

AN ANALYSIS OF THE ECONOMIC PERFORMANCE OF THE
JOHANNESBURG'S SMALL INTERNET SERVICE PROVIDERS FROM
2002 – 2006

by

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I, declare that **AN ANALYSIS OF THE ECONOMIC OF JOHANNESBURG'S SMALL INTERNET SERVICE PROVIDERS FROM 2002 – 2006** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references

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This study would not have been successful without the assistance I received from other people. I wish to dedicate my thanks to my family for their continued support from the time I started with the degree. Special thanks go to my wife Nombuso for her support throughout and her efforts of putting her interests and life on hold to ensure that I successfully complete the degree.

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SUMMARY OF THE STUDY

The following study about the economic performance of the Johannesburg's small Internet service providers investigates the economic performance of the small Internet providers against the backdrop of regulatory conditions. The study departs from the view point that reports about previous studies have not given particular attention to the economic performance of the small Internet service providers and other impacting factors.

The study employed the qualitative research approach with an aim of obtaining deeper understanding and internal view as reiterated by the respondents. The analysis presented follows a guide by Neuman (2006) which departs from the premises of themes or concepts. The results of this study provide a perspective of respondents and the conclusions drawn by the researcher.

The study ends by providing suggestions and recommendations for future studies. Suggestions and recommendations provided at the end have been prompted by the results and experiences encountered during the study.

Title of thesis:

AN ANALYSIS OF THE ECONOMIC PERFORMANCE OF
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2002 – 2006

Key terms:

Internet service provider, Internet market, Internet peering, small business, business strategy, interconnection issues, telecommunications regulation, collusion, economic performance, competition, telecommunications costs, price squeeze, game theory, normative theory, positive theory

LIST OF ABBREVIATIONS / ACRONYMS USED

ADSL	Asynchronised Digital Subscriber Line
CAGR	Compound Annual Growth Rate
CSP	Converged Services Provider
DoC	Department of Communications
DoL	Department of Labour
DTI	Department of Trade and Industry
ECA	Electronic Communications Act
ECTA	Electronic Communications and Transactions Act
GNP	Gross National Product
HDI	Historically Disadvantaged Individual
IAP	Internet Access Provider
IBP	Internet Backbone Provider
ICASA	Independent Communications Authority of South Africa
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
ISPA	Internet Service Providers Association
ITU	International Telecommunications Union
IWF	Internet Watch Foundation
Kbps	Kilo Bits Per Second
MTN	Mobile Telecommunications Network
OED	Oxford English Dictionary
OSIPTEL	Supervisory Office for Private Investment in Telecommunications
PSTN	Public Switched Telecommunication Network
QoS	Quality of Service
SAIX	South African Internet Exchange
SATRA	South African Telecommunications Regulatory Authority
SKA	Sender Keep All
SPSS	Statistical Program for Social Sciences
TdP	Telefonica del Peru

US	United States of America
VANS	Value Added Network Services
WTO	World Trade Organisation

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CHAPTER 1: INTRODUCTION

1.1. BACKGROUND AND MOTIVATION FOR THE STUDY

In modern times businesses are operated to ensure the growth of the business profit. The success of a business operation is therefore measured by the expansion of business (to other areas which were not initially the intended market) and profit growth.

To succeed, some businesses do not only have to devise robust strategic marketing plans, but also have to observe and obey market regulations and operate the business according to license conditions and obligations. For example, a telecommunications company can embark on a marketing strategy and introduce special or reduced rates for its subscribers during weekends and public holidays. However, the same company may not sell products which are not permitted by license conditions. Neither may it, through its marketing strategy, possess a huge market share which is prohibited by current regulations.

In the telecommunications market there are different products which licensees are licensed to sell. While some licensees offer a broad spectrum of products in the market, others are licensed to offer fewer products. Other licensees also provide connection infrastructure such as "Telkom, Neotel and Mobile Telecommunications Network (MTN)" (Internet Service Providers' Association 2008:1).

Academic and non-academic studies have been conducted regarding the Internet in South Africa. Such studies have focused on different aspects of the Internet. For example, Wilson (1999:99–111), analysed the Internet as a research tool used in academic institutions and a revenue generating

business. In another Internet growth related study (Lewis (2005:8) points out that the Internet's "rapid growth quickly made it a space where costs had to be recovered and where there was money to be made.

Additionally, South African Internet related studies have focused on the growth and decrease of subscriber numbers. Theron (2005:8) states that "the growth rate of South African Internet users has slowed more than it has elsewhere in the world. The high cost of Internet access in South Africa, both in absolute and relative terms is undoubtedly why the growth of Internet subscribers has slowed and continues to tumble". Another study by Tobin and Bidoli (2006:38) concludes "the market for voice over Internet protocol (VoIP) and converged Internet Protocol (IP) services is growing strongly in South Africa".

Studies regarding Internet economies in South Africa have focused on all market players including "Telkom, Sentech and MTN" (Data Monitor 2005:7). According to ISPA (2008:1) member list Sentech and MTN are big players in the Internet market. "In general the sources of a research problem are to be found in a combination of direct observations and experiences, theory and previous investigations. The need for scientific investigation could rise out of the need for more information about a certain situation" (Bless & Achola 1990:17). Because previous Internet studies which have focused on growth of subscriber numbers, Internet as a research tool and Internet as a revenue generating service, it is a motivation for this study to work within the same research area but be only exclusively focusing its inquiry to the small sized ISPs.

1.2. PURPOSE OF THE STUDY

The purpose of this study is to investigate the economic performance of the small ISPs in the Johannesburg region from 2002-2006. The five year curve

from 2002 – 2006 has been chosen because South Africa enacted a policy on electronic communications and transactions in 2002, had also made amendments in 2001 on the Telecommunications Policy of 1996 and also enacted another policy on electronic communications in 2005. It is unknown whether the regulatory interventions had an impact or not on the viability and performance of the small Internet providers in general. Bless and Achola (1990:17) argue that “the choice of the topic might be dictated by various factors”. These factors include “academic interest, practical interest, personal or social conditions” (ibid.). Considerations for this study are the following:

- Small size ISPs have been targeted because in the member list of 148 members provided by ISPA (cf. Addendum 1), 117 members are classified as small enterprises. Furthermore studies done on Internet service providers have failed to make mention of the small providers’ input.
- Out 117 small size ISPs, 39 are based in Johannesburg. If more than 25 percent of the total small ISPs are in Johannesburg, it is considered to have an impact on the Internet economy and the telecommunications industry as well as the national economy in general since Johannesburg is generally perceived as the economic hub of the Gauteng Province.
- Johannesburg was selected for economic reasons. Because the researcher resides in Johannesburg it was cost effective and quicker for the research to conduct research in the ISPs within the residential city than it would have been for ISPs located far away.

1.3. RESEARCH PROBLEM

It is expected that the results of this study will create a better understanding of each small ISPs’ economic performance and reasons aligned with that performance. The study hopes to reveal aspects of negative small ISP

economic performance compared to aspects contributing to positive economic performance. From the stand point of achieving positive economic results, which is the desire of every ISP, it is envisaged that this study will clarify what the small ISPs do to counteract possible future negative economic performance and what measures do they take to counteract previous negative economic performance.

According to Hoofste (2006:88) "assumptions are things taken to be true without checking whether or not they are". "Assumptions are so basic that, without them, the research problem itself could not exist" (Leedy & Ormrod 2005:56). Leedy and Ormrod (2005:57) further advise that "all assumptions that have a material bearing on the problem should be openly and unreservedly set forth. If others know the assumptions a researcher makes, they are better prepared to evaluate the conclusions that result from such assumptions". It is thus "important to state clearly the research assumptions on which the research problem is based" (Bak 2002:21).

The interaction between ISPA and Telkom, (which is the only licensed Internet infrastructure provider in South Africa and from which all Internet providers lease bandwidth) has been that of conflict (Lewis 2005:10-12, Wilson 1999:105) and cooperative game theory. The cooperative side (ISPA members) has levelled allegations and accusations (dealt with in detail in Chapter 3, the section about literature review) against Telkom Accusing Telkom of anti competitive behaviour. The accusations levelled by ISPA members against Telkom form the gist part of this study as they are used to explain the theory used in this study and also assumed to have borne an impact on the economic performance of the South African ISPs generally.

1.4. RESEARCH QUESTION

Based on the purpose of the study, the research question for the study has been formulated as follows: *What is the economic performance of the Johannesburg's small ISPs from 2002 – 2006?*

1.4.1 Research sub-questions

While the question of the economic performance of small sized ISPs remains unanswered, other questions that relate to the same problem arise. This study has the following sub-questions:

- What business strategies have been used by small ISPs to remain in the business?
- What impact has sector regulation had on the economic performance of the small ISPs? and
- What other factors impact on the economic performance of the small ISPs?

1.5. THEORETICAL BACKGROUND FOR THE STUDY

1.5.1. Game theory

The purpose of this section is to introduce theoretical frame of reference for viewing and understanding the driving force when operating an ISP in a competitive environment. According to Bless and Higson–Smith (1995:10) research is a “science based primarily of facts. There exists a fundamental relationship between facts defined as empirically verifiable observations and theory; the explanatory framework”. Babbie (2004:43) states that theories are systematic sets of interrelated statements intended to explain some aspect of social life”. Additionally, “theories help to guide us through this maze of empirical findings so that we can explain or understand what is going on” (Baxter & Babbie 2004:82).

Because research is based on facts, "facts" therefore "give rise to theory since they raise a need for explanation of the observed phenomena" (Bless & Higson-Smith 1995:10). Conducting the study on the economic performance of the small Johannesburg ISPs will thus find reasoning and understanding from theoretical framework. The first theory considered to explain processes involved in Internet service provision is the game theory.

"Game theory is the formal study of decision-making where several players must make choices that potentially affect the interests of the other players" (Turocy & Stengel 2001:2).

"What economists call game theory, psychologists call it "the theory of social situations, which is an accurate description of what game theory is about" (Levine 1999:1). Ferguson (2000:3) argues that "games are characterised by a number of players or decision makers who interact, possibly threaten each other and form coalitions, take actions under uncertain conditions and finally receive some benefit or reward or possibly some punishment or monetary loss" (ibid.). Because the game theory involves "conflict and cooperation, game theoretic concepts apply whenever the actions of several agents are interdependent. These agents may be individuals, groups, firms or any combination of these" (Turocy & Stengel 2001:4). The game theory is explained using several viewpoints and different experts explain the game theory differently. For example, Turocy and Stengel (2001:6), Levine (1999:1) and Ferguson (2000:5) provide some of these viewpoints on the game theory and state: "Non-cooperative game theory deals largely with how intelligent individuals interact with one another in an effort to achieve their own goals" (Levine 1999:1).

The South African Internet service provision has a scenario that can be best explained and clarified utilising the analogy of the game theory. "In many-player games, there is a tendency for the players to form coalitions to favour

common interests. It is assumed that each coalition can guarantee its members a certain amount called the value of the coalition" (Turocy & Stengel 2001:5). Furthermore "[t]he coalitional form of a game is part of cooperative theory" (ibid.). In South Africa, the coalition of "independent ISPs" joined in "1996 to form (ISPA 2008:1) what Wilson (1999:105) refers to as a "conglomerate of Internet providers", ISPA has served as "an active industry body, facilitating exchange between the different ISPs, the Department of Communications, Independent Communications Authority of South Africa (ICASA), operators and other service providers in South Africa" (ISPA 2008:1).

1.5.2. Normative and positive theories

The other theories considered for this study are the positive and normative theories. According to Hodge and Theopold (2001:17) "the normative theory postulates that regulation ought to be introduced when there is market failure". According to Wilson (1999:106) value added network services (VANS) operators (which include the Internet providers) "operated in a very liberalised framework with minimal regulation" in the early years of Internet development in South Africa. However current regulation compels ISPs to obtain interconnection gadgets from Telkom.

"Requests for lines and connections were frequent met with delays or refusals. The emergent providers of Internet services were therefore entirely dependent on a single company for all their connectivity, and therefore acutely vulnerable to delays, disputes, and denial of service. The period from 1990 is thus characterised by ongoing grumbles and complaints over the incumbent's foot-dragging over the provision of facilities, punctuated by outbreaks of active dispute and litigation" (Lewis 2005:15).

The outbreaks in service provision as mentioned by Lewis (ibid.) are an indication of market failure. The dissatisfaction experienced by the ISP's would automatically translate to the dissatisfaction of customers.

In response, the independent ISPs have filed accusations against Telkom to both the former South African Telecommunications Regulatory Authority (SATRA) and the Competition Commission (Wilson 1999:105 and Lewis 2005:11, 12). ISPs' accusations and complaints to SATRA and the Competition Commission are a sign of the adverse effect of regulation which not only obliges the ISPs to obtain their service inputs from Telkom, but also make Telkom a monopoly provider of an essential facility thus leaving the inputs market a non-competitive market. "If interest groups that are being adversely affected by regulation organise more effectively, then they may be able to reduce the level of regulation" (Hodge & Theopold 2001:18).

1.6. DIMENSION OF THE STUDY

1.6.1. Space dimension

The following section of the study aims to indicate the physical setting within which the study is conducted and its significance in both the economy and communication of South Africa. According to Baxter and Babbie (2004:41) "researchers are interested in topics in which the physical setting for the research is an integral part". This study has its space dimension in Johannesburg, South Africa. South Africa has five major cities, namely Durban, Cape Town, Pretoria, Johannesburg and Bloemfontein. Not only is Johannesburg chosen for its diversity in terms of culture and language, but also for its popularity as a city of wealth, thus the local Zulu saying in South Africa referring to Johannesburg: "Kwanyama kayipheli kuphela amazinyo endoda" – meaning "a place where meat never gets finished but the teeth of a man get finished". Also the other name for Johannesburg – "eGoli", meaning place of gold, means that Johannesburg is a rich city.

Johannesburg is also a home to headquarters of the major communication institutions of the country, such as the South African Broadcasting Corporation (SABC), Independent Communications Authority of South Africa

(ICASA), and ISPA. Johannesburg also houses the biggest and busiest international airport in the country, the OR Tambo International airport – which is the South African communication link with the rest of Africa and the world.

1.6.2. Time dimension

The time dimension in research does not only pertain to the time at which the research is focusing or the occurrence of events being studied. The time dimension can also mean the time taken from start to completion of the study. The time taken to complete the study can affect the results as patterns of events and phenomena change over time. “If we compare a particular historical period against a period closer to us in time, we see more clearly the pace with which events moved in days gone by” (Leedy & Ormrod 2005:170). This is the reason Babbie (2004:100) as well as Baxter and Babbie (2004:38) point out that “time affects the generalisability of research study”.

“Time plays many roles in the design and execution of research, quite aside from the time it takes to do research” (Baxter & Babbie 2004:38, Babbie 2004:101). While “researchers need to come to grips with how time enters into their designs” (Baxter & Babbie 2004:39), Leedy and Ormrod (2005:107) advise that the “researcher who is studying more than one set of chronological data within the same time frame may gain increased insight by arranging multiple timeline scales side by side”.

According to Hoofste (2006:74) “people place unrealistic expectations on them” regarding completion of a research study. Taking into account that “individuals work at different paces, bring different skills to the task at hand, have different amounts of time that they can devote” (Hoofste 2006:74). Though time taken for this study had been aimed at a period of seven months, however it has taken an additional two months to complete, i.e. May 2008 to January 2009.

1.7. RESEARCH METHODOLOGY

Data were collected over a period of two months, between December 2008 and January 2009. Because it took more time for the researcher to arrange appointments with respondents and also to conduct the personal interviews. Data were analysed in three weeks, in January 2009. The processes of data collection and analysis were, therefore, conducted over a period of nine weeks, while the thesis was produced in a year (2008) and one month (January 2009).

The qualitative research methodology, employing personal interviews as a data collection method, was used to undertake this study's field research. Qualitative means that the raw data exist in a non-numerical form (e.g., reports and conversations) (Du Plooy 2001:33). Neuman (2006:8) states that qualitative design entails the collection of data in the form of words, pictures and objects. The collected qualitative data are presented in Chapter 6.

Personal interviews were selected and used with the main purpose of ensuring the validity and reliability of the results and also because the researcher intended to collect the data efficiently within the short period of time available at one's disposal. The personal interviews were also employed because they allow penetration into subtle social and personal meaning of respondents. In this research, an interview schedule was constructed and ISP staff members were asked the questions in the interview schedule (cf. Addendum 2). Additional questions were asked in cases where the researcher viewed answered received as vague and requiring further inquisition.

