policy/legislation govern the ISP market? Who regulates it?

6. Can you please describe the situation in terms of CSL's suppliers for internet? Does CSL have its own dedicated off island connection?

7. What factors have inhibited CSL's ability to offer better pricing, products and coverage?

8. What do you believe is the optimum number of ISP providers in Samoa. If the number of ISPs is greater than (3) in today's Samoan market how will they survive economically?

9. How do you explain the lack of foreign investment in Samoa's ISP market?

10. Is the opening up of the telecommunications market beneficial to Samoa? Why? How?

11. What do you perceive as the impact of further liberalization of the international gateway?

12. What are Samoa's Priority needs in terms of creating and sustaining a successful telecommunications market (defined as one that provides effective, reliable, affordable, universal service)?
Interview Questionnaire for the Office of the Regulator

1. Can you please describe the current regulatory regime in place in Samoa? What are the components? What are the key regulations?

2. How would you describe a successful/ideal telecommunications market in Samoa? What are the key success indicators for you as the regulator?

3. What are the current regulatory challenges in Samoa’s competitive wireless mobile market?

4. What were the rationale/reasons for the Government of Samoa introducing competition into the telecommunications market?

5. Do you believe the introduction of competition into the wireless mobile market has been beneficial to Samoa? How so?

6. What do you think the impact of further liberalization, like that of the international gateways, would be for Samoa?

7. In Samoa, there has been significant growth in the wireless mobile market in terms of number of users, quality of service and coverage areas yet there is significantly less growth in the internet service market which has been competitive since the 1990s, why do you think that is?

8. What do you think the appropriate level of regulatory involvement should be in Samoa’s wireless mobile market?

9. What challenges lie ahead for the Office of the regulator in Samoa?

10. What are Samoa’s priority needs in terms of creating and sustaining a successful (in the public interest) telecommunications market?
Interview questionnaire for Policy makers

1. What were the rationale/reasons for introducing competition into the telecommunications market?

2. Can you please describe the role of MCIT in the development of telecommunications in Samoa?

3. How would you describe the successful/ideal telecommunications market in Samoa? What are the key success indicators for you as the policy making body?

4. Can you please describe the key components of the current communications policy in Samoa?
   a. Are there price regulations?
   b. Are there entry requirements?

5. What are key policy-issues currently being faced by the Ministry in dealing with competition in telecommunications in Samoa?

6. Do you believe the introduction of competition into the wireless mobile market has been beneficial to Samoa? How so?

7. What do you perceive as the impact of further liberalization in the telecommunications market, like that of the international gateways?

8. How does the current communications policy cater for rural areas, low income users, users with limited access?

9. In Samoa, there has been significant growth in the wireless mobile market in terms of number of users, quality of service and coverage areas yet there is significantly less growth in the internet service market which has been competitive since the 1990s, why do you think that is?

10. What are Samoa’s Priority needs in terms of creating and sustaining a successful telecommunications market (defined as one that provides effective, reliable, affordable, universal service)?
Focus Group Questions

Perceptions on Mobile Service in Samoa

1a. How and when do you use your mobile phone? (Are you a pre-paid or post-paid customer? What are your main uses for your mobile phone?)

1.b. Tell me about positive experiences you've had with your mobile phone provider? (What are services you like? What about coverage? Quality of Service? Prices?)

1.c. Tell me about disappointments you've had with your mobile phone provider? (Perhaps you requested a service but it wasn't available? Quality of service? Prices? etc)

1.d. Who or what influences your decision to choose a particular mobile phone provider/plan?

1.e. When you decide to purchase a mobile phone/plan, what do you look for? Take a piece of paper and jot down three things that are important to you when you purchase a mobile phone/plan?

1.f. Have you ever changed mobile phone providers? What brought about the change?

1.g. What do you think of the current level of service you receive from your mobile service provider?

1.h. Think back over the period of time you've had service from your wireless mobile provider (think of the prices, the service, the promotions, the customer service, the variety of products and services available). What do you think they did well? What needs improvement?

Perceptions on Internet Service in Samoa

2.a. How and when do you use your internet service?

2.b. Tell me about positive experiences you've had with your ISP? (What are services you like? What about coverage? Quality of Service? Prices?)

