



Shapers and Adopters of Disruptive Innovation in the Telecommunications Sector of  
South Africa

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by

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**ABSTRACT**

Under conditions of pervasive change, the most difficult challenge facing the market leader is sustaining its leading position. The primary research problem statement relates to the construct of Disruptive Innovation that has the potential for new entrants to substantially alter the basis of competition and impact the business models of incumbents. Ultimately, how are shapers distinguished from adopters of Disruptive Innovation? A qualitative research methodology was selected given the nature of the research. The main findings from the analysis indicate that non-technological attributes distinguishes shapers from adopters of Disruptive Innovation in the telecommunications sector of South Africa. However, Disruptive Innovation as a construct, is largely unknown, and does not adequately explain the changes in the landscape of the telecommunications sector of South Africa. The implications for the research results are that other factors or features, such as the role and impact of the State, have a role to play in explaining the features of the South African telecommunications sector.

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## CHAPTER 1: ORIENTATION

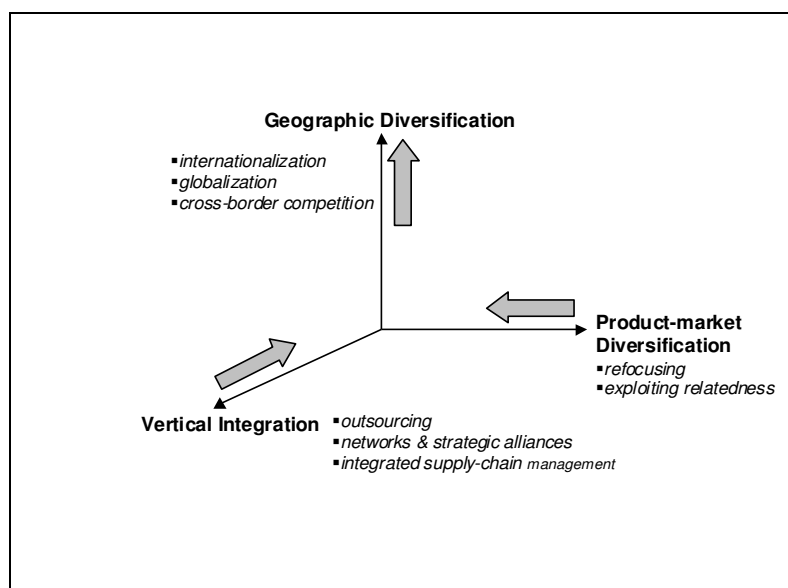
### 1.1 Introduction

The cliché, “the only constant is change”, aptly depicts today’s pervasive business landscape. Observers compare this rate of change to that of a Schumpeterian hurricane. Profound change in the competitive landscape has produced an array of new organisational forms, institutional relationships, and value creating possibilities (Hamel, 1998).

The ‘old’ competitive landscape (pre-1980’s) was characterized by business models that were relatively stable and where homogenous industries were dominated by only a few large players (Ferreira, 2006). Long term strategic planning horizons, cost advantage based on scale economies, vertical integration and industry experience were the key features of this period.

Increased globalization has led to increased geographic diversification, the refocusing of products and services around core business value propositions has led to a decrease in product-market diversification, and value chains are becoming less vertically integrated (Figure 1).

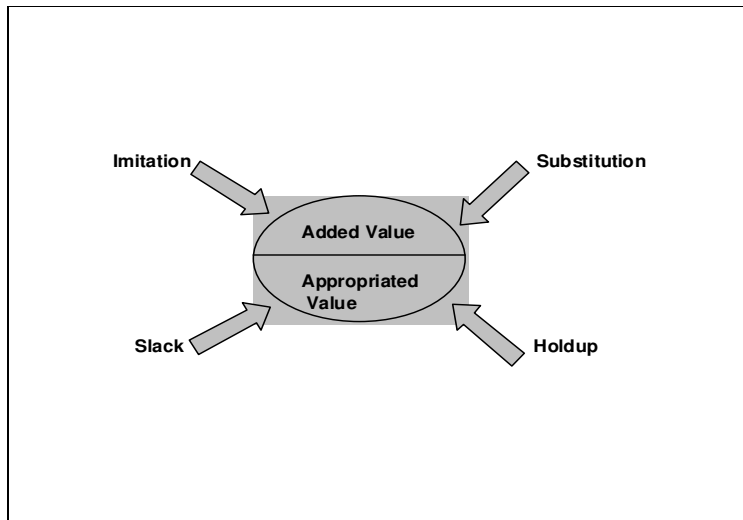
**Figure 1: Dimensions of Scale and Scope: Latest Trends**



Adapted from: Ferreira (2005:75)

Mass and market share no longer protect large established incumbent firms. Customers are more sophisticated in terms of price and utility, new competitors are deploying innovative business designs and technology in addressing customer priorities, and access to information has lowered switching costs. These features of the 'new' competitive landscape have radically undermined the competitive sustainability of 'traditional' business models (Figure 2).

**Figure 2: Threats to Sustainability**



**Adapted from: Ghemawat (1994:106)**

In this context, competition from entrants with innovative business models are continually forcing established firms to either adapt or exit the industry. Christensen (1997) pioneered the concept of “disruptive innovation” that describes a specific type of innovation that has the potential to substantially alter the basis of competition in an industry to the disadvantage of the incumbent firms (Husig, Hipp and Dowling, 2005: 17).

The migration of value from the traditional incumbent firms to new entrants over the last two decades, “constitutes a pattern that reflects the increasing obsolescence of traditional business designs, a pattern of accelerating value migration away from increasingly outmoded business designs towards others that are better designed to maximise utility for customers and profit for the companies” (Slywotzky, 1996:4).

Under these circumstances, the most difficult challenge facing the market leader is maintaining its leading position, and more specifically, how market leaders are able to respond to disruptive business models and innovations. The implications for business strategy are that competitive advantage is temporary and that sustainability is at best, a short series of short-term advantages.

## **1.2 Statement of the Problem and Sub-Problems**

### **1.2.1 Primary Research Problem Statement**

Joseph Schumpeter viewed competition as a “perennial gale of creative destruction” through which favourable industry structures – monopoly in particular – contains the seeds of their own destruction by attracting incursions from new and established firms deploying innovatory strategies to unseat incumbents (Grant, 1991:105).

Christensen’s (1997) concept of “disruptive innovation” has the potential to substantially alter the basis of competition in an industry to the disadvantage of the incumbent firms (Husig, Hipp and Dowling, 2005:17).

Slywotzky’s (1996) concept of “value migration” highlights the shift in the migration of value from the traditional business designs towards others that are better designed to match customer priorities generating greater value.

Under these conditions, as postulated by Schumpeter, Christensen and Slywotzky, the most difficult challenge facing the market leader is sustaining its leading position. This is especially true in the ICT industry where multiple product generations and rapid technological evolution continually test the ability of the incumbent to stay ahead of potential entrants (e.g. Voice over IP and cellular technology) (Nault and Vandenbosch, 2000:304).

The primary research problem statement would therefore relate to “this specific type of innovation that has the potential to substantially alter the basis of competition” (i.e. disruptive innovation) and its impact on the business models in the telecommunications sector of South Africa. In essence, what differentiates shapers and adopters of disruptive innovation in the telecommunications sector of South

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Africa and does the concept of disruptive innovation, explain the changes in the telecommunications sector of South Africa?

### 1.2.2 Sub-Research Problem Statement

The primary research problem statement has been subdivided into sub-research problem questions to address and resolve the primary research problem statement and they are stated as follows;

- i. What forms does disruptive innovation take in the telecommunications sector of South Africa?
- ii. What are the characteristics that both identify and forecast disruptive innovation in the telecommunications sector of South Africa from an *ex ante* perspective, and, what predictive use do these characteristics have in assisting industry incumbents in deterring entrants deploying disruptive business models?
- iii. Are there systemic reasons why some companies in the telecommunications sector of South Africa find it difficult to jump to new innovative business models despite disruptive innovation being a known phenomenon?
- iv. As industry and product life cycles reach maturity, commoditisation of products and services restrict growth options as businesses are compelled to compete on price. How then, do industry participants in the telecommunications sector of South Africa differentiate or re-invent themselves or close the 'innovation gap'?
- v. What is the influence of the State's national policy on innovation in the telecommunications sector of South Africa, and how does this influence impact the ability of incumbents and entrants alike in adopting or shaping disruptive innovation and thereby competing both nationally and abroad?

### **1.3 Objectives of the Research**

#### **1.3.1 The Primary Research Objective**

The Primary Research Objective is to explore the degree to which disruptive business models and innovations impact companies in the telecommunications sector in South Africa and how they are able to respond to it.

#### **1.3.2 Secondary Research Objectives**

The secondary research objectives are as follows;

- i. Identify the underlying theoretical constructs of disruptive innovation,
- ii. Develop a set of characteristics and features from existing theoretical constructs for the purposes of exploring the effects of disruptive innovation on the telecommunications sector of South Africa,
- iii. Analyse the impact of disruptive innovation on the business models of companies in the telecommunications sector of South Africa, and
- iv. Distinguish characteristics that define shapers and adopters of disruptive innovation in the telecommunications sector of South Africa.

### **1.4 Definitions**

#### **1.4.1 ADSL**

Asymmetrical Digital Subscriber Line

#### **1.4.2 Business-Model Innovation**

Business-model innovation is a discovery of a fundamentally different business model in an existing business (Markides, 2006:20).

#### **1.4.3 Capabilities Advantage**

The ability to develop and launch a next generation product at a lower cost than the competitor, and a product with a greater market response is one with greater profit flows (Barrie and Vandenbosch, 2000:304).

#### 1.4.4 Disruptive Innovation

An innovation that is financially unattractive for the leading incumbent to pursue, relative to its profit model and relative to other investments that are competing for the organisation's resources (Christensen, 2006:11).

#### 1.4.5 Equilibrium Thinking

The circular flow of resources in an existing economic system (Hospers, 2005:23).

#### 1.4.6 ICT Industry

Information, Communications and Technology Industry

#### 1.4.7 ISDN

Integrated Services Digital Network

#### 1.4.8 Radical Product Innovations

Products and value propositions that disturbs prevailing consumer habits and behaviours in a major way (Markides, 2006:4).

#### 1.4.9 Resources

Resources as defined by Christensen (2001), are those things or 'assets' that contribute toward what an organisation can and cannot do, within themselves resources do not adequately explain capabilities.

#### 1.4.10 TNO's

Telecommunication Network Operators

#### 1.4.11 Schumpeterian Industries

Those industries subject to rapid product innovation and which are characterized by what Grant (1991) refers to as hyper-competition.

#### 1.4.12 Strategy Innovation

The capacity to re-conceive the existing industry model in ways that create new value for customers, wrong foot competitors, and produce new wealth for all stakeholders (Hamel, 1998:8).



#### 1.4.13 Value Migration

The movement of profitability and market value from one industry player to another (Slywotski,1996:21).

### 1.5 **Delimitation of the Study**

The study is limited to the following aspects;

- i. Telecommunications Sector of South Africa,
- ii. Telecommunication network operators in South Africa,
- iii. Future observers of the Telecommunications Sector of South Africa.
- iv. Industry participants who can be defined as deploying disruptive innovations in the Telecommunications Sector of South Africa,
- v. Proficient private users of fixed line, mobile and broadband technologies, and
- vi. Proficient corporate users of fixed line, mobile and broadband technologies.

No assumptions regarding the study are made as the research orientation is primarily exploratory by nature and no theoretical foundations are provided.

### 1.6 **Importance of the Study**

Knowledge based competition is a key feature of the new business environment, by understanding the systemic drivers behind disruptive innovation and its impact on the telecommunications industry in South Africa, local industry participants could improve their understanding of;

- i. What differentiates shapers and adopters of disruptive innovations in the telecommunications industry in South Africa,
- ii. How the theory of disruptive innovation applies in the telecommunications industry South Africa,

- iii. The characteristics that both identify and forecast disruptive innovation in the telecommunications industry in South Africa from an ex ante perspective,
- iv. Why some company's find it difficult to jump to new innovative business models despite disruptive innovation being a known phenomenon,
- v. The influence of the State's national policy on innovation in the telecommunications industry in South Africa, and
- vi. Response strategies for incumbents to pre-empt new entrants deploying disruptive business models and close the 'innovation gap'.

### **1.7 Contribution of the Study in Relation to the Existing Body of Knowledge**

Substantial volumes of research on the impact of disruptive innovation in the telecommunications sector exist for the United States of America, Western Europe and Japan. In the literature reviewed, no reference is made to African countries and in particular South Africa. As such, could the same argument be put forth that many of the same forces apply in developing and less developed countries as they do globally?

Basic research advances theoretical conceptualisations about a particular topic (Leedy and Ormond, 2005:43). The potential benefits would be to extend the current body of work by analysing and exploring the relevance of the theoretical construct of disruptive innovation in the telecommunications industry from a South African perspective.

### **1.8 Outline of the Research Report**

The structure as outlined in the chapters of the Research Report provides the reader with an overview as to what can be expected in each of the chapters.

Chapter 1 provides the reader with an outline of what the research entails, however, no research results are disclosed. The reader is provided with an understanding of the objectives and purpose of the study. The statement of the problem and sub-problems are presented as they guide the focus of the study. The research is

delineated, key concepts are defined as generally accepted in the literature and contributions towards the field are presented.

Chapter 2 is a review and analysis of the ICT industry with specific reference to the telecommunications sector in South Africa. The research is exploratory in nature and no hypothesis is presented and as such no theoretical foundations are provided.

Chapter 3 is a critical review of the literature relevant to the research problem. The integrated literature review indicates what has already been done in the field and provides implications with regards to the research problem statement and objectives. The literature review only reports on the literature and the Researcher makes no conclusions regarding the research at this stage of the report.

Chapter 4 correlates the nature of the research problem statement and objectives with an appropriate research methodology. The chapter indicates on what basis the Researcher has selected the appropriate research method, determined the sampling frame, how data will be collected and analysed, what the most effective measurement instrument will be, and what ethical norms must be observed.

Chapter 5 contains the research results of the study and an objective interpretation and limitation of the results is provided.

Chapter 6 provides the outcome of the study which is discussed with cross-reference to the literature review in Chapter 3 and the underlying foundation covered in Chapter 2.

The conclusion highlights the implications of the research results and the chapter closes with recommendations for further research.

A list of references and appendices (technical detail, questionnaires and discussion guidelines) follow the last chapter and all the necessary details are provided using the UNISA School for Business Leadership (SBL) referencing guidelines.

## **CHAPTER 2: FOUNDATION OF THE STUDY**

### **2.1 Introduction**

Chapter 2 is a review of the macro-environment of the ICT industry with specific reference to the telecommunications sector in South Africa. Chapter 2 places the research in context in terms of the research problem statement and objectives. The research is exploratory in nature and no hypothesis is presented and as such no theoretical foundations are provided.

### **2.2 Transformation of the Telecommunication's Industry in South Africa**

The Telecommunications Act was passed as law in 1996 and the objectives of the Act aimed at transforming the South African telecommunications market to be globally competitive and eliminate previous infrastructure allocation imbalances. The elimination of imbalances pertained to provision of universal service and access, empowerment of previously disadvantaged communities and encouraging a competitive sector through investment and innovation (Schofield, 2004:8).