1.8. THE POPULATION AND SAMPLING

The sampling approach of this study has been driven mostly by the topic of the study. Multiple and combined approaches have been adopted in this

study. Firstly a judgmental approach where “judgmental sampling about what constitutes a representative sample” (Oakshott 1998:47) was used. This judgmental sampling was based on the constraints of both time and money to conduct research. An agreement between the researcher and supervisor was reached to use 10 percent of the population as the sample. The agreement was also based on the economic crunch period experienced by South Africans and the world over thus a smaller sample appeared appropriate for the feasibility of the study.

Deciding on the 10 percent makes part of sampling to be a quota sample. “Quota sampling is so named because the researcher decides on how many people to include, the researcher then tries to get the right number of people” (Johnson & Chirstensen 2004:215). Dooley (1994:144-145) states that “[s]urvey sample size is often maximized within the constraints of the survey design and total research resources” hence the time constraints, convenience and cost implications alluded to in this section.

Another aspect impacting on the sampling method was the construction of the topic by geographical location. While there are small ISPs located throughout South Africa, the research topic is constructed in such a manner that it specifies the theoretical interests it projects. According to Lindlof and Taylor (2002:126), “[i]f a research project is driven by a theoretical interest, then persons, activities, events or settings can be selected according to the criteria of key constructs”.

From the population of 117 small ISPs in South Africa, a geographical stratification to isolate the Johannesburg based ISPs from the ISPA member list was conducted coming out with 39 ISPs based in Johannesburg thus providing the researcher with a sampling frame. Such stratification first determined the contact number which should begin with the dialing code 011 and where cellular phone numbers and countrywide codes such as 086 were used, the physical address was checked on the ISP’s webpage to determine

the exact physical location of that particular ISP.

The names of the 39 ISPs in Johannesburg (the sampling frame) were numbered from 1 to 39. Using SPSS (Statistical Program for Social Sciences) which is a computer software program the figure 39 was punched into the computer next to the population icon. Another figure 4 which is about 10 percent of the sampling frame was punched next to the sample icon and the enter button pressed for the software program to randomly select the sample. The multi-stage sampling strategy was chosen as means of generating a sample size that was statistically representative of the population, and also to ensure reliability and validity of the data.

The same procedure was followed again to randomly select subjects to be used for the pilot study. Instead of punching a figure 4 a figure 2 was punched and the computer randomly selected two numbers which were corresponded to other ISPs. As indicated the purpose of the second random selection was to obtain additional ISPs that would be used for the pilot study. Two ISPs had to be selected for the pilot study so that the pilot group is not larger than the sample. The two selected ISPs which were different from the sample made 50 percent of the sample and five percent of the sampling frame.

1.9. PILOT STUDY

The pilot study was conducted on the two selected ISPs on 28 and 30 December 2008 respectively. The purpose for the pilot study was to ensure that the questions in the schedule were understood by respondents in the manner they were intended and to refine them where needed. Another purpose of the pilot study is to allow the researcher to “develop a neat and well organized system of recording data” and to “pilot test any apparatus that will be used in the treatment situation” and to uncover aspects of the experiment that need refinement” (Neuman 2007:219). According to Du Plooy (2001:93) “[i]t is advisable to pilot test the method used to collect data, to

determine whether it is relevant and effective”.

The ISPs selected for the pilot study were approached for permission to visit them for the purposes of research. In the telephonic request by the researcher with each one of the ISPs, the researcher specifically mentioned that he needed to interview a person in management who would have specific information about business strategy of the ISP. This request was done to avoid waste of limited time by engaging with junior staff that would not have knowledge or authority to release certain information to a non-employee. Interviews were done with persons in top management and responses were recorded by hand as they responded to each question.

1.10. DATA COLLECTION METHOD AND DATA ANALYSIS

Qualitative interviews were used as a method of data collection. Questions were asked to respondents using an interview guide which had specifically been designed for this study. Responses from each respondent were recorded separately in writing and each record sheet identified by clipping a business card of the company or an official company stamp as provided by the respondents. Data collected were then analysed using the qualitative data analysis guide by Neuman (2006:460) and Dey (1993:40). According to Neuman (ibid.) qualitative research allows for data to be organized into categories formed “on the basis of themes, concepts or similar features”. Results of this study produced six categories which are further discussed in Chapter 6.

1.11. LIMITATIONS OF THE STUDY

This study has two limitations. The first limitation relates to time as indicated in sub-section 1.6.2 of this chapter. The second limitation is that of focus of

study. This study only focuses on economic spin-offs that are a result of internet and email service offering and not any other non telecommunications services which the ISPs might be offering. The third limitation relates to collected data. According to Hoofste (2006:87) "limitations are inherent in academic work", however there is often confusion on the application or use of the term "limitations", "What the research intends to do is stated in the problem. What the researcher is not going to do is stated in the delimitations" (Leedy & Ormrod 2005:55).

For Hoofste (ibid) limitations refer to the "scope of the study". It is possible to cover many things within a certain scope of the study. However delineations "explain to the reader what" the study is "responsible for by detailing what" the study is "not responsible for and why" (ibid). Higson – Smith, Parle, Lange and Tothil (2000:10) concur pointing out that "the researcher must specify the limits of the study in a way that makes it clear what is, and is not to be studied". This study concentrates on the economic performance of the small ISPs only as most previous studies have concentrated on all or compound performance of all ISPs.

Leedy and Ormrod (2005:55) argue that "the researcher can easily be beguiled by discovering interesting information that lies beyond the precincts of the problem under investigation" Hoofste (2006:87) thus states that researchers are "expected to name the limitations of" their "work explicitly" so that they may not be "held for standards" they "never intended". "What the researcher will not do becomes involved in any data extraneous to this goal – no matter how enticing or interesting such an exploratory safari may be" (Leedy & Ormrod 2005:55). According to Bak (2002:22) some ways of delimiting a research study are to: "define the key concepts one will use in the thesis and state the claims (i.e. assumptions) of the thesis". This study therefore claims that growth and profit projections that have been reported on Internet service provision in South Africa are not necessarily applicable to small ISPs. It is therefore necessary to indicate that the usual trend for

service providers is to offer a bundled service. This study aims to inquire about the spin-offs which are resultant to the offering of the Internet service only. Any other value added network service will have to be counted out of this study.

Another limitation on a study can be predisposed by other factors which will not be discussed at this point. Such limitations can be attributable to the inquiry methodology chosen for the study and / or the research instrument used. With regards to this study, such limiting factors will be discussed in a section which deals with methodology. However it is worth mentioning that time limitations of this study will be dealt with in Chapter 5.

Other study limitations encountered while conducting the study and field research, if any are encountered, will be stated in Chapter 5 (those pertaining to the research methodology) and other study shortcomings will be mentioned at the end of the thesis, in Chapter 6.

1.12. SUMMARY AND OUTLINE OF CHAPTERS

In this section of the study among the issues dealt with are: This chapter introduced the research problem, background to and motivation for the study, purpose of the study and the research methodology, theoretical background of the study and the study dimensions. Chapter 2 defines concepts used in the study to specify operational meanings of the concepts, which are peculiar to this study, thus establishing unified understanding throughout the study. Chapter 3 reviews the literature around the topic of Internet service provision in South Africa and in other countries. Chapter 4 discusses issues on telecommunications provision against the theoretical background of this study. Chapter 5 discusses the data collection method used in this study while chapter 6 presents the results and give analysis thereof.

CHAPTER 2: DEFINITION OF CONCEPTS

2.1. INTRODUCTION

The previous chapter has introduced and formulated the research problem for this study. "The formulation of a research problem introduces the necessity of defining clearly all the concepts used and of determining the variables and their relationships" (Bless & Higson-Smith 1995:29). The purpose of this chapter is ensure that terms referred to in this chapter are viewed and understood with common and unambiguous meaning relevant to this study. In research studies "there is virtually no limit to what or who can be studied, or the unit of analysis" (Baxter & Babbie 2004:32). Because anything can be studied, it should be noted that "most variables we want to study don't exist in the way that rocks exist. They are made up" and "they seldom have a single unambiguous meaning" (Babbie 2004:119).

Because different terms or concepts assume different meanings which are subject to the situation in which they are used, Berg (1998:25) points out that "concepts need to be conceptualised and operationalised to ensure that everyone is working on the same definition and mental image." This is particularly important because some "variables do not exist in nature. They are merely terms made up and assigned specific meaning for some purpose such as doing social research" (Babbie 2004:119).

Baxter and Babbie (2004:34) argue that "when the unit of analysis is not so clear, it is absolutely essential to determine what it is, otherwise" it "cannot" be possible to "determine what observations are to be made about whom or what". "The process through which we specify what we mean when we use particular terms in research is called conceptualisation. Conceptualisation produces a specific agreed-upon meaning for a concept for the purpose of research" (Babbie 2004:122). Concurring, Leedy and Ormrod (2005:56) state

that the operational definition given to the term “must interpret the term as it is used in relation to the researcher’s project”.

In this study, concepts relating to the research problem are defined. As mentioned earlier in the introduction (cf. section 2.1) the concepts are defined so that their use in this study conjures the applicable mental images. These terms are: market, Internet Access Provider (IAP) and Internet Backbone Provider (IBP), economic performance and small enterprises, with specific reference to ISPs.

2.2. DEFINITIONS

2.2.1. Economic performance

The word “economic” is an adjectival word derived from the word economy meaning wealth. As an adjectival word, it is used in different settings in combination with other words (such as economic growth, economic results, economic indicators etc.) as is the case in this study’s context. It is nonetheless used to signal the measure of wealth. Other experts (Dobson & Palfreman 1999:3, Sexton 2003:2 & Lieberman & Hall 2000:1) refer to the term in its plural form. Dobson and Palfreman (1999:3) regard economics as a “science of making choices under conditions of scarcity”. Lieberman and Hall (2000:1) state that economics “studies those aspects of human behaviour relating to working, producing goods, distributing them and consuming them”. Lieberman and Hall (ibid.) further argue that “economics has a practical value to people, businesses and government”.

For Sexton (2003:2-3):

“economics is a unique way of analysing many areas of human behaviour. In fact economics is front page news almost everyday, whether it involves politicians talking about tax cuts, inflation, interest rates or unemployment, business executives talking about restructuring their companies to cut costs or the average citizen trying

to figure out how to make ends meet each month”.

Even though there is common agreement that economics is a science, further definitions beyond that tend to differ. The differences observed echo Babbie's (2004:123) assertion that “whenever we take our concepts seriously and set about specifying what we mean by them, we discover disagreements and inconsistencies”. This study however does not provide for inconsistencies in meaning. Meaning defined in this section will be maintained throughout the course of this study.

Economic is a word commonly used in association with activities that have to do with financial growth. It indicates the making of or the likelihood to make profit. According to Baxter and Babbie (2004:110) “the product of conceptualisation process is the specification of one or more indicators of what we have in mind, indicating the presence or absence of the concept we are studying”. Conceptualisation thus “involves describing the indicators we'll be using to measure our concepts and the different aspects called dimensions” (Babbie 2004:122). However Feige (1990: 989) states that “all measurement requires a conceptual framework since measurement without theory is vacuous. The conceptual framework must elaborate the substantive problems of concern; specify the particular hypothesis that require investigation and provide a set of operational definitions of the variables that are regarded as central to the analysis”. If the definition relating to financial growth or the making of profits is taken to consideration it then becomes easy and clear to argue that this study intends to investigate the presence or absence of profits.

Like the term economic, performance is a term frequently used with other words such as academic performance, economic performance, performance appraisal, performance indicators, performance assessment, etc. “The idea of performance itself is probably one of the least understood or certainly the one where the greatest leap of intuition is used as the initial starting point of the

researcher" (Folan, Browne & Jagdev 2007:605). Performance is an adjective derived from the English verb (doing word) perform. Because of its adaptability in being used with other terms, it is then borrowed by different disciplines and applied in situations and contexts fitting the ascribed meaning at that given time. "However the variability is usually seen to reside in the secondary term and not in the word performance" (Folan, Browne & Jagdev 2007:605).

"Few people agree on what performance really means" (Lebas 1995:23). Whilst considered an interesting concept by Wholey (1996:1). "Performance is not an objective reality out there somewhere waiting to be measured or evaluated" (ibid.). "Widespread studies of the word performance are not known to exist outside its use in dictionaries and in a small number of recently evolved disciplines" (Folan, Browne & Jagdev 2007:606) Folan, Browne and Jagdev (2007: 606-609) use four definitions stated in the Oxford English Dictionary (OED). The four definitions or entries also have subentries providing further explanation.

Again in the field of human resources or people management discipline, performance is used with the word analysis thus performance analysis. Rossett (1999:13) defines performance analysis as

"partnering with clients and customers to help them achieve their goals. Performance analysis involves reaching out for several perspectives on a problem or opportunity, determining any and all drivers towards or barriers to successful performance and proposing a solution system based on what is learned not what is typically done".

Besides that the term performance has been used with another term resulting in a two worded term, performance "can mean anything from efficiency to robustness or resistance or return on investment or plenty of other definitions never fully specified" (Lebas 1995:23). Because "of the multiplicity of meanings of performance, individual researchers have taken disparate definitions to task" (Folan, Browne & Jagdev 2007:609).

In research, experts distinguish between definitions of conceptual nature and definitions of operational nature. "A conceptual definition is the definition of a concept by a set of other concepts". It "cannot be true or false but it may or may not be useful for communication" (Bless & Achola 1990:34). Babbie (2004:125) refers to this kind of definition as a "nominal definition". A nominal definition is one that is simply assigned to the term without any claim that the definition represents a 'real' entity". However "for concepts to be useful they must be defined in a clear, precise, non-ambiguous and agreed-upon way" (Bless & Higson – Smith 1995:35). Concurring, Babbie (2004:125) states that "nominal definitions represent some consensus or convention about how a particular term is to be used".

Understanding that definition of terms involves "specification" (Babbie 2004:125), definitions of performance interrogated thus far tend to have an idea of an action. However such action is not agreed upon in terms of its measurement. "Even a very well formulated conceptual definition does not fulfil the need of a researcher who wants to assess the existence of some empirical phenomenon. This is the function of an operational definition" (Bless & Achola 1990:35). According to Babbie (2004:125) "an operational definition specifies how a concept will be measured". "An operational definition does not only give precise indications as to what are the fundamental characteristics of a concept, it also gives precise indications about how to observe or measure the characteristics under study" (Bless & Achola 1990:35).

Bless and Achola (ibid.) warn that "a definition should be stated positively, expressing the properties shared by the objects and not properties they lack". While Folan, Brown & Jagdev (2007:607) have defined performance as "action of executing or interpretation", a sub-definition of this definition portrays the term performance in a negative sense. It should be noted that operational definitions that follow in this study may depict the term performance in a negative light. While in a business sense "the use of the

term performance itself can come to mean 'positive progress' in itself, without any qualifying adjective applied to the term" (Folan, Browne & Jagdev 2007:608), such meaning may not be ignored in this study just because Bless and Achola (ibid.) warn against the non-positive expression of the term. While Bless and Achola (ibid.) warn about the negative definitions of terms, this study will accommodate the negative approach of the term performance so as to provide space for measurement of negative characteristics of performance.

Bless and Achola (1990:35) also state that "an operational definition is based on the observable characteristics of an object and indicates what to do or what to observe in order to identify these characteristics". This study is therefore obliged to measure performance in a continued state for the given period. The reasoning behind is that "performance as a concept requires that the object or operation under investigation to be formalised, as it is impossible to assess the performance of an entity imbued with randomness" (Folan, Browne & Jagdev 2007:608).

The most important feature of operational definitions is their ability to indicate measuring devices or assessment techniques to determine the existence of the variables so defined" (Bless & Achola 1990:36). This study therefore aims to measure performance of ISPs in terms of being economic (likelihood to make profits) or non-economic (failure to make profits). Such measurement will however be determined and guided by the research instrument, i.e. personal interviews. The variables that are believed to allow an ISP to be economic are the net income of the ISP, its customer base as well as its efficiency.

Definitions provided by some experts appear interesting and appropriate for the purpose of this study. Wholey (1996:2) argues that "[p]erformance may relate to economy, efficiency, effectiveness, cost-effectiveness or equity". Folan, Browne & Jagdev (2007:609) state that "performance studies recognise that the term performance is boundary-less and is open to

numerous interpretations which means that the use of the term in a business context may be of interest to these practitioners". Folan, Brown and Jagdev (ibid.) thus argue that the "notion of performance certainly has resonance for businesses, especially if we consider the publishing of company accounts, the need for the public image" etcetera – "all these facets may reside in a typical business image that could be deemed as a performance". Thus Lebas (1995:27) attests that "we may not be able to define performance beyond saying it is about capability to meet certain objectives but we can derive from what a performing business is, some of the components of performance".