2.c. Tell me about disappointments you've had with your ISP? (Perhaps you requested a service but it wasn't available? Quality of service? Prices? etc)

2.d. Who or what influences your decision to choose a particular ISP/plan?

2.e. When you decide to purchase an ISP/plan, what do you look for? Take a piece of paper and jot down three things that are important to you when you purchase a mobile phone/plan?
2.f. Have you ever changed ISPs? What brought about the change?

2.g. What do you think of the current level of service you receive from your ISP?

2.h. Think back over the period of time you've had service from your ISP (think of the prices, the service, the promotions, the customer service, the variety of products and services available). What do you think they did well? What needs improvement?
List of Preliminary Codes

1. **Competition**
   a. Ex-ante
   b. Post-ante

2. **Innovation**
   a. Measures of innovation
      i. Improvements in Price
      ii. Improvements in Service Coverage
      iii. Improvements in Types of services

3. **Social Economic Status**
   a. Market size
   b. Economic status of market

4. **Regulation**
   a. Types of regulation
      i. Price Regulation
      ii. Unbundling

**List of Codes – Round 2***

*New codes in italics

1. **Competition**
   a. Ex-ante
   b. Post-ante
   c. *The level playing field*

2. **Innovation**
a. Measures of innovation
   i. Improvements in Price
   ii. Improvements in Service Coverage
   iii. Improvements in types of services
   iv. Improvements in customer service
   v. Use of new technologies for service deployment. For example, GSM, WiMAX, Wi-Fi etc.
   vi. Improving local skills and management.

3. Social Economic Status
   a. Market size
   b. Economic status of market
      i. Average revenue per user
   c. Social impacts of technology

4. Regulation
   a. Types of regulation
      i. Price Regulation
         1. Interconnection
            a. Calculation of rates
            b. Negotiation process
      ii. Unbundling
         1. Exclusivity of licensing on International Gateways
         2. Co-location
      iii. Universal service
      iv. Dispute resolution processes
APPENDIX C. BACKGROUND INFORMATION ON SAMOA

Introduction - Samoa

Samoa, officially the Independent State of Samoa, is a country comprising a group of islands in the South Pacific Ocean. Previous names were German Samoa from 1900 to 1919, and Western Samoa from 1914 to 1997. It was recognized by the United Nations on 15 December 1976 as Samoa. The entire group was known as Navigators Islands before the 20th century because of the Samoans' excellent seafaring skills. It has a population of 176,710 (2001 census).

Geography

a. Topography

The country is located east of the international dateline and south of the equator, about halfway between Hawai'i and New Zealand in the Polynesian region of the Pacific Ocean. The Samoa islands are of volcanic origin, and the total land area is 2934 km², consisting of the two large islands of Upolu and Savai'i which account for 96% of the total land area, and eight small islets: Manono, Apolima, Nu'utele, Nu'ulua, Namua, Fanuatapu, Nu'usafe'e, and Nu'ulopa. The main island of Upolu is home to nearly three-quarters of Samoa's population, and its capital city is Apia. The interior of both main islands is fairly rugged and mountainous and most of the populations have settled around the coast.

b. Climate

The climate is tropical, with wet and dry seasons. The mean daily temperature is 27 degrees C (80 degrees F). Average annual rainfall is about 287 centimeters (113 in.), of which 190 centimeters (75 in.) falls from October to March. Although Samoa lies outside the normal track of typhoons, severe storms occasionally strike.

c. Geography details

Location: Oceania, group of islands in the South Pacific Ocean, about one-half of the way from Hawaii to New Zealand

Economy

a. Background

The economy of Samoa has traditionally been dependent on development aid, private family remittances from overseas and agricultural exports. The country is vulnerable to devastating storms.

Labor force: 82,500 (1991 est.)

Labor force by occupation: Agriculture 65%, services 30%, Industry 5% (1995 est.)
Agriculture employs two-thirds of the labor force, and furnishes 90% of exports, featuring coconut cream, coconut oil, noni [sic] (juice of the nonu [sic] fruit), and copra. Outside of a large automotive wire-harness factory, the manufacturing sector mainly processes agricultural products. Tourism is an expanding sector; more than 70,000 tourists visited the islands in 1996. The Samoan government has called for deregulation of the financial sector, encouragement of investment, and continued fiscal discipline. Observers point to the flexibility of the labor market as a basic strength for future economic advances.

b. GDP

Total: $1.16 billion USD
Per capita: $6,344 USD

Infrastructure (Power, Water, Transportation)

a. Background

Samoa's power, water and transportation infrastructure is largely maintained by the Ministry of Works, Infrastructure and Transport, which is inclusive of utility services such as water and electricity.

b. Electricity

The Samoa Electric Power Corporation maintains the electricity infrastructure in Samoa. Samoa, like other Pacific island countries, still relies on imported fossil fuel for its energy needs. Electricity generation in Samoa in 2002 was 53% diesel with the rest from hydropower. Some parts of Samoa do not have access to electricity.

Electricity - consumption: 107.9 million kWh (2003)
Oil - consumption: 1,000 bbl/day (2003 est.)

c. Water

Samoa's water supply infrastructure is maintained by the Samoa Water Authority, which was established in 1994 with a goal to be financially independent, but currently relies heavily on aid.

Water Supply: 85% population (18,000 customers)

d. Transportation

The transport infrastructure is maintained by the Works Division of the Ministry of Works, Infrastructure and Transport and again, relies heavily on AID. Samoa is well
served with sealed roads and an international airport and most residential areas are accessible by public roads.


Merchant marine: total: 1 ships (1000 GRT or over)

Ports and terminals: Apia

Population

a. Population

Total population: 176,710

Annual population growth: 0.01

Population 0-14: 71,930

Working population 15-64: 96,574

Adult population 65+: 7,903

Median age: 19.7

Urban population: 0.22

Crude birth rate: 29

Total fertility rate: 4.4

Average life expectancy at birth – males: 71.8

Average life expectancy at birth – females: 73.8

Number of households: 23,059

Average household size: 8

b. Population Density
c. Literacy

Languages: Samoan, English

Education: Years compulsory - ages 5-14.

Elementary school attendance - 85%

Adult literacy: 9%

Source:

This appendix was compiled from a variety of sources listed below:


APPENDIX D. CHRONOLOGY OF KEY EVENTS IN SAMOA'S ICT AND TELECOMMUNICATIONS HISTORY

Chronology of Key Events in the History of ICT and Telecommunications in Samoa

➢ 1962
  - Samoa becomes independent and sets up a Westminster style of government based on the New Zealand and British systems.
  - The Ministry of Post and Telecommunications is the government department responsible for looking after domestic landline services, international gateway services, broadcasting, radio and postal services.

➢ 1972
  - Definition of the role, responsibilities and authority of the Ministry are stipulated under Post Office Act 1972

➢ 1974
  - The USP Communications Network was established in 1974 to provide a communications system to help bridge the vast distances between the main campus in Suva, the other USP campuses in Samoa and Vanuatu, and the 11 centres delivering USP's distance education services throughout the South Pacific countries including Fiji.

➢ 1977
  - The government sets up Computer Services Limited (CSL) (www.csl.ws) to provide bureau-computing services to Government Departments and Corporations.
  - 1977 Telephones Regulations defines the call services and charges as administered by the Ministry.

➢ 1979
  - 1979 Radio Regulations define regulations for radio licensing procedures and operations.

➢ 1984
  - The Government of Samoa divested 60% of its share holding in CSL to encourage private enterprise involvement in the operation of the company.
• The National University of Samoa was set up by the Government to provide tertiary level education and a longer term goal of easier access to technology to Samoan students.

• The Institute for Research, Extension and Training in Agriculture (IRETA) is one of the seven Institutes of The University of the South Pacific (USP) was established in at the Alafua Campus in Samoa to carry out programs responsive to the regions needs in agricultural development.

➤ 1988

• Radio Polynesia, Samoa’s first privately run radio station goes to air

➤ 1989

• Lesa’s Telephone Services, a private company, is set up to provide PABX, Telex, Facsimile supplies and maintenance services.

➤ 1991

• CSL opened its computer training school. The Training School is a registered educational institution with the Dept of Education and provides a wide range of training courses to cater for the computer novice to the advanced user.

➤ 1993

• Samoa Broadcasting Corporation – Government owned, free to air television station goes to air in Samoa.

➤ 1996

• CSL established a sole distribution and service agreement with DELL for the sale and services of DELL computers into Samoa and American Samoa.

➤ 1997

• Lesamoa.net (www.lesamoa.net) set up by Lesa’s Telephone Services to provide internet services as well as computer supplies and services.

• Telecom Samoa Cellular Ltd (TSCL) a joint venture company providing mobile phone services is formed. The shareholders are Telecom NZ Ltd (90%) and the Government of Samoa (10%). Telecom NZ Ltd provided the capital for the formulation of TSCL while the Government of Samoa’s contribution to the JV was the provision of existing network infrastructure and services.

➤ 1998
• CSL set up an internet service provider (www.samoawsts).

• In October 1998, CSL launched its first wireless broadband internet link to the WHO building, a precursor to what today is "Airnet" Services, Samoa's largest independent broadband wireless internet network.

> 1999

• The Government of Samoa decided to separate out the Telecommunications and ICT policy and advisory section to be independent of its service provider. This resulted in the formation of two new entities.

△ The Ministry of Post and Telecommunications becomes a corporation. SamoaTel Limited (www.samoatel.ws), 100% owned by the Government of Samoa is set up with its main function being to provide efficient landline services, international gateway services and postal services.

△ Ministry of Communications and Information Technology (MCIT) (www.mcit.gov.ws) set up to formulate and monitor policy for communication, broadcasting, and ICT regulation.

• Responsibilities and authority of SamoaTel Limited are stipulated under the Postal and Telecommunications Act 1999.

• December, iPasifika.net – a privately owned internet service provider was set up providing dial up internet and IT support.

> 2000

• USPNet-2000 set up is a new USP-dedicated VSAT telecommunications network funded by the Governments of Japan, New Zealand and Australia, together with the USP member countries.

• Passing of the Foreign Investment Act 2000 to promote foreign investment in Samoa while at the same time regulating it to protect the ability of citizens to participate in the economy of Samoa.

• Since 2000 there has been a growth in the number of ICT and Telecom related businesses in the private sector with several computer supplies and maintenance companies forming as well as companies in the retail of cell phones and telecommunications equipment.

> 2001

• GBN, a religious broadcasting company goes to air in Samoa.
The Cisco Networking Academy at the University of Samoa was established in 2001 through a joint effort by ITU, UNDP, Cisco Systems and the University under the LDC initiative.

2002

- Pro-Com Systems offers Cable Television to local subscribers in Samoa.

2003

- SamoaTel extends its coverage to rural areas of Savaii by offering Wireless Local Loop (WLL) services to Savaii

2004

- SamoaTel offers Payphone services around both main islands of Savaii and Upolu (enabled through WLL)

2005

- NUS offers online learning management system in its courses through its virtual classroom created with open source software.
- Telecommunications Act 2005 introduced and Telecom Regulator position advertised by MCIT – to facilitate competition in Samoa’s Telecommunications market.
- CCTV – Free to air TV station based in China goes to air in Samoa.
- Government of Samoa provides TSCL with a Global Systems for Mobile (GSM) license, an ISP license, an international gateway license from January 2007 and rights to receive Wi-Fi/Wi-Max licenses once they are established. In return TSCL gave up its rights as the exclusive cellular operator in Samoa, which it previously had until February 2007.
- Government of Samoa provides second GSM license to SamoaTel Ltd.
- September 28, MCIT calls for tenders for a third GSM license.

2006

- Privately owned free to air television station Lau TV goes to air
- A second privately owned free to air television station TV3 goes to air.
- April, Digicel Ltd (www.digicelgroup.com) in partnership with CSL secured the third GSM license tendered by the Government of Samoa.
- Three GSM licenses are issued to TSCL, SamoaTel and Digicel.
September, Digicel merged with TSCL as Digicel Samoa and intend to launch their GSM product into the market in October 2006.

Source:

This appendix was compiled from a variety of sources listed below:


• *Personal communications and email interviews with:*

  ➢ Aitken Fruean (2006)
  ➢ Elisa Kohlhase (2006)
  ➢ Henry Tunupopo (2006)
  ➢ Junior Lene (2006)
  ➢ Laeimau Oketevi Tanuvasa (2006)
  ➢ Sita Leota Lameko (2006)
  ➢ Seumanutafa, Lesa (2006)
  ➢ Theresa Masoe (2006)
  ➢ Tima Leavai (2006)
REFERENCES:


