An External Industry Analysis of the Telecommunications Market in South Africa

By

WARREN F. MOORGAS

(Student Number: 202522806)

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University of Natal (Durban)
Graduate School of Business, Faculty of Management

Supervisor: Professor Elza Thomson

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DECLARATION

STATEMENT 1

CONFIDENTIALITY CLAUSE

Due to the strategic importance of this research it would be appreciated if the contents of this dissertation remain confidential and not be circulated for a period of five years.

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STATEMENT 2

This work has not been previously accepted for any degree and is not being currently submitted in candidature for any degree.

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This dissertation is being submitted in partial fulfilment of the requirements for the degree of Masters in Business Administration.

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STATEMENT 4

The dissertation is the result of my own independent work / investigation, except where otherwise stated.

Other sources are acknowledged by giving explicit references. A bibliography is appended.

Signed .....

Date.....15/09/03.....

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To my Darling wife, Claudene. You are a true friend and supporter. I take pride in being your husband and I hope we continue to be each other's best friend in the future. I would like to express my gratitude and thanks for your support and the many sacrifices made during my term of study and research. I want you to remember that I could not have come this far without you. You are my source of inspiration and strength.

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ABSTRACT

This dissertation assesses the external environment of the Telecommunications market in South Africa. It accomplishes this goal by explaining the political economy, market structure, key driving forces and conducting an Industry analysis. The study considers the literature on regulation and liberalisation, convergence and the various techniques of industry and competitive analysis. A case study on the historic and current Telecommunications environment is presented.

The analytical framework developed for this study adopted from Naidoo (2002), consists of five components: the external environment, remote environment, industry environment, operating environment, key driving forces and an industry and competitive analysis. It also includes a background overview and recommendations.

Data for the study was largely collected using publications and journals, which have been published in electronic format on various Internet hosted databases including: verbatim submissions to the White Paper on telecoms policy (Government Gazette no. 16995 Notice No 291 of 13 March 1996), submissions on the licensing of the Second Network Operator, participant-observation, government documents, statistical databases, published literature and unpublished papers.

The perspective of the study is to learn and apply the knowledge elsewhere. The main purpose of this study is to describe the industry for the various Telecommunications operators (fixed, cellular and VANS) in the South African market and to conduct a strategic analysis. Another objective is to provide the researcher with further knowledge of this particular industry and to ascertain from a business environment viewpoint whether to invest in the telecommunication sector in South Africa.

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Chapter 1

INTRODUCTION

1.1 Introduction

Telecommunications plays a pivotal role in a country's economy and is a major enabler of economic growth. This is now more evident than ever with the emergence of the global economy and the struggle of developing countries to make inroads into the economic world of the developed or first world economies. The advancement of Telecommunications in South Africa has additional benefits in that it can also allow people previously denied access to the mainstream economy and so unlocking the potential of the country and its people.

Telecommunications includes a broad range of technologies incorporating telephone and cable networks, data communications, wireless communications systems, satellite, optical fibre, and Internet technologies. The cellular industry, wireless communication systems, electronic commerce, and the Internet have served as a catalyst for the worldwide demand for Telecommunications products and services, which is currently valued at more than $1 trillion per year (Institute of Telecommunications; 2000).

The Telecommunications industry incorporates the provision of two-way, one-to-one communications of voice, data and video. It is distinct from the broadcasting market, which is typically a one-way, one-to-many communication service. However, convergence means that infrastructure developed for either market can be adapted to provide the other service. The scope of this study will be the fixed line and cellular/mobile industries. However the value added network services (VANS) industry is an important one and cannot be completely ignored. Sufficient comment will be made on the VAN's. However, no distinction will be made to the different types of transmission, that is, voice, data or image.

1.2 Background

The South African Telecommunications sector has recently been the subject of renewed interest as it commences its second phase of liberalisation and opens up its fixed line

market to competition. With democracy in place in 1994, the challenge of economic and social development created by the ravages of apartheid, required detailed government policy in every sector. Telecommunications was no exception (Cohen; 2002). In 2001, the government began to articulate its plan for the future of Telecommunications policy, and with it the end of an era. Its vision continues to assume a positive association between Telecommunications infrastructure and economic growth and suggests that policy is tailored to achieve that end (Eggleston *et al*; 2002). It also continues to draw on ideas of distributive justice but has publicly begun to shift from universal service objectives to stressing the importance of foreign investment and of maximizing revenue from the restructuring of state assets.

1.3 Motivation for study

According to Cohen (2002), the South African Telecommunications sector is a lucrative market at the ascent of its potential. Telecommunications (services and equipment) account for 4 per cent of total GDP (which itself has grown almost 50 per cent since 1994), which translates into South Africa spending more on Telecommunications than most developed European nations.

The South African Telecommunications sector is about to embark on a highly challenging period as it begins to open its fixed line market to competition. With the current downturn in the global Telecommunications market, it faces many challenges. The country's social and economic development agenda is as pressing as ever, necessitating creative solutions for service delivery - and requiring foreign investor interest and capital. Whether its current vision to affect this is sufficient will depend on many factors, but foreign and domestic investment is unlikely to flow if regulatory design matters are left un-addressed.

This dissertation is completed on the understanding that it will add to the body of knowledge of organisations and potential Telecommunications companies that would require industry information to consider entry into South Africa. Furthermore, research of this nature could be used to influence regulators in terms of policy decisions for the

Telecommunications industry as each country needs policies that will help prevent the gap of the "digital divide" between those who have and do not have access to basic Telecommunications services.

1.4 Value of Study

The perspective of the study is to learn and apply the knowledge elsewhere. The study is not mainly focused on applying the results on the studied matter but rather focused on migrating the results and applying the knowledge to another market. As stated previously, the South African Telecommunications market is very lucrative especially with the second round of liberalisation on the horizon. This study will allude to whether it is feasible, from a business environment viewpoint to invest in the Telecommunications sector in South Africa. The perceived shortcomings in the current government policy are also highlighted.

1.5 Objectives

The main purpose of this study is to describe the industry for the various Telecommunications operators (fixed, cellular and VANS) in the South African market and to conduct a strategic analysis. Another objective is to provide the researcher with further knowledge of this particular industry. Due to the fact that the Telecommunications industry is very dynamic, and the usefulness of previous studies can be dated, it therefore became necessary to conduct a detailed overview study of this environment. This study is intended to have a useful time scale of approximately 24 to 30 months after completion.

1.6 Research Methodology

There have been many studies conducted by Academic Institutions, Business Organisations, Aid Organisations and other interested parties. Unfortunately these studies require large financial and human resources, and numerous other logistical obstacles are encountered. In keeping with the methodology used by Naidoo (2001), a decision was then taken to use these sources of data and not conduct a primary research study. This dissertation then utilises the many research papers conducted by others as a source of

secondary data. The generally accepted shortcomings of the use of secondary research have been noted, however it was evaluated and found to have very little negative impact on this particular study. The framework for the literature review (Naidoo; 2001) was conducted, using the theory of authors that have been accepted by students and academics as being accurate. The data for this research was largely collected using publications and journals, which have been published in an electronic format on various Internet hosted databases.

1.7 Limitations

Telecommunications includes a broad range of technologies incorporating telephone and cable networks, data communications, wireless communications systems, satellite, optical fibre, broadcasting and Internet technologies. The scope of this study is confined to the fixed line, wireless (cellular/mobile) industries and a brief comment on the VANS. It was decided that the research would become too broad and hence loose its depth if all aspects of the Telecommunications environment were to be incorporated. It is noted that convergence means that there is a strong overlap between all industries in the Telecommunications environment. However this overlap is the most prevalent in the above three industries.

The study is limited to a strategic analysis. From a company investment viewpoint it is assumed that the firm's corporate strategic decision is to expand into new markets. Other considerations for investment, which are not covered by this dissertation, are the financial and economic aspects like return on investment and similar issues. The risk of the investment is also not discussed. It is based on the generally accepted principle that the first precondition for an investment in the Telecommunications industry in South Africa is that the business environment must first be conducive for market entry, thereafter when this condition is satisfied, the aspect of financial feasibility must be considered. The last, but also equally important, issue of risk needs to be then evaluated. This dissertation does not however, analyse the environment exclusively in isolation. However, it has recognised that there are certain overlaps between the financial feasibility, risk and business environment factors. Where these have been identified it was discussed

appropriately. It was once again decided that the research would become too broad and hence loose its depth if all aspects of the external investment environment were to be studied. Market research pertaining to the consumer's spending power and potential size and value of the Telecommunications market has been specifically excluded from this study.

The study completes a single aspect of the entire strategy decision process namely the external environment. A strategy could therefore be formulated using the study of the external environment in conjunction with the other various aspects of strategy formulation. This study provides only a partial process of the entire strategy development of an organisation, that is, it is restricted to analyse only certain aspects of the external environment and not the company's own internal situation.

1.8 Structure

The structure for this dissertation is based on the dissertation framework ***figure 1.1*** proposed by Naidoo (2001) in his analysis of the East African region, that is, it takes the structure of the external analysis model. The purpose of situation analysis is to determine the features in a company's internal and external environment that will most directly affect its strategic options and opportunities, (Strickland & Thompson; 2003). The effort concentrates on generating solid answers to a well-defined set of strategic questions, then using these answers first to form an understandable picture of the company's strategic situation, and second to identify what its realistic strategic options are.

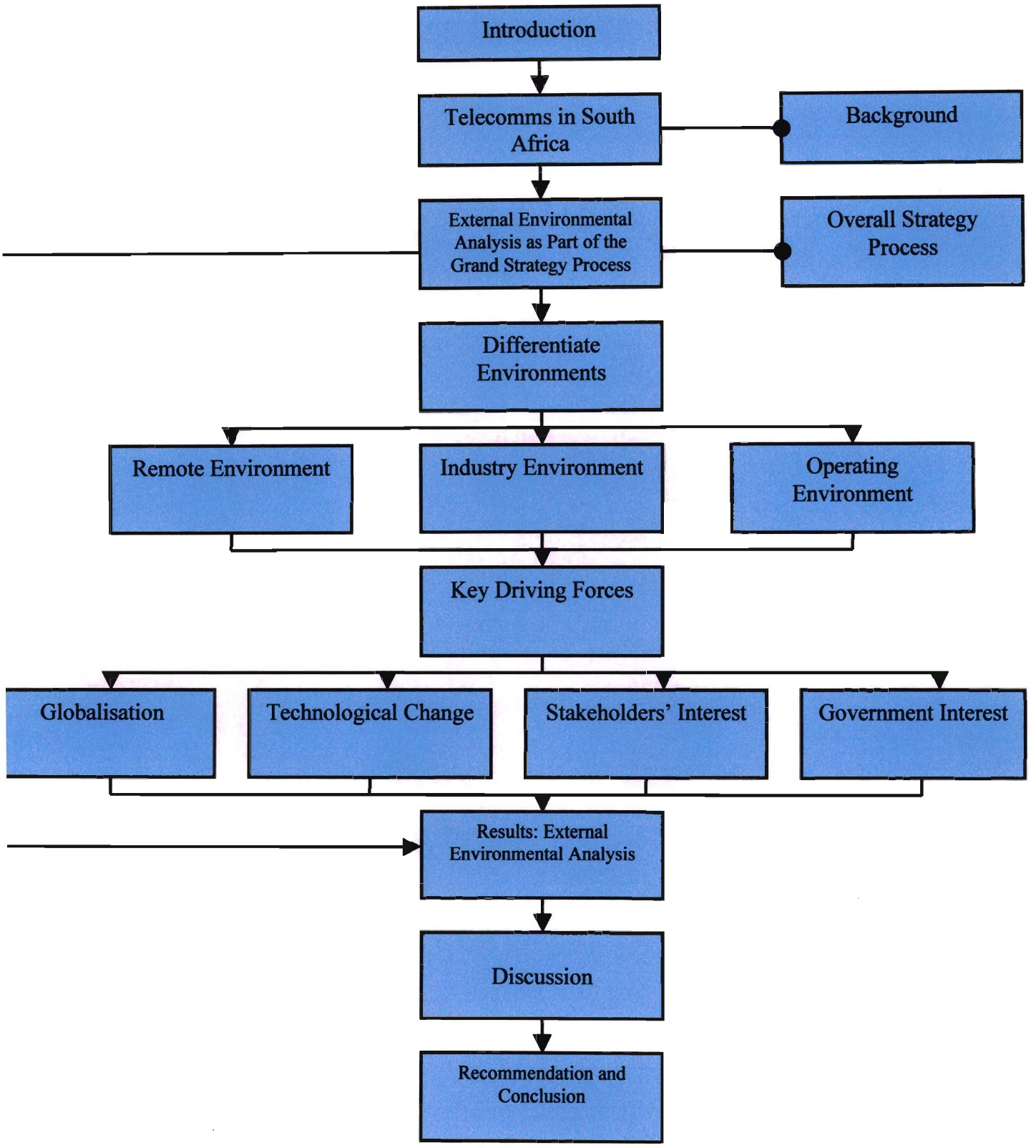
In studying the methods of strategic situation analysis, it is customary to begin with single-business companies. In single-business strategic analysis, the two biggest situational considerations are (1) industry and competitive conditions ("external environment") and (2) the company's own internal situation and competitive position. Industry and competitive analysis is the terms used to refer to external situation analysis of a company. Company situation analysis examines the internal narrower field of its microenvironment. This dissertation is restricted to analyse only the external environment and not the company's own internal situation.

1.9 Summary

With the emergence of the global economy the role of Telecommunications in a country's economy as a major enabler of economic growth is now more important than ever before. The South African Telecommunications sector has recently been the subject of renewed interest as it commences its second phase of liberalisation and opens up its fixed line market to competition. With the current downturn in the global Telecommunications market, it faces many challenges. The country's social and economic development agenda is as pressing as ever, necessitating creative solutions for service delivery - and requiring foreign investor interest and capital. Whether its current articulated vision to affect this is sufficient will depend on many factors, but foreign and domestic investment is unlikely to flow if regulatory design matters are left un-addressed. The main purpose of this study is to describe the industry for the various Telecommunications operators (fixed, cellular and VANS) in the South African market and to conduct a strategic analysis. This dissertation utilises the many research papers as well as Internet resources conducted by others as a source of secondary data. The scope of this study is confined to the external environment of the fixed line and wireless (cellular/mobile) markets. It was decided that the research would become too broad and hence loose its depth if all aspects of the Telecommunications environment and the entire strategic process were to be studied.

Figure 1.1

DISSERTATION FRAMEWORK



Chapter 2

LITERATURE REVIEW

2.1 Introduction

Johnson and Scholes (1999) define strategic analysis as being concerned with understanding the relationship between the different forces affecting the organisation and its choice of strategies. It may be that the environment exercises severe constraints, or yields potential opportunities and this needs to be understood. One of the objectives of this study is to determine whether it is feasible, from a business environment viewpoint, to invest in the Telecommunications service sector in South Africa. It is the opinion of this author that the various analysis techniques outlined below will highlight the various threats and opportunities in the Telecommunications industry. It may be that a particular firm has certain competences on which it can build, or that it needs to develop. It may be that the expectations and objectives of stakeholders who influence the organisation or the culture of the organisation play an important role in determining that company's strategy.

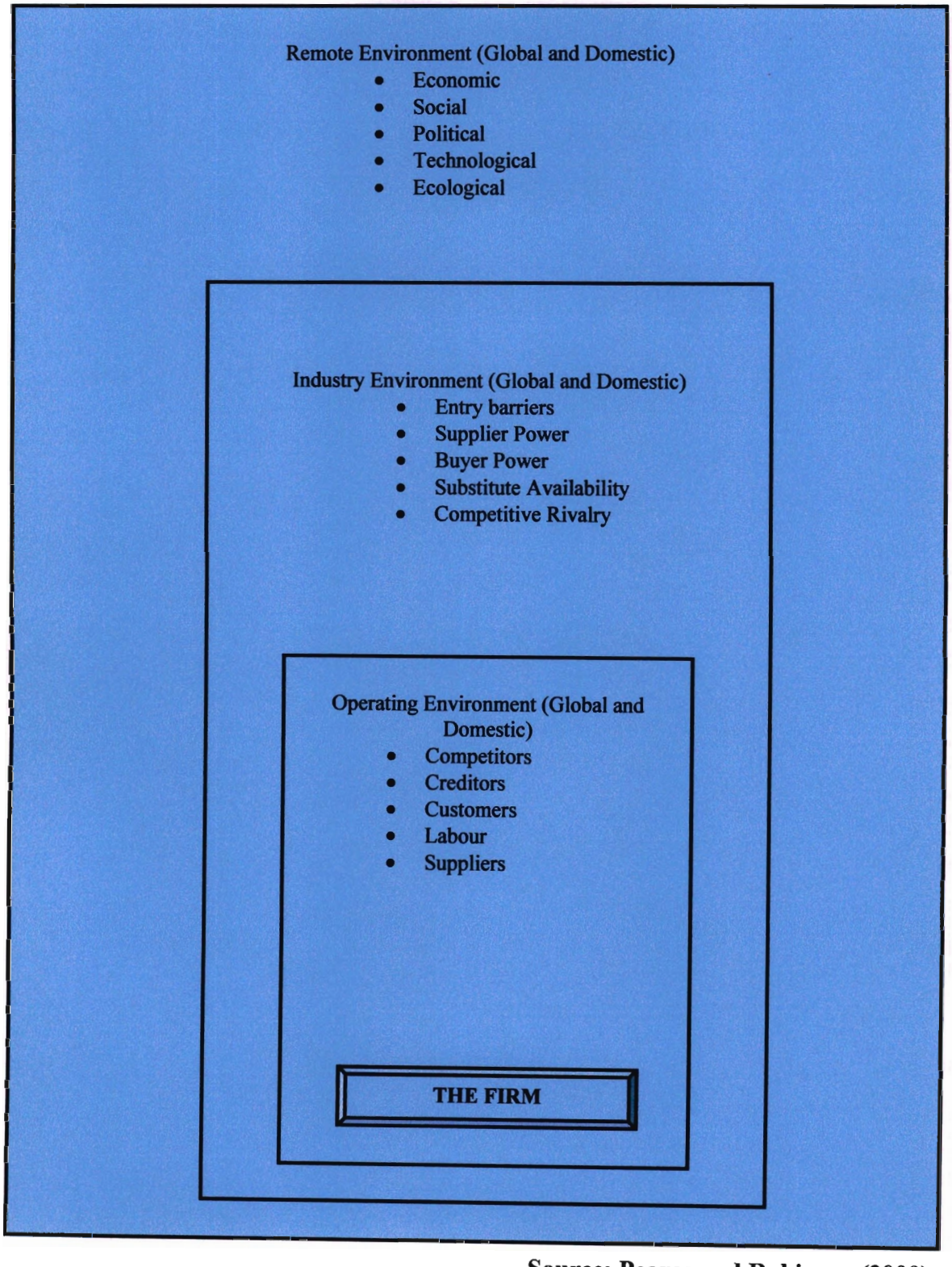
Most firms face external environments that are growing more turbulent, and complex and experience global conditions that make interpretation increasingly difficult. To cope with what are often ambiguous and incomplete environmental data and to increase their understanding of the general environment, firms engage in a process called external environmental analysis (Hanson, Dowling and Hitt; 2001).

2.2 External Environment Analysis

A host of external factors influence a firm's choice of direction, its action and ultimately, its organisational structure and internal processes. According to Pearce and Robinson (2000) these factors, which constitute the external environment, can be divided into three interrelated subcategories: factors in the remote environment, factors in the industry environment, and finally factors in the operating environment. This section describes the complex necessities involved in formulating strategies that optimise a firms market opportunities. ***Figure 2.1*** suggests the interrelationship between the firm and its remote, its industry and its operating environments. In combination, these factors form the basis of the opportunities and threats that a firm faces in its competitive environment.

Figure 2.1

THE FIRM'S EXTERNAL ENVIRONMENT



Source: Pearce and Robinson (2000)

An important objective of studying the external environment is identifying opportunities and threats. An opportunity is conditions in the general environment that may help a company achieve strategic competitiveness. A threat is a condition in the external environment that may hinder a company's efforts to achieve strategic competitiveness (Pearce and Robinson; 2000).

2.2.1 Components of the External Analysis

As mentioned previously many firms engage in External Analysis. This process, which should be conducted on a continuous basis includes the following activities (Hanson, Dowling and Hitt; 2001):

- **Scanning:** Entails the study of all segments in the external environment. Through scanning, firms identify early signals of potential changes in the general environment and detect changes that are already under way. When scanning, the firm often deals with ambiguous, incomplete or unconnected data and information. Environmental scanning is critically important for firms competing in highly volatile environments. In addition, scanning activities must be aligned with the organisational context. A scanning system designed for a volatile environment is inappropriate for a firm in a stable.
- **Monitoring:** When monitoring, analysts observe environmental changes to see if an important trend is emerging from among those spotted by scanning. Critical to successful monitoring is the ability to detect meaning in different environmental events.
- **Forecasting:** Scanning and monitoring are concerned with events in the general environment at a point in time. When forecasting, analysts develop feasible projections of what might happen, and how quickly, as a result of the changes and trends detected through scanning and monitoring.
- **Assessing:** The objective of assessing is to determine the timing and significance of the effects of environmental changes and trends on the strategic management of a firm. Through scanning, monitoring and forecasting, analysts are able to understand the external environment. Going a step further, the intent of assessment is to specify the implications of that understanding for the

organisation. Without assessment, the firm is left with data that is interesting, but of unknown competitive relevance.

2.2.2 Remote Environment

The remote environment comprises of factors that originate beyond and usually irrespective of any single firm's operating situation. The remote environment presents firms with opportunities, threats and constraints, but rarely does a single firm exert any meaningful reciprocal influence (Pearce and Robinson; 2000). The remote environment is composed of segments (and their individual elements) that are external to the firm (***see Table 2.1***). Although the degree of impact varies, these environmental segments affect each industry and the firms within it. The challenge is to scan, monitor, forecast and assess those elements in each segment that are of the greatest importance. In addition, the results of an external environmental analysis should recognize environmental changes, trends, opportunities and threats. Opportunities are then matched with a firm's core competencies. Through proper matches, the firm achieves strategic competitiveness and earns above-average returns (Hanson, Dowling and Hitt; 2001).

It is useful to consider what environmental influences have been particularly important in the past, and the extent to which there are changes occurring which make these more or less significant in the future for the organisation and its competitors (Hanson, Dowling and Hitt; 2001). ***Table 2.1*** is designed to help by providing a summary of some of the questions to ask about key forces at work in the remote environment. This is commonly known as a PEST analysis, which involves identifying the political, economic, social and technological influences on an organisation. The political is very heavily weighted due to the regulatory framework controlled by the government. The influence of this control is analysed further to determine its effect on market entry and competitive rivalry.

Table 2.1: The Remote Environment Segments and Elements

Economic	Political/Legal
• Inflation Rates • Interest Rates • Trade Deficits or Surpluses • Budget Deficits or Surpluses • Personal Savings Rate • Business Savings Rate • Gross Domestic Product • Business cycles • GNP trends • Money Supply • Unemployment • Disposable income	• Antitrust laws • Taxation laws • Deregulation Philosophies • Labour Training laws • Education Philosophies and Policies • Monopolies Legislation • Environmental Protection Laws • Foreign Trade regulations • Employment law • Government Stability
Socio-Cultural	**Technological**
• Women in the workforce • Workforce diversity • Attitudes about the quality of work life • Concerns about the environment • Shifts in work and career preferences • Shifts in preferences regarding products and service characteristics • Population demographics • Income distribution • Consumerism • Social mobility	• Product innovations • Applications of knowledge • New communication technologies • Focus of private and government supported R&D expenditure • New discoveries/development • Speed of Technology transfer • Rates of obsolescence

Source: Adapted from (Hanson, Dowling and Hitt; 2001) and (Johnson and Scholes; 1999)

2.2.2.1 PEST Analysis

- **Economic:** The health of a nation's economy affects the performance of individual firms and industries. Because of this, companies study the economic environment to identify changes, trends and their strategic implications. The economic environment refers to the nature and direction of the economy in which a firm competes or may compete. Due to the connection among nations, which is resulting from the global economy, firms must scan, monitor, forecast and assess the health of economies outside their host nation. According to Hanson, Dowling and Hitt (1999), in light of the increasing interdependencies among the world's economies, it is in the best interests of all nations to create truly global markets. It has been argued, that doing this can create a future in which the common goals of creating wealth and fostering economic stability are achievable. Members of the World Trade Organisation (WTO) stated that 'A broad range of empirical studies concludes that open trade policies are conducive to growth. The conclusion appears to hold regardless of the level of development of the countries concerned, challenging the notion that a certain level of development is required before the benefits from trade can be fully realized. (Hanson, Dowling and Hitt; 2001).

  Until recently the economic trends have largely been discounted. However more recently international powerbrokers like the European Economic Community (EEC) and the Organisation of the Petroleum Exporting Countries (OPEC) have changed the focus of economic environmental forecasting. Multilateral trade agreements between economic union groups have had a profound effect on most multinationals in almost all industries, the Telecommunications sector is not excluded. Developing economies have recently assumed a greater role in international commerce as a source of both threats and opportunities. These countries have found it economically advantageous to confront the developed countries (Pearce and Robinson; 2000). These factors must be taken into consideration when evaluating the economic trends in South Africa as this is classified as an emerging or developing economy. These international forces can affect positively or negatively the economic well being of the

Telecommunications business community in the Southern African region. Therefore the impact of these major forces, must be forecasted as accurately as possible for both the domestic as well as the international arena.

- **Social:** The socio-cultural segment is concerned with a society's attitudes and cultural values. Because attitudes and values form the cornerstone of a society, they often drive demographic, economic, political/legal and technological conditions and changes. Socio-cultural segments differ across countries. For example, in the United States, 14 per cent of the nation's GDP is spent on health care (Hanson, Dowling and Hitt; 2001). This is the highest percentage of any Organisation for Economic Cooperation and Development (OECD) country. Germany allocates 10.4 per cent of GDP to health care, while Switzerland allocates 10.2 per cent, Australia 8.4 per cent and New Zealand 7.6 per cent. Countries' citizens have different attitudes about retirement savings as well. In Italy, just 9 per cent of the citizenry say that they are saving primarily for retirement, while the figures are 18 per cent in Germany and 48 per cent in the United States (Hanson, Dowling and Hitt; 2001). Attitudes regarding one's savings for retirement affect a nation's economic and political/legal segments. Differences in attitudes about work seem to exist between France and some other nations, including the United States. In Australia and the United States, boundaries between work and home are becoming blurred, as employees' workweeks continue to be stretched, whereas working long hours has become a crime in France.

Companies must understand the implications of a society's attitudes and its cultural values before they can expect to offer goods and services that will meet consumers' needs and interests. A significant trend in many countries is increased diversity of the workforce. The number of female workers is an important indicator of increasing workforce diversity, and women are a valuable source of highly productive employees. Changes in organisational structure and management practices often are required to eliminate subtle barriers that may

exist. Learning to manage diversity in the domestic workforce can increase a firm's effectiveness in managing a globally diverse workforce as the firm acquires more international operations. These commitments to promote and manage diversity enhance the firm's performance. Another manifestation of changing attitudes towards work is the continuing growth of contingency workers (part-time, temporary and contract employees) throughout the global economy. Parts of the world in which this trend is significant include Australia, Canada, Japan, Latin America, Western Europe and the United States. The fastest-growing segment of contingency workers is in the technical and professional area (Hanson, Dowling and Hitt; 2001).

- **Political:** The political/legal segment is the arena in which organisations and interest groups compete for attention, resources and a voice in overseeing the body of laws and regulations guiding the interactions among nations. Essentially, this segment represents how organisations try to influence government and how governments influence them. Constantly changing, the segment influences the nature of competition (***see Table 2.1***). Due to this, firms must carefully analyse a new administration's business-related policies and philosophies. Antitrust laws, taxation laws, industries chosen for deregulation, labour training laws and the degree of commitment to educational institutions are areas in which an administration's policies can affect the operations and profitability of industries and individual firms. Often, how the firm intends to interact with the political/legal segment is captured through the development and use of a political strategy (Hanson, Dowling and Hitt; 2001). The effects of a host of global governmental policies on the firm's competitive position increase the importance of forming an effective political strategy. In these early years of the 21st century, business firms across the globe confront an interesting array of political/legal questions and issues.

- **Technological:** Pervasive and diversified in scope, technological changes affect many parts of societies. Their effects occur primarily through new products,

processes and materials. The technological segment includes the institutions and activities involved with creating new knowledge and translating that knowledge into new outputs, products, processes and materials. The knowledge and capabilities that are created by developing or using new technologies sometimes transform or revitalise an entire industry. To ensure sustainability a firm must be aware of the technological changes that could influence the environment. A technological breakthrough can have a dramatic impact on a firm - this could be either a positive or negative one, (Pearce and Robinson; 2000). The opportunities and threats are evaluated to determine how this influences the firms directly and indirectly.

2.2.3 Industry Environment

An industry is a group of firms producing products that are close substitutes. In the course of competition, these firms influence one another. Typically, industries include a rich mix of competitive strategies that companies use in pursuing strategic competitiveness and above-average returns. In part, these strategies are chosen because of the influence of the effects of an industry's characteristics. Compared to the remote environment, the industry environment has a more direct effect on strategic competitiveness and above-average returns. The intensity of industry competition and an industry's profit potential (as measured by the long-run return on invested capital) are a function of five competitive forces: the threats posed by new entrants, suppliers, buyers, product substitutes, and the intensity of rivalry among competitors (Hanson, Dowling and Hitt; 2001). The five forces model of competition expands the arena for competitive analysis. Historically, when studying the competitive environment, firms concentrated on companies with which they competed directly. However, today competition is viewed as a grouping of alternative ways for customers to obtain the value they desire, rather than as a battle among direct competitors. This is particularly important, because in recent years industry boundaries have become blurred. For example, in the electrical utilities industry, co-generators – firms that also produce power – are competing with regional utility companies. Moreover, Telecommunications companies now compete with broadcasters, software manufacturers also provide personal financial services, and

airlines sell mutual funds, and automobile manufacturers sell insurance and provide financing. In addition, in order to focus on customers rather than specific industry boundaries to define markets, geographic boundaries should be considered. The reason for this is that research evidence suggests that different geographic markets for the same product can have considerably different competitive conditions. The five forces model recognizes that suppliers could become a firm's competitor (by integrating forward), as could buyers (by integrating backward) (Hanson, Dowling and Hitt; 2001).

2.2.3.1 Porters Five Forces

This section will detail how the above forces operate. Harvard Professor Michael E. Porter's five forces model has been used internationally and is well renown. The five forces model has been adapted by many academics over the years. The literature review for this dissertation will be based on the adaptation by Charles Boyd (2003). A different perspective by Pearce and Robinson (2000) is however offered in ***figure 2.2*** to add a different perspective on the model.

Force 1: Rivalry Among Existing Firms - is intensified by many factors:

Balance Among Firms: No matter how many firms are in the industry, if they are about the same size, rivalry is likely to be more intense as they try to gain an advantage over one another. This intense rivalry is easiest to see at the local level, such as the competition among supermarkets or fast-food outlets in one city. You usually see the least intense rivalry in an industry in which one or a few large firms dominate.

Slow-Growth Markets: These make for intense rivalry because the only way to grow is to take market share away from competitors.

High Fixed Costs: High fixed costs may result in price-cutting to get the turnover to cover these costs.

Extra Capacity: When a firm adds extra capacity, it may create short-term overcapacity that results in intense price competition to build the volume needed to use the new capacity.

A Commodity Market: Exists when none of the competing firms have any sort of differentiation advantage. In these situations there is little to keep customers from switching to a competitor, so competition to hold customers can become brutal. We see this condition in the personal computer hardware market, where brand identity is hard to establish and competition is mostly based on price.

High Exit Barriers: Create chronic overcapacity and the intense rivalry that accompanies that condition. Exit barriers can be high for three key reasons:

- High investment in fixed assets that have no other practical use. This makes it hard for competitors to leave the steel industry:
- The cost of layoffs. When the auto industry lays off workers, they must pay 95 percent of wages for some time, according to the union contracts.
- Continuing to produce a product that loses money but which may be necessary to sell another product. Gillette must produce razors to sell blades. But the money is in the repeat sale of blades. Gillette must sell enough blades to justify producing the razors, some of which they may give away.

Force 2: New Competitors (Barriers to entry) – can be repelled by several means:

Brand Loyalty: Is established by continually advertising the brand and company name, patent protection, high product quality, after-sales service, and other means. Strong brand loyalty makes it hard for customers to change to a new, competing product.

Absolute Cost Advantages: It is hard to compete against a firm with lower costs if their product is of appropriate quality. That is one major reason we see U.S. jobs going to Mexico. But remember that labour is only one cost, and it is becoming a less important cost for many products. Low-cost advantage can be achieved in any of a company's operations: better management, lower transportation costs, better purchasing—you name it.

Economies of Scale: Is the market big enough for the company in question to serve it profitably? Small businesses thrive by serving market niches that are too small for larger firms to serve profitably.

The Capital Requirement For Entry: Can you imagine the start-up of another South African automaker? The capital requirements to compete in today's world market would

be enormous. Smaller businesses, however, have no such protection against new competitors. Their protection must come from special service, high quality, or a focus on serving a market segment extremely well.

Legislation Or Other Government Action: This can lower entry barriers quickly and significantly. Deregulation of airlines, trucking, and long-distance telephone service are good examples during the past two decades.

Differentiation: This is the ultimate barrier to entry. Like lower costs discussed above, differentiation can be achieved in virtually any phase of a company's operations.

Expected Retaliation: You must consider how a competitor will react to any competitive action you take. This means that you must try to understand the motivations of your key competitors, although that is hard. These motivations can change over time. The more you know about possible competitor reactions, the more able you are to choose a strategy that will not result in an unexpected or unwanted reaction.

Force 3: Threat of Substitutes

Both direct and indirect substitutes need to be considered. Some products are direct substitutes for one another: for example, calculators for slide rules or sugar substitutes for sugar. It is harder to see indirect substitutes for a product. For example, TV sets, VCRs, DVD players, and other consumer electronic products compete with furniture and home furnishings.

The direct and indirect substitutes for products or services offered by a firm need to be identified. Is there a way that a firm can lessen these threats, perhaps by some form of differentiation or by lowering costs? Is there a way that the firm can find new markets by making its products or services a substitute for those of a competitor? Close substitutes are a very potent competitive threat. Newly created substitutes can even cancel advantages a firm may have gained by speeding down the learning curve. But the absence of close substitutes may give a firm the chance to raise prices and profit margins. The firm find some way to take advantage of a lack of close substitutes, but must always be on the lookout for ways competitors may gain such advantages, and plan their countermoves.

Force 4: Supplier Power - is likely to be high when:

- There is a concentration of suppliers rather than a fragmented source of supply.
- The switching costs of changing from one supplier to another are high. For example, the cost and long learning curve associated with a corporation changing from one software application to another.
- It is possible for a supplier to integrate forward if they do not obtain the prices and margins they want in their present business.
- The supplier's customers are not very important to the supplier. Such a supplier may not be willing to offer very favourable terms and service to customers. Many small businesses face this problem as they buy from their suppliers.

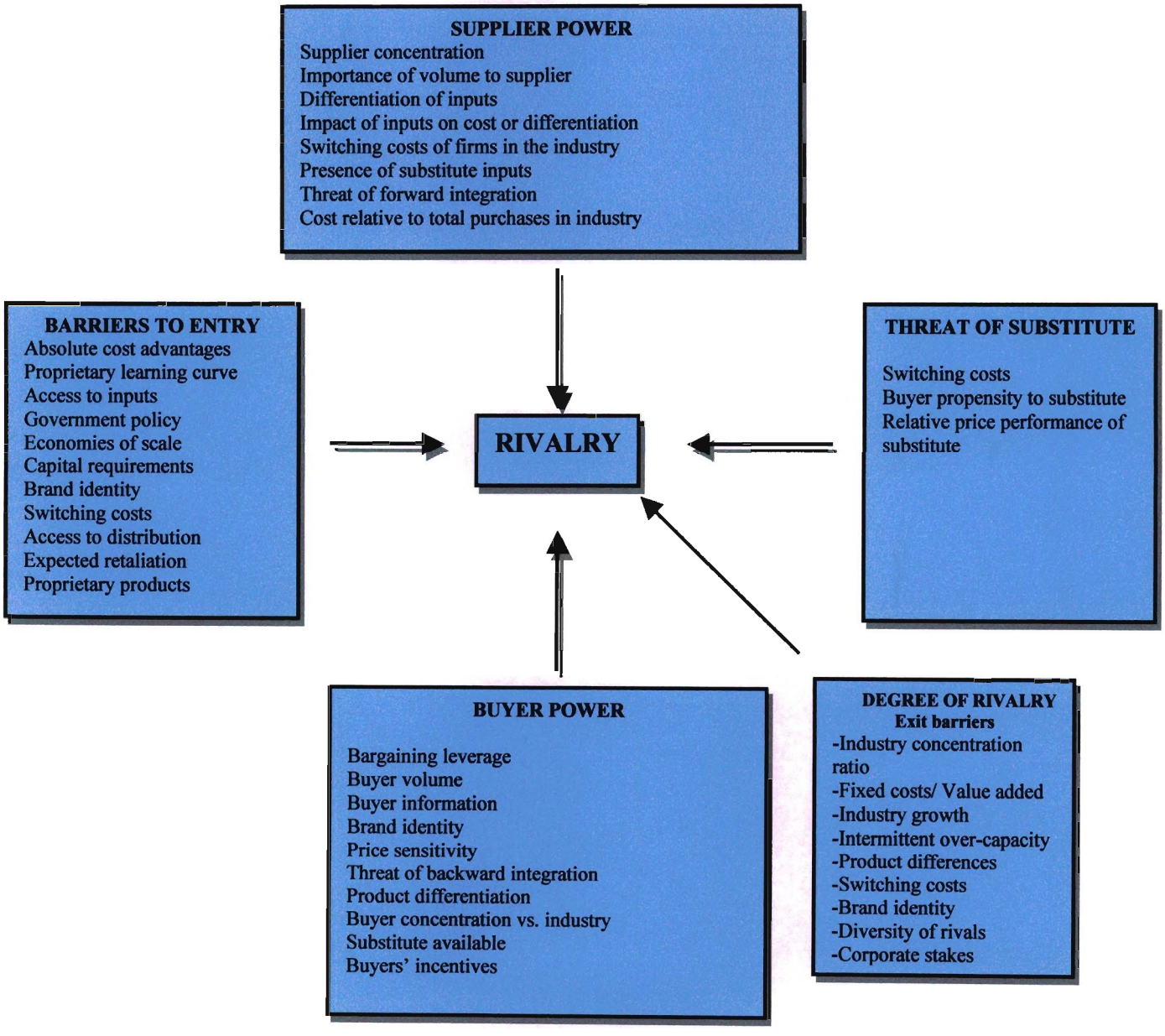
Force 5: Buyer Power

The buyer is the next person downstream in the channel of distribution. Thus, the buyer for the subject firm may be a manufacturer, wholesaler, or the final consumer. The question then is "Who is the buyer in the case or situation the firm is analysing?" The factors that increase a buyer's power are the mirror image of those that increase a supplier's power. Thus buyers have enhanced power:

- When they are concentrated and buy in volume. These conditions give buyers power over small, fragmented suppliers.
- When there are alternative sources of supply and it costs little to switch among them. This lets buyers play suppliers among each other to get the lowest price or best service.
- If the component or material cost is a high percentage of total cost. Under these conditions, buyers will shop for the best price and squeeze suppliers.
- When the buyer can integrate backward if suppliers cannot offer satisfactory prices.

Figure 2.2

FORCES DRIVING INDUSTRY COMPETITION



Source: Pearce and Robinson (2000)

2.2.4 Operating Environment

The operating environment is seen as the closest arena immediately outside of the firm. It is sometimes referred to as the near environment. The firm does have some control of this through its corporate strategy, which it decides to adopt. The environment comprises of factors in the competitive situation that affect a firms success in acquiring much needed resources or factors that affect the marketing of the Telecommunications service profitability. Pearce & Robinson (2000) identifies the most important of these factors as:-

- Competitors
- Creditors
- Customers
- Labour
- Suppliers

The customers, competitors and labour are key to the Telecommunications sector. The suppliers once the network infrastructure is built are less important to the direct profitability of the firm. One should not discount this supplier influence completely, because a huge capital expenditure, which is above market related rates could impact negatively in the long term, relative to other competitors.

2.3 The Methods of Industry and Competitive Analysis

Industry and competitive analysis uses various concepts and techniques to get a clear fix on key industry traits, the intensity of competition, the drivers of industry change, the market positions and strategies of rival companies, the keys to competitive success and the Industry's profit outlook. Thompson and Strickland (2003), propose a framework consisting of seven probing questions to conduct a competitor and industry analysis:

- What are the industry's dominant economic features?
- What is competition like and how strong are each of the competitive forces?
- What is causing the industry's competitive structure and business environment to change?
- Which companies are in the strongest/weakest positions?
- What strategic moves are rivals likely to make next?
- What are the key factors for competitive success?

- Is the industry attractive and what are the prospects for above-average profitability?

The collective answers to these questions build understanding of a firm's surrounding environment and form the basis for matching strategy to changing industry conditions and to competitive forces. This is an alternative view of environment analysis, which could be easily applied due to its question and answer nature. The main disadvantage to this method is that different individuals will attach various levels of significance to each answer without a solid theoretical foundation. The impact of each factor could then be misrepresented in the analysis.

Because industries differ significantly in their basic character and structure, industry and competitive analysis begins with an overview of the industry's dominant economic traits. As a working definition, the word industry is used to mean a group of firms, whose products have so many of the same attributes that they compete for the same buyer. The definition of the Telecommunications industry, used to be abundantly clears in the past. However with the convergence of the Internet, Telecommunications, multimedia and entertainment, the Telecommunications industry becomes much more difficult to identify. The factors to consider in profiling an industry's economic features are fairly standard (Pearce & Robinson; 2000):

- Market size
- Scope of competitive rivalry (local, regional, national or global).
- Market growth rate and where the industry is in the growth cycle (early development, rapid growth and takeoff, early maturity, late maturity and saturation, stagnant and ageing, decline and decay).
- Number of rivals and their relative sizes – is the industry fragmented with many small companies or concentrated and dominated by a few large companies?
- The number of buyers and their relative sizes.
- The prevalence of backward and forward integration.
- Ease of entry and exit.

- The pace of technological changes in both production processes and new product introductions.
- Whether the services of rival firms are highly differentiated, weakly differentiated, or essentially identical.
- Whether there are economies of scale in manufacturing, transportation, or mass marketing.
- Whether the industry has a strong learning and experience curve such that average unit cost declines as cumulative output (and thus the experience of "learning by doing") builds up.
- Capital requirements.
- Whether industry profitability is above/below par.

Table 2.2. (Naidoo 2002) illustrates a profile of the Telecommunications industry chief economic characteristics. According to Thompson and Strickland (2003) an industry's economic characteristics are important because of the implications they have for strategy – ***Table 2.3.***

Table 2.2 Telecommunications Industry' s Dominant Economic Characteristics

Market Size: Value of revenue in each country

Scope of Competitive Rivalry: Limited

Market Growth Rate: In excess of 300 percent per annum for the East African Region

Stage of Life Cycle: Infancy

Number of Companies in Industry: average of three in each country

Customers: mainly early adopters of technology for cellular subscribers

Degree of Vertical Integration: None

Ease of Entry/Exit: High entry barriers exist in the form of capital requirements and licence approvals.

Technology/Innovation: Cellular GSM technology standardised Fixed line – none

Product Characteristics: Highly standardised, the brands of different network operators are essentially identical (buyers perceive little real difference between operators).

Scale Economies: Does exist to an extent very high fixed cost and small percentage variable costs growth in subscribers does translate into savings on scale economies.

Experience Curve Effects: A major factor in this industry, easy access to foreign expertise for operations and technical know how to overcome curve effects.

Capacity Utilisation: Network traffic difficult to predict due to lack of historical data, therefore design capacity based on projected values.

Industry Profitability: well above par profits, the utility nature of the service results in high usage of the service by subscribers and high profitability due to limited market entrants.

Source: Naidoo (2002)

Table 2.3: Strategic Importance of an Industry's Key Economic Features

Factors/Characteristics	Strategic Importance
• Market size	• Small markets don't tend to attract big/new competitors; large markets often draw corporations looking to acquire established companies.
• Market growth rate	• Fast growth breeds new entry; growth • slow downs spawn increased rivalry • and a shake-out of weak competitors
• Capacity surpluses or shortages	• Surpluses push prices and profit margins down, shortages pull them up
• Industry profitability	• High-profit industries attract new entrants; depressed conditions encourage exit.
• Entry/Exit barriers	• High barriers protect positions and profits of exiting firms vulnerable to entry.
• Cost and importance of product	• More buyers will stop for lowest price.
• Standardised products	• Buyers have more power because it is easier to switch from seller to seller.
• Rapid technological change	• Raises risk factor investments in technology facilities/ equipment may become obsolete before they wear out.
• Capital requirements	• Big requirements make investment decisions critical; timing is important; creates a barrier to entry & exit
• Vertical integration	• Raises capital requirements; often creates competitive differences and cost differences among fully versus partially versus non-integrated firms.
• Economies of scale	• Increases volume and market share needed to be cost competitive.
• Rapid product innovation	• Shortens product life cycle; increases risk because of opportunities for leapfrogging.

Source: Thompson and Strickland (2003)

2.4 Key Driving Forces in the Telecommunications Industry

According to Thompson and Strickland (2003) the most dominant forces in an industry are called the driving forces because they have the biggest influence on what kind of changes will take place in the industry's structure and competitive environment.

Historically, most countries had direct public control of the Telecommunications sector. In this model, a state-owned monopoly provider had to meet targets, such as teledensity or affordability, which had been set by its government. This model worked well in developed countries in that it delivered significant penetration and network quality. However, increasing pressure from both internal and external forces has altered the status quo. ***See Figure 2.3***. The most important influence's according to Beardsley *et al* (2001) are:

- Ever accelerating technological change. State-owned companies often react too slowly to keep up. They also struggle to master the uncertainty created by change.
- Growing political consensus around the world on the benefits of open markets and reduced government control. This has been promoted mainly by international organisations such as the World Trade Organisation (WTO) and the European Union (EU).
- Stakeholders pushing for change. These include retail consumers looking for better service, businesses that require data connections to compete both locally and globally, and domestic and foreign investors who want to participate in a growing market.
- Increasing fiscal pressure on government and budgets, which means that resources have to be reallocated. It often results in privatisation and liberalisation, including the sale of Telecommunications to new operators, both to generate budget financing and to decrease state investment in the sector.

An added impetus for change in emerging and developing countries is the lack of capital. In these countries, sector reform is the only way to bring in the funding needed to expand their Telecommunications infrastructure, and ensure the provision of communication services to their citizens. For this reason, many of those countries have been moving towards reform in recent years. Despite these forces, state control of the

Telecommunications sector is still a viable option for some countries. Countries that follow this path are basically reproducing the route taken by developed countries prior to sector reform. China, for example, decided to assign priority to building out its Telecommunications infrastructure, as the government undoubtedly recognized that this was key to making the country economically powerful. The country has been adding more fixed lines than the rest of the world in recent years, and creating incentives for equipment providers to manufacture in the country. State control has increasingly been coupled with sector reform and partial privatisation (Beardsley *et al*; 2001). This option can work if a government has resources to divert towards infrastructure build-out and if it is willing to subsidize the provision of access with profits earned in other segments, such as long-distance. In addition, a government must be able to manage possible pressure to deliver open access and/or competitive entry. A market-based reform generally allows market forces to set prices, quantities, and quality, as well as to determine the services to be provided. Governments can start reform in three ways: through privatisation, liberalisation, or by a combination of both (full sector reform). A more detailed description of each option is included in ***Figure 2.3***. Full sector reform is rarely done in one leap. Countries usually start with either privatisation or liberalisation before combining both approaches.

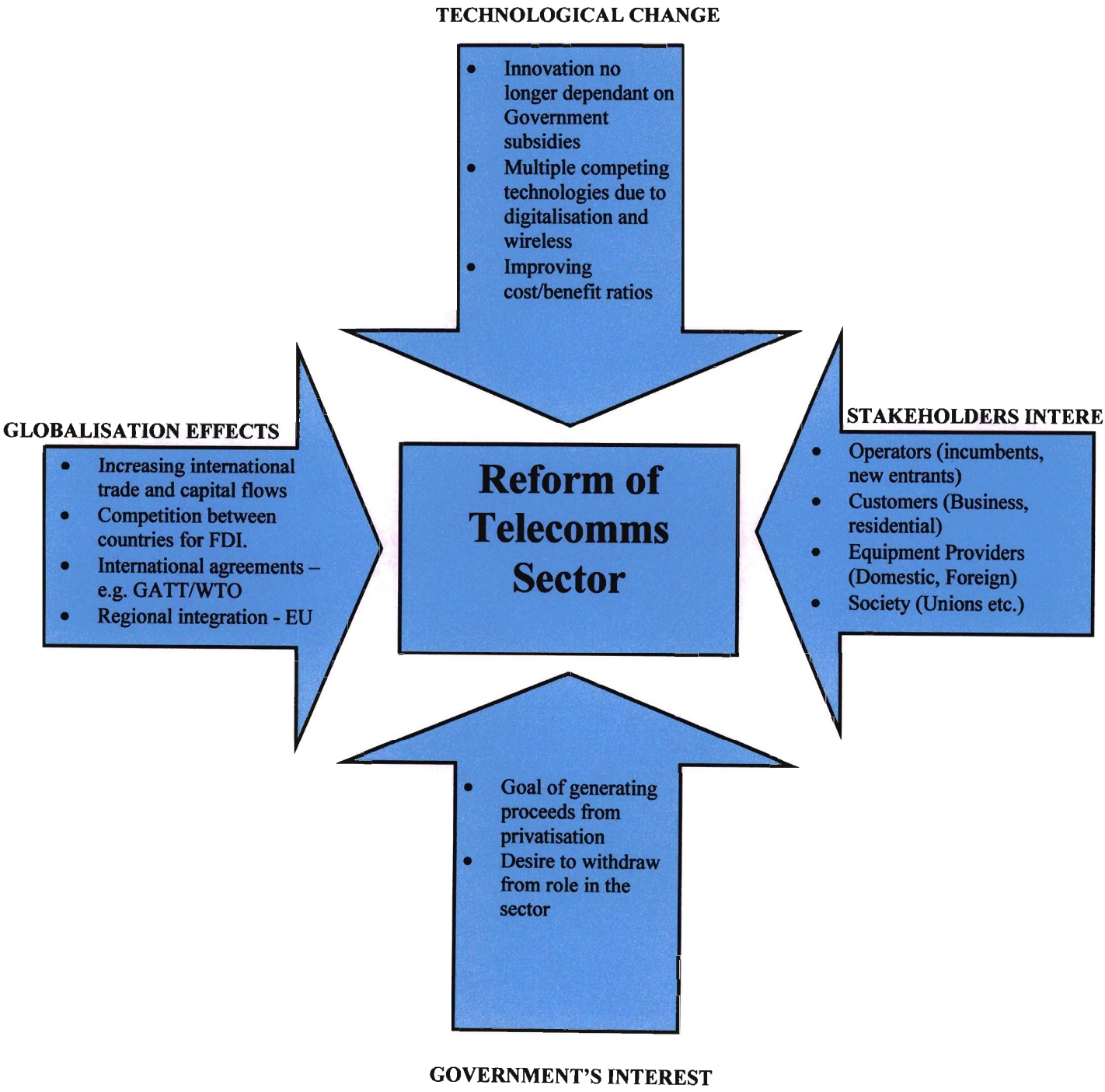
2.5 The Telecommunications Market

Telecommunications includes a broad range of technologies incorporating telephone and cable networks, data communications, wireless communications systems, satellite, optical fibre, and Internet technologies. The Telecommunications industry concerns the provision of two-way, one-to-one communications of voice, data and video. It is distinct from the broadcasting market, which is typically a one-way, one-to-many communication service.

However, convergence means that infrastructure developed for either market can be adapted to provide the other service. The scope of this study will be the fixed line and cellular/mobile industries. No distinction will be made between the different types of transmission, that is, voice, data or image.

Figure 2.3

FORCES DRIVING REFORM OF THE TELECOMMUNICATIONS SECTOR



Source: Beardsley *et al* 2001

Telecommunications production can roughly be divided into the provision of network infrastructure and the provision of services on that infrastructure. Typically a public monopoly is vertically integrated and so provides all parts of the production chain and all horizontal markets (Hodge and Theopold; 2001).

2.5.1 Network Infrastructure

Network providers operate the infrastructure on which various Telecommunications services are run. Networks are made up of switches and transmission. The switches provide the routing of voice, data, and video signals through the network. The transmission medium can be separated into fixed line (twisted pair of copper wires, fibre optic, coaxial cable) or wireless (satellite, cellular radio, microwave). The big technological changes in network provision have been (Hodge and Theopold; 2001):

- The rapidly decreasing costs of switches and transmission equipment
- The increasing capacity and speed of transmission mediums – both in the transmission material (e.g. fibre optic) and the improved compression of signals (e.g. ADSL or asymmetric digital subscriber lines which increase speeds on copper paired wire)
- The increasing intelligence of the networks enabling them to improve their efficiency and begin to offer a wide variety of services beyond mere telephony
- The convergence of different industries due to the common use of digital format. The industries relate to the original purpose for which the networks were built – Telecommunications (voice), broadcasting (video) and computing (data).

Hodge and Theopold (2001) propose three different components to the network that can be seen as three different stages of production. These are local access, long-distance and international. ***Figure 2.4*** demonstrates how these three components interconnect to form a complete international Telecommunications network. It looks at a mixed fixed line/mobile example. The local access network connects the customer premises to the local switch through the local loop. From the local switch there is an interoffice transmission facility to either other local switches or long-distance (national or international) points-of-presence (PoP). The long-distance networks then transmit the

signal to another long-distance PoP where it is distributed to a local switch and onto the other customer premises. What follows is a more detailed discussion of each component of the supply chain and the various technological platforms used.

2.5.2 Customer premises equipment (CPE)

The focus here is the retail supply of customer premises equipment and not the manufacture of the items. CPE's include fixed line telephones, mobile handsets, and PABX's (private exchange equipment for business use). Each of these can be considered a separate market. In the heyday of public monopoly, the customer premises equipment had to be supplied by the incumbent public switched telephone network (PSTN). This monopoly position, on what is essentially a service with no natural monopoly features, represented an opportunity for abnormal profits to be made. Almost without fail the first step in any deregulation process is to liberalise this part of the supply chain.

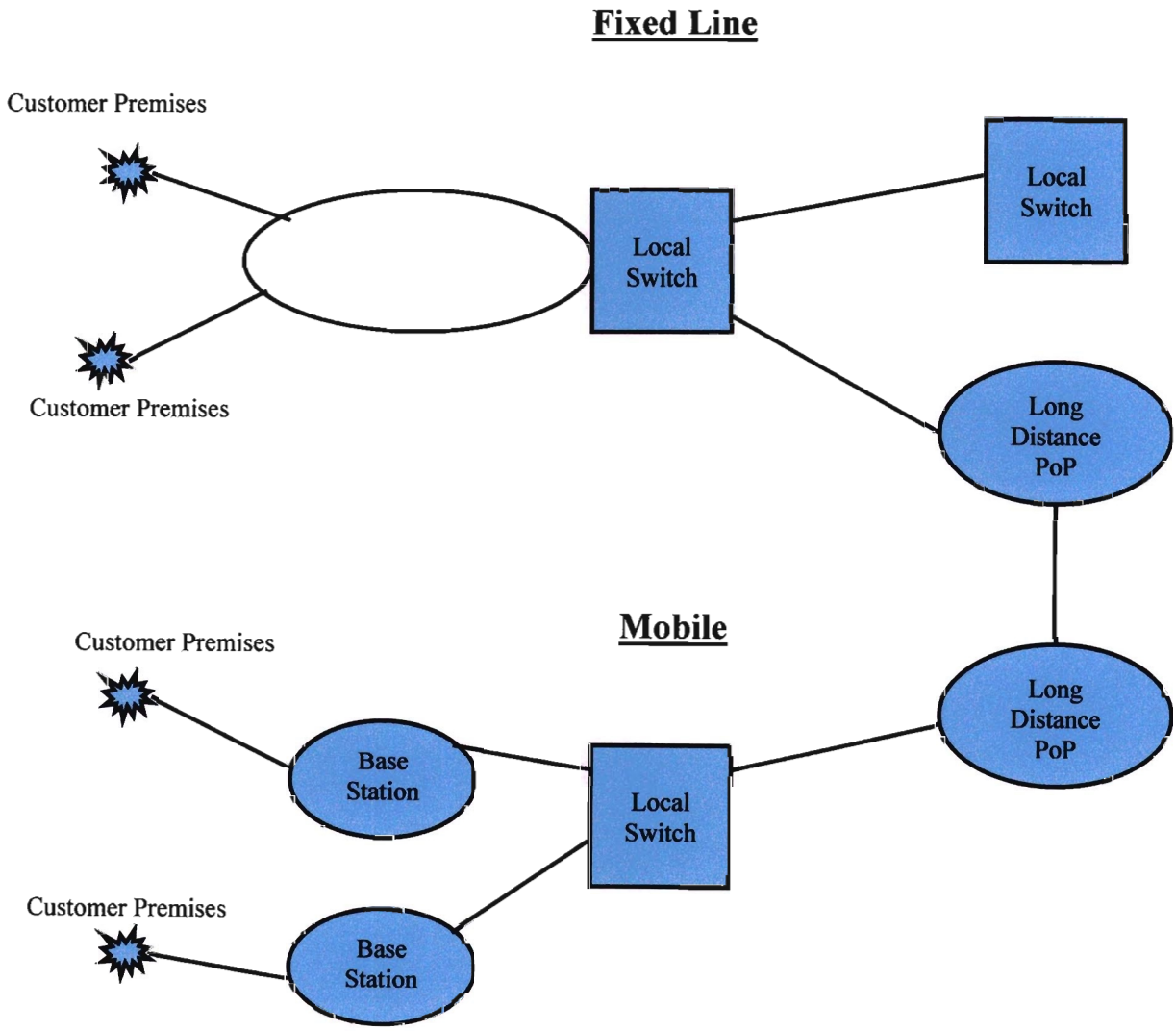
2.5.3 Local Access

Local access can now be provided by a number of different technologies, each with different cost structure and therefore different degrees of substitutability with the traditional PSTN. Although local access is being handled as one stage of production, it should be noted that this stage could be broken down further. In particular:

- Connection of premises to local loop
- Local loop
- Local exchange (switch)

Figure 2.4

A Simplistic Telecommunications Network



Source: Hodge and Theopold (2001)

2.5.4 Fixed Line

Within the group of network providers that use fixed line infrastructure, networks were historically built to focus on one of three different types of transmission – voice, data or image. However, increasingly networks are offering all three. This is feasible because almost all networks now use a digital format. In voice, the traditional PSTN consists mainly of copper or coaxial cable transmission equipment at the local access level and switching equipment that allows two-way transmission between two individual points on the network by establishing a dedicated line between two points for the duration of a call. The transmission mediums have low capacity or network speed (measured in bits per second) making them inadequate for video transmission and a slow but adequate medium for data transmission. However, recent technological developments in data compression have substantially increased the speeds available on these wires (in particular the asymmetrical digital subscriber line systems – ADSL – and other DSL technologies). Upgrading the networks to provide greater speed does require additional investments in the local access infrastructure (Hodge and Theopold; 2001). An alternative is the use of fibre optic, which has a far greater network capacity. Due to the higher cost of fibre optic, it is only cost effective with large businesses and not residential homes in the local access component of the network. It is used extensively in the long-distance and international networks. Either way, it is increasingly possible for PSTN networks to be upgraded to offer video services too. In fact, growing use of capacity for data transmission (that is, the Internet and intra-corporate transfers) makes the investments in fibre optic or ADSL increasingly worthwhile, offering the springboard to broadcasting.

2.5.5 Wireless (Mobile) Networks

According to Hodge and Theopold (2001) wireless networks differ from fixed line in their use of the radio frequency spectrum for transmission. The local access process involves a handset for the subscriber transmitting to and from a base station using a specific spectrum that the network provider is licensed to use. The base stations are usually connected to each other or another network through a fixed line infrastructure. In local access there are two types of wireless networks – fixed and mobile. The fixed wireless local loop is a recent addition and is being used to provide a 'last drop' to the

consumer for fixed line voice or data networks. It is similar to two-way radio where the physical coverage is very limited, and the receiving device (a telephone) is often fixed in location. The same receiving device as fixed lines is used. The cellular networks provide local access but also the added advantage of mobility. The subscriber is required to invest in a handset that cannot be used for fixed line or fixed wireless access (a switching cost). The current mobile networks are constrained in their network speed to offering voice and data services only. However, the so-called 3 rd Generation (3G) or Universal Mobile Telecommunications Services (UMTS) hope to achieve networks speeds that would enable the transmission of video too.

2.5.6 Long Distance (National and International)

Local access networks connect to a long distance network through a point-of-presence (PoP). The long-distance network is made up of these PoP exchanges and a transmission network. Given that these networks draw on a large pool of local access subscribers, they are able to get greater density of use in their transmission networks. As a result, most long distance networks use fibre optic when using a fixed line solution. Alternative transmission mechanisms include satellite and microwave (national only). Despite the choice of technologies available, a single market is defined as one for national long-distance and for international long distance. In addition, as most of these networks have sufficient network speed for broadcast quality, there is no real need to differentiate at the infrastructure stage between voice, data and video. As with local access, there are economies of scope in rolling out fibre optic long-distance networks. A substantial proportion of the costs are in paying royalties to landowners to pass the transmission cable through and putting in place infrastructure to carry the transmission medium. If a new entrant already has a national infrastructure (e.g. railways, electricity grid), then some of these costs will be spared allowing a faster and cheaper rollout (Hodge and Theopold; 2001).

2.5.7 Provision of Services (VANS)

The network infrastructure is the basis on which services are provided. The increasing intelligence of Telecommunications networks has permitted a proliferation of services

that are feasible beyond the basic local, national and international telephony. The new telephony-related services include automatic call-back, number/name identification, selective call rejection/acceptance, voice messaging, selective routing of calls, text messaging, fax, calling card, etcetera. In addition, the range of data/video services have proliferated with the most common including a full Internet offering (email, world-wide-web), EDI (electronic data interchange), paging, managed data network services, video-conferencing, database access and transactions, video-on- demand. Service provision can be split into two basic components – value-added network services (VANS) and basic voice. From this point there can be further separation into wireless vs. fixed line, local/long distance/international, and business/residential etcetera. VANS are described as including electronic data interchange, electronic mail, protocol conversion, database access, managed data network services, voice mail, store and forward fax, video conferencing, Telecommunications related to publishing and advertising services and electronic information services, including Internet service provision (Hodge and Theopold; 2001). The provision of services occurs on top of the network infrastructure. Historically the network provider was also the provider of services. However, unbundling the service from the network is feasible and has been the path of most deregulation processes. A service provider who does not own the network offers the service by either leasing part of the network from the network provider and enhancing this with one or more service components, or interconnecting their own network to others in order to provide the service. According to Hodge and Theopold (2001) the service component is added for essentially two reasons:

- Because the network provider does not offer the service (by regulation or choice),

or

- The network provider is seen to be inefficient at that service and the service provider is able to offer it at lower cost or better quality.

In terms of efficiency arguments, a number of possibilities emerge. It could be that a network provider is using outdated or inefficient technology at points in the network, which a service provider may choose to replicate and then lease or interconnect to other parts of the network to compete. This may be as simple as the credit and billing

component, or Internet access via the local telephone network but using a national data network. Alternatively, the large network provider may not be able to adequately price discriminate amongst all niches in the market and a service provider may lease excess capacity in the network for the purpose of niche resale. Hodge and Theopold (2001) believe that this is often the case with international or national telephony services providers. The Internet provides another example of niche servicing – an important component of what customers seek in service providers is member services such as home page news, links and community information. These can be tailored to niche markets while the cost can be kept the same by leasing lines. The additional components that service providers bring to the network are:

- Service-specific infrastructure – this includes additions to the network infrastructure required to technically provide a particular advanced service. For example, in Internet services these would include a national points of presence (PoP's) network linking to the long-distance data network (or Internet backbone) linking to a server farm that would include a router, authentication server, firewall, mail hosts, proxy servers and local content servers.
- Some form of customer management systems – this would include customer information, billing and customer support (call centre)
- Content – some advanced services may have content that will be received by the customer (e.g. Internet, video-on-demand)

A local example of separation of network and service provider is the cellular industry in South Africa. The network providers do not retail to the public but instead wholesale network access to a group of approved service providers. These providers in turn offer retail outlets to access customers, they stock and sell the phones, do the credit checks, link the customer to the network and perform all billing and debt collection.

2.5.8 Interconnects

The pricing and competitive behaviour amongst network providers is influenced by a number of factors peculiar to network industries. First, the value of a network is related to the number of customers connected to that network. Therefore, it is in the interests of all

competitors to interconnect with each other to gain access to as broad a customer base as possible in order to enhance the value of their respective networks. The ability to interconnect also means that firms can compete with other network providers on one part of their network without having to duplicate the entire network. For instance, firms may compete on long distance telephony by building their own long distance infrastructure and interconnecting to a local network to reach the final customers. For service provider's interconnection is key. Although the regulation stipulates that interconnection must occur, it is the terms of this interconnection that determine the pricing and competitiveness of alternative infrastructures.

2.6 Regulation and Liberalisation of Telecommunications

Regulation is the intervention of a government body in a market, through the use of price, access or product controls. Price controls occur in Telecommunications, where Telkom has to get its tariffs approved by the South African regulator, ICASA. The same goes for access controls, as ICASA has the right to issue licenses for the different types of telecomm markets, as it has in Telkom for the fixed line market and MTN and Vodacom for the mobile phone market. Hodge and Theopold (2001) propose that there are two basic types of theories about regulation: normative theories outlining the response to market failures and positive theories describing the dynamics between policy makers and recipients of regulation.

2.6.1 Normative Theory of Regulation

Normative Theory of Regulation suggests that regulation ought to be introduced when there is market failure. According to Hodge and Theopold (2001) there are three basic types of market failure:

- *Externalities:* any transaction has a cost and a benefit to it. These costs and benefits may well differ for the individual and the society. When the social costs exceed the private costs, or the private benefits exceed the social benefits, the level of activity is too high. When social benefits exceed private benefits, allocation will be lower than desired. Taxes, in the case of over allocation, and subsidies in the case of under allocation may be used to rectify the situation.

- *Natural Monopoly:* occurs when it is more expensive to have several companies providing the same product than it is to only have one. Public utilities, such as water and electricity and most other network industries are classic examples of natural monopoly. Single product monopolists will derive their advantage from economies of scale, whereas multi-product natural monopolies may also derive their advantages from economies of scope.
- *Large specific investments and hold-up problems:* when private activity invests large amounts in assets that may only be used for one purpose, there is a potential for the extraction of rents from a contract partner. Private contracting may be costly in this case and regulation the preferred tool.

Regulation must hence be used in sectors where competition is not sustainable due to one of the three reasons mentioned above.

2.6.2 Positive Theories for Regulation

Positive Theories for Regulation do not only exist to correct market failures. This is apparent from the fact that regulation continues to exist in sectors with no natural monopoly features. Regulation also exists because it is a powerful means to redistribute wealth in society. Regulation can be used to tax one group of consumers and redistribute to another without imposing a more transparent tax-subsidy approach. Classic examples in Telecommunications are cross subsidization from long distance to local calls, from urban areas to rural areas and from business users to domestic users. An alternative to government using regulation for social welfare-improving redistribution is for specific interest groups to capture the regulatory process through lobbying government. Companies demand regulation in an attempt to earn abnormal profits at the expense of consumers. Politicians are prone to interest group pressure since single voters are unable to monitor and coerce the policy maker. The successful pressure group in the regulatory game need not be companies only, but whoever it is they should have low costs of organisation and high potential payoffs relative to the competing interest groups. The same forces that drive politicians to regulate sectors may also drive them to deregulate. If interest groups that are being adversely affected by regulation organize more effectively (or if the cost of the regulation to them increases enough to make them organise) then

they may be able to reduce the level of regulation. In Telecommunications, the advent of the Internet has meant that an inefficient monopoly has had greater costs to a group of industry users who have become harsh critics of the continued monopoly.

2.6.3 Different Types of Regulation

Having identified the different types of factors that create the need for regulation, and the criteria to judge the success of regulation, the question arises about the ways in which regulation is administered. Hodge and Theopold (2001) differentiate between theories for situations when the regulator has perfect information and theories when the firm has more information than the regulator.

2.6.3.1 Regulation under Perfect Information

- **Marginal Cost (MC) pricing**: is possible under the case of a weak natural monopoly, that is, one where the average cost is upward sloping over some of the domain. In this case, MC pricing is possibly efficient.
- **Ramsey Pricing:** under strong natural monopoly (that is, the average cost curve is downward sloping over the whole domain reflecting high fixed costs and low marginal costs), MC pricing will lead to a loss and be unsustainable.

Clearly, the implementation problems associated with MC and Ramsey pricing are those of asymmetric information. The regulator will have less than complete information about the cost structure of the regulated firm, making the implementation difficult. Lastly, there may be distributional concerns, as those goods that are inelastic will have the highest mark-up, but these also tend to be necessities (like basic access to a telephone).

2.6.3.2 Regulation under Asymmetric Information

In reality, MC and Ramsey pricing will suffer from information asymmetries between regulators and the firms. Under these circumstances the regulator needs to design regulation that overcomes the information asymmetries to provide effective regulation. Two types of regulation have been implemented in practice. These are:

- **Rate of Return Regulation:** this is based on the Ramsey idea of having prices set so that the firm covers its cost and achieves a "fair" return on capital. Hearings are used to determine prices after a test year. The problem with this system is that the firm has no incentive to continually reduce cost. Inflated cost is created through the attraction of capital rather than efficiency, an incentive to inflate costs before a rate hearing and the need for very detailed regulation.
- **Incentive regulation:** has been created to deal with the inefficiencies inherent in rate of return regulation. There are two basic types of incentive regulation, that is, Price-Cap Regulation and Earnings Sharing.

2.7 Convergence

Convergence is the integration of IT, Computing, Broadcasting & Telecommunications (Transtel; 2003). From the perspective of Telecommunications this definition of convergence speaks to the technological changes over the last decade making the delivery of services by different entities in these areas convergent resulting in both a threat and an opportunity. There is however a number of important foundations, pillars, required to support such a definition. These pillars include the need to deploy digital terrestrial infrastructure that will have high bandwidth capabilities, the spread of Internet Protocol (IP) rather than the carrying of voice calls, the integration of the fixed and mobile markets, new methods of pricing services, the liberalisation of content, infrastructure and media services and last but not least, globalisation of reach. It is essential that these pillars are more stable and reliable than those in existence today as society in general will become more dependent on them, in an environment where the transfer of information is even more closely integrated into our daily lives. For the most part, the infrastructure required will physically consist of high capacity fibre optics links, carrying packet-based data, which can simultaneously support various types of services.

Over the past decade, Telecommunications has been subjected to a technological revolution, decreasing natural monopoly characteristics of the industry and creating new markets in mobile telephony, the use of the Internet and wireless local loop technologies. Whereas in the past, the market to be regulated was clearly defined and regulation of players revolved more around technical regulation, today the market boundaries have

become blurred. Competition has the potential to decrease the need for regulation in some of the more competitive markets, but has increased the potential for asymmetric regulation. Whereas in the past the emphasis was laid on efficiency and principal-agent problems of inducing the correct behaviour in regulated utilities, nowadays the problems lie more in the area of dominance of incumbents, a lack of market boundaries, the pace of technological change influencing cost and uncertainty about future technologies. In the past, the more concentrated regulation of single sectors was by nature defining the rules of play and creating competitive environments. In the present context, however, competition agencies have gained greater importance, observing the markets and acting ex-post only if there is evidence of anti-competitive behaviour. An example of classic sectoral regulation is that of OFTEL, the UK office for Telecommunications regulation. In Malaysia, on the other hand, regulation of the entire broadcasting industry has been attributed to a single agency, dealing with all Telecommunications and broadcast issues (Hodge and Theopold; 2001).

2.8 Summary

The theories to be applied for this study are:

- External Environment Theory
- The Methods of Industry and Competitive Analysis
- Key Driving forces
- The Telecommunications Market (including a brief Technical Overview)
- Regulation and Liberalisation of Telecommunications
- Convergence

It is hoped that the above theories and techniques will highlight the various threats and opportunities in the Telecommunications industry. The framework used for this study is shown in ***Figure 1.1,*** which is titled Dissertation Framework. This also provides some complementary theory and therefore provides completeness to the study.

Most firms face external environments that are growing more turbulent, complex and global, conditions that make interpretation increasingly difficult. To cope with what are often ambiguous and incomplete environmental data and to increase their understanding

of the general environment, firms engage in a process called external environmental analysis. The emphasis of this study will be placed on the competitive environment. The study attempts to identify the key driving forces in the Telecommunications industry. The key driving forces will help in understanding the industry as well as the external environment. It is hoped that these key-driving forces will also assist with the environmental forecasting.

The Telecommunications Industry is one of a very technical nature with its own jargon. The section "The Telecommunications Market" has been included to give a non-technical person a quick overview of the industry. Lastly, this author believes that this study will not be complete without considering the Theories on Regulation and Liberalisation, as it is this aspect, which is shaping the current Telecommunications Industry in South Africa.

Chapter 3

Case Study

Telecommunications In South Africa

3.1 Introduction

South Africa is 1,127 square kilometres consisting of nine geographical and political entities or provinces. It has an annual GDP of US$128 billion and a population of over 45 million people. This represents approximately 5 per cent of the total African population, estimated to be around 800 million (Gillwald; 2002). It is the dominant economy in Africa, particularly in sub-Saharan Africa. However, it also has one of the highest Gini coefficients in the world: the poorest 20 percent of households earn less than 3 percent of total income and the richest 20 percent of households earn 65 percent of total income (White; 2002). This is, of course, a legacy of Apartheid and this pattern of gross inequality is mirrored, not surprisingly, in South Africa's Telecommunications statistics.

The South African Telecommunications sector has recently been the subject of renewed interest as it commences its second phase of liberalisation and opens up its fixed line market to competition. With democracy in place in 1994, the challenge of economic and social development created by the ravages of apartheid, required detailed government policy in every sector. Telecommunications was no exception (Cohen; 2002). In 2001, the government began to articulate its plan for the future of Telecommunications policy, and with it the end of an era. Its vision continues to assume a positive correlation between Telecommunications infrastructure and economic growth and suggests that policy is tailored to achieve that end (Eggleston *et al*; 2002). It also continues to draw on ideas of distributive justice but publicly has begun to shift from universal service objectives to stressing the importance of foreign investment and of maximising revenue from the restructuring of state assets.

Despite being advertised as a beacon to the rest of Africa, South Africa faces many challenges around unemployment, crime, education, delivery of health services, and housing. The country is relatively dependent on foreign investment and gears economic

policy largely to that end. To appreciate the difficulties and achievements of the South African Telecommunications sector, it is useful to view them against the broader backdrop of Telecommunications in Africa. Twelve percent of the global population lives in Africa, yet Africans have access to only two percent of the world's telephone lines. Fewer than one in 300 sub-Saharan Africa has a main telephone line (Teer-Tomaselli).

Under the banner of Telecommunications '98, the International Telecommunications Union (ITU) identified a number of paradoxes around the provision of Telecommunications services in sub-Saharan Africa:

- Traffic per subscriber is high, but traffic per inhabitant is low
- The profitability of operators is high, but the revenue per inhabitant is low
- Wages levels are low but investment costs are high

African people, among the poorest in the world, pay more for Telecommunications services than the richer inhabitants of industrialized countries. These services are frequently vastly inferior to those routinely enjoyed by more affluent countries. High equipment costs; a result of the necessity to import all capital equipment, combined with weak local currencies, vast and inhospitable terrains to be covered, all result in an installation fee of a telephone line costing four times that in a developed country. The above leads to a situation, which is characterized, by high tariffs, low consumer demand, and a low productivity leading to further disincentive for development. There is a high level of variability between African countries in the provision of their existing Telecommunications networks. In countries where Telecommunications have been identified as a priority, digital switches with fibre optic inter-city backbones, and contemporary cellular and mobile technology have been installed. Rwanda and Botswana, with 100 percent digital main lines, are among the world's most sophisticated national networks. The USA, for instance, has a 49,5 percent digital line provision (Teer-Tomaselli). At the other end of the scale, Uganda and Madagascar have highly unreliable analogue telephones and poor national links between centres. Cellular telephones are now available in 35 African countries, mostly confined to the capital cities and a few secondary towns. Many of the cellular networks can be used to access the Internet, but

the high cost makes its common use prohibitive, and in practice it is used only for small traffic in e-mail. Forty-five countries have full Internet access in the capital cities.

3.2 International and Regional Policy Structures affecting South Africa's Telecommunications Market

Southern Africa region - South Africa is a member of the Southern African Development Community (SADC). The SADC's primary focus is the regional integration of the politics and economies of its 14 Southern African member states (Teer-Tomaselli). The SADC's competence in Telecommunications is housed in a Ministerial Committee, the Southern Africa Transport and Communications - Technical Unit (SATCC-TU). This unit developed the SADC Protocol on Transport, Communications and Meteorology, which was adopted in March 1998. The agreement requires South Africa and other regional states to harmonise their Telecommunications regulatory environments, and to create similar technical standards, network maintenance and provision, performance standards, regulatory structures and universal service policies, among other objectives. Increasingly, South Africa will have to consult and have regard to developments within the SADC when making decisions regarding its own Telecommunications market. For example, the Telecommunications Regulators Association of Southern Africa, an SADC association has been created to harmonise the region's regulatory approaches.

African region - The African Telecommunications Union (ATU), of which South Africa is a member, is the significant continental body with a bearing on South Africa's Telecommunications sector. ATU membership does not require compliance with specific objectives. Rather, the ATU encourages South Africa to participate in the vision of the Union, being a working partnership between the ICT industry and African governments. The objectives of the ATU are numerous. They include the promotion of funding and finance, developing appropriate policy and regulatory frameworks, promoting ICT human resources development. These objectives are to be achieved through ATU organs, for example the Administrative Council, the General Secretariat and the Conference on Plenipotentiaries. The focus at the ATU is on capacity building in various strategic areas, such as policy and human resources rather than on implementation. South Africa's

continental obligations in the ATU, then, are more administrative in nature than procedural (Teer-Tomaselli).

The world trade organisation (WTO) - South Africa is a member of the WTO. WTO membership binds South Africa to an open trade system with requirements to adhere to specific principles when trading with WTO member states. These principles are: freer trade through tariff reduction, non-discrimination against foreign players, market liberalisation, increased competition and policy transparency. Specific commitments affecting South Africa's Telecommunications sector are contained in the General Agreement on Trade Services (GATS). South Africa's WTO commitments under GATS can be generally understood as requiring a totally liberalised domestic Telecommunications market, as per WTO principles. These commitments require among others: ensuring access to and use of public Telecommunications transport networks or services offered within or across the borders of South Africa (including private leased circuits) by WTO members; ensuring that relevant information on conditions affecting access to and use of public Telecommunications transport networks and services (including tariffs and other terms and conditions of service) is publicly available; providing information on specifications of technical interfaces with such networks and services; and affording access on reasonable and non-discriminatory terms and conditions of use. The only WTO restrictions on market players will be placed to protect the integrity of South Africa's networks, maintenance of state security, secrecy, or to frustrate efforts to circumvent WTO agreements (WTO; 2003).

3.3 Infrastructure

South Africa has approximately 5 million fixed lines and 11 million mobile subscribers. However, access to Telecommunications resources is unequal –divided along racial lines and also along urban/rural lines. Teledensity is approximately 13.5 percent (White; 2002). However, while white people in urban areas often have an abundance of Telecommunications facilities, fixed line phones and Internet access at home and at work, as well as a cell phone; a huge number of rural black people have never used a telephone. The relatively low teledensity figures are a combined product of the skewed utility

distribution policies of apartheid and other barriers to telephone penetration, such as geographical, low literacy levels, high costs of usage and poor last mile infrastructure. It is worth noting that line cancellation due to lack of affordability is estimated at 16 per cent. A study commission by the Telecommunications regulator in 1997 indicated that, at that time over 40 per cent of the population would not even be able to afford the line rental of the incumbent operator, if one used a figure of two percent of income on telephone expenditure which is below the national average of over 3 per cent. (Gillwald; 2002). There is little to indicate that the situation is different today.

Despite significant gains over the last five years, the distribution of telephony service in South Africa continues to reflect the highly uneven development of the infrastructure of the past - with 18 per cent of black households and 82 per cent of white households having telephony service. Similar distinctions in service can be seen between urban and rural households – with 64 per cent of urban households and only 9 per cent of rural households having telephony service. Importantly, the introduction of mobile cellular services (particularly prepaid, rather than on contract) has aided the provision of telephony service. Overall 42 percent of people in South Africa have fixed telephones and/or cell phones in their house (universal service). Universal access, measured as a 30 minute walk to the nearest phone, has increased dramatically with over 80 per cent of all households now having access, largely due to the network of over 100,000 public pay phones distributed nationally (Gillwald; 2002). Refer to ***Table 3.1*** for a breakdown of universal service and access figures.

The figures for Internet access and access to other data services are even more starkly unequal. South Africa is indeed a microcosm of the global digital divide within one country. This makes it a particularly interesting Telecommunications environment from a regulatory point of view.

Table 3.1: Universal Service and Access Figures for South Africa

Percentage of Households with service and access (fixed & cellular combined)		ALL	AFRICAN	WHITE
ALL	Universal Service	42	18	82
	Universal Access	80	74	93
URBAN	Universal Service	64	32	82
	Universal Access	94	93	94
NON-URBAN	Universal Service	9	5	84
	Universal Access	59	56	98

Source: Gillwald (2002)

According to the Final Report of the Digital Opportunity Initiative by the Markle Foundation, infrastructure in South Africa is poorly linked and spread unevenly across the country. The development in the commercial zones contrasts with very low penetration of services in rural and remote areas (22 lines per 1,000 people). The South African Information Technology Industry Strategy (SAITIS) and Info 2025 Vision include a focus on building infrastructure, especially within secondary towns designated as export zones for both Information Communication Technology (ICT) and non-ICT products and services. Through the establishment of the Universal Service Fund, both wire line and wireless service providers have extensive obligations to provide access to previously disadvantaged areas with low income and geographic complexity. South Africa has also been involved in the Southern African and Far East (SAFE) Initiative to promote the connectivity of all African countries through regional backbones that do not leave the continent. This will reduce the cost of calls that are currently routed through Europe.

Internet penetration in South Africa is by far the highest on the continent, with 1.8 million users (90 percent of the total in Africa) – Markle Foundation. This penetration is focused in urban areas close to major towns. Penetration is low or non-existent in rural and remote areas due to lack of infrastructure and the high cost of access and equipment. All

government departments and their ministries have established web sites to disseminate information regarding their activities and are working to ICT-enable their constituencies.

As it did with most state-provided services, apartheid fundamentally skewed the manner in which the Telecommunications infrastructure was allocated in South Africa. As a result the Telecommunications network exhibits a characteristic duality. One of the major problems of the legacy of apartheid within the public sector was the lack of overarching state commitment to providing and maintaining telephones in the black areas. This duality was in part due to the greater economic power of the white community, but also an historical consequence of the political power of whites and the role the state played in ensuring provision was made based on social and political clout, rather than economic efficiency. Furthermore, the urban, rather than rural areas enjoyed greater service provision. There were fewer telephones in the rural areas, except for white farmers, whose lines were provided at a subsidized cost. This is also true of the electricity grid provided by ESKOM (Electricity Supply Commission). The underlying political problem lay across two axes: the racial as well as the urban/rural division along which resources were differentially distributed. State-controlled resources have been allocated in favour of whites rather than blacks, and insofar as blacks share in the distribution of resources, the urban areas have substantially benefited at the expense of the rural areas (Teer-Tomaselli).

3.4 Human Capacity

According to the Final Report of the Digital Opportunity Initiative by the Markle Foundation *et al*, South Africa is facing a significant "brain drain" in technical and entrepreneurial ICT skills, with an estimated 200-300 ICT-skilled resources leaving the country each month. This is caused by the rapid growth in demand for ICT skills worldwide and little opportunity (jobs, remuneration, and innovation) in South Africa. Current unemployment rates are very high (30-35 percent), but it is also difficult to find a sufficient supply of skilled ICT workers to meet the rising demand.

Historically, the education infrastructure in South Africa has been segregated and unequal, and ICT provision in schools reflects this. Approximately 50 percent of schools have no infrastructure to support ICT use among students. In addition, the current education system has been slow to meet market needs. ICT courses are only available in the universities and in the Technikons (technical colleges). It is only recently that an effort has been made by the Department of Education to revise the curricula to include ICT courses at the primary and secondary levels and to create ICT-specific learning centres. To address the knowledge worker shortage, the government has created the Human Resources Development Fund. The fund is being used to provide grants and subsidies to promote the provision of adequately skilled human resources for ICT. The establishment of the Houwteq Learning Centre, which focuses on skill development for ICT, supports this. The Department of Education has responded by creating SchoolNet, a strategic partnership that coordinates the linking of schools to the Internet (Markle Foundation).

3.5 Government Policy, Law and Regulation

This section presents a historical perspective on the South African government policies regarding Telecommunications services and their provision. Coinciding with the broader political transformation to democracy in 1994, the early 1990's saw the start of a unique reform process in Telecommunications and broadcasting in South Africa (Horwitz; 2001). Telecommunications services had historically been delivered on a monopoly basis through a government department responsible for Postal and Telecommunications services (SAPT). The Department fell under the full control of the Post-Master General (PMG) who was subject only to the Minister of Posts and Telecommunications (The Post Office Act No. 44 of 1958). By the late 1980's, SAPT was beset by a number of problems common to many Post Telephone and Telegraph (PTT) monopolies, the most notable of which was its enormous debt, which made expansion impossible. A meeting of international and domestic pressures, including the trend towards asymmetrical deregulation abroad and the pressure of the anti-apartheid struggle at home, resulted in the Department's commercialisation and the sector liberalisation in 1992. Beyond structural changes affecting financial operations and corporate governance, the locus of

power and the mechanics of the monopoly remained completely unchanged. The monopoly provider, Telkom SA Ltd fell to the control of the Postmaster- General and the Minister who continued to determine tariffs and fees. Telkom retained the power to prohibit others from offering any service without its explicit authorization, preserving, as Zlotnick observes, a direct link through the Minister, between government and the licensee. After the historic, first democratic elections in South Africa in 1994, the African National Congress (ANC) inherited a Telecommunications Company that had largely failed to resolve its legacy dilemmas: an inefficient, severely debt-ridden telephone company, now belonged to them. Little had changed, except that the delivery of telephone services to redress past inequality was now a stated government priority linked to the broader developmental goals that that had buttressed the ANC's election platform (Cohen; 2002). Thus began an historic consultative process, somewhat distinctive in its inclusiveness where all sectoral stakeholders participated in the development of a White Paper on Telecommunications policy (Government Gazette no. 16995 Notice No 291 of 13 March 1996) which was ultimately to become the blueprint for legislation and a future beacon for assessing how the consultative policy product has been finally realized and, where appropriate, deviated from. The White Paper articulated a commitment to the ideal that Telecommunications is not simply an aspect of development, but rather a precondition for its success. Thus, under the oversight of an independent regulator, competition would be gradually phased in while allowing a limited exclusivity for Telkom to concentrate on the rollout of service to previously disadvantaged areas (Janisch, Kotlowitz; 1998). A thirty per cent stake in the incumbent was sold to a strategic equity partner (SEP) who would supply the capital required to fund expansion, and the management capacity and skill to ensure it met the development challenges ahead. The consortium, Thintana investments is comprised of SBC communications (18 percent) and Telekom Malaysia (30 percent). Of the R5.45 billion transaction (at the time, USD 1.26 Billion), R4.4 billion was retained by Telkom for the development of its infrastructure (Janisch, Kotlowitz; 1998).

The White Paper found expression in the 1996 Telecommunications Act, which established the legal and regulatory framework for Telecommunications. With the coming into force of the Telecommunications Act, some important changes took place in

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the Telecommunications environment. For the first time, the general public interest was at the forefront of Telecommunications policy. Clearly the biggest challenge facing the government was how to ensure equal access to Telecommunications service and ensure that services were available in the rural and other poor areas. Some of the objects of the Telecommunications Act include: promoting universal service, encouraging ownership and control by persons from historically disadvantaged groups, ensuring fair competition, promoting small, medium and micro-enterprises within the industry and ensuring the efficient use of the frequency spectrum. (White; 2002).

Most significantly, the Act fundamentally changed the way in which Telecommunications was to be regulated, by establishing an independent Authority tasked to fulfil a public interest mandate. The Independent Communications Authority of SA (ICASA), which superseded the South African Telecommunications Regulatory Authority (SATRA), thus retrieved all licensing functions from Telkom, thereby separating the roles of policy formulation (the Department of Communications), operations (Telkom) and implementation (Regulator) – (Cohen; 2002). The obvious difficulty, which ICASA faces as a merged regulator, is that it is required to act in terms of both the applicable broadcasting and Telecommunications legislation. In terms of section 4(1) of the ICASA Act, ICASA must perform the duties imposed and may exercise the powers conferred upon the Independent Broadcasting Authority (IBA) and SATRA, respectively, in terms of the IBA Act, the Broadcasting Act and the Telecommunications Act. In practice, this has proved extremely difficult since the nature of the powers given to the regulators, and particularly, the nature of the relationships between SATRA and IBA, respectively, in relation to the Minister, were very different. Thus, in respect of its Telecommunications functions, ICASA is to operate with a severely constrained form of independence, for example, it is required to function in accordance with ministerial policy directions. However, in respect of its broadcasting functions, ICASA's independence is much greater, for example, it need only consider ministerial policy directions.

This schizophrenic nature of ICASA is especially difficult to manage given the fact that convergence of technologies means that the separation between Telecommunications and

broadcasting is becoming meaningless: it is increasingly difficult to say whether a particular technological innovation should be classified as broadcasting or Telecommunications. Indeed, convergence was the rationale for the merger of SATRA and the IBA and the establishment of ICASA in the first place. This issue has not, however, been adequately taken account of in the legislative framework and has only recently been making waves (Janisch, Kotlowitz; 1998).

The Telecommunications Act, unlike the IBA Act, provides for an important role for the Minister in making of regulations. No regulation made by ICASA in respect of Telecommunications is valid unless the Minister has approved and published it in the Government Gazette. This has given rise to disputes between the Minister and ICASA, notably in respect of facilities leasing and interconnection. The Telecommunications Act requires ICASA to prescribe guidelines relating to the form and content of interconnection and facilities leasing agreements. These guidelines are critical given the fact that Telkom (and soon the SNO) has exclusivity over the provision of Public Switched Telecommunications Services (PSTS) services and over the provision of certain Telecommunications facilities, thus making it difficult for Telecommunications service providers to, for example, obtain facilities from other suppliers.

As mentioned previously, ICASA retrieved all licensing functions from Telkom, thereby separating the roles of policy formulation (the Department of Communications), operations (Telkom) and implementation (Regulator) – (Cohen; 2002). Telkom's exclusive right to provide Telecommunications services were however, barely altered by the 1996 Act: its monopoly looked largely as it did in 1992. The government determined that the best way to ensure increased teledensity was to ensure that the Telecommunications Act provided that Telkom was able to continue to be the monopoly provider of certain PSTS and of certain Telecommunications facilities, in return for having certain roll out obligations. The Telecommunications Act provided that in its licence, the Minister would determine the period of exclusivity given to Telkom. Telkom's licence provided that Telkom would provide PSTS and certain Telecommunications facilities on an exclusive basis until 7 May 2002. The exclusivity could be extended for a period of one year if certain of Telkom's roll out targets had been

met. Telkom's licence set out roll out and new line targets. Although Telkom has been fined for not meeting its targets in a particular year, it has technically complied with the bulk of its roll out targets and has installed over 2 million new lines (Cohen; 2002). Unfortunately, there is a very high churn rate in South Africa, particularly in the poor rural areas. It is estimated that up to two thirds of these new lines have in fact been disconnected, due to non-payment. Telkom's exclusivity in respect of the provision of certain Telecommunications facilities consisted of providing fixed lines to the cellular operators, and providing facilities to value added network service operators ("VANS") and to certain private Telecommunications network ("PTN") operators.

The Telecommunications Act also opened up certain service licence categories to competition, including Value-Added Network Services ("VANS") and Private Telecommunications Networks ("PTNs"). There are approximately 300 licensed VANS-providers and approximately 50 licensed PTNs. VANS are restricted to the carrying of data only while PTNs may also carry both data and voice (Cohen; 2002). This first wave of competition was characterised by on-going disputes between Telkom and other VANS operators. Many court battles were fought and complaints were laid with the regulator. Telkom was of the view that its exclusivity was being undermined by the types of services, notably virtual private network services, being provided by VANS operators. It refused to supply additional facilities to numerous VANS providers who were unable to obtain these elsewhere, given Telkom's exclusivity. Unfortunately, few of these disputes have been satisfactorily resolved.

The Act also entrenched the duopoly status of Vodacom and MTN - whose initial licenses were controversially granted under the previous regime. Amidst a furore, a third cellular operator, Cell-C (Pty) Ltd, was subsequently licensed in February 2001. The 1996 law also formalised the operation of all other non-exclusive service sectors including Private Telecommunications Networks (PTN); Value-added Network Services (VANS) and Internet Service Provision (ISP), (Cohen; 2002).

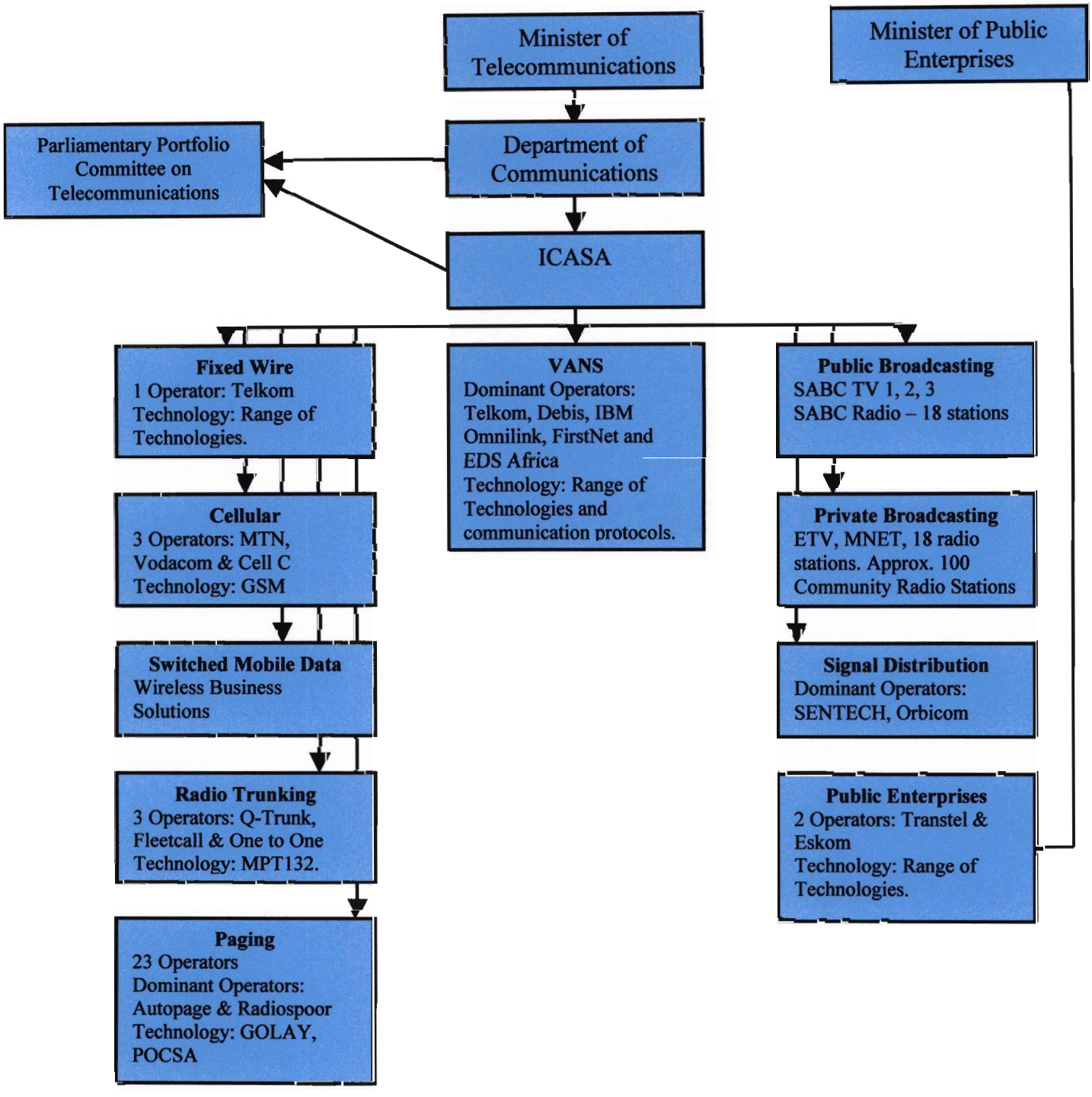
Manufacturing and equipment supply is fully deregulated and competitive, subject only to the condition that all specified equipment meets type approval standards set by the Authority.

In early 2001, the second consultative forum for broad participation in formulating the country's telecom policy was held. Notably however, the heady mood of reform politics characterizing the mid-90's had passed: the ANC government, still facing heavy unmet social policy demands, was well within its second electoral term. With Telkom's monopoly about to expire, amendments to the law in 2001 introduced novel approaches to realizing the developmental goals articulated in policy since 1994. The new legislative innovations now ensure that various companies with differing degrees of state shareholding are included in all major licenses.

According to Cohen (2002), a second national operator (SNO) will be licensed in 2003 to compete with Telkom, in which 30 per cent is to be shared between Eskom Telecommunications and Transtel, the communications divisions of the state electricity and transport utilities, in order "to maximise use of their respective existing Telecommunications infrastructure, facilities and resources." This 'maximum use' sentiment holds much appeal for many in the industry who have been seeking alternative service and facilities provision during the exclusivity years. To this end, given the extent of their respective networks, arguably capable of competing nationally with Telkom, Eskom Telecommunications and Transtel have urged the Minister to authorize them to provide interim service while a 51 per cent SEP is sought. Sentech (Pty) Ltd, the wholly state-owned signal distributor, will have its current service offering augmented by two new licenses to enable it to compete in multimedia and international gateway services, but will not be a direct service supplier to end users. Remaining faithful to the development promise of the White Paper, a further 19 per cent stake in the SNO was also set aside for a black empowerment component to the SNO license. ICASA accordingly recommended Nexus as a preferred applicant to the minister. The Act also provided for a number of issues, which facilitated an Initial Public Offering (IPO) of Telkom shares in 2003. While many of the telecom proposals were highly contested by various interest groups, they are now matters of settled law. However, it is too early to conclusively

Figure 3.1

SOUTH AFRICA'S TELECOMMUNICATIONS STRUCTURE



Source: BMI Techknowledge 2000

suggest whether the new market structure alone will facilitate or impede growth in the sector. A number of issues emerge as clear cause for concern, most significantly, the incumbent advantage afforded to Telkom by virtue of its position in the market; the downturn in the international Telecommunications industry and the lack of readily available investment capital and investor interest in the SNO.

However, one common factor that has unequivocally affected, and continues to adversely impinge on market growth in the future is the unresolved question of independent and effective regulation, and the legislative arrangements compromising that goal.

3.6 Current Market Structure

The scope of this study will be the Fixed line, Cellular/Mobile and Value Added Network Services (VANS) industries. No distinction will be made to the different types of transmission , that is, voice, data or image. The following is a summary of the different segments and sub-segments within the South African Telecommunications as described by Gillwald (2002).

3.6.1 Fixed Line

The 1996 Telecommunications Act afforded Telkom a legislated monopoly over public switched telephony. In terms of the Act and its Public Switched Telephone Network (PSTN) licence, Telkom had an exclusive right to provide national, international and local telephony services, including public pay phones, for a period of five years up to May 2002, when the sector was opened to new entrants. During the exclusivity period, Telkom was required to install 2.8 million new lines (1.7 million of which were to be installed in under-serviced areas), including 120,000 payphones. The switched network is currently 74 per cent digitalised, and the transmission network is fully digitalised. Telkom is committed to increasing the percentage of digitalised lines. Furthermore, Telkom is committed to extending the coverage of narrowband ISDN (Integrated Services Digital Network) and by introducing broadband ISDN services. This is possible largely because the core backbone of the ATM (Asynchronous Transfer Mode) network has been fully operational since February 1999, linking Johannesburg, Durban,

Bloemfontein, Port Elizabeth and Cape Town. As part of sector reform, Telkom took on a strategic equity partner (SEP) in April 1997 to assist in settling a high debt/equity ratio and preparing the company for competition. The capital raised from the ZAR 5.6 billion sale price was further needed in order to effect fixed line rollout. Thintana Communications, a consortium comprised of SBC Communications International Inc and Telekom Malaysia Berhad acquired a 30 per cent equity stake in Telkom, holding 18 per cent and 12 per cent respectively. A further 20 percent of Telkom was sold by an initial public offering (IPO) at the end of March 2003. This sale was originally set for 2001, but legislative delays and a weak Telecommunications market forced a postponement.

A second national operator (SNO) will be licensed at the end of 2003 to compete with Telkom, in which 30 per cent is to be shared between Eskom Telecommunications and Transtel, the communications divisions of the state electricity and transport utilities, in order "to maximise use of their respective existing Telecommunications infrastructure, facilities and resources."

3.6.2 Wireless (Mobile/Cellular)

Global Systems for Mobile Communication (GSM) has changed the face of Telecommunications in South Africa, and the country is becoming one of the most important GSM markets outside Europe. In 1993, two GSM public land mobile network (PLMN) licenses were issued to Mobile Telephone Networks Pty Ltd (MTN) and Vodacom Pty Ltd to provide cellular telephony on a national basis. Both networks operate at 900 MHz covering most urban areas and national roads — more than 70 per cent of population. In June 2001, a third license was awarded to the Cell C Consortium, which went live in November 2001. Cellular subscriber growth has been dramatic and far in excess of expectations, with almost 13 million subscribers in August 2002 (80 percent of which are active users), up from 2 million in March 1998, and now representing approximately 29 per cent of the population. As of August 2002, Vodacom had 7 million subscribers (54 percent market share), MTN had 5 million subscribers (40 percent market share), and Cell C had 750,000 subscribers (6 percent market share) (Gillwald; 2002). A major component of the subscriber base comes from the prepaid market, with more than

90 percent of all new connections coming from prepaid customers. This can be attributed to factors including the convenience of the prepaid model and the difficulty in securing credit for contracts.

3.6.3 VANS

Under the 1996 regulatory framework, the VANS and equipment supply sectors are fully competitive. ICASA has not finalised the licensing framework for either VANS or private Telecommunications networks (PTNs) but interim licences are currently granted on application. Providers however are constrained by the legislative requirement to use Telkom facilities in the provision of VANS. There are currently about 60 issued VANS licenses (both deemed and interim) with total revenue generated in this sector estimated at ZAR 180 - 200 million. Collectively, they service a customer base of 12,000, with monthly income per customer ranging from ZAR 2000 to well over ZAR 1 million. The total estimated value of installed VANS equipment is between ZAR 50-60 million.

3.6.4 Other Markets

Private Telecommunications networks (PTN) - There are currently seven interim PTN licenses in the sector, issued after the 1996 Act, in addition to the two national private networks operated by Transtel and Eskom. PTN licenses allow both voice and data services. However, the condition for issue is that the services allowed will be used by companies for internal purposes only, and will not bypass the PSTN. Collectively, Transtel and Eskom operate 150 exchanges, handling 72 million outgoing calls per annum. All other PTNs have to use Telkom facilities where the network is not contained on a single or two adjacent pieces of land, or where it interconnects to the PSTN.

Satellite - Satellite services operate in both the broadcasting and the Telecommunications markets. Significantly, no regulatory policy exists on satellite, and the Ministry of Posts, Telecommunications and Broadcasting has only released a draft policy on GMPCS. Within the broadcasting market, the dominant signal distributors are Orbicom (part of the M- Cell group) and Sentech, the government-owned common carrier signal distributor. Additionally, PanAmSat provides services to DTH broadcaster Multichoice, the South

African Broadcasting Corporation and a VSAT communications service. Inmarsat currently operates a global satellite system that is used by Telkom to offer a range of communications services for customers. Furthermore, Telkom utilizes the services of Intelsat satellites to provide voice satellite links for provisioning of PSTN voice and data services. Telkom itself is building new satellite earth stations to provide symmetrical as well as asymmetrical bandwidth. Teleports providing high-speed reliable connectivity are situated in the three main business areas of the country.

Undersea cable - Significant changes are on the horizon for the South African market as greater intra-continental and global connectivity are expected in Africa. SAT2, the biggest submarine cable serving Sub-Saharan Africa since 1993, will be complemented. SAFE (Southern Africa Far East) will connect Cape Town to Penang, Malaysia through an undersea (submarine) cable system. The WASC/SAT3 cable will connect Dakar, Senegal to Cape Town, while also connecting Cape Town to Portugal and Spain. The Africa ONE network, a 32'000 km undersea fibre optic Telecommunications cable system, will ring the entire continent and have 20 - 30 landing points at key coastal cities in Africa (Cape Town being one), the Middle East and Europe, and is expected to be ready for full service at the end of 2003. This greater connectivity will go a long way to bridging the digital divide between Africa and the rest of the world, and increasing South Africa's importance as a hub.

Internet market - The South African Internet users can broadly be divided into three categories: home users accessing the Internet from home (largely via dial-up modems), corporate users gaining access through company networks, and academic users and educational institutions. In total, the number of South Africans with access to the Internet at the end of 2002 was 3,068,000.10 (Inter-World-Stats; 2003). Thus, approximately 1 in 15 South Africans currently has access to the Internet. This compares with at least 1 out of every 3 people in economies like the USA, Canada, South Korea, Singapore and Hong Kong. The industry is dominated by five "first-tier" ISPs - those that buy part of their bandwidth from international suppliers or manage part of their bandwidth outside South Africa. These companies are Internet Solutions, UUNet SA, Telkom, DataPro and MTN Network Solutions. The remainder of the industry is made up of smaller "second-tier"

ISPs, which purchase their bandwidth from the first-tier ISPs. The leased line Internet links of the "first-tier" ISPs are mostly carried through the SAT-2 fibre cable across the Atlantic to the USA, but there are also satellite providers. Most ISPs peer through the South African Internet Exchange (SAIX), with 55 points-of-presence around the country and two shared INX's. The number of ISPs in South Africa grew from an initial 7 ISPs operating in 1994, to a total of 150 ISPs operating at the end of 2002. However, this growth has not been of a consistent rate. In 1995, the annual increase in number of ISPs was 160 per cent and in 1997 the annual increase in number of ISPs was 133 per cent. However, since 1997, the rate of growth has slowed down significantly. With the emergence of a competitive Telecommunications environment in 2003, the rate of growth is expected to begin increasing again.

Broadcasting – There are three segments in the broadcasting market, which are, Radio, Television and Signal distribution. Broadcasting is outside of the scope of this study.

3.7 Investment Situation

According to the Final Report of the Digital Opportunity Initiative by the Markle Foundation *et al*, many South African businesses now have access to both international and local financial institutions. Black empowerment start-up organisations have access to financial means far beyond that available under the apartheid regime, and there is a vibrant and growing local venture capital market accompanied by inflow of foreign direct investment from ICT multinationals. A number of South African ICT-related businesses have obtained access to global markets through mergers and acquisitions with ICT companies in similar lines of business.

Free trade policies and tax incentives have allowed organisations such as Mecer, Acer and Compaq to start assembling ICT hardware and network equipment locally, creating a pool of ICT-skilled technicians and programmers. There are also ICT tariff programs applied to the shipping of small units or parts that encourage value-added assembly to take place in South Africa.

The financial sector has been at the forefront of adopting ICT, contributing 50 percent of all ICT expenditure. Major banks operate their own regional networks, offering some web sites with online banking services. Public enterprises are also being transformed and modernized in a widespread restructuring program. This movement has facilitated the development of an active entrepreneurial scene.

3.8 Summary

South Africa has approximately 5 million fixed lines and 11 million mobile subscribers. However, access to Telecommunications resources is unequal – divided along racial lines and also along urban/rural lines. As it did with most state-provided services, apartheid fundamentally skewed the manner in which the Telecommunications infrastructure was allocated in South Africa. As a result the Telecommunications network exhibits this characteristic duality which was in part due to the greater economic power of the white community, but also an historical consequence of the political power of whites and the role the state played in ensuring provision was made based on social and political clout, rather than economic efficiency.

After the historic first democratic elections in SA in 1994, the ANC inherited a Telecommunications Company that had largely failed to resolve its legacy dilemmas: an inefficient, severely debt-ridden telephone Telkom, now belonged to them. The 1996 Telecommunications Act established the legal and regulatory framework for Telecommunications. Most significantly, the Act fundamentally changed the way in which Telecommunications was to be regulated, by establishing ICASA and thus retrieving all licensing functions from Telkom, thereby separating the roles of policy formulation (the Department of Communications), operations (Telkom) and implementation (Regulator) – (Cohen; 2002). Telkom's exclusive right to provide Telecommunications services were however, barely altered by the 1996 Act: its monopoly looked largely as it did in 1992. However, the Act did open up certain service licence categories to competition, including Value-Added Network Services ("VANS") and Private Telecommunications Networks ("PTNs"). The Act also entrenched the duopoly status of Vodacom and MTN - whose initial licenses were controversially

granted under the previous regime. Amidst a furore, a third cellular operator, Cell-C (Pty) Ltd, was subsequently licensed in February 2001. A second national operator (SNO) will be licensed in 2003 to compete with Telkom, in which 30 per cent is to be shared between Eskom Telecommunications and Transtel, the communications divisions of the state electricity and transport utilities.

Chapter 4

EVALUATION

4.1 Introduction

This chapter uses the literature framework of chapter 2 to report the results and findings of the Telecommunications environment in South Africa. The scope of this evaluation will be an external analysis of the fixed line and cellular industries. No distinction will be made to the different types of transmission, that is, voice, data or image.

4.2 SWOT Analysis of the Telecommunications Environment in South Africa

Although South Africa is the dominant economy in Africa (particularly in sub-Saharan Africa) it also has one of the highest Gini coefficients in the world. This is a legacy of Apartheid and this pattern of gross inequality is mirrored in South Africa's Telecommunications statistics. Teledensity in South Africa is approximately 13.5 percent. This relatively low teledensity figure is a combined product of the skewed utility distribution policies of apartheid and other barriers to telephone penetration, such as geographical, low literacy levels, high costs of usage and poor last mile infrastructure. It is worth noting that line cancellation due to lack of affordability is estimated at 16 per cent. Despite significant gains over the last five years, the distribution of telephony service in South Africa continues to reflect the highly uneven development of the infrastructure of the past, with 18 per cent of black households and 82 per cent of white households having telephony service. Similar distinctions in service can be seen between urban and rural households, with 64 per cent of urban households and only 9 per cent of rural households having telephony service. This is a definite weakness as South Africa is playing catch-up to developed countries and also has to address the wrong doings of the past. Any policy decisions made for the Telecommunications Industry will have to take into account the social responsibility of addressing this inequality. Therefore politics has a big responsibility in shaping the new Telecommunications environment.

Furthermore, infrastructure in South Africa is poorly linked and spread unevenly across the country. The development in the commercial zones contrasts with very low penetration of services in rural and remote areas (22 lines per 1,000 people). If one has to look at the penetration levels solely from a business viewpoint and not from a social one then the current infrastructure in the urban areas certainly enhances South Africa's reputation as being the cornerstone of Africa. The government is certainly addressing the rural access with its second phase of liberalisation by opening up its fixed line market to competition. However, despite being advertised as a beacon to the rest of Africa, South Africa faces many challenges around unemployment, crime, education, delivery of health services, and housing. The country is relatively dependent on foreign investment and gears economic policy largely to that end. These are issues that the government will have to address if South Africa is to fulfil its economic potential.

South Africa is a member of the Southern African Development Community (SADC). The SADC's primary focus is the regional integration of the politics and economies of its 14 Southern African member states. The agreement requires South Africa and other regional states to harmonise their Telecommunications regulatory environments, and to create similar technical standards, network maintenance and provision, performance standards, regulatory structures and universal service policies, among other objectives and thereby gives South Africa the perfect platform in which to tap into the African Telecommunications market. This could however also pose a problem, as South Africa will increasingly have to consult and have to conform to developments within the SADC when making decisions regarding its own Telecommunications market. Furthermore the African Telecommunications Union (ATU), of which South Africa is a member, is the significant continental body with a bearing on South Africa's Telecommunications sector. South Africa also has various commitments due to its WTO membership.

The 1996 Telecommunications Act established the legal and regulatory framework for Telecommunications in South Africa. With the coming into force of the Telecommunications Act, some important changes took place in the Telecommunications environment. Most significantly, the Act fundamentally changed the way in which Telecommunications was to be regulated, by establishing an independent Authority

tasked to fulfil a public interest mandate. The Act also entrenched the duopoly status of Vodacom and MTN - whose initial licenses were controversially granted under the previous regime. The licensing of the third cellular operator, Cell-C (Pty) Ltd, creating a oligopolistic market structure, which I believe, was necessary to keep the industry competitive and to also take advantage of the market demand for mobile services. The 1996 law also formalised the operation of all other non-exclusive service sectors including Private Telecommunications Networks (PTN); Value-added Network Services (VANS) and Internet Service Provision (ISP). A second national operator (SNO) will be licensed in 2003 to compete with Telkom, in which 30 per cent is to be shared between Eskom Telecommunications and Transtel, the communications divisions of the state electricity and transport utilities, in order "to maximise use of their respective existing Telecommunications infrastructure, facilities and resources." This author believes that although there have been a few hiccups along the way, government policy is certainly heading in the right direction. One has to take cognisance of the fact that the new democratic government has a social responsibility and therefore will have to slowly but surely shape the industry. World events certainly have not helped the government in its quest to liberalise the industry.

GSM has changed the face of Telecommunications in South Africa, and the country is becoming one of the most important GSM markets outside Europe. This is a significant opportunity for South Africa. A major component of the cellular subscriber base comes from the prepaid market, with more than 90 percent of all new connections coming from prepaid customers. This can be attributed to factors including the convenience of the prepaid model and the difficulty in securing credit for contracts. Another opportunity is the SAFE (Southern Africa Far East) project, which will connect Cape Town to Penang, Malaysia through an undersea (submarine) cable system. The WASC/SAT3 cable will connect Dakar, Senegal to Cape Town, while also connecting Cape Town to Portugal and Spain.

Since 1997 the rate of growth in the ISP's in South Africa has slowed down significantly. With the emergence of a competitive Telecommunications environment in 2003, the potential is certainly there for the rate of growth to begin increasing again.

Many South African businesses now have access to both international and local financial institutions. Black empowerment start-up organisations have access to financial means far beyond that available under the apartheid regime, and there is a vibrant and growing local venture capital market accompanied by inflow of foreign direct investment from ICT multinationals. A number of South African ICT-related businesses have obtained access to global markets through mergers and acquisitions with ICT companies in similar lines of business. However, high equipment costs, a result of the necessity to import all capital equipment - combined with weak local currencies, vast and inhospitable terrains to be covered, all result in an installation fee of a telephone line costing four times that in a developed country. Manufacturing and equipment supply is fully deregulated and competitive, subject only to the condition that all specified equipment meets type approval standards set by the Authority.

South Africa is facing a significant "brain drain" in technical and entrepreneurial ICT skills, with an estimated 200-300 ICT-skilled resources leaving the country each month. This could be costly, especially with the impending rollout of the SNO.

There is a very high churn rate in South Africa, particularly in the poor rural areas. It is estimated that up to two thirds of these new lines have in fact been disconnected, due to non-payment. One could attribute this to the economic climate of the country.

A number of issues emerge as clear cause for concern, most significantly, the incumbent advantage afforded to Telkom by virtue of its position in the market; the downturn in the international Telecommunications industry and the lack of readily available investment capital and investor interest in the SNO. However, one common factor that has clearly affected, and continues to adversely affect market growth in the future is the unresolved question of independent and effective regulation, and the legislative arrangements compromising that goal. All of these problems just emphasise what a daunting task the government actually faces since most of these problems are external.

Table 4.1: SWOT Analysis of the Telecommunications Environment in South Africa

STRENGTHS	WEAKNESSES
• Dominant Economy in Africa • Member of SADC, SATCC-TU, ATU and WTO • Developed Rail and Electricity infrastructure • Embracing change • Pent-up demand for high speed access • Existing 5 million fixed lines and 11 million mobile subscribers. • High penetration in commercial zones • Highest Internet penetration in Africa • Government policy and commitments • 1996 Telecommunications Act • Independent Regulator viz. ICASA • Oligopoly cellular market structure • Manufacturing and equipment supply is fully deregulated and competitive • Strict standards control • SNO will be licensed end of 2003 • Transport and Electricity utilities will form part of the SNO	• Highly uneven development and poorly linked Telecom infrastructure • Legacy of Apartheid • Limited trained work force • Dependant on FDI • Ability to attract services and investors • High cost of build-out • Scarce funds (capital) • Need to think beyond County • Public transportation • High Gini Coefficient • Lack of reasonably priced high-speed services • Vast and inhospitable terrain • Access to Telecommunications resources is unequal divided along race and urban/rural lines • Low teledensity figures • High costs of usage and poor last mile infrastructure • Line cancellation due to affordability is 16 percent Only 42 percent of South Africans have fixed telephones or cellphones.

STRENGTHS contd.	WEAKNESSES contd.
• Incumbent is bound to performance criteria • Most important GSM market outside of Europe • VANS and equipment supply sectors are fully competitive • WASC/SAT3 undersea cable • Many South African businesses now have access to both international and local financial institutions.	• Lack of entrepreneurial ICT Skills • Schizophrenic nature of ICASA • Minister has to approve any regulation deemed necessary by ICASA • Very high churn rate • Telkom has a strong advantage in terms of market position • Rate of growth in Internet market has slowed down
OPPORTUNITIES	**THREATS**
• Better level of services • Move to high tech usage • Government • Financing • Global market access – To & From • African Market • Educational opportunities • Cultural activities • Job market • Constantly evolving technology • Second Phase of Liberalisation – opening up fixed line to competition • Licensing of the SNO • Member of SADC, SATCC-TU, ATU and WTO	• Financing • Media-bad press • Politics • Government • Some citizens are still unwilling to embrace change • Constantly changing technology • Lack of information • Existing, entrenched Telkom • Economic Challenges – unemployment, crime, education, delivery of health services and housing • Weak Currency • Low literacy levels

OPPORTUNITIES contd.	THREATS contd.
• Most important GSM market outside of Europe • Huge prepaid market • WASC/SAT3 undersea cable will open foreign markets • Approximately 1 in 15 South Africans have access to the Internet • Many South African businesses now have access to both international and local financial institutions. • Free trade policies and tax incentives • Major banks operate their own regional networks. • Transformation and modernisation of public enterprises	• High Equipment Costs mainly because of importing • Significant Brain drain • Downturn in the international Telecommunications industry • Lack of readily available investment capital and investor interest in the SNO

Source: Warren Moorgas

4.3 Remote Environment

The remote environment comprises factors that originate beyond and usually irrespective of any single firm's operating situation. The remote environment presents firms with opportunities, threats and constraints, but rarely does a single firm exert any meaningful influence as the remote environment is composed of segments (and their individual elements) that are external to the firm. The PEST analysis will be used to consider what environmental influences have on the remote environment with regards to the Telecommunications market in South Africa.

4.3.1 PEST Analysis

Political

The political is very heavily weighted due to the regulatory framework controlled by the government. The influence of this control is also analysed further to determine its effect on market entry and competitive rivalry. South Africa is a member of the Southern African Development Community (SADC), the African Telecommunications Union (ATU) and the World Trade Organisation (WTO). South Africa's many commitments to the above organisations means that it has to consult and have to conform to developments with its trading partners when making decisions regarding its own Telecommunications market. Thus policy is not made in isolation. The 1996 Telecommunications Act established the legal and regulatory framework for Telecommunications in South Africa by introducing ICASA as an independent regulator, introducing the oligopoly cellular/mobile market structure of MTN, Vodacom and Cell C, formalised the operation of all other non-exclusive service sectors including PTN's, ISP's and VAN's and the impending licensing of the SNO. BEE has been heavily pursued by the government to address the legacy of apartheid. This author believes that although there have been a few hiccups along the way, government policy is certainly heading in the right direction. One has to take cognisance of the fact that the new democratic government has a social responsibility and therefore will have to slowly but surely shape the industry. World events certainly have not helped the government in its quest to liberalise the industry.

Economic

Developing economies have recently assumed a greater role in international commerce as a source of both threats and opportunities and have found it economically advantageous to confront the developed countries. These factors must be taken into consideration when evaluating the economic trends in South Africa as this is classified as an emerging or developing economy. These international forces can affect positively or negatively the economic well being of the Telecommunications business community in South Africa.

South Africa is a middle-income, emerging market with an abundant supply of natural resources; well-developed financial, legal, communications, energy, and transport

sectors; a stock exchange that ranks among the 10 largest in the world; and a modern infrastructure supporting an efficient distribution of goods to major urban centres throughout the region. However, growth has not been strong enough to lower South Africa's high unemployment rate; and daunting economic problems remain from the apartheid era, especially poverty and lack of economic empowerment among the disadvantaged groups. High crime and HIV/AIDS infection rates also deter investment. South African economic policy is fiscally conservative, but practical, focusing on targeting inflation and liberalizing trade as means to increase job growth and household income. The country is relatively dependent on foreign investment and gears economic policy largely to that end. These are issues that the government will have to address if South Africa is to fulfil its economic potential.

Social

The end-users of Telecommunications products are becoming increasingly aware of quality and expect a product that is reliable during use. GSM has been an unqualified success because it works, offers definite advantages over first generation and is at a price that enables everyone to access the technology. One problem that has been apparent over recent years is the high market exposure given to new features and technologies that are not well-proven and tested before launch. Wireless Applications Protocol (WAP) was a prime example of this. A great deal of effort has been injected into WAP to make sure that the early teething problems have been overcome, but the public can sometimes demonstrate good long-term memory, and changing opinions is a much harder marketing nut to crack. The market expectation for Bluetooth and 3G has been raised considerably, therefore now we are at a critical stage in fulfilling the advertised dream.

Technological

The government policy on convergence cannot come quick enough. The one-stop shop customer need and the manufacturers' success in integrating cellular, cordless and Internet user applications into a single unit has meant that a Telecommunications company has to consider all major technologies and review each for their commercial benefits. In certain cases, some technology advancements will not create a profitable business in isolation, but, it might mean the difference between getting the complete sale

Table 4.2: PEST Analysis of the Telecommunications Environment in South Africa

Economic	Political/Legal
• Inflation Targeting • High Interest Rates • GDP of US$128 billion • Population of 45 million is approximately 5 percent of total African population • One of the highest Gini Coefficients in the world • High penetration in commercial zones • High Unemployment	• Member of SADC, ATU and WTO • Telecommunications commitments under GATS • 1996 Telecommunications Act • ICASA is an Independent Regulator (implementation) • Policy Formulation sits with the Department of Communications • Minister has to approve any regulation deemed necessary by ICASA • Commencement of second wave of liberalisation and deregulation • IPO of Telkom • Free trade policies and tax incentives • Black Economic Empowerment
Socio-Cultural	**Technological**
• A huge number of rural black people have never used a phone • Skewed utility distribution policy – legacy of apartheid • Low literacy levels • Large unskilled, unproductive workforce • 18 percent black households have services compared to 82 percent of	• Approximately 300 licensed VANS and 50 licensed PTN's. • Manufacturing and equipment supply is fully deregulated and competitive • Stringent Standards set by the Authority. • Telkom deployed broadband ISDN • Digitalised lines

Socio-Cultural contd.	Technological contd.
whites. • Significant Brain Drain • Segregated and unequal education infrastructure • Entrenched Environmental Laws	• Both MTN and Vodacom operate at 900MHz • VANS and equipment supply sectors are fully competitive • GPRS, VSAT, WASC/SAT3 • Convergence

to products or none at all. The great breadth of technology and the amount of time required to analyse each market sector does create a large overhead for a Telecommunications vendor, but this is a necessary task and is appropriate to a modern, commercial company.

4.4 Industry Environment

An industry is a group of firms producing products that are close substitutes. In the course of competition, these firms influence one another. Typically, industries include a rich mix of competitive strategies that companies use in pursuing strategic competitiveness and above-average returns. In part, these strategies are chosen because of the influence of the effects of an industry's characteristics.

4.4.1 Porters Five Forces Analysis

The model proposed by Michael Porter and discussed in Chapter 2 is used to analyse the competitive situation of both the fixed line and cellular industries.

4.4.1.1 Fixed Line

Force 1: Rivalry Among Existing Firms - LOW

Exit barriers – Exit barriers are high due to the large capital investment and usually high amount of licence fees. Payback on initial investment could vary between 4 – 10 years depending on market size and investment on the network.

Industry concentration Ratio – This is usually favourable to the operator since the licences conditions normally specifies or restricts the number of incumbents to ensure the market can sustain the operators. In South Africa the incumbent Telkom is likely to face competition at the end of 2003 from the impending SNO. However this means that there will still only be two national operators.

Industry Growth – This is a major factor and with the economic outlook of South Africa looking better than in the Apartheid era. I believe that the industry is in the growth phase and likely to increase with the introduction of the SNO.

Overcapacity- Could be problem especially since the infrastructure and capital investment laid out by the country's transport and electricity utilities are already being questioning by the FEP investors for the SNO.

Product Difference – Not a major factor since majority of consumers require basic low cost service.

Brand identity – Could be a factor as Telkom has the stigma attached to all state utilities, that is, one of inefficiency.

Switching costs - This has a major influence since these are generally high and there is not much incentive for consumers to switch, that is, the products offered by Telkom and the SNO will not be significantly differentiated.

Force 2: Barriers to Entry - HIGH

Government policy – It is seen as the single most dominant driver to gain entry into the market. The window of opportunity is relatively small and timing is of crucial importance. After privatisation of the main incumbent, market liberalisation commenced and entry is now possible. Market entry is gained in one of two ways either on the issue of the new SNO licence or acquisition of equity of the main state owned monopoly operator viz. Telkom.

Capital Requirements - Network infrastructure and other capital requirements are demanding and places a barrier to entry which can only be overcome by corporations with sufficient liquid reserves or alternatively have the resources to source the necessary finance required. The privatisation of the state networks also requires huge capital resources for companies who decide to bid for such as was the case with Thintana

Investments to a tune of R5.45 billion. Capital requirements are very large to purchase a network licence. One way of reducing capital requirements and removing this barrier to entry is to acquire a stake in an operational operator with the licence and network infrastructure in place. The investment is then reduced.

Economies of Scale – This is another factor that has an impact with the high fixed cost of the network and a relatively small variable cost it becomes necessary for operators to gain the maximum number of subscribers that will ensure an almost 100 percent utilisation of capacity. Estimating market share is important to ensure construction of a network with capacity to operate at near optimum level. Scale economies could be harnessed only if the network is used at maximum or near maximum capacity. Organisations like Deutsche Telkom, British Telkom, Vodafone etcetera harnesses economies of scale on a global basis, through expertise transfer and almost negligible learning curve costs. This is due to the vast experience gained in many networks throughout the world. These organisations will invariably have a lower operating cost and lower exposure to risk. The high risk items are identified and systematically protected, this is only possible through the experience gained and systems developed on other networks. Economies of scale are also gained by optimising the network to maximise the utilisation of the assets.

Access to Distribution – Universal access is important in South Africa since the current network infrastructure and capacity is heavily weighted towards the more profitable metropolitan areas. The SNO will be given easy access to distribution to the less profitable rural areas. Access to distribution in the urban regions is expected to be restricted however - the offer of the rural regions is expected to be open for market penetration. Here again it is the issue of universal access and addressing the needs of the rural communities. The two major disadvantages are the first being the cost of network is higher to reach an urban equivalent subscriber base. The second is the low utilisation of the network increases the payback and therefore exposure to risk is higher.

Absolute cost Advantage – No major impact

Propriety Product differences – No major impact

Propriety Learning curve – No major impact if managed well especially since Eskom and Transtel are already established PTN's.

Access to Inputs – No major impact – equipment suppliers (vendors) are currently aggressively competing for the same business and most have project funding/financing in place to offer to the operator (client).

Brand identity – No major impact initially

Switching costs – No major impact.

Expected Retaliation – This factor does have an impact since the main incumbent , that is, Telkom will endeavour to become more efficient and "will" drop prices to become more competitive.

Force 3: Threat of Substitutes - MEDIUM

Switching Cost - At present the switching cost of consumers has no direct impact in the Telecommunications industry, since there is no real equivalent to switch to. This will change with the SNO. However, switching to a mobile service provider is costly.

Relative performance of substitute – No direct competitor at present, however the mobile operators have in recent years gained significant market share.

Buyer propensity to Substitute – No major substitutes to the fixed Telecommunications service, which could attract subscribers, therefore it is not seen as a major influence. Voice over IP (VOIP) has not been a success at all in the South African market. There is however a choice between a mobile Telecommunications service and a fixed line service. Wireless products and two-way radios have not been available to the general public at large and therefore although identified as a substitute it does not pose a threat.

Force 4: Supplier Power - LOW

Switching cost of firms in the Industry – Operators decision to switch from one supplier to another although not common, does impact. Global standards reduce switching costs since interoperability is possible between various vendors equipment, that is, fixed line switches, mobile switches and mobile base stations for receivers and transmitters (GSM standard). The same applies to fixed line telephone instruments as well as mobile handsets.

Threat of Forward Integration - Although possible and if implemented could become a major factor to deal with, the equipment suppliers have not to date forward integrated to become an operator, this status quo, is predicted by most respected bodies to remain.

Supplier concentration – There are seven major suppliers of Telecommunications network equipment, which are Siemens, Ericsson, Nokia, Nortel, Alcatel, Lucent and Motorola.

Importance of volume to supplier – It is the norm that an operator will have specific supply contracts with certain vendors. These are however subject to evaluation and performance standards and are reviewed ever so often usually over a two-year period.

Differentiation of Inputs – No major impact

Cost relative to total Purchase in Industry – Once of major purchase and construction of network thereafter maintenance and upgrade of network, no major influence.

Presence of substitute inputs – Not possible in this sector. Alternative technologies could be used however the suppliers of such remain the same as those providing the primary choice of equipment.

Standards - The existence of the International Telecommunications Union (ITU) enabled standards to be adopted in most cases, globally. These standards reduced the supplier power by eliminating the propriety equipment standards and now all switching equipment and wireless equipment conforms to some standard, which enables an operator to switch from one supplier to another with very little cost. This reduces the supplier power.

Force 5: Buyer Power - LOW

Product Differentiation – Although this is a major factor in the developed economies, as previously stated market research reveals basic service at low cost is required for the Southern African region. The structure of this industry is such that the buyer power is limited. This is mostly as a result of the industry being a utility type Service Provider operating in a Monopoly or Oligopoly sector. The buyer doe not have much power to negotiate lower prices or non-standard services. This is due to the utility nature of the Telecommunications industry.

4.4.1.2 Mobile

Force 1: Rivalry Among Existing Firms - HIGH

The industry has changed from two competing entities to the current number of three. The end result has been a related decrease in any firm's given market share. The industry

trend in market share and concentration is, therefore, moving in a preferable direction. Of course, the Department of Communications has been instrumental in bringing the mobile industry into existence, and in helping achieve a competitive environment. The finding that spectrum scarcity and the licensing process create a barrier to entry is not intended as a criticism of the Department, but rather as a statement of one entry consideration which has a bearing on the competitive status of the industry. There are now two roughly equal sized firms and one smaller firm. While the relative concentration in the mobile wireless industry might be considered cause for concern in some circumstances, the licensing requirement really places the power of determining how many competitors exist in the hands of the government. There are no indications of market power abuse resulting from the high levels of industry concentration, although continued monitoring should be maintained. The competitors continue to match or outdo each other in offerings and promotions, while at the same time trying to introduce distinctiveness into their own offerings, demonstrating a relatively high degree of rivalry.

Force 2: Barriers to Entry (New Competitors) - HIGH

The mobile wireless industry is a difficult industry to enter. While the technology to provide service does not present a particularly imposing barrier (since numerous vendors are available to supply network and other equipment and until fairly recently, they acted as key financiers as well), and although the costs of networks and other costs will limit the number of firms able to finance entry, the key barrier concerns the scarcity of spectrum, and the licensing process to allocate that spectrum. In short, no one enters the market until such time as the Department of Communications decides to release new spectrum, and until they have successfully applied to and received permission from the Department. A second key entry/exit barrier concerns the foreign ownership limits which currently apply to South African telecom carriers.

There are indications that economies of scale may exist in the market, but not that the appropriate industry structure is less than the current number of firms. That is, while economies may exist, they do not appear to be harmful to competition. The ability to access and the cost of capital varies from competitor to competitor. This situation can

affect the ability of some carriers to compete as effectively as others. In addition, it may be important to building the next generation of service networks. Ongoing monitoring is recommended.

Force 3: Threat of Substitutes - LOW

At present the switching cost of consumers between operators is high. Furthermore the inconvenience with the changing of one's cellphone number is a big factor in prohibiting switching. However there is no equivalent industry to replace the mobile one , that is, there is no direct substitute to the industry.

Force 4: Supplier Power - LOW

Same as the fixed line.

Force 5: Buyer Power - MEDIUM

The scope and variety of services, packages, features and coverage indicate a strongly competitive state with respect to product (or non-price) related competition. Most consumers enjoy a wide variety of choices in how they can receive mobile telephone service. From pre-paid options to numerous number-of-minute packages, from handset and service features, from combination packages of anytime minutes, long distance and calling features, all the way to highly customized packages, the South African market offers numerous product/service choices. While there are still areas of the country that do not have terrestrial wireless service available, the vast majority of the South African population can access a mobile wireless service, usually with a choice of at least two suppliers. The wide variety of choices in non-price related mobile service characteristics is echoed in price options. Similar to the (non-price related) options available in service packages and features, South African consumers have numerous choices in price-points for mobile wireless service. Prices have been falling over time (particularly after the entry of Cell-C) and compare favourably with prices internationally. The lack of supra-normal returns (or any profitability) in the industry provides further substantive evidence of the vigorous price competition in the market.

4.5 The Operating Environment

The operating environment is seen as the closest arena immediately outside of the firm. The firm does have some control of this through its corporate strategy, which it decides to adopt. The environment comprises of factors in the competitive situation that affect a firms success in acquiring much needed resources or factors that affect the marketing, of the Telecommunications service, profitability:

- Competitors
- Creditors
- Customers
- Labour
- Suppliers

Analysis of many of the above factors is outside the scope of this study. However those that are relevant e.g. competitors are common to the industry environment and have been adequately assessed in that section.

4.6 Key Driving Forces

The key driving forces identified in Chapter 2 (Figure 2.3) for the Telecommunications industry are:

- Technological change.
- Government/Political interest
- Stakeholders interest viz. operators, customers, and supplier's etcetera.
- Globalisation effects

All of the above forces have been commented on in the preceding analysis and will therefore not be individually analysed to avid repetition. However it has to be noted, that of all the above driving forces, the liberalisation process is the most significant.

4.7 Summary

The legacy of apartheid is a definite weakness as South Africa is playing catch-up to developed countries and also has to address the wrong doings of the past. Any policy decisions made for the Telecommunications industry will have to take into account the

social responsibility of addressing this inequality. Therefore politics has a big responsibility in shaping the new Telecommunications environment and is very heavily weighted in all parts of the analysis.

South Africa faces many challenges around unemployment, crime, education, delivery of health services, and housing. The country is relatively dependent on foreign investment and gears economic policy largely to that end. These are issues that the government will have to address if South Africa is to fulfil its economic potential.

Although there have been a few hiccups along the way, government policy is certainly heading in the right direction. One has to take cognisance of the fact that the new democratic government has a social responsibility and therefore will have to slowly but surely shape the industry. World events certainly have not helped the government in its quest to liberalise the industry.

There are many market opportunities in the Telecommunications industry in South Africa. The industry is in the growth phase and offers many prospects for firms looking to invest. However there are a few barriers to entry especially for the major operator licences. Competition is relatively low except in the Cellular industry where the licensing of Cell-C has certainly introduced healthy competition.

Chapter 5

Recommendations and Conclusion

5.1 Introduction

This dissertation was completed on the understanding that it will add to the body of knowledge of organisations and potential Telecommunications companies that would require industry information to consider entry into South Africa. The main purpose of this study was to describe the industry for the various Telecommunications operators (fixed, cellular and VANS) in the South African market and to conduct a strategic analysis. Another objective was to provide the researcher with further knowledge of this particular industry. The perspective of the study was to learn and apply the knowledge elsewhere. The study is not mainly focused on applying the results on the studied matter, but rather focused on migrating the results and applying the knowledge to another market. As stated previously the South African Telecommunications market is very lucrative, especially with the second round of liberalisation on the horizon. A further aim of this study was to ascertain whether it is feasible, from a business environment viewpoint to invest in the Telecommunications sector in South Africa. The perceived shortcomings in the current government policy were also highlighted.

After analysis of the environment it emerged that the remote environment and in particular the legal and political factors, exerted the most influence on this industry. It has also been noted that the barriers to entry presents itself in both, the operating as well as he remote environments. The issue of globalisation and world trends was found to be present in the region. The liberalisation argument has been identified as the key driving force in this industry.

The following recommendations are adopted from the fifty-five submissions to the Second National Telecommunications Colloquium, as published by the Bridges.Org association with regards to recommendations on future government policy direction. These submissions included but were not limited to companies such as Siemens, GD Communications, SAEEC, Marconi, SABC, Transtel, Eskom, Telkom, MTN, Vodacom, SAVA and Sentech.

5.2 Discussion and Recommendations

Competition and Market Structure

The liberalisation of the Telecommunications market in South Africa is favourable. Allowing competition to thrive will have a major impact on the development of the Telecommunications market in this country, as it has elsewhere in the world, which will allow both consumers and business users to take advantage of greater choice, lower prices, and innovative services and applications. This will be of vital importance to South Africa's global competitiveness. I believe that the ideal situation is a market model which provides for multiple competitors at all levels of the Telecommunications industry, rather than a duopoly as has appeared to gain favour over the last few years (that is, the licensing of only the SNO and not a Third Network operator). A duopoly market structure, particularly at the operator level, is an imperfect market structure that will not afford consumers and business users alike sufficient choice, with competitive pricing and service levels, and will not deliver the economic and social benefits that a true competitive environment should afford. It is significant that recent European Union proposals, for example, specifically prohibit any restriction on the number of licenses to be issued in any class or category unless there is a specific need to restrict the number of licences due to the existence of some physical constraint e.g. the availability or otherwise of a scarce natural resource such as frequency spectrum (Van Den Berg 2001).

Participation in the Telecommunications market should be pursued through open and fair competition. Government intervention, when required, should promote a stable, international legal environment, allow a fair allocation of scarce resources and protect public interest. Such intervention should be no more than is essential and should be clear, transparent, objective, non-discriminatory, proportional, flexible, and technologically neutral. Furthermore, effective implementation of South Africa's WTO agreement on basic Telecommunications is of critical importance. Scheduled commitments under the WTO agreement should be reviewed to determine the extent to which the South African market and regulatory regime are fulfilling the Government's commitment to provide for and promote fair and effective competition in defined market sectors.

Free market principles will create a healthy, sustainable Telecommunications industry in South Africa. As an enabling technology, Telecommunications plays a large part in, and is fundamental to, the growth of all industry sectors. Globalisation and trade liberalisation will increase. Furthermore a strong domestic market underpins export success. Whilst it will probably not be cost effective to locally develop new major Telecommunications products in competition with the best of breed products from the big international manufacturers, the local companies excel in adding engineering value to the mass-produced international products. The best opportunities for the export of Telecommunications products would therefore be in the form of local value adding to internationally successful products for re-export, such as customisation of mass-produced components to meet customers' specific requirements and/or integration of the new products with customers' existing infrastructure. Some opportunities also exist for the development of niche products, which could address some gaps in the product ranges of the international players.

It has to be noted that the option favoured by Telkom and the already appointed SNO participants (Transtel, Eskom Telecommunications and Nexus) is for a duopoly with exclusivity for another 3-5 years. Telkom also would want a so-called 'level playing field' where the entrant would have all the same universal service obligations as Telkom. There is also considerable government support for this approach. It appears as if much of the government support comes from the fact that a further exclusivity period with a duopoly will maximise the revenue objective of government. It is perceived that the sale of both Transtel and Eskom Enterprises will both realise higher prices if an exclusive duopoly is in place – a premium to reflect the abnormal profits they are likely to get in future.

Convergence

Convergence of technologies is leading to the need for associated convergence in regulation of broadcasting, IT and Telecommunications. Convergence is crucial and must be supported by appropriate government policies. Currently, different rules apply to the regulation of different communications infrastructure and associated services, supported by different Acts of Parliament, and until recently, under the control of different

regulators. Convergence however means that the same services can be carried over any transmission network, whether fixed or mobile, Telecommunications or broadcasting, satellite or terrestrial. Separate regulatory frameworks for different communications infrastructures and associated services are therefore likely to become increasingly inconsistent and could potentially distort competition.

A converged regulatory authority such as ICASA is correctly positioned to regulate within a converged environment. The caution in this instance is that it must be correctly resourced and funded, and must be seen to be effective. Care must also be taken to ensure that the needs and demands of Telecommunications and broadcasting do not overwhelm one another – a balanced approach is essential when many differing priorities are constantly facing and challenging the regulator. To ease the burden on the authority, it should be recognised that the regulator will be best positioned to react to changes caused by convergence by using competition policy as much as possible as the predominant means of preventing abuses of market power in the Telecommunications and media sectors.

Empowerment

It is noted that various attempts have made for the provision of a minimum shareholding to be held by historically disadvantaged individuals in new developments/projects. However consideration should be taken of the fact that international companies may not have this limitation, which will create an unfair and anti-competitive advantage for international companies over South African companies. It should be left to the free market and moral obligation as to what percentage of companies' shareholding is to be held by previously disadvantaged persons. Given the drastic shortage of ICT skills both locally and abroad, and the fact that there is a lack of skilled historically disadvantaged individuals in the industry, the main thrust of plans should be to empower employees and potential employees through Skills Development. Incentives for training should be through tax incentive schemes and recognition in terms of internal qualifications obtained.

Human Resource Development

State of the art technologies and a policy framework are indeed critical to South Africa's ability to harness the Telecommunications sector. However, without the human capacity (people) to build and use the applications those technologies and policies will be for naught. This is one of the greatest challenges facing the industry. There is a severe shortage of persons with the skills necessary for growth in the economy in general, and in the ICT industry in particular. This shortage is seen as a result of the apartheid policies as well as a continued lack of coordination between the education system and the labour market. The shortage of relevant skills is further aggravated by the widespread emigration of skilled South Africans to countries such as the United Kingdom, United States, Australia, Canada, and New Zealand. It is imperative that the Telecommunications industry has equal opportunity policies and values that encourage diversity in our workforce to address the legacy of apartheid. It is necessary to develop South African's potential to the fullest by implementing extensive developmental programs to address their needs. The industry should be committed to a work environment free of racial, gender and disability discrimination, and has to accelerate its Affirmative Action plans over the next few years. To bring about the transformation of the socio-economic environment, the Telecommunications industry within South Africa should be committed to an Empowerment strategy whereby opportunities are offered to all sectors of the Designated Groups through initiatives including the active facilitation of Skills training, joint ventures and support of Small, Medium and Micro Enterprise's (SMME). Incentives should be offered by the government to help to accelerate the process.

Universal Service and Access

It is essential that Universal Service funding strategies are not used by and in conjunction with the incumbent operator to actually further entrench its economic monopoly. Universal Service fund contributions should be determined only based on the provision of those Telecommunications services that would have the direct effect of reducing (via revenue erosion by competitors) the capacity of the holder of the Universal Service obligation to fund the provision of services into under-served areas. It should never become an indiscriminate levy on all industry participants, regardless of their capacity to

negatively affect the incumbent's competitive positioning in industry sectors defined to be competitive.

New Telecommunications Technologies

In a number of ways, the technology employed in the South African Telecommunications network is quite sophisticated. Nearly all of the high-end communications services expected in the advanced economies are available in South Africa, including ISDN (integrated services digital network), GSM (global standard for mobile communications), videoconferencing, and WAP (wireless applications protocol). In fact, the South African GSM cellular network is the largest in the world outside of Europe and the percentage of digital switches is higher in South Africa than in many highly industrialised countries.

It is as impossible to predict which new technologies will be invented in coming years as it is to accurately predict what impact they will have, both in terms of economic and cultural impact, as well as in terms of the impact that they may have on the industry rules and regulations already in place. The Internet and the personal computer are excellent examples of new technologies that, at the time of their invention, were never predicted to have the kind of groundbreaking impact on the world as they have done. It for this reason that a facilitating and minimalist approach to both policy making and regulation should be adopted Rather ere on the side of growth and innovation, with all the potential for economic leadership that this approach can offer, rather than stifle those same driving forces via excessive regulation and restrictive slow-moving policies. Both policy and legislation must be technology neutral. Technological neutrality means that legislation should define the objectives to be achieved, and should neither impose, nor discriminate in favour of, the use of a particular type of technology to achieve those objectives. The current legislative framework is not technologically neutral. Different rules apply, for example, to services provided over mobile and fixed networks, and to access to frequencies for Telecommunications and broadcasting networks. Regulation that is based on specific technology can quickly become outdated, and may lead to inefficient or insufficient investment by market players. It means that the provision of services should be regulated in a homogenous way whatever the communications infrastructure on which

they are carried, whether Telecommunications networks or broadcasting networks, so that the regulatory framework does not distort competition.

Investment

It was perhaps naïve to assume that the results of this dissertation would paint an absolute picture of whether to invest in the South African Telecommunications market. Instead the many investment challenges of the region were identified and brought to the fore. Without investment in the production, distribution and application of information and communications technologies, developing the Telecommunications industry will be very challenging. Investor confidence and interest can be maximised by:

- Establishing preferential treatment for investment in the Telecommunications industry.
- Leading the investment attraction in this sector at the highest level of government involvement by lobbying, establishing contacts, and encourage and support their realization.
- Providing investment security and guarantee and institute a reliable exit and dispute resolution mechanisms.
- Providing taxation incentives both on input and final outputs of the information industry.
- Revising tax and general business rules that irk investment
- Providing clear long-term policies backed up with legislation that is consistent, unambiguous and simple.
- Removing as far as possible government involvement in the day-to-day operations of the industry.
- By ensuring those World Trade Organisation agreements, ITU regulations and local inter-government agreements are well prepared and communicated timeously to the industry.

Other considerations for investment, which are not covered by this dissertation, are the financial and economic aspects like return on investment and similar issues. The risk of the investment is also not discussed. It is based on the generally accepted principle that

the first precondition for an investment in the Telecommunications industry in South Africa is that the business environment must first be conducive for market entry, thereafter when this condition is satisfied, the aspect of financial feasibility must be considered. The last, but also equally important, issue of risk needs to be then evaluated. This dissertation does not however, analyse the environment exclusively in isolation. However, it has recognised that there are certain overlaps between the financial feasibility, risk and business environment factors.

5.3 Conclusion

Globally, the gap between those countries and individuals that have access to information and communications technologies and those who do not has become known as the 'digital divide'. South Africa's digital divide extends across the country with skewed access to ICT. Addressing this gap has been a major policy objective of the new democratic government in South Africa. Through various means, the Government of South Africa has attempted to use policy tools to achieve a range of objectives relating to the digital economy and the fostering of a knowledge society. South Africa's role as a leading African and developing world economy places additional burdens on its need to engage in regional, and global policy formulation activities in support of the emergence of a new regime for global e-commerce, that is supportive of the strategic goals of the developing world.

South Africa has made significant strides towards embracing the digital economy and the prospects for its development in the country are good (the recent downturn in the global technology markets and the so-called 'dot.bomb' implosion in the global e-commerce sectors notwithstanding). A key element in this generally positive outlook is the country's own high level of investment in Telecommunications technologies and infrastructure. South Africa has had a significant level of activity, and has tried to influence developments at local, national, regional, and global levels (with varying degrees of success). However, while there has been a high level of investment, there is still an insufficient level of Telecommunications infrastructure in rural and semi-urban areas, and within most black communities. This disparity of access to Telecommunications

infrastructure remains a barrier to growth of the digital economy in South Africa. These access issues are being addressed to a large degree through the use of multi-purpose community information centres, public Internet terminals, and other approaches to public computing. However, the existing monopoly in Telecommunications is still seen as a factor hindering the growth and development of the sector. Further, the lack of competition keeps prices artificially high, and combined with the metered tariff structure makes it exceedingly costly for SMME's and consumers to fully utilize the existing infrastructure. Awareness of the importance of the digital economy is growing, but current human resources and development strategies are insufficient to meet human capital requirements.

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Appendix I

ABBREVIATIONS

3G	-	Third Generation
ADSL	-	Asymmetric Digital Subscriber Lines
ANC	-	African National Congress
ATU	-	African Telecommunications Union
ATM	-	Asynchronous Transfer Mode
BEE	-	Black Economic Empowerment
CPE	-	Customer Premises Equipment
DOC	-	Department of Communications
DSL	-	Digital Subscriber Line
GATS	-	General Agreement on Trade Services
GDP	-	Gross Domestic Product
GSM	-	Global Systems for Mobile Communication
EDI	-	Electronic Data Interchange
EEC	-	European Economic Community
ESKOM	-	Electricity Supply Commission
EU	-	European Community
FDI	-	Foreign Direct Investment
IBA	-	Independent Broadcasting Authority
ICASA	-	Independent Communications Authority of South Africa
ICT	-	Information Communication Technology
IP	-	Internet Protocol
IPO	-	Initial Public Offering
ISDN	-	Integrated Services Digital Network
ISP	-	Internet Service Provision/Provider
IT	-	Information Technology
ITU	-	International Telecommunications Union
MC	-	Marginal Cost
MTN	-	Mobile Telephone Networks Pty Ltd

NGO	-	Non Government Organisation
OECD	-	Organisation for Economic Cooperation and Development
OPEC	-	Organisation of the Petroleum Exporting Countries
PABX	-	Private exchange equipment for business use
PoP	-	Point of presence
PMG	-	Post-Master General
PSTN	-	Public Switched Telephone Network
PSTS	-	Public Switched Telecommunications Services
PTN	-	Private Telecommunications Network
PTT	-	Post Telephone and Telegraph
SA	-	South Africa/n
SADC	-	Southern African Development Community
SAFE	-	Southern African and Far East
SAITIS	-	South African Information Technology Industry Strategy
SAPTS	-	South African Postal and Telecommunications Services
SATRA	-	South African Telecommunications Regulatory Authority
SEP	-	Strategic Equity Partner
SMME	-	Small, Medium and Micro Enterprise
SNO	-	Second National Operator
UMTS	-	Universal Mobile Telecommunications Services
USA	-	United States of America
USD	-	United States Dollar
VANS	-	Value Added Network Services
VOIP	-	Voice over IP
WAP	-	Wireless Applications Protocol
WTO	-	World Trade Organisation
ZAR	-	South African Rand