As this study focuses on the economic performance of ISPs, business related definitions of the term performance are thus accommodated as they have relevance to the purpose of the study. While "the general view carried by the accounting tradition limits the view of performance to that of net income, i.e. the difference between sales and costs under the constraint of the accrual and the matching principles" (Lebas 1995:27). "in a business sense, performance is concerned with the 'carrying out of an action' and the subsequent determination of performance based upon this action as carried out" (Folan, Browne & Jagdev 200&:613).

Folan, Browne and Jagdev (ibid.) also mention that "performance may be said to be governed by priorities" namely "relevance of an entity to a particular environment, relevant objective in mind and relevant or reduced recognisable characteristics thus we commonly assess a company on competitive parameters". Folan, Browne and Jagdev (2007:614) further argue that "performance must assume a changing, ideally an evolving environment with performance as the element that traces the firms evolutionary path from the past to the present". Lebas (1995:26) thus states that "data are accumulated about the past. Information based on past data is only interesting in as much as it helps the user understand the potential for success in the future". These views and definitions form the background against which the concepts

defined in this chapter are understood and will be used to assess ISP economic performance.

2.2.2 Internet

In order to define what an ISP is, it is paramount to first create an understanding of what the Internet is and how it operates. "The Internet is an interconnected network of networks, that carries bits of information between computers, or smaller networks of computers" (Madden & Coble-Neal 2002:344). Madden and Coble-Neal (ibid.) further state that the Internet "connects independent computers, communication entities and information systems without any hierarchy or rigid controls limiting the paths that users set up to communicate".

Fan (2005:198) describes the Internet connection as having three levels or tiers. The first tier is a level that provides for global connectivity. Norton (2001:2) argues that "a tier 1 ISP is an ISP that has access to the global Internet routing table but does not purchase transit from anyone". "Level two refers to national backbone providers who provide a set of paths to which local or regional networks connect for global Internet connectivity" (Fan 2005:199). "Large Internet Backbone Providers (IBPs) have the ability to carry" information "traffic all over the Internet" (Lippert & Spagnolo 2008:33).

2.2.3 Internet Service Providers

There is usually confusion between the definition of IBPs and ISPs. As seen in the definition by Norton (2001:2):

- Tier 1 (which provides global connectivity) is referred to as an ISP while Fan (2005: 200) refers to tier 3 as an ISP.
- Tier 2 as an ISP or IBP, however they make a distinction to indicate that an ISP on this level (tier 2) is a "facilities based ISP" which "supply routers connected by high speed data lines" (Madden and Coble-Neal 2002:345).
- Tier 3 therefore "refers to an ISP that connects end users to the Internet" (Fan et al 2005:200 & Norton 2001:1). Lippert and Spagnolo

(2008:34) state that “global connectivity is largely provided to the ISPs by IBPs in exchange for a payment to carry the traffic”, thus ISPs are able to provide Internet access to end users. For the purpose of this study the three tiers of Internet provision are exclusively named as follows:

- (a) Global connectivity - Tier1
- (b) Internet Backbone - Tier 2 (IBP = Internet Backbone Provider)
- (c) Service Provider - Tier 3 (ISP = Internet Service Provider)

Research inquiry relating to this study focuses on the economic performance of tier 3 Internet providers.

2.2.4 Small business

The use of the term small within the English language has five meanings. The term small can mean:

- Anything that is less than normal or usual size.
- Anything of less quantity or having insufficient power or strength.
- An object of insignificance or less importance.
- The level of growth or development not being fully achieved.
- In a business sense or its owner, the operation of a business in a modest scale.

Amongst the meanings provided for the term small, the meaning which refers to the term in a business sense appears appropriate for this study. Other definitions of similar nature tend to combine the with the word business, thus forming a two – worded term; small business. A definition by Rustin (2006:1) regards a “small business as any company with under 100 employees”. In the United States of America (U.S.), a small business is defined as “independently owned, independently operated and not dominant in its field of operation” (NFIB 2003:7). According to NFIB (ibid.) “some do not feel that the use of a

single criterion to define small business is appropriate. Measures other than employment, annual revenue and assets can also define small business”.

The varying definitions of small in a general or business sense can yield many different meanings. ISPA has a meaning that is unique to its membership and operations. ISPA defines large business players in the South African Internet industry as “companies that have their own direct link to a part of the Internet located outside the African continent. Medium ISPs are those that operate points of presence in more than two South African provinces. A virtual access provider with more than 256kbps of bandwidth to its upstream network operator. Small companies are anyone else” (Elaine 2008/08/01). Another reason for regarding anyone else as small provider or business could be the fact that “large and medium companies have their own linkage facilities, whereas small providers rely on the linkage provided by the Johannesburg Internet exchange” (Elaine 2008/08/01). In the context of this study, the definition of small providers as stated by ISPA was taken into great consideration as it includes the membership list of the ISPs in South Africa from which the population sample of this study was drawn (cf. Addendum 1).

2.2.5 Market

The term market is an English word that usually has two meanings, depending of course on where it is used and on the context under which it is used. The term market can be employed as a verb, whereby it can mean the act of persuading or encouraging people to buy. In this sense the term is used in the advertising practice. The term market can also be used as a noun (a naming word) whereby it means a place or area where goods or services are exchanged.

“There are two aspects to the definition of a market – the product and the geographic area in which the product is sold” (Intev, Oliver & Sepulveda 2000:10). Intven, Oliver and Sepulveda (ibid.) argue that “geographic areas are more important in defining some telecommunications markets than

others. For example the market for local access in Mumbai is not affected by the degree of competition in Johannesburg local access market". Lieberman and Hall (2000:42) state that in ordinary language, a market is an actual location where buying and selling takes place such as a supermarket, an outdoor market or a flea market".

"Although we usually think of a market as a place where some sort of exchange occurs, a market is really not a place at all" (Sexton 2003:60). Concurring, Lieberman and Hall (2000:42) state that "in economics a market is something different". According to Sexton (ibid.) "a market is the process of buyers and sellers exchanging goods and services". Lieberman and Hall (ibid.) hold the view that "a market is a group of buyers and sellers with the potential to trade", thus a market "is defined not by its location but by its participants". The view of a market as "a process of buyers and sellers exchanging goods and services" appears appropriate this study as this study intends not to focus on the economic performance of small ISPs in terms of the location of where they do their business, but in terms of them being based in the accessible area for research purposes. This can be equated to an American based company doing business in and outside America. Therefore location in this study is only used to identify the research subjects not as a place where business is exchanged.

If a market is perceived as a place or physical location, then such a place will have to be associated with time. Lieberman and Hall (ibid.) state a supermarket or flea market as examples. Physical markets often have time of business operation and have to be manned by a human being. However taking into consideration that the Internet operates round the clock regardless of where the user is and does not need the presence of a human being where exchange occurs or for its functionality to continue, definitions which perceive a market as a place might limit the scope of this study and therefore will not be used. Considering that the Internet allows for services such as electronic banking (which allows people to bank anywhere at

anytime) as well as electronic commerce (e-commerce, including mobile commerce/m-commerce) which facilitates electronic shopping anywhere at anytime, perception of a market as a continually existing and operating engagement is an approach that this study adopts.

2.2.6 Internet peering

Peering is an exercise that involves network interconnection. While ISPs may have individual networks, "interconnection among all parties is one of the main features of the Internet" (Baake & Wichmann 1998:1). Interconnected networks form one big network, thus "every computer connected to the Internet is able to communicate with any other computer on this network" (ibid.). According to Milgrom, Mitchell and Srinagesh (2000:2) "a number of ISPs exchange traffic with each other at private and public Internet exchanges". The exchanging of communication traffic amongst ISPs result in a "business relationship whereby ISPs reciprocally provide each other connectivity to each others' transit customers" (Norton 2001:1).

According to the Internet & Telecom Association of Hong Kong (2002:1) peering is a relationship between two or more ISPs in which the ISPs create a direct link between each other and agree to forward each others' packets directly across this link instead of using the standard Internet backbone". Therefore, "the Internet peering ecosystem consists of a community of loosely affiliated network operators that interact and interconnect their networks in various business relationships" (Norton 2003:1). "Such interconnection agreements can be bilateral as well as multilateral. Multilateral exchanges can either consists of a central router to which all networks are connected" (Baake & Wichmann 1998:1)

2.2.7 Collusion

In the context of this study, collusion can be regarded as the teaming up of different service providers with an aim of achieving a specific service provision

goal Collusion should however not be confused with mergers and acquisitions which is the process whereby two or more firms merge to become one company. In collusion firms maintain their identity but conjoin their effort to achieve the desired specific goal. Collusion can include an array of anti-competitive behaviours from market players. For example firms can collude against a new entrant and refuse to deal with or interconnect with the new entrant. There has been a speculation by that South African mobile service providers had colluded in price fixing. The speculation goes on to point out that mobile telecommunications prices should have gone down during the introduction of a third cellular operator, Cell C. However MTN and Vodacom's suspected collusion make mobile telecommunications prices to remain high because even if Cell C wanted to reduce prices while other local providers do not want to, Cell C would operate at a loss because:

- Cell C does not have a subscriber base equal to that of either MTN or Vodacom,
- Cell C still has to pay termination fees to other firms for the calls made from its network to the other companies' networks. In that case Cell C might end up giving a free service to its customers as all its revenue will be paying for the termination fees. Therefore the speculated price fixing collusion of MTN and Vodacom impacts on Cell C's prices thus Cell C has to keep his prices on par with other firms.

These are just speculations evolving from a few UNISA and University of Witwatersrand students studying telecommunications. While these speculations might be valid, their authenticity has not be scientifically tested. Furthermore the introduction of a reduced international roaming fee of R5.00 by MTN which other cellular companies have not introduced in South Africa, contradicts the speculation of collusion between cellular companies.

2.2.8 Price squeeze

Price squeeze or margin squeeze is a form of anti-competitive behaviour. It "is an exclusionary practice used by vertically integrated firms to leverage

market power in the upstream market (or supply market) to squeeze the margins of their downstream (service provision market) competitors" (Crocioni & Veljanovski 2003: 28). "Price squeeze can occur when an operator with market power controls certain services that are key inputs for competitors in downstream markets and where those same key inputs are used by the operator or its affiliates to compete in the same downstream market" (Intev, Oliver & Sepulveda 2000:24). "A margin squeeze occurs when a firm is dominant in an upstream market and supplies a key input to undertakings that compete with it in a downstream market" (ISPA 2006:28).

According to Aron (2002:1) price squeeze which also referred to as vertical foreclosure, is a "strategy". This implies that it is a meditated and intended practice which does not happen by chance unless intended. Aron (2002:1) sees price squeeze as an intended practice (strategy) "by a monopolist in an upstream input market of integrating into the downstream product market in order to drive downstream competitors out of that market. The integrated monopolist could exclude the competitors from the downstream market by refusing to sell the monopolistically supplied input to downstream competitors". Furthermore the "monopolist could disadvantage competitors by selling the input at discriminatory prices or at diminished quality" (ibid.).

2.3 SUMMARY AND OUTLINE OF CHAPTER 3

This chapter explained the importance of defining terms, which, in this thesis, is to create common understanding and agreement on the terms used in the study. Furthermore, definitions provided give more clear sense on what the topic is about thus laying a level ground for the following chapters. The terms which have been defined do not only relate to the topic under investigation, however there are other terms which relate to the practices and tendencies observed within the telecommunications provision which are likely to form

part of the Internet service provision discussion should they be observed during data collection as well as in the interpretation of the results.

The following chapter reviews literature and theory on the Internet. Chapter 3 also mentions and analyses studies regarding Internet service provision in South Africa and other countries to create comparison and determine the factors influencing Internet service provision nationally and globally.

CHAPTER 3: LITERATURE REVIEW

3.1. INTRODUCTION

Telecommunications is an industry that is characterised by both competition and regulation. National governments adopt different policies to ensure the viability of their telecommunications sectors. Such policies can range from privatisation, liberalisation to managed liberalisation. In South Africa regulations and regulatory amendments have been introduced in the telecommunications sector since the inception of the 1996 Telecommunications Act No. 103. Literature review regarding the Internet service provision also indicates that Internet service provision has not been without turmoil.

The turmoil in South African Internet service provision emanates from interconnection disagreements between companies. Other issues regarding the Internet service turmoil stem from the fact that the Internet was at its inception an unregulated or minimally regulated service in 1996. Wilson (1999:106) states that "VANS¹ in South Africa operate in a very liberalised framework and are subject to minimal regulation". Shenker, Clark, Estrin and Herzog (1996:183) contend that "as the Internet made the transition from research test bed to commercial enterprise, the topic of pricing in computer networks suddenly attracted great attention".

Bless and Achola (1990:22) as well as Bless and Higson-Smith (1995:22-23) point out that "literature review is an ongoing process. Not only because relevant research results can be published at any time, but because in the cause of research new aspects and problems arise requiring new information". This therefore means that this study should not be viewed as exhaustive in terms of literature review as other (on-going) research studies

¹ VANS represents value added network services.

may publish results or new local Internet provision problems could arise requiring new information.

3.2. PREVIOUS STUDIES CONDUCTED ON SOUTH AFRICAN INTERNET SERVICE PROVISION

Studies pertaining to Internet service provision in South Africa have not focused on economic performance of small ISPs. Most studies have focused on inclusive performance. For example, the study by Wilson (1999: 104) analysed the Internet subscriber base and stated that "the number of Internet subscribers" then was "estimated to be between 700 000 and 800 000 of which 20 000 to 30 000 are dial up users". Other studies showed interest in usage patterns and population variances of the market (cf. Gillwald & Kane 2003). Gillwald and Kane (2003:46) provide a comparison table of Internet users in African countries and conclude that "the growth rate of South African Internet users has slowed more than it has elsewhere around the world".

Data Monitor (2005:8) refers to revenues generated as representing a compound annual growth rate (CAGR). Inclusive studies focus on aspects such as growth and expansion of the Internet service in South Africa, or other telecommunications services excluding Internet provision. Other studies focused on market penetration and not so much on profits generated by the ISP market. Gillwald, Esselaar, Burton and Stavrou (2005:133) contend that "while South Africa's Internet penetration has followed the standard path of technological adoption - which is weak initially until a critical mass is achieved, followed by a subsequent explosion in growth, which then reduces as the markets gets saturated". The above-mentioned studies on Internet penetration do not translate into studies about profit generation or economic performance.

A study by Tobin and Bidoli (2006:31-40) unearthed various factors regarding Internet service provision in South Africa. Tobin and Bidoli (ibid.) cite regulatory uncertainty, market uncertainty and quality of service in the

Internet service. Indeed, little is said in the area of economic performance despite that mentioned factors (e.g. regulatory uncertainty, quality of service in the Internet service) could have a direct impact on the economic performance of ISPs.

3.3. INTERNET SERVICE PROVISION REGULATION

Understandably the growth of the Internet should be studied in order to grasp and probably devise manipulative approaches that could hinder or control negative or stunted growth. Previous telecommunications studies in South Africa have thus revealed that one of the causes of stunted growth of the Internet segment is the telecommunications regulatory forces within the Internet segment. Gillwald (2005:474) argues that "South Africa, like most developing countries has little local expertise in the area of policy, regulation and specifically privatisation though this was often not adequately acknowledged". This can be attributed to the then Electronic Communications and Transactions Act No. 25 of 2002 which had not made its impact after its enactment. In 2005 the South African Parliament enacted the Electronic Communications Act which "is South Africa's substantive regulatory response to convergence. It repeals most of the existing telecommunications and broadcasting legislation" (Thornton, Carrim, Mtshaulana & Reyburn 2006: 335). When Telkom (the South African incumbent land line provider), was issued with a "25 year operating license in May 1997", it was offered "monopoly rights by the license" (Barendse 2004:55). The "license protected Telkom in the following markets: national long distance, international, local access, public payphones, infrastructure for VANS, infrastructure for private networks other than Transnet and Eskom (ibid.).

"Government policies governing the telecommunications service market and promoting information infrastructure have a significant impact on the growth of Internet access" (Fan 2005:192). In South Africa, government policies have negatively impacted upon the local ISP market. Gillwald (2005:470) states

that “the ISP market in South Africa has been liberalised since 1996, but its activities have been stunted by restrictions that require operators to acquire facilities and bandwidth from Telkom”. Prior to 2002 Telkom also enjoyed “a monopoly on access to the international data gateway” (Gillwald 2005:470). Recently other companies such as Sentech, and Vodacom have been given international gateway licenses which means that Telkom is no longer going to be the sole provider of international gateway for the South African telecommunications companies.

In China, of the eight licenses “of the interconnecting network providers, two of them, China Telecom and China Unicom, are permitted to provide international links for other interconnecting networks” (Fan 2005:199). In other words, the two companies provide global connectivity – tier 1. The Chinese “regulation requires that all ISPs have to gain global Internet access through one of the interconnecting networks and those network providers should lease their international links from either China Telecom or China Unicom” (Fan 2005:199). In South Africa, not only are ISPs required to obtain their facilities from Telkom, “ISPs are required to pay Telkom to use Telkom’s network” (Gillwald 2005:471). However, in Australia, “ISPs are generally not regulated. There are no regulations to force ISPs to connect to the Internet via the specified backbone providers” (Fan 2005:200).

Because “Australian ISPs have more choice in obtaining global connectivity” (ibid.), Fan (2005:202) concludes that “the Australian experience suggests that foreign investment in the telecom and Internet sectors is very positive for Internet access expansion”. The South African situation can be compared to the Chinese Internet regulation. Compared to China, an “Australian Internet user enjoys relatively cheap Internet access charges” (Fan 2005:200). In South Africa “the growth and flexibility of Internet access have been constrained not just by high prices for leased lines” (Horwitz & Currie 2007:447), but also by “Telkom’s delays in providing facilities and interconnection to the VANS” (Gillwald 2005:471).

According to Horwitz and Currie (2007:447) "South African telecommunications has been plagued by poor policy and monopolistic behaviour". Not only is the sector plagued by poor policy, "the structural flaws in the policy were compounded by the paucity of specialised skills in the regulator, the Ministry of Communications and among the elected representatives in the Parliamentary Portfolio Committee on Communications" (Gillwald 2005:473). Lack of regulatory expertise from the Ministry of Communications, instability and non predictable amendments in the telecommunications regulations was observed in 2004.

In September 2004, the Minister of Communications, Dr. Ivy Matsepe-Casaburri, made policy announcements, some of which had a direct link and an impact on the Internet service market. As a step towards technological convergence, the Minister announced that "as of 01 February 2005 value added network services may carry voice using any protocol" (South African Government Information 2004:2). The regulation had previously prohibited VANS from voice transmission. Furthermore the Minister of Communications also announced that "as of 01 February 2005 VANS may also be provided by means of telecommunications facilities other than those provided by Telkom or the Second National Operator" (ibid.).

These policy announcements were gladly received by most Internet providers as they unleashed ISPs from the anchor of having to acquire facilities from Telkom. Furthermore, these announcements meant that the Internet service market would be widened by incorporating the provision of Voice over Internet Protocol (VoIP). "The Minister had opened the wholesale telecommunications market to considerably more competition" (Tobin & Bidoli 2006:32). However the joy of the ISPs and VANS was short lived as the Minister made clarifications of the policy announcements two days before they came into effect. The Minister announced that:

“The issue of self provisioning was issued in the government’s policy determinations only in relation to mobile cellular operators in terms of fixed links, to give full meaning of the intention to reduce the costs of telecommunications services in South Africa, it is the intention that value added network operators may obtain facilities from any licensed operator and as specified in the determinations. It is not the government’s intention to license every single activity that can be provided by a VAN operator” (South Africa Government Information 2005:1).

The January Ministerial 2005 clarification seemed to be a retraction of the policy announcements made in September 2004. In their study regarding the adoption of VoIP in South Africa, Tobin and Bidoli (2006:35) state that the “key informants” of their study “said that” the “key factors holding back adoption were high bandwidth costs, regulatory uncertainty, market uncertainty and quality of service concerns”. The market is absolutely uncertain where regulation somersaults before being implemented, thus affecting the service market. This retraction of policy announcement was not the first. The previous telecommunications regulator (South African Telecommunications Regulatory Authority or SATRA) had “sent finalised interconnection and facilities guidelines to the Minister, guidelines that spelled out Telkom’s common carrier obligations and specified a pricing formula. The Minister approved and published the guidelines in March 2000, but abruptly withdrew them a month later” (Horwitz & Currie 2007:453).

As indicated in the introduction of this chapter that the “VANS in South operate in a liberalised framework and are subject to minimal regulation”, the minimal regulation that exists in the VANS segment is the cause for concern amongst market players and academics. Hodge and Theopold (2001: 26) argue that “the most crucial factor influencing the structure and performance of the market is the regulatory regime”. The monopolistic rights given to Telkom through the operating license have been an issue deemed to be the cause of negative economic performance of ISPs as they not only have to obtain their infrastructure from Telkom but also have to interconnect to Telkom’s network and also pay line rental charges.

3.4. INTERNET SERVICE PROVISION PRICING

It is not only regulation that has been fingered to have caused turmoil in the Internet service market. Another cause of contention has been Telkom's entry into the Internet service market. McCluskey (1997:1) states that "Telkom's entry into the market has led to accusations of unfair and anti-competitive practices from other Internet access providers who allege that Telkom is placing its competitors in the Internet market at a disadvantage". According to Theron (2005:24) "Telkom occupies both a horizontal and a vertical position within the Internet service provider market by virtue of its ability to offer Internet services and other telecommunications facilities". Theron (2005:5) also argues that "vertically integrated firms in the telecommunications market can often use market power to act anti-competitively in a related market".

Before 1996 Telkom did not provide Internet services. However, "the Telecommunications Act of 1996 allowed Telkom to be a major player in the competitive VANS sector" (Gillwald 2005:481). According to Lewis (2005:10), from "01 October 1995 Telkom had began pre-commercial testing of its own Internet service ". Gillwald (ibid.) argues that the Telecommunications Act of 1996 "provided Telkom with an incentive to engage in anti-competitive pricing, quality and access practices". Concurring, Horwitz and Currie (2007: 451) contend that when the Internet came into Telkom's attention, Telkom "launched South African Internet Exchange (SAIX), its own Internet Access Provider (IAP) in June 1996 at a tariff considerably lower than other IAPs".

Gillwald (2005:471) articulates the negative impact on Internet and barriers to communication. For Gillwald (ibid.) "barriers to communication access have been created by the high prices that ISPs and other value added services providers are required to pay Telkom to use Telkom's network and Telkom's delays in providing facilities and interconnection to these VANS providers".

The South Africa Foundation (2005:31) argues that “the competitive playing field in the ISP market is not level” because the “ISPs compete with Telkom’s Internet offering” yet Telkom’s Internet provider does not pay the same price for bandwidth as the independent ISPs”. Retorting to the telecommunications regulatory reforms as announced by the Minister of Communications, Mayer and Onyango (2005:8) point out that “it is essential that policy makers apply their minds in a way that is conducive to fair competition and affordable delivery”.

According to Gillwald (2005:471) “soaring local-call charges have impacted negatively on Internet take-up and usage with high prices resulting in lower market saturation that would have been the case in South Africa”. “Evidence from the VANS industry which includes ISPs, indicates that there has been little non-Telkom growth in this competitive component of the market” (Gillwald & Esselaar 2004:13). However “over 80% of the ISPs costs accrue directly to Telkom for facilities and network usage. Thus the vast majority of revenue generated through Internet service provision in South Africa has been going to Telkom” (Gillwald 2005:479). According to South Africa Foundation (2005:31) an Internet subscriber for ADSL “must acquire an ISP connection at an average monthly cost of R250.00. The ISP pays Telkom R190.00 for bandwidth and R40.00 to conclude peering arrangements”.

“At the same time Telkom’s own VANS offerings were priced differently and more favourably than its competitors” (Horwitz & Currie 2007:452). A similar occurrence has been witnessed in Peru. Briceno (1999:28) states that “when Telefonica del Peru (TdP)” (the incumbent telecommunications provider in Peru) “got into the Internet market in 1997, the largest ISP at that time filed a complaint against TdP. The allegation was that TdP was acting in an anti-competitive manner because among other reasons, it was using part of its telephone infrastructure but not imputing to itself the same price charged to its competitors”. Like ISPs in South Africa, ISPs in Peru had to acquire their upstream facilities from TdP as a “legal temporary monopoly” was “awarded

to TdP" until 1998 (Briceno 1999: 28, 29). The monopoly arrangements in Peru did not allow the independent ISPs "to deploy their own transmission links or local loops, so these inputs had to be leased from TdP" (Briceno 1999:29).

In a study conducted following the allegations from other independent ISPs, Briceno (1999:47) claims that "results suggested that TdP had been unlawfully favouring its affiliate firms in the access service to the Internet by charging them lower rates for non-competitive inputs than their rivals". In South Africa "Telkom priced a digital leased line according to speed, distance and for the whole circuit. The price for its own VANS offerings was distance independent and charged customers for just half the circuit" (Horwitz & Currie 2007:452).

The Supervisory Office for Private Investment in Telecommunications (OSIPTTEL), in Peru, was requested to intervene following the allegations against TdP's anti-competitive behaviour. OSIPTTEL "decided to undertake several areas of investigation at the same time. From the results found in investigation, it was concluded that TdP engaged in discriminatory practices against competitors in the Internet market" (Briceno 1999:47-48). Unfortunately Briceno (1999:27-49) does not proceed to mention measures taken against TdP's anti-competitive behaviour.

Telkom has been accused of margin or price squeeze. Intven, Oliver and Sepulveda (2000:25) argue that "if the incumbent decides to engage in vertical price squeeze it could increase the price to competitors of the upstream input while leaving its downstream price the same. The effect would be to reduce or eliminate the profits of competitors". Telkom has been accused of the similar practice whereby Telkom has been seen to be "giving preferential treatment" and "practising price discrimination by supplying wholesale access at lower rates to its own division" (Theron 2005:25).

Tobin and Bidoli (2006:32) believe that “restrictive regulations aimed at protecting the incumbent operator Telkom have resulted in excessive tariff increase and limited bandwidth”. That said, Horwitz and Currie (2007:447) believe that “the growth and flexibility of VANS including the Internet access have been constrained not just by high prices for leased lines, but by a highly litigious and sometimes predatory Telkom”. Mayer and Onyango (2005:5) argue that “local call prices have nearly doubled since the privatisation of Telkom despite significant efficiency gains”. Continuing Mayer and Onyango (2005:6) point out that “[o]f the total basket of cost that a consumer pays for Internet access, around 70 per cent of the costs go directly to Telkom in the form of dial up access charges”.

The margin squeeze which telecommunications experts point out in the South African telecommunications market, has also affected competition in a negative way. The Data Monitor (2005:13) states that “South African ISPs have switched their business focus towards serving existing customers rather than on driving growth in users”. Horwitz and Currie (2007:451) concur, articulating that “South African Internet providers must lease lines from Telkom and because of dial-up access is subject to high metered tariffs, Internet use has weakened”. Arguably the weakening of Internet use in South Africa can be deemed to have negative bearing on local Internet market competition which will eventually drive out some competitors who do not have strong financial muscle.

In the telecommunications industry, patterns of occurrences tend to be similar in different countries as indicated in the comparison between South Africa and Peru. “In China, the interests of the incumbent operator and the regulator were closely aligned and entrants were treated unfavourably” (Yu, Berg & Guo 2004:718). Gillwald (2005:483) refers to the South African situation and point out that “the Ministry (of Communications) has sometimes found itself unable to act in the broader interests of the sector, or of the economy as a whole, because of pressure from within government to protect a key state

asset such as Telkom". Horwitz and Currie (2007:447), concur, stating that "the Ministry had a structural conflict of interest as both the policy maker for the sector and the custodian of the state".

3.5. THEORETICAL APPROACHES FOR THE STUDY AND IN PREVIOUS INTERNET-RELATED STUDIES

Internet studies in South Africa have adopted varying approaches. Tobin and Bidoli (2006:34) "decided that open ended, semi-structured interviews would be most effective". Though not indicated clearly in the research report, however Tobin and Bidoli (ibid.) aimed at doing a study with "comparative analysis of findings". Statistical results of Tobin and Bidoli's study indicate the quantitiveness of their study. Other studies such as Gillwald and Esselaar (2004:11, 19, 22), South Africa Foundation (2005: 2, 3, 8 & 9) and Gillwald and Kane (2003: 20, 44, 46) rely on reports from different institutions such as "MTN & Vodacom annual report, ITU World indicators report and the Telecommunications Regulatory Authority of India". With varied sources of information, the studies such as that of Gillwald and Esselaar (2004) compare Internet growth and revenues in South Africa and other developing countries such as Malaysia.

The comparison that is frequently seen in the South African Internet studies is an indication that not much has been published regarding the South African Internet market, thus a benchmark or standard of measurement can be created using studies conducted in other countries, for example Gillwald and Kane (2003: 45, 47 & 48). According to Data Monitor (2005:19) the report it presents "is based on a combination of Data Monitor research including online, face-to-face and telephone interviews with consumer and industry players, and secondary research using various sources'. Because most South African studies are not empirical in nature but more responsive and advisory, there is lack of detail on methods of inquiry followed or detail about the approach followed

3.6. SUMMARY AND OUTLINE OF CHAPTER 4

In this chapter, previous studies regarding Internet service provision in South Africa, and studies conducted on this subject, and other countries were outlined and analysed. This chapter has also interrogated issues pertaining to Internet pricing, regulation as well as theoretical approaches that previous studies employed. To conclude, South African literature has not specifically assessed the economic performance of small ISPs, however, the performance of the telecommunications sector in general has been studied or analysed. Furthermore, sector performance studies have not focused too much on the profits generated within the telecommunications sector, but the contribution of telecommunications to the gross national product (GNP) was analysed and widely published. Comparative studies using published annual reports have been employed to compare the South African Internet sector with the international Internet sector.

Chapter 4 provides other theoretical and regulatory aspects of the Internet which also contribute as the theoretical foundation of this study. Theory analysed and applied in Chapter 4, explains processes influencing Internet service provision internationally; include the game theory, and normative and positive theories.

CHAPTER 4: THEORIES, MODELS AND REGULATION OF INTERNET SERVICE PROVISION

4.1 INTRODUCTION

The purpose of this chapter is to discuss South African Internet Service Provision regulation by analysing theories and models explaining processes of Internet provision. The discussion incorporates global trends and regulatory policies in Internet Service Provision, paying special attention to the regulation of Internet Service Providers (ISPs) in South Africa, Australia, China and the United States of America (U.S.). The chapter discusses the purposes of Internet Service Provision and explores the impact of this regulation on ISPs. The purpose of regulation is reiterated according to the views of different experts about the purpose of ISP regulation, the impact of this regulation and competition on ISP economic performance. This chapter also discusses interconnection issues and analyses interconnection and Internet Service Provision in South Africa using the theories introduced in Chapter 1 of this mini-thesis.

4.2 WHY REGULATE INTERNET SERVICE PROVISION?

In South Africa Internet connectivity is offered in different ways. "The principal broadband technology for Internet access is Asymmetric Digital Subscriber Line (ADSL), with a maximum speed of 512 kbps. Telkom has traditionally provided Internet access through normal dial-up connections" (Theron 2005: 15). However, while wireless Internet access has changed how people work, play and interact with others, Theron (2005:15) states that "ADSL provides customers with a dedicated link to the Internet which is an always-on connection that can transmit voice and data simultaneously". Other than the dial-up (using a land-line connection) Internet access, "Telkom also

provides various technologies which provide consumers access to the Internet” such as “Integrated Digital Services Network (ISDN), satellite and Diginet (Theron 2005:13)

Besides that ISDN carries both voice and data simultaneously at an “upload speed of 256kbps” (Theron 2005:15) “the deployment of new technologies such as ADSL improved standards” (Gillward 2003: 6), thus since its introduction in 2002 ADSL has become the technology of choice for most customers” (Theron 2005:15). Telkom’s Internet services have much improved in 2009 as a result of convergence and digitalisation, and the quality of the company’s services match the advanced technology of this era of convergence (cf. Telkom Annual Review 2008). Telkom had a 92 per cent ADSL coverage in 2008 (with a growth of 61.2 per cent from 255, 633 subscribers in 2007 to 412, 190 subscribers in 2008), and also 358, 066 Internet subscribers in 2008 (a growth of 18.3 per cent from 302, 593 subscribers in 2007) (Telkom Annual Report 2008: 6-7).