The transformation of the sector is highlighted by; the acquisition of a stake in Telkom by equity partner (Thintana Consortium), the exclusivity period for Telkom's fixed line business ended in 2002, the formation of the Independent Communications Authority of South Africa (ICASA), licensing of additional operators (e.g. Cell C), the listing of Telkom in 2003, the licensing of Under-serviced areas Operators in 2004, and the issue of a policy directive allowing Value Added Network service providers to carry voice on any platform.

In 2007, South Africa receives Neotel, the second fixed-telephone line operator. The entry of the new telecommunications group marks a new era in service provision in the sector and an introduction of new and competitively priced products and services (Mashalaba, 2006).

### **2.3 Universal Service**

Availability, accessibility and affordability underpin universal service and access in the telecommunications sector. Availability refers to nationwide coverage of telephone services and emphasizes that users should have equal treatment in terms

of price and service quality, and affordability means that services should be priced in a way that most users can afford it (Schofield, 2004:12).

### 2.3.1 Fixed Line Telephony

The first phase of the post-apartheid telecommunications policy focused on the partial privatization of Telkom and the extension of its monopoly on basic telecommunication services. The primary goal was to building the basic network in order to promote socio-economic goals of the sector by expanding the telecommunications infrastructure and attaining universal service.

Unexpected mobile growth (mobile users had outpaced fixed line users especially prepaid users), capping of its tariffs by Government and servicing low benefiting under-serviced areas, curtailed the goal of achieving universal telecommunication services through the fixed line telecommunications operator. By 2004, Telkom's target for new installations fell short by 2.15 million reducing its return on investment of R50 billion (1997-2004) impacting its ability to expand the fixed line network infrastructure (Schofield, 2004:15).

The introduction of Neotel in 2007 as South Africa's second fixed line operator, further strengthens the government's hand in responding to economic challenges by improving the competitiveness of the sector and meeting developmental goals, especially that of universal services (Mashalaba, 2006). Neotel will be investing R11bn in capital expenditure in the next 10 years and the injection will fuel economic growth as Neotel plans to invest in its network and the building of infrastructure.

### 2.3.2 Mobile Telephony

Vodacom, MTN, Cell C and Virgin Mobile are the cellular mobile providers in South Africa and mobile telephony continues penetration levels close to those in European countries. The widespread use of mobile telephony is due to the liberalization of the telecommunications sector in South Africa, although, in rural communities widespread use of mobile telephony is hindered by infrastructural development such as lack of electricity forms a barrier to mobile phone ownership.

### 2.3.3 Under-serviced Area Licenses (USAL's)

The award of licenses in areas with a teledensity lower than five percent was aimed at promoting small business persons from disadvantaged groups. USAL's provide for telecommunications services including Voice over Internet Protocol (VoIP), fixed mobile services, public pay telephones and long distance calls to be transported through trunk networks of any operator licensed to carry international traffic.

### 2.3.4 Telephone Penetration

The mobile segment has been more successful than the fixed line segment and achieved a penetration level of 36.5 percent between 1997 and 2004 investing a cumulative amount of R27.90 billion during this period (Schofield, 2004:20). The mobile segment has also achieved higher penetration levels at a lower cost per line than the fixed line business. Telkom achieved an average capital expenditure per line of R1 343.75 between 1997 and 2004 while the mobile segment incurred an average investment per subscriber of R675.50 (Schofield, 2004:20). The higher investment per line cost of the fixed line business outweighed the benefits, especially in lower revenue-per-line rural areas.

The government anticipates that the introduction of a second fixed line operator, Neotel, will bring innovation to this part of the sector especially with regards to prices, broadband Internet access and international connectivity.

South African phone penetration stands at over fifty percent of the population and still continues to grow. This is a significant value for the sector given that South Africa has very high levels of socio-economic inequality. The market is also characterised by the following trends;

- i. High levels of coverage in the country by mobile providers are in excess of levels required in terms of their licenses,
- ii. High usage of mobile network services based on a variety of innovative tariffs, free services and community service telephones, and

- iii. Products that lower access barriers e.g. incoming vouchers, call me service etc.