However, Telkom dominates Internet Service Provision in South Africa and more competition in this industry is necessary to develop small ISPs as critics have argued that Telkom has exhibited anti-competitive tendencies against the smaller ISPs (cf. Chapters 1 and 2 on a discussion and critical analysis of this issue).

Black (2002: 12-13) states that “industries had robust competition early in their history. A few driven individuals emerged to lead their companies to dominance in their industries”. However, as companies grew bigger, a trend of “business practices” which were anti-competitive was noticed (ibid.). Anti-competitive companies would “cut prices to drive competitors out of business then buy the failing competitors thus forming trusts and once in control raise the prices” (Black 2002: 13). The result was “huge profits with diminished quantity, quality and availability of affordable products to the public, leading to public outcry against the dominant companies” (ibid.). Presumably the

public outcry would then warrant for government intervention to regulate the industry so that it will serve the public interest as well.

Mathiason (2009: 40) looks at the need to regulate the Internet Service Provision industry from the proprietary standards point of view. According to Mathiason (ibid.) "proprietary standards for specific products have been common in the private sector". However, "the Internet has made them more controversial since they can affect how well the Internet functions" (ibid.). Mathiason (ibid.) further reiterates that "private corporations have joined standard setting bodies as a means of ensuring that their proprietary software is compatible and interoperable. However, when one corporation becomes dominant governments have been induced to regulate them". The latter statement explains the route taken by the South African government, which introduced Internet regulation because of Telkom's domination of the sector at the expense of the consumer, smaller ISPs and value-added network service operators (VANS).

Thornton, Carrim, Mtshaulana and Reyburn (2006: 18) state that "telecommunications was seen in the same light as other public utilities such as water and electricity" and that the existence of telecommunications "involves valuable natural resources, namely the radio frequency spectrum". In summary Thornton et al. (ibid.) also state the reasons for regulating telecommunications (also referred to as telecoms), including the Internet, are the following:

- (a) maintaining "control over the use of natural resources such as the frequency spectrum;
- (b) controlling anti-competitive behaviour by dominant players in the market; and
- (c) ensuring the development and implementation of effective universal service policies".

With specific reference to Internet regulation and governance, Mathiason (2009: 3) states that “the Internet began in a scientific and technical environment in which the governments were absent except as a funding resource”. However, “the borderless nature of the Internet produces particular needs for global institutions and has opened doors for innovative approaches” (Mathiason 2009: 2-3). Arguably, some of the innovative approaches are related to its regulation and governance. Achterberg (2000: 358) states that “with the development of new technologies, there has been a growing realisation that the many aspects and products of telecoms service provision are not subject to the same cost conditions”. This has stimulated reforms in many countries which have changed the structure and ownership of the sector and introduced regulation (ibid.).

Mathiason (2009: 12) further cites five communication components that can be used to analyse telecoms regulatory policies, particularly the Internet and these components are:

- (a) sender;
- (b) message;
- (c) medium;
- (d) receiver; and
- (e) feedback.

Two of these components (cf. (a) to (e) above), stand out in terms of Internet regulation and these are the medium and the message. Mathiason (2009: 15) states that “the medium or channel over which the message is sent has historically been the focus of communications regulation”. At national level, “communication channels, like frequencies or lines that passed over public lands were inherently public goods. At international level, regulation has been reflected in international standards for bandwidth, frequency allocations and exchange protocols” (ibid.).

Another area of regulation relates to the content of the message that is sent: "There has been increasing focus on the presence of and the ability to gain illegal and harmful content online" (European Information Society Group or EURIM 2004: 1). Because of the legality of content regulation especially of the Internet has been an unavoidable necessity. The political dimension of content regulation has to do with the following issues:

- (a) "long legacy of government direction or control over radio and television broadcasting;
- (b) the desire to promote and protect national cultural traditions and language; and
- (c) the correct balance between the right to free expression on one hand and the duty of the government to protect citizens, particularly children from harmful material" (Walden and Angel 2005: 411.)

While there are varying reasons for regulating the Internet internationally, different countries also have varying structures for regulating Internet Service Provision. The next section explores these reasons and structures in South Africa, Australia and China, among other countries.

4.3 GOVERNMENT MINISTRIES AND OTHER STRUCTURES THAT REGULATE INTERNET SERVICE PROVISION AND USE IN SOUTH AFRICA, AUSTRALIA, CHINA AND EUROPE

In South Africa, the telecommunications laws are set by the Ministry of Communications and administered, regulated and enforced by the industry regulator, the Independent Communications Authority of South Africa (ICASA) (Thornton et al. 2006: 101). There are institutions that are part of the telecommunications regulatory regime in South Africa. These institutions include:

- (a) the Competition Commission, which oversees the fairness of competition in all industries and
- (b) Courts of Justice which resolve disputes and legal battles within the telecoms sector.

All the institutions mentioned thus far have different levels of involvement and unequal authority in the Internet Service Provision sub-sector.

Thornton et al. (2006: 19) maintain that “the nature of telecommunications is that it is borderless. It therefore makes sense that at least some of the regulation of telecommunications should be through international law”. South Africa has some of its regulations that derive from and incorporate aspects of international laws. As “South Africa is a member of the World Trade Organisation (WTO), members of the WTO are required to establish independent regulators which will be separate from and not be accountable to any supplier of basic telecommunications services” (Thornton et al. 2006: 108). With regards to Internet regulation, Mathiason (2009: 2) maintains that “unlike most areas where global institutions have been created, where the role of government is predominant, the Internet is a field where the private sector and civil society each have a role as important or sometimes more important than governments”.

According to the European Information Society Group (EURIM 2004: 2) there are “self and co-regulatory schemes” that aid Internet regulation. For example, “one of the most successful initiatives in the area of distribution and viewing of child abuse images via the Internet has been the Internet Watch Foundation (IWF). The IWF works in partnership with government, ISPs, telecommunications companies, mobile operators, software providers and police to minimise the availability of illegal Internet content” (ibid.). Other organisations include the Internet Crime Forum which “exists to promote, maintain and enhance an effective working relationship between industry and law enforcement to tackle crime and foster confidence in the use of the Internet” (ibid.). These are the plausible initiatives existing in Europe.

At present, South Africa does not have active interest groups or organisations that stand out to form coalitions that will assist the government and the police force in curbing Internet related crimes. Instead, there has been Acts and Amendments of Acts passed, from the 1996 Telecommunications Act No. 103, (that are specifically aimed at regulating telecoms and the Internet), to the Electronic Communications Act (ECA) No. 36 of 2005, (which regulates the provision and use of the Internet). The ECA is an amended and extended version of the Electronic Communications and Transactions Act (ECTA) No 25 of 2002. In this mini-thesis, however, focus is not on South African Internet-related crimes but on Internet problems between ISPs and Internet backbone providers which arise from interconnection problems and disputes.

4.4. INTERCONNECTION ISSUES IN SOUTH AFRICA AND INTERNET SERVICE PROVIDERS’ INTERCONNECTION CONTRACTUAL AGREEMENTS AND STRUCTURAL MODELS

Interconnection is addressed in Chapter V, Section IV, of the 1996 Telecommunications Act No. 103, as well as in Chapter 7 of the ECA No. 36 of

2005. According to the 1996 Telecommunications Act No. 103, “every person who provides a telecommunications service shall when requested by another such person interconnect its telecommunication system to the telecommunication system of such other person unless such request is unreasonable” (South African Telecommunications Act 1996: 33). Because “interconnection involves physical means of linking two different networks for the exchange of traffic, users on one network may communicate with users on the other” (Walden & Angel 2005: 215). Furthermore, the physical connection allows for ISPs to “engage in peering arrangements” (Lippert & Spagnolo 2008: 35). Internet backbones interconnect under two different arrangements or models, peering and transit (cf. Jensen 2005:4, Shrimali & Kumar 2008; Badasyan & Chakrabarti 2008).

Jensen (2005:4) states that “in the peering model, backbones agree to exchange traffic with each other at no cost. The backbones only exchange traffic that is destined for each other’s end users, not the end users of a third party. In a transit arrangement, one backbone pays another backbone for interconnection. In exchange for this payment, the transit supplier provides a connection to all end users on the Internet” (ibid.). Shrimali and Kumar (2008: 19) state that “peering arrangements between ISPs, in which providers agree to carry traffic originating from a peer, are common in the Internet”. “A common contractual peering agreement between smaller ISPs is “Bill-and-Keep”, where no money is exchanged between the peers. In a transit relationship, a traffic-originating provider pays a transit provider to establish connectivity with nodes outside its network”.

The “Bill-and-Keep” peering contractual agreement is also known as “Zero-Dollar” peering or “Sender-Keep-All” (SKA) peering (ibid.). Peering is often employed as an alternative to paying transit charges, especially if transit charges are on the rise. The “Bill-and-Keep” peering contractual arrangement is becoming prevalent among similar providers and from a policy perspective, it implies that there is no need to intervene and force other arrangements for

efficiency (cf. Shrimali and Kumar 2008:31). Unregulated Internet markets are found in the U.S.

Badasyan and Chakrabarti (cf. 2008:4)'s simple game-theoretic analysis of peering and transit contracting among ISPs suggests that "if traffic flows and the costs of interconnection are fairly shared, the provider's peer, otherwise they choose transit". "Providers balance benefits against the costs to determine whether to peer or transit" (ibid.: 15). The latter's simple game-theoretic analysis in peering and transit contractual arrangements among ISPs also concedes that "if one ISP incurs most of the transporting costs under the peering arrangement due to traffic imbalances, it has a valid competitive reason to refuse peering and, thus, there is no need for regulatory policies encouraging it" (ibid.: 1-2).

Additionally, Bailey (1995: 7) states that there are many models of interconnecting two users together but they fit into a few major categories, which are:

- (a) "bilateral agreements", in which "ISPs agree to interconnect for economic reasons" (transit);
- (b) "third party administrator" – which "provides interconnection between a number of hosts"; and
- (c) "cooperative agreements" – e.g., certain "governmental agencies who interconnect their Internet Protocol (IP) networks but do not act opportunistically by extracting profits if they operate an interconnection point".

One of these categories is provided by Telkom where Telkom is a third party providing interconnection between a number of hosts.

4.5. AN ANALYSIS OF INTERNET MARKET PLAYER BEHAVIOUR USING THEORIES AND A MODEL OF INTERNET SERVICE PROVISION

Because of the competitive edge amongst the industry players, business tactics and games relating to interconnection come to the fore hence the game theory introduced in Chapter 1 of this mini-thesis. In game theory, building on the fundamental results of decision, it is assumed that each player's objective is to maximise the expected value of his own payoff" (Myerson 1991: 2). However, the approaches used in maximising the payoffs are not the same. Because the "game theory is concerned with how individuals make decisions, interaction between individual decision makers all of whom are behaving purposefully and whose decisions have implications for other people, that makes strategic decisions different from other decisions" (Bierman & Fernandez 1993: 68).

In July 1996 ISPA lodged a complaint with the Competition Board claiming that Telkom was discriminating against them (ISPA members) "by compromising on the quality of the network (cf. Wilson 1999; Achterberg 2000). This is one of the interactions amongst the service providers in South Africa which can be viewed as part of game theory. The series of disputes against Telkom prompted the South African government to issue the General Notice 1259 of 2000. The issuing of this General Notice can be deemed as a normative (and positive theory, cf. Chapter 1) theory reaction on government part. As indicated in Chapter 1, the normative theory postulates that regulation ought to be introduced where there is market failure. Bailey (1995: 7) concurs when he articulates that "regulation may be likely if a third party administrator excludes some firms who wanted service". As indicated in Chapter 1:

"Requests for lines and connections were frequent met with delays or refusals. The emergent providers of Internet services were therefore

entirely dependent on a single company for all their connectivity, and therefore acutely vulnerable to delays, disputes, and denial of service. The period from 1990 is thus characterised by ongoing grumbles and complaints over the incumbent's foot-dragging over the provision of facilities, punctuated by outbreaks of active dispute and litigation" (Lewis 2005:15).

The General Notice No 1259 of 2000, approved by the Minister of Communications, Dr Ivy Matsepe-Casaburri, has Sections 8 and 9 which address non-discrimination principles with particular attention to interconnection and quality of service (QoS) of interconnection.

8.1 An Interconnection Provider must treat each:

- a. Interconnection Seeker on a basis that is non-discriminatory in its provision of interconnection and no less favourable than the treatment the Interconnection Provider affords to its subsidiaries, its affiliates, or other similarly situated telecommunication service provider seeking interconnection;*
- b. telecommunication service of an Interconnection Provider on a basis that is non-discriminatory and no less favourable than the treatment which the Interconnection Provider affords to telecommunication services of itself, its affiliates, or other similarly situated telecommunication service providers;*
- c. Customer of an Interconnection Seeker on a basis that is non-discriminatory and less favourable than the treatment which the Interconnection Provider affords to its own Customers or the Customers of its subsidiaries, its affiliates or other similarly situated telecommunication service providers.*

9. Quality of service

- 9.1. An Interconnection Agreement will contain service levels that reflect good interconnection practice and provide reasonable remedies for any failure to meet those service levels.*
- 9.2. The parties to an Interconnection Agreement will comply with all relevant standards of the International Telecommunications Union, and such other technical standards as the Authority may prescribe from time to time.*
- 9.3. In the even of the parties failing to reach an agreement with regards to the quality or level of service, the quality or level of service will be determined by the Authority. (General Notice 1259 of 2000:5).*

In South Africa, the 1996 complaint filed by ISPA to the Competition Board was followed by a "counter-complaint" from "Telkom charging that the very existence of the commercial ISPs was illegal," and "in contravention of Telkom's legally entrenched monopoly' (Lewis 2005: 12). Telkom's counter complaint further stated that "IP services were within the sphere of exclusivity guaranteed in terms of the South African Telecommunications Act of 1996 and asking the then telecoms regulator, the South African Telecommunications Regulatory Authority of South Africa (SATRA), "to amend its license accordingly" (ibid.). Such action by Telkom can be viewed in terms of "creative strategies for responding to competitive actions" (Day, Reibstein & Gunther 1997: 237). Day, Reibstein and Gunther (1997: 238-250) state five game theoretic competitive questions to ask and competitive defensive strategy decisions with which to respond and these are:

- (a) "competitive stance – whether to respond at all or give ground to the competitor;
- (b) magnitude – how aggressively to react;
- (c) speed – how fast to react; react as soon as the firm learns of competitor's move, adopt a wait and see attitude or react in anticipation of the competitor's move before it happens;
- (d) domain – choosing where to respond; respond to the competitor's market or responding in a neutral market; and
- (e) weapon – how to respond.

The exclusivity right which Telkom claimed to have had not been propagated before the ISPs lodged their complaints. As mentioned above, Telkom's counter-complaint can be viewed as creative strategies for responding to competitive actions" in terms of game theory. Telkom's reaction can also be seen as a non-cooperative game theory stance because it has tampered the smoothness of the competition process within the telecommunications sector.

4.6. SUMMARY

In this chapter the need to regulate telecommunications in South Africa was discussed, structures that regulate telecommunications in South Africa were identified, interconnection issues were looked at and the behaviour of market players was compared with game theory. Interconnection issues were discussed because they are assumed to be the source of most of the disputes in the telecommunications industry in South Africa. A brief mention of the non-governmental regulatory initiatives in European countries was also included. The next chapter discusses the methodology that was used to collect data for this study.

The following chapter looks at research methodology. At the beginning of the chapter the aims of this study, the research design, the research questions and sub-questions are restated. The chapter also looks at data capturing, population sample and also give a report on the pilot study, issues of validity and reliability as well as research ethical issues.

CHAPTER 4: THEORIES, MODELS AND REGULATION OF INTERNET SERVICE PROVISION

4.1 INTRODUCTION

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provides various technologies which provide consumers access to the Internet” such as “Integrated Digital Services Network (ISDN), satellite and Diginet (Theron 2005:13)

Besides that ISDN carries both voice and data simultaneously at an “upload speed of 256kbps” (Theron 2005:15) “the deployment of new technologies such as ADSL improved standards” (Gillward 2003: 6), thus since its introduction in 2002 ADSL has become the technology of choice for most customers” (Theron 2005:15). Telkom’s Internet services have much improved in 2009 as a result of convergence and digitalisation, and the quality of the company’s services match the advanced technology of this era of convergence (cf. Telkom Annual Review 2008). Telkom had a 92 per cent ADSL coverage in 2008 (with a growth of 61.2 per cent from 255, 633 subscribers in 2007 to 412, 190 subscribers in 2008), and also 358, 066 Internet subscribers in 2008 (a growth of 18.3 per cent from 302, 593 subscribers in 2007) (Telkom Annual Report 2008: 6-7).

However, Telkom dominates Internet Service Provision in South Africa and more competition in this industry is necessary to develop small ISPs as critics have argued that Telkom has exhibited anti-competitive tendencies against the smaller ISPs (cf. Chapters 1 and 2 on a discussion and critical analysis of this issue).

Black (2002: 12-13) states that “industries had robust competition early in their history. A few driven individuals emerged to lead their companies to dominance in their industries”. However, as companies grew bigger, a trend of “business practices” which were anti-competitive was noticed (ibid.). Anti-competitive companies would “cut prices to drive competitors out of business then buy the failing competitors thus forming trusts and once in control raise the prices” (Black 2002: 13). The result was “huge profits with diminished quantity, quality and availability of affordable products to the public, leading to public outcry against the dominant companies” (ibid.). Presumably the

public outcry would then warrant for government intervention to regulate the industry so that it will serve the public interest as well.

Mathiason (2009: 40) looks at the need to regulate the Internet Service Provision industry from the proprietary standards point of view. According to Mathiason (ibid.) "proprietary standards for specific products have been common in the private sector". However, "the Internet has made them more controversial since they can affect how well the Internet functions" (ibid.). Mathiason (ibid.) further reiterates that "private corporations have joined standard setting bodies as a means of ensuring that their proprietary software is compatible and interoperable. However, when one corporation becomes dominant governments have been induced to regulate them". The latter statement explains the route taken by the South African government, which introduced Internet regulation because of Telkom's domination of the sector at the expense of the consumer, smaller ISPs and value-added network service operators (VANS).

Thornton, Carrim, Mtshaulana and Reyburn (2006: 18) state that "telecommunications was seen in the same light as other public utilities such as water and electricity" and that the existence of telecommunications "involves valuable natural resources, namely the radio frequency spectrum". In summary Thornton et al. (ibid.) also state the reasons for regulating telecommunications (also referred to as telecoms), including the Internet, are the following:

- (a) maintaining "control over the use of natural resources such as the frequency spectrum;
- (b) controlling anti-competitive behaviour by dominant players in the market; and
- (c) ensuring the development and implementation of effective universal service policies".

With specific reference to Internet regulation and governance, Mathiason (2009: 3) states that “the Internet began in a scientific and technical environment in which the governments were absent except as a funding resource”. However, “the borderless nature of the Internet produces particular needs for global institutions and has opened doors for innovative approaches” (Mathiason 2009: 2-3). Arguably, some of the innovative approaches are related to its regulation and governance. Achterberg (2000: 358) states that “with the development of new technologies, there has been a growing realisation that the many aspects and products of telecoms service provision are not subject to the same cost conditions”. This has stimulated reforms in many countries which have changed the structure and ownership of the sector and introduced regulation (ibid.).

Mathiason (2009: 12) further cites five communication components that can be used to analyse telecoms regulatory policies, particularly the Internet and these components are:

- (a) sender;
- (b) message;
- (c) medium;
- (d) receiver; and
- (e) feedback.

Two of these components (cf. (a) to (e) above), stand out in terms of Internet regulation and these are the medium and the message. Mathiason (2009: 15) states that “the medium or channel over which the message is sent has historically been the focus of communications regulation”. At national level, “communication channels, like frequencies or lines that passed over public lands were inherently public goods. At international level, regulation has been reflected in international standards for bandwidth, frequency allocations and exchange protocols” (ibid.).

Another area of regulation relates to the content of the message that is sent: "There has been increasing focus on the presence of and the ability to gain illegal and harmful content online" (European Information Society Group or EURIM 2004: 1). Because of the legality of content regulation especially of the Internet has been an unavoidable necessity. The political dimension of content regulation has to do with the following issues:

- (a) "long legacy of government direction or control over radio and television broadcasting;
- (b) the desire to promote and protect national cultural traditions and language; and
- (c) the correct balance between the right to free expression on one hand and the duty of the government to protect citizens, particularly children from harmful material" (Walden and Angel 2005: 411.)

While there are varying reasons for regulating the Internet internationally, different countries also have varying structures for regulating Internet Service Provision. The next section explores these reasons and structures in South Africa, Australia and China, among other countries.

4.3 GOVERNMENT MINISTRIES AND OTHER STRUCTURES THAT REGULATE INTERNET SERVICE PROVISION AND USE IN SOUTH AFRICA, AUSTRALIA, CHINA AND EUROPE

In South Africa, the telecommunications laws are set by the Ministry of Communications and administered, regulated and enforced by the industry regulator, the Independent Communications Authority of South Africa (ICASA) (Thornton et al. 2006: 101). There are institutions that are part of the telecommunications regulatory regime in South Africa. These institutions include:

- (a) the Competition Commission, which oversees the fairness of competition in all industries and
- (b) Courts of Justice which resolve disputes and legal battles within the telecoms sector.

All the institutions mentioned thus far have different levels of involvement and unequal authority in the Internet Service Provision sub-sector.

Thornton et al. (2006: 19) maintain that “the nature of telecommunications is that it is borderless. It therefore makes sense that at least some of the regulation of telecommunications should be through international law”. South Africa has some of its regulations that derive from and incorporate aspects of international laws. As “South Africa is a member of the World Trade Organisation (WTO), members of the WTO are required to establish independent regulators which will be separate from and not be accountable to any supplier of basic telecommunications services” (Thornton et al. 2006: 108). With regards to Internet regulation, Mathiason (2009: 2) maintains that “unlike most areas where global institutions have been created, where the role of government is predominant, the Internet is a field where the private sector and civil society each have a role as important or sometimes more important than governments”.

According to the European Information Society Group (EURIM 2004: 2) there are “self and co-regulatory schemes” that aid Internet regulation. For example, “one of the most successful initiatives in the area of distribution and viewing of child abuse images via the Internet has been the Internet Watch Foundation (IWF). The IWF works in partnership with government, ISPs, telecommunications companies, mobile operators, software providers and police to minimise the availability of illegal Internet content” (ibid.). Other organisations include the Internet Crime Forum which “exists to promote, maintain and enhance an effective working relationship between industry and law enforcement to tackle crime and foster confidence in the use of the Internet” (ibid.). These are the plausible initiatives existing in Europe.

At present, South Africa does not have active interest groups or organisations that stand out to form coalitions that will assist the government and the police force in curbing Internet related crimes. Instead, there has been Acts and Amendments of Acts passed, from the 1996 Telecommunications Act No. 103, (that are specifically aimed at regulating telecoms and the Internet), to the Electronic Communications Act (ECA) No. 36 of 2005, (which regulates the provision and use of the Internet). The ECA is an amended and extended version of the Electronic Communications and Transactions Act (ECTA) No 25 of 2002. In this mini-thesis, however, focus is not on South African Internet-related crimes but on Internet problems between ISPs and Internet backbone providers which arise from interconnection problems and disputes.

4.4. INTERCONNECTION ISSUES IN SOUTH AFRICA AND INTERNET SERVICE PROVIDERS' INTERCONNECTION CONTRACTUAL AGREEMENTS AND STRUCTURAL MODELS

Interconnection is addressed in Chapter V, Section IV, of the 1996 Telecommunications Act No. 103, as well as in Chapter 7 of the ECA No. 36 of

2005. According to the 1996 Telecommunications Act No. 103, “every person who provides a telecommunications service shall when requested by another such person interconnect its telecommunication system to the telecommunication system of such other person unless such request is unreasonable” (South African Telecommunications Act 1996: 33). Because “interconnection involves physical means of linking two different networks for the exchange of traffic, users on one network may communicate with users on the other” (Walden & Angel 2005: 215). Furthermore, the physical connection allows for ISPs to “engage in peering arrangements” (Lippert & Spagnolo 2008: 35). Internet backbones interconnect under two different arrangements or models, peering and transit (cf. Jensen 2005:4, Shrimali & Kumar 2008; Badasyan & Chakrabarti 2008).

Jensen (2005:4) states that “in the peering model, backbones agree to exchange traffic with each other at no cost. The backbones only exchange traffic that is destined for each other’s end users, not the end users of a third party. In a transit arrangement, one backbone pays another backbone for interconnection. In exchange for this payment, the transit supplier provides a connection to all end users on the Internet” (ibid.). Shrimali and Kumar (2008: 19) state that “peering arrangements between ISPs, in which providers agree to carry traffic originating from a peer, are common in the Internet”. “A common contractual peering agreement between smaller ISPs is “Bill-and-Keep”, where no money is exchanged between the peers. In a transit relationship, a traffic-originating provider pays a transit provider to establish connectivity with nodes outside its network”.

The “Bill-and-Keep” peering contractual agreement is also known as “Zero-Dollar” peering or “Sender-Keep-All” (SKA) peering (ibid.). Peering is often employed as an alternative to paying transit charges, especially if transit charges are on the rise. The “Bill-and-Keep” peering contractual arrangement is becoming prevalent among similar providers and from a policy perspective, it implies that there is no need to intervene and force other arrangements for

efficiency (cf. Shrimali and Kumar 2008:31). Unregulated Internet markets are found in the U.S.

Badasyan and Chakrabarti (cf. 2008:4)'s simple game-theoretic analysis of peering and transit contracting among ISPs suggests that "if traffic flows and the costs of interconnection are fairly shared, the provider's peer, otherwise they choose transit". "Providers balance benefits against the costs to determine whether to peer or transit" (ibid.: 15). The latter's simple game-theoretic analysis in peering and transit contractual arrangements among ISPs also concedes that "if one ISP incurs most of the transporting costs under the peering arrangement due to traffic imbalances, it has a valid competitive reason to refuse peering and, thus, there is no need for regulatory policies encouraging it" (ibid.: 1-2).

Additionally, Bailey (1995: 7) states that there are many models of interconnecting two users together but they fit into a few major categories, which are:

- (a) "bilateral agreements", in which "ISPs agree to interconnect for economic reasons" (transit);
- (b) "third party administrator" – which "provides interconnection between a number of hosts"; and
- (c) "cooperative agreements" – e.g., certain "governmental agencies who interconnect their Internet Protocol (IP) networks but do not act opportunistically by extracting profits if they operate an interconnection point".

One of these categories is provided by Telkom where Telkom is a third party providing interconnection between a number of hosts.

4.5. AN ANALYSIS OF INTERNET MARKET PLAYER BEHAVIOUR USING THEORIES AND A MODEL OF INTERNET SERVICE PROVISION

Because of the competitive edge amongst the industry players, business tactics and games relating to interconnection come to the fore hence the game theory introduced in Chapter 1 of this mini-thesis. In game theory, building on the fundamental results of decision, it is assumed that each player's objective is to maximise the expected value of his own payoff" (Myerson 1991: 2). However, the approaches used in maximising the payoffs are not the same. Because the "game theory is concerned with how individuals make decisions, interaction between individual decision makers all of whom are behaving purposefully and whose decisions have implications for other people, that makes strategic decisions different from other decisions" (Bierman & Fernandez 1993: 68).

In July 1996 ISPA lodged a complaint with the Competition Board claiming that Telkom was discriminating against them (ISPA members) "by compromising on the quality of the network (cf. Wilson 1999; Achterberg 2000). This is one of the interactions amongst the service providers in South Africa which can be viewed as part of game theory. The series of disputes against Telkom prompted the South African government to issue the General Notice 1259 of 2000. The issuing of this General Notice can be deemed as a normative (and positive theory, cf. Chapter 1) theory reaction on government part. As indicated in Chapter 1, the normative theory postulates that regulation ought to be introduced where there is market failure. Bailey (1995: 7) concurs when he articulates that "regulation may be likely if a third party administrator excludes some firms who wanted service". As indicated in Chapter 1:

"Requests for lines and connections were frequent met with delays or refusals. The emergent providers of Internet services were therefore

entirely dependent on a single company for all their connectivity, and therefore acutely vulnerable to delays, disputes, and denial of service. The period from 1990 is thus characterised by ongoing grumbles and complaints over the incumbent's foot-dragging over the provision of facilities, punctuated by outbreaks of active dispute and litigation" (Lewis 2005:15).

The General Notice No 1259 of 2000, approved by the Minister of Communications, Dr Ivy Matsepe-Casaburri, has Sections 8 and 9 which address non-discrimination principles with particular attention to interconnection and quality of service (QoS) of interconnection.

8.1 An Interconnection Provider must treat each:

- a. Interconnection Seeker on a basis that is non-discriminatory in its provision of interconnection and no less favourable than the treatment the Interconnection Provider affords to its subsidiaries, its affiliates, or other similarly situated telecommunication service provider seeking interconnection;*
- b. telecommunication service of an Interconnection Provider on a basis that is non-discriminatory and no less favourable than the treatment which the Interconnection Provider affords to telecommunication services of itself, its affiliates, or other similarly situated telecommunication service providers;*
- c. Customer of an Interconnection Seeker on a basis that is non-discriminatory and less favourable than the treatment which the Interconnection Provider affords to its own Customers or the Customers of its subsidiaries, its affiliates or other similarly situated telecommunication service providers.*

9. Quality of service

- 9.1. An Interconnection Agreement will contain service levels that reflect good interconnection practice and provide reasonable remedies for any failure to meet those service levels.*
- 9.2. The parties to an Interconnection Agreement will comply with all relevant standards of the International Telecommunications Union, and such other technical standards as the Authority may prescribe from time to time.*
- 9.3. In the even of the parties failing to reach an agreement with regards to the quality or level of service, the quality or level of service will be determined by the Authority. (General Notice 1259 of 2000:5).*

In South Africa, the 1996 complaint filed by ISPA to the Competition Board was followed by a "counter-complaint" from "Telkom charging that the very existence of the commercial ISPs was illegal," and "in contravention of Telkom's legally entrenched monopoly' (Lewis 2005: 12). Telkom's counter complaint further stated that "IP services were within the sphere of exclusivity guaranteed in terms of the South African Telecommunications Act of 1996 and asking the then telecoms regulator, the South African Telecommunications Regulatory Authority of South Africa (SATRA), "to amend its license accordingly" (ibid.). Such action by Telkom can be viewed in terms of "creative strategies for responding to competitive actions" (Day, Reibstein & Gunther 1997: 237). Day, Reibstein and Gunther (1997: 238-250) state five game theoretic competitive questions to ask and competitive defensive strategy decisions with which to respond and these are:

- (a) "competitive stance – whether to respond at all or give ground to the competitor;
- (b) magnitude – how aggressively to react;
- (c) speed – how fast to react; react as soon as the firm learns of competitor's move, adopt a wait and see attitude or react in anticipation of the competitor's move before it happens;
- (d) domain – choosing where to respond; respond to the competitor's market or responding in a neutral market; and
- (e) weapon – how to respond.

The exclusivity right which Telkom claimed to have had not been propagated before the ISPs lodged their complaints. As mentioned above, Telkom's counter-complaint can be viewed as creative strategies for responding to competitive actions" in terms of game theory. Telkom's reaction can also be seen as a non-cooperative game theory stance because it has tampered the smoothness of the competition process within the telecommunications sector.

4.6. SUMMARY

In this chapter the need to regulate telecommunications in South Africa was discussed, structures that regulate telecommunications in South Africa were identified, interconnection issues were looked at and the behaviour of market players was compared with game theory. Interconnection issues were discussed because they are assumed to be the source of most of the disputes in the telecommunications industry in South Africa. A brief mention of the non-governmental regulatory initiatives in European countries was also included. The next chapter discusses the methodology that was used to collect data for this study.

The following chapter looks at research methodology. At the beginning of the chapter the aims of this study, the research design, the research questions and sub-questions are restated. The chapter also looks at data capturing, population sample and also give a report on the pilot study, issues of validity and reliability as well as research ethical issues.

CHAPTER 5: RESEARCH METHODOLOGY

5.1 INTRODUCTION

In this chapter, the methodology used in this study about the economic performance of the small Johannesburg ISPs is described. Elements of the research approach encapsulate the method employed in the study, the techniques used to select the population and sample, the instrument is the method and already stated, issues of validity and reliability, data analysis techniques and ethical issues. The qualitative personal interview method was used as the data collection method and is briefly examined. The chapter then winds up by discussing issues pertaining research ethics and providing an outline of Chapter 6.

5.2 THE RESEARCH AIM AND THE RESEARCH QUESTION

5.2.1 The research aim

The aim of the study is to describe factors influencing the economic performance of small Johannesburg ISPs, as perceived by respondents who are employees of the ISPs. The questions in the interview schedule are meant to provide an avenue for the respondents' opinions regarding their firms' economic performance. The research aim, therefore, is to *investigate the economic performance of the small ISPs in the Johannesburg region from 2002-2006*, as stated in Chapter 1 of this thesis.

5.2.2 The research question

Based on the purpose of the study, the research question for the study has been formulated as follows: *What is the economic performance of the Johannesburg's small ISPs from 2002 – 2006?*

5.2.2.1 Research sub-questions

While the question of the economic performance of small sized ISPs remains unanswered, other questions that relate to the same problem arise. This study has the following sub-questions:

- What business strategies have been used by small ISPs to remain in the business?
- What impact has sector regulation had on the economic performance of the small ISPs? and
- What other factors impact on the economic performance of the small ISPs?

5.3 RESEARCH DESIGN

5.3.1. Qualitative research approach

Having mentioned the aim of the study, this sub-section explains why the study has employed the qualitative research approach. In qualitative research, "the goal of research is defined as describing and understanding rather than explaining and prediction" (Babbie & Mouton 2001:53, 270). The qualitative nature of this study, is demonstrated by inquiring about the respondents' perspective or view about the economic performance of the small Johannesburg ISPs. According to Leedy and Ormrod (1995:134) "qualitative researchers tend to ask open-ended questions (at the beginning of an investigation) because they sometimes have difficulty identifying ahead of time the exact method they will use". It is for this reason that when the

qualitative questions had been formulated, a need for quantitative questions was identified thus the quantitative approach used within the qualitative study (cf. question 15 in Addendum 2, the interview schedule).

As Babbie and Mouton (2001:272) contend "it is not surprising that the qualitative researcher has a preference of understanding events, actions and processes in the context". In understanding the events in question "qualitative researchers prefer to use categories and concepts used by actors themselves" (ibid.).

5.3.2 Population and sample

As indicated in Chapter 1 (cf. page 3 - Purpose of the study) of this study the population of the study is made of 148 ISPs from the ISPA member list. Of the 148 members which are categorised into large, medium and small players, 117 are small companies and 39 of the small companies are based in Johannesburg. As indicated in section Chapter 1.8 (cf. page 12-13) of this study multi-stage sampling procedure was adopted for this study. Multi-stage sampling procedure was adopted for the purposes of this study as such sampling procedure incorporates elements of other sampling procedures like judgemental sampling, quota sampling and random sampling.

According to Babbie (2004:201) "simple random sampling is the basic sampling method assumed in the statistical computations of social research". The single stage sample which is hereby incorporated is a "sampling procedure in which the researcher has access to names in the population and can sample the elements directly" (Creswell 2003:156, Babbie & Mouton 2001:174). Addendum 1 at the end of this study provides the names of the 39 small Johannesburg ISPs and the names written in italics are those which have been sampled for the study. The Moonstats SPSS program was loaded with the number 39 and then prompted to randomly sample 4 numbers and thus gave the sample attached at the end of this chapter, as explained in Chapter 1 of this study (cf. page 13).

5.3.3. The pilot study

To allay the scepticism and doubts regarding construct validity, a pre-test or pilot study of the two sampled ISPs for pilot study was conducted. Their responses have thus been used to test the research schedule and to see if the need for modification of questions was necessary or not and to ensure that the respondents understood the questions exactly the same way. Babbie (1990:222) contends that "the selection of subjects for instrument pre-tests can be profitably flexible and varied" thus the idea of using only two respondents. As indicated in Chapter 1 of this study, both the sample and pilot study respondents had to be kept to a minimal due to time constraints and financial constraints of this study (cf. page 12).

The main objective of the pre-test study was to measure the time it would take to conduct the interviews and to ensure that there is no ambiguity in the interview questions. According to Babbie (1990:221) the "pre-test represents initial tests of one or more aspects of research design". Pre-test can be for the sample design, the research instrument, data collection, data processing or analysis. The pre-test conducted for this study was that of data collection. The two small ISPs piloted were regarded as a pre-test sample which would determine how the researcher would handle the interviewees and improve one's interviewing skills when conducting the actual field research interviews

The two companies (BSC Net & Interactive Systems Design - ISD) that had been selected for the pilot study were visited on 29 and 30 December 2008 respectively. BSC Net and ISD were asked questions as they appear on the interview schedule. During the pilot study it was noted that ISPs do not provide Internet connectivity only but also provide technical support for computers and other Internet based applications as well provide Internet based services such as payroll for employees and Internet desk service. The respondent from BSC Net kept on articulating that his company is not an ISP but a CSP. The researcher then inquired what the meaning of the acronym is

and was informed that it represents "Converged Services Provider". The respondent further stated that because his company provides other telecommunications services that are Internet based, it is therefore not an ISP. From that point the acronym ISP in the interview schedule was then replaced by the words 'company' (to refer to an organisation) and 'business' (to refer to the activities of the company).

It was further noted that respondents from Internet companies did not answer the question on economic performance with precision that the researcher expected. Respondents did not state the economic performance according to years mentioned, but gave an overall impression throughout the five year curve in question. The researcher then made an effort to ensure that the information obtained from the sample is detailed. This was achieved by the researcher asking the respondents to precisely mention the economic performance in each year.

5.3.4. The research method

The study employed the personal interview that the researcher conducted face-to-face with the respondents. The interview questions were specifically designed for this study and not adopted from any previous study or used before. Creswell (2003:157) advises that the "instrument used to collect data in the research study" should be "named". Further discussion should also indicate "whether it is an instrument designed for" the particular "research, modified instrument or an intact instrument developed by someone else". The personal interview questions employed in this study were therefore used after careful consideration of the research problem.

In this sub-section of the chapter, a brief discussion of interviews is presented with particular attention to the advantages and disadvantages of the face-to-face interviews used in this study.

Babbie and Mouton (2001:289) regard a qualitative interview as “an interaction between an interviewer and a respondent in which the interviewer has a general plan of inquiry”. However a general plan has unavoidable situations where an interviewer will have follow up questions that are meant to clear out answers of the respondent or to check whether the respondent was precisely understood.

Taylor and Bogdan (1984:77) argue that structured interviews could also be qualitative in nature. Taylor and Bogdan (ibid.) argue that “in most structured interviewing each person is asked identically worded questions to assure comparable findings. The interviewer serves as a data collector, getting people to answer the predefined series of questions”. It was the intention of this study therefore to use the same format of questions for every respondent so as to ensure comparability of findings.

Babbie and Mouton (2001:263) also warn against the disadvantage of employing standardised questions. According to Babbie and Mouton (ibid.) “designing questions that will be at least minimally appropriate to all respondents” may miss “what is important to many respondents”. Not only may important aspects be missed, but “as a form of conversation, interviews are subject to the same fabrications, deceptions, exaggerations and distortions that characterise talk between any persons” (Taylor & Bogdan 1984:81). These negative characteristics of interviews are possible in this study and where noted, such responses were clarified by using follow-up questions to eliminate ambiguous and contradictory answers. .

5.3.5. Data capturing

Like other data gathering methods, interviews also have rules on how data should be collected and the manner in which the interviewer has to conduct himself or herself. In observation studies the research subjects should not be made aware that they are being observed” (Weisberg, Krosnick & Bowen

1996:105). However in interviews while subjects are made aware of the research intentions, "the success of an interview is in the hands of the interviewer" (ibid.) as "interviews are so sensitive to how the interviewer handles the interpersonal relation involved" (Weisberg, Krosnick & Bowen 1996:125).

According to Weisberg, Krosnick and Bowen (1996:122) "response rates are best for face-to-face interviews". Not that other data- collection methods are not good, however as Weisberg, Krosnick and Bowen (ibid.) argue that, "it is easier to hang up on a telephonic interview than to ask one sitting in your living room to leave". Furthermore "face-to-face interviews allow for longer interviews".

The interview schedule used in this study has three sections. The first section inquires about demographics thus establishing amongst other things the duration of business of the company, the position of the respondent within the company. The second section of the interview schedule inquires about the business strategies that ISPs adopt to keep afloat. This section also inquires about the numeric description of economic performance of each ISP during the five year curve in question. The third section then seeks to obtain an understanding or rationale that each company attaches to each performance within the context of the South African telecommunications regulation.

5.3.6. Contacting the ISPs

The sampled ISPs were first sent an email in October 2008 where in they were being requested to participate in the study (see addendum 3). There was no response to the email then a telephonic follow up was made in early December 2008. During the telephone call it was categorically mentioned that a person occupying a management position was required to take part in the interview. Although the ISPs agreed to participate, interviews for data collection could only take place after Christmas as most companies closed for

the festive season on 12 December 2008. Because of the closure during the festive season, some ISPs had to be visited well after new years' day.

5.3.7. The interviews

In the first interview "the parties usually meet each other as strangers", therefore "researchers must do whatever they can to put the participant at ease" (Lindlof & Taylor 2002:188). To ease the participants and build rapport, the researcher provided proof that he was a registered student at UNISA and proof of identification that indeed he was the person he claimed to be. As Lindlof and Taylor (2002:189) contend, "[r]apport begins with the researcher's clarity of purpose. Participants should be given clear, honest reasons for why they have been contacted, what the project goals are and how the interview will be conducted". The principles contended by Lindlof and Taylor (ibid.) were precisely followed during the telephone conversation as well as in the start of each interview.

The interviews lasted between thirty and forty-five minutes. In one interview, the interviewee got more relaxed and spoke well out of the topic to include even the issues of current political climate in the country, thus the interview lasted for almost an hour. One interviewee was initially unfriendly however as the interview progressed, he became more relaxed and was also impressed by the fact that some of his views were confirmed by the citations from academic literature echoed by the researcher.

It was noted that all the interviewees were white males and holding decisive positions in the sampled companies. Because of positions held by interviewees some interviews were interrupted by incoming business telephone calls or by some junior staff requesting an urgent managerial decision on an urgent business issue, however such interruptions were of very short and insignificant durations.

5.4. DATA ANALYSIS

Data analysis takes many forms in qualitative research. According to Babbie and Mouton (2001:429) "there is no one neat and tidy approach to qualitative data analysis nor even one approach to each specific type of qualitative data analysis". Taylor and Bogdan (1984:129) point out that "all researchers develop their own ways of analysing qualitative data". For Taylor and Bogdan (1984:130) "data analysis entails certain distinct phases. The first is an on going discovery phase of identifying themes and developing concepts and propositions".

That said, this study did not have preconceived themes and concepts but developed them from the responses obtained from the respondents and then followed a data analysis guide from Nueman (2006:460). This study employed the following data analysis procedure(s):

- Organised the data by arranging it into themes or categories;
- Provided meaning to each theme by labeling each theme with a specific term or terms; and
- Described the meanings of each terms to obtain a general sense of the overall meaning of the themes or categories arranged from respondent answers.

Because of the nature of this study, data analysis "may eliminate some theoretical explanations from consideration while increasing the plausibility of others" if "only a few explanations" are consistent with a pattern in the data" (Neuman 2000:419). Neuman (2000:420) further argues that "a researcher organizes raw data into conceptual categories and creates themes or concepts which" are then "used to analyze data". This is exact procedure followed in this study to analyse collected data.

5.5. RELIABILITY AND VALIDITY

According to Neuman (2000:167) “validity is an overused term” thus there are different meanings and understanding about the term. “Sometimes it is used to mean true or correct (Neuman 2000:167). Babbie and Mouton (2001:123) state that the “conventional usage” of “the term validity refers to an extent to which an empirical measure adequately reflects the real meaning of the concept under consideration”. In the many forms in which validity as a term is used in social research, three meanings are considered for this study, namely face validity, content and construct validity (Neuman 2000:167, Babbie & Mouton 2001:123, Weisberg, Krosnick & Bowen 1996:95).

Weisberg, Krosnick and Bowen (1996:94) point out that “good questions must be valid, meaning that they should measure the concept they are intended to measure”. According to Babbie and Mouton (2001:122) “all of social life, including research, operates on agreements about the terms we use and the concepts they represent” thus it is possible that “a question may actually measure a related concept rather than the one the researcher wants to measure” (Weisberg, Krosnick & Bowen 1996:94). This approach of validity is referred to as face validity.

Face validity or measurement validity focuses “on how well the conceptual and operational definitions mesh with each other” (Neuman 2000:167). Face validity in this case was determined by the responses provided by respondents. If respondents tend to drive away from the concept being measured, which is the economic performance of the ISPs, then the face validity of the questions is low.

Different prefix attachments to the term validity enable it to acquire changing and altering meanings. Content validity is another angle at which the term is approached. “Content validity refers to how much a measure covers the range

of meanings included within the concept" (Babbie & Mouton 2001:123) or "the degree to which questions measure all the important aspects of the concept" (Weisberg, Krosnick & Bowen 1996:95). Neuman (2000:168) points out that content validity "addresses the question: "is the full content of a definition represented in a measure?" The definition of economic performance, as stated in Chapter 2 of this thesis, views economic performance as the ability of a business entity to make profit at any given time. Strategies of ensuring profits are important in understanding how a particular business achieved its profits. This study's content validity is high as it assessed small ISP profits.

This study is also valid regarding the third type of validity, namely construct validity. "Construct validity is based on the logical relationships among variables" (Babbie & Mouton 2001:123). Construct validity addresses the question: "If the measure is valid, do the various indicators operate in a consistent manner?" (Neuman 2000:170). In this study construct validity was achieved because during the interviews, the small ISP economic performance was measured by using the correct constructs generally employed to measure economic performance, e.g. annual profit, number of employees per year and increase in employee numbers between 2002 and 2006, and business activities the ISP engages in and how these activities generate profit for the business.

5.6. ETHICAL ISSUES

Professional practices follow a certain code of conduct. Some of the professional codes are referred to as professional etiquette. In social research too, there are codes of ethics that need to be adhered to. According to Babbie and Mouton (2001:520) research ethics concerns or is "associated with morality as both deals with matters of right and wrong". Much as it is "the right of the scientist or researcher to search for the truth but" such a search

cannot be done "at the expense of the rights of other individuals in society" (ibid.). (in the context of this study the "other individuals" stated above are the respondents or interviewees from the small ISPs).

Bless and Achola (1990:83-84) argue that "an interviewer might want information of a private nature or at least uncomfortable to participants. Participation in research must be voluntary, and people can refuse to divulge certain information about themselves". In this study such ethical practice was observed in that respondents were not further probed about information which they were uncomfortable with. Bless and Achola (1990:84) further state that where the researcher seems to be encroaching to the privacy of the subjects, which the subjects are uncomfortable divulging, "direct consent for participation must be obtained from adults and in the case of children from their parents. Moreover this consent must be informed in the sense that the participants must be aware of the positive or negative aspects or consequences of participation". During this study respondents were informed both in the letter and verbally that they were welcomed to withhold the information which they wished not to divulge and that the information they provided will be for academic use and academic publication where necessary. Furthermore the interviewer guaranteed that their anonymity will be ensured for any information which they divulged but wished to remain anonymous about.

Additionally, sampled participants were sent an e-mail first, requesting their participation in the research, explaining the objective of the study and also citing confidentiality or protection of their identity if they so wished. This was undertaken because Babbie (1990:341) argues that interviews "often force respondents to face aspects of themselves that they do not normally consider". The unraveling of past experiences "could be the source of a continuing personal agony for the respondents" (ibid.). The personal agony referred to in this instance could translate to poor economic performance that the respondents might not be happy to reflect upon or competitive relations

with other players within the sector which they might not want to be made public.

5.7 SUMMARY AND OUTLINE OF CHAPTER 6

At the beginning this chapter re-stated the aim of this study and the research questions. Further discussion explained the research approach employed in the inquiry method, namely the qualitative approach as well as the sample and population. This chapter has also discussed the research instrument, the personal interviews, data analysis technique and ethical issues this study considered during the field research as well as issues of validity and reliability. Chapter 6 provides the analysed data according to a specific data analysis guideline, the themes or categories into which data is grouped, conclusions and recommendations about future studies.

CHAPTER 6: DATA ANALYSIS AND CONCLUSIONS

6.1. INTRODUCTION

The purpose of this chapter is to report on the interviews conducted with small ISPs' senior management staff (cf. table 7 page 95). The chapter begins by reporting about the pilot study then moves to state how interviews were organised and administered, their duration and who the interviewees were. The chapter also provides the ISP manager responses to all the other questions in the interview schedule. The data are presented both in writing and table format.

6.2. DATA PRESENTATION

The analysis of results follows the guidelines by Neuman (2006:460). According to Neuman (ibid.) "qualitative researchers analyse data by organising it into categories on the basis of themes, concepts, or similar features". Indeed "the first systematic effort at data analysis usually comes with the creation of categories and a coding scheme. Categorisation and coding are essential to making sense of qualitative data" (Lindlof & Taylor 2002:214).

In qualitative data analysis "the categories we use are organising tools which allow us to sort out the heap of bit according to relevant characteristics" (Dey 1993:40). The characteristics referred to also allow for the data to be viewed from different stand points thus expanding meaning which would have been limited as it would have not been unpacked. "Without classifying the data we have no way of knowing what it is that we are analysing nor can we make meaningful comparison between bits of data" (Dey 1993:40). "Coding data had a different meaning and role in qualitative research. Instead of a clerical data management task, qualitative coding is an integral part of data analysis

guided by the research question and leads to new questions” (Neuman 2006:460). That said; the analysis of this study will not only look at the questions in the interview guide, but will also explore if the questions presented in section 1.4.1 of this study have been resolved.

In analysing data the following themes were identified:

- a) Economic performance
- b) Business strategy
- c) Regulation
- d) Telecommunications costs
- e) Interconnection issues
- f) Competition

6.2.1. Economic performance

The study revealed that the economic performance of the small Johannesburg ISPs has not been bad over specified the years. Except for one ISP in the sample (Xnet Computers) other ISPs (i.e. Business Connexion and Arm-It) have not had a deficit in their economic performance; i.e. they all have had profits. Two ISPs (i.e. Business Connexions and Neology) could not account for the performance in 2002-2005 respectively. Representative of Respondent 2 (Business Connections) could not account for the economic performance of the years 2002, 2003 and 2004 because he joined the company in 2005. Records for the unaccounted years were unavailable due to the alleged financial misappropriation which according to the respondent was still under investigation.

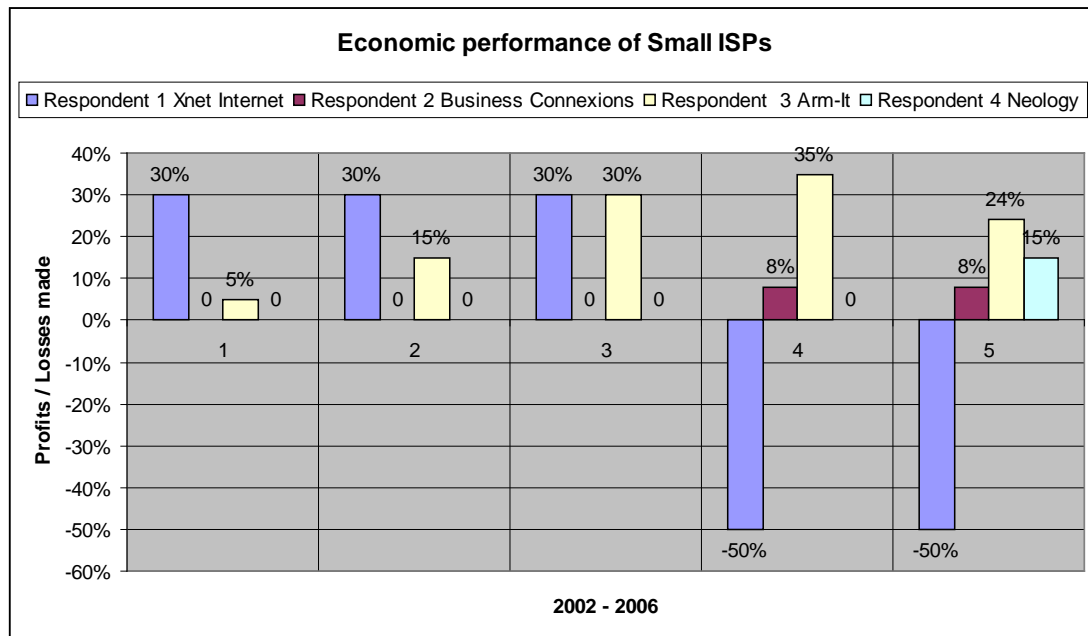
Representative of Respondent 4 (Neology) did not have records for years 2002, 2003, 2004 and 2005 as the company existed in name only during that time and only started operating in 2006. The representatives of the other two studied companies provided economic information of their companies for all the years in question and this information is stated in Table 1.

Table 1: Economic performance of small ISPs

Period/year	Respondent 1 Xnet Internet	Respondent 2 Business Connexions	Respondent 3 Arm-It	Respondent 4 Neology
2002	30%	0	5%	0
2003	30%	0	15%	0
2004	30%	0	30%	0
2005	-50%	8%	35%	0
2006	-50%	8%	24%	15%

In Table 1 one ISP (Xnet Internet Computers) experienced negative economic performance during 2005 and 2006. Such performance is represented in negative figures in Table 1 and depicted with the downward bar on X-Axis of the graphical presentation below. According to the representative of Respondent 1 (Xnet Internet) the negative economic performance was a direct result of the telecommunications regulations (i.e. ECA of 2005) which required that companies should also employ members of the Historically Disadvantaged Communities. According to the representative the members of the Historically Disadvantaged Communities which were employed by his company were incompetent and had tendencies (such as switching their phones off and be unavailable for customers) which created huge customer dissatisfaction that resulted in the business plunging down economically.

Graphic presentation 1: Economic Performance



6.2.2. Business Strategy

The study revealed that the ISPs adopt different business strategies in order to remain in business. Each of the ISPs interviewed seem to have identified a niche within the market to develop its own business strategy. From the different business strategies (i.e. providing a one stop shop, leveraging technical skills, developing products specific to company and reducing operating costs) it can be concluded that each ISP saw a particular need amongst its customers and provided an ISP service to meet that particular need thus making its unique business strategy. Table 2 tabulates the different business strategies as cited by the studied ISPs.

Table 2: Business Strategy

Respondent or ISP Name	Business Strategy
Arm-it	We provide a one-stop shop. When customers have technical problems big businesses confuse people and leave them without any further option. Such situations of confusion work to our favour
Neology	Leveraging technical skills to have technical advantage. The lack of skills in other companies and ability to think outside the box. Other companies do not allow junior staff to take decisions only management takes decisions.
Xnet Internet	We develop products specific to our company such as firewalls and network accelerator
Business Connection	New mass drive is to reduce operating costs, do public and government contracts and add value to existing customers. The economic downturn is to our benefit as it makes outsourced services cheaper.

6.2.3. Telecommunications regulation in South Africa

All the respondents from the studied small ISPs echoed the same sentiment with regards to telecommunications regulation in South Africa. The respondents viewed South African telecommunications regulation as within a continuum of being haphazard and also restrictive. The responses provided implied that the manner in which telecommunication is regulated in South Africa impacts negatively on the economic performance of small ISPs in general. Question 22 on the interview guide inquired about the impact of South African telecommunications regulation on the economic performance of each ISP and the respective responses to this question are tabulated in Table 3.

Table 3: Telecommunications Regulation

ISP Name	Responses regarding telecommunications regulation in South Africa
Arm – it	Very prohibitive and restrictive on smaller providers. If there is a bigger pool of providers, that will mean there is better competition.
Xnet Internet	It is disastrous because of the Minister’s heavy handedness and unilateral decisions from ICASA. It is further complicated by the attempted compliance with BEE
Business Connexion	We can’t rely on regulation as it changes often and becomes very costly turmoil in the industry. I am not happy with either ICASA or the Ministry
Neology	Regulation is a huge limitation. The market is controlled by five legally licensed big operators. The big boys are holding on resources they have and are only opening those resources to their advantage and under controlled circumstances

6.2.4. Telecommunications Costs

With regards to the cost of telecommunications the respondents did not reiterate positive responses. Telecommunications costs do not only have to do with the price paid for making a call but include service installation, rental fees, cost per call and the price for the customer premises equipment. The responses that were given were not for a particular aspect of telecommunications but inclusive of all the costs involved in having a continuous service to operate the business as the ISPs need to have. The responses also indicate that the nature of business that ISPs have is reliant on the cost of telecommunications. Even their own price structure is formulated on the price that they themselves have to pay in order to be able to provide a service, i.e. the price they charge has to include the charge that each ISP will pay for connecting the customer to the South African Internet Exchange. Table 4 provides the responses obtained regarding the cost of telecommunications in South Africa. The following page also has Table 5 provides responses about interconnection and Table 6 states respondent

views on competition issues which appear to have impact on the economic performance of the ISPs.

Table 4: Cost of Telecommunications in South Africa

Has the cost of telecommunications services in South Africa affected your business in any way? Please explain	
Company Name	Respondent answer on costs of telecommunications
Xnet Internet	Yes, Negatively. It is extremely high, the provider is competing on the same level as you thus profit margins are small
Neology	Negatively because it costs a fortune. Telecommunications is about 10-15% of operational costs
Arm-it	It is one of those necessary evils. We can't do without it as it makes business
Business Connections	I think Neotel has been the saving grace in terms of bringing prices down

Table 5: Interconnection issues

How does your company's relationship with other service providers affect the operations of your business	
Company Name	Respondent answer on costs of telecommunications
Xnet Internet	Cellular providers are reluctant to provide down stream services
Business Connections	Amount of money spent on interconnecting companies gives first class services because connecting companies are competing for business.
Arm-it	There are blocks that frustrate but we work around them. The big guys lock the small guys out there. Negatively – by lack of peering arrangements and rejection of traffic from non affiliates on the amount of traffic, e.g. 10 megabytes. Everybody is trying to protect his business. I don't accept 10 megabytes but I wont relay either
Neology	Smaller businesses tend to be specialists thus there is a lot of collaboration – large business tends to lower the business standards

Table 6: Approach to competition

How does your company deal with competition in the industry	
Company Name	Respondent answer on costs of telecommunications
Xnet Internet	We have a niche market and do not worry much about opposition
Business Solutions	Our approach to competition is to innovate, making better and faster as well as consolidating services.
Arm-it	We do not care about competition. We enhance our service levels and provide solutions to our clients
Neology	Competition is always there. We don't only have a set of products but also deliver solutions. When you have the ability to deliver?

6.2.5. Interconnection issues

This study reveals that the issues discussed in Chapter 4 (cf. pages 55 to 57) regarding interconnection issues are a reality. Respondents indicated that connectivity with bigger firms, especially cellular providers is not easy as these providers are reluctant to provide downstream services. The small ISPs also mentioned that interconnection issues affect them negatively because of lack of peering arrangements and some other ISPs rejecting traffic from non affiliates if such traffic is bigger than 10 megabytes. The only reason obtained regarding rejection of traffic is that some ISPs are of the idea that big traffic compromise their servers and therefore put blocks so that such traffic is not relayed but rather rerouted.

6.2.6 Competition

Respondents expressed different views about competition; however none of the views seems to object the presence of competition. Responses towards competition appear to be a thought provoking stimulus. Ideas that come give perceptions that range from providing better and faster consolidated services, to finding a niche market and enhancing service levels and providing solutions to clients. This study shows that the Johannesburg small ISPs are not worried about competition and therefore do not necessarily view competitors as

enemies. When the researcher further probed each respondent about what they think should be done to enhance competition, the respondents said that an advanced level of competition in the Internet industry was possible. However the feasibility of the imagined advanced level of competition is reliant on the removal of current constraining and unfavourable regulation.

6.3. CONCLUSIONS

The study shows that the regulation of the telecommunications sector is a source of each ISPs complaint. The ISPs voiced unhappiness about the Minister of Communications, Dr. Matsepe – Casaburri’s “heavy handed regulation” and also viewed the regulator, ICASA to be incompetent. Criticism levelled against ICASA included among other things the allocation of spectrum and spectrum licenses. Respondents also mentioned that the manner in which the sector is regulated is confusing. Besides the confusion voiced about the sector regulation, other sectors of government departments seem to have a hand in the operations of the ISPs such as the Department of Trade and Industry (DTI) and the Department of Labour (DoL). According to the respondents, the DTI has predictable regulation on how companies should be run. The DoL also has stable and understandable regulation regarding the treatment of employees. However they regarded the Department of Communications as “haphazard and constantly changing to the detriment of the small ISPs”.

The results of this study concur the speculation in chapter 1 (cf. page 3) that telecommunications regulation has affected some of the small ISPs in a negative way. Twenty five percent of the studied ISPs have experienced negative economic performance which according to the respondents was a direct cause of regulation, particularly regulation that ordered small ISPs to include members of the Historically Disadvantaged Individuals (HDI) in their staff establishment. To counteract the negative economic performance, one

ISP decided to ignore the conditions in the regulation and not to consider the HDI in their staff establishment any longer.

While observing the ethical issues discussed in Chapter 5 (cf. page 66) where in further probing of the respondent about the subject which the respondent was not comfortable about, the researcher noticed two outstanding issues regarding the stance taken by the company which had experienced negative economic performance. These issues are skills development and unfair dismissal. Doing away with employees which were perceived to have brought the company down can be regarded as a labour issue amounting to an unfair dismissal.

Furthermore it could not be deciphered whether the company had taken an initiative to develop the critical skills which the dismissed employees were lacking, i.e. customer service skills. If the dismissed employees were employed because of the qualifications they had which could be a diploma or degree in electronics or, it can be assumed that hard sciences like physics and botany as well as technical studies such as electronics do not empower the learners with human interaction skill which are found in the soft sciences like communication, psychology or sociology. Based on this assumption, it can therefore be further assumed that the dismissed employees lacked the critical skill which could have enabled them to manage the customers in a more appealing manner thus yielding positively in the economic performance of the company.

The research aim was to find out what business strategy or strategies small ISPs adopt to earn more profit or remain in business. It has been discovered through the field research that different ISPs adopt different and unique business strategies. Such strategies are not just unique but are structured in a manner that each ISP perceives itself in the Internet service provision market.

The decision made by small ISPs to join ISPA and to develop performance strategies was because of the unaccommodating circumstances in the regulatory environment. According to the ISPs, the inconsistency and unpredictable manner in which regulation has been, has prompted the ISPs in general to be vigilant by consolidating their efforts against opposition through ISPA as their voice. This study has confirmed Ferguson's (2003:3) statement regarding the game theory as alluded to in chapter 1 of this study (cf. page 6 to 7):

"games are characterised by a number of players or decision makers who interact, possibly threaten each other and form coalitions, take actions under uncertain conditions and finally receive some benefit or reward or possibly some punishment or monetary loss"

6.4. VALIDITY AND RELIABILITY

In most cases critics of the research study always evaluate or assess the reliability and validity issues around that particular study. According to Lindlof and Taylor (2002:238):

"The question of reliability has to do with the consistency of observations: whether a research instrument yields the same results every time it is applied. If it does yield the same results time after time then it can be said that the instrument is dependable for the purpose at hand".

The instrument used in this study was applied to four different respondents at different times and each time it was employed not only did it yield the responses that were probed but the understanding in the instrument was perceived in the same manner by the respondents. "Reliability is a concern in social research because a result found to be unreliable cannot be assumed to be valid" (ibid.). Therefore as Neuman ((2006:197) argues: "Validity and reliability are usually complementary concepts".

"The question of validity has to do with the truth value of observations: whether a research instrument is accurately reporting the nature of the object of study and variations in its behaviour" (Lindlof & Taylor 2002:239). The contention by Lindlof and Taylor (ibid.) is true particularly in qualitative research because "[q]ualitative researchers are less concerned with matching an abstract construct to empirical data" but are "more concerned with giving a candid portrayal of social life that is true to the experiences of people being studied" (Neuman 2006:196). In terms of face validity of this study, the instrument used measured the exact constructs it was designed to measure in the manner defined at the beginning of the study.

6.5. RECOMMENDATIONS OF THE STUDY

Like all other studies this study has identified areas that need investigation to bring deeper understanding about them. As this study was done at a relatively small scale, it is recommended that it could be repeated at a bigger scale. Other recommendations and questions that could be addressed are:

- a) Which business strategy yield best results in situations of uncertain regulation?
- b) Under what circumstances would the chosen business strategy become inadequate or obsolete?
- c) A comparative study of economic performance of ISPs between the different regions of the country.

Further studies can also investigate the skills development initiative that the communication companies embark on in an effort to retain their employees and also to perform well within the communication industry.

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