## **2.4 Innovation and Competition**

Competition has fostered innovation in the telecommunications industry e.g. South Africa was the first country in the world to introduce the prepaid system. South Africa's network operators offer a wide range of communication services that includes voice and data services.

The provision of data service evolved rapidly and developed into two distinct service markets, namely; private network services for business and the Internet. The country's Internet users are estimated at 3,068 million as at 2004 (Schofield, 2004:43).

The growth of Internet users was also accompanied by an increase in data traffic volumes. The provision of broadband services (e.g. ADSL) also further been strengthened by Sentech's licensing in 2004 who provides broadband wireless communication services.

South Africa boasts a wide range of telecommunication services that allows consumers a variety of options. Consumer choice and technology has increased competition between the fixed line (e.g. telephone lines, ISDN lines and Internet) and mobile (e.g. Post and Pre Paid packages) operators and entrants exploiting broadband technologies (e.g. Voice-over IP).

Real competition in the fixed line communications market in South Africa should see a further improvement in services and innovation in this sector. Unlike the fixed line market, the cellular mobile market is highly competitive and is providing a platform for the country's leading mobile network operators to expand into Africa (e.g. MTN's expansion efforts into Nigeria).

Major investments have been made by the telecommunications industry and the sector constitutes approximately 6% of GDP (Schofield, 2004:89).

## 2.5 Analysis of the South African Telecommunications Industry

The core of a firm's business environment is formed by its relationship with its customers, suppliers and competitors and there are many features of an industry that determines the intensity of competition and the level of profitability (Appendice 1).

### 2.5.1 Threat of New Entry

The size of the advantage of established over entrant firms (in terms of unit costs) measures the height of barriers to entry, which determines the extent to which the industry can, in the long run, enjoy profit above the competitive level (Grant. 2005, pg.76).

- i. *Capital Requirements:* Barriers to entry in the telecommunications industry are relatively high, due to the considerable investments required to build up an extensive network and bandwidth capacity. Therefore, contestability in the telecommunications market largely depends on the presence of sunk costs and hence the ability to earn a return on capital in excess of cost of capital. However, capital requirements could reduce as wireless technologies become more efficient (e.g. forthcoming Skype Internet phones).
- ii. *Economies of scale & scope:* Business scale is important for service providers as customers increasingly demand cheaper bundles of services across an array of products. New entrants in the cellular and wireless market would be exposed to price wars from the established firms, and, are faced with choice of entering on a small scale and being exposed to high unit costs or entering on a large scale and running the risk of underutilized capacity while they build up sales volumes. Established firms have also established their core competencies and possess the complex technical expertise required to operate in the telecommunications industry, new entrants could acquire the skills but would still need to inevitably be exposed to learning curve effects thereby delaying their penetration into the market.
- iii. *Brand Identity:* Established firms have an advantage of brand recognition and a larger mainstream customer base which increases the barriers to entry for new firms. Furthermore, customers increasingly demand flexible and cheaper service bundles with a comprehensive network service provider, only a few



firms (e.g. Vodacom, MTN and Telkom) can differentiate their product offering by providing a variety of service packages.

- iv. *Absolute Cost Advantages*: Established firms have a cost advantage over new entrants due to economies of learning and economies of scale. New entrants would initially, not be in a position to leverage cost advantages as they would be 'shut out' by the established firms who can offer lower prices and comprehensive services.
- v. *Governmental*: Governmental agencies have more confidence in established firms, granting of licenses in South Africa is extremely difficult and a new entrant may experience difficulties establishing confidence with governmental agencies.

#### 2.5.2 Rivalry among Existing Competitors

For most industries, the major determinant of the overall state of competition and the general level of profitability is competition among the firms within the industry (Grant, 2005, pg.78).

- i. *Concentration*: The concentration of operators competing in the South African telecommunications industry is relatively high (i.e. at present, one fixed line operator and four mobile operators), and subsequently competition is intense especially in the cellular mobile market.
- ii. *Excess Capacity and Exit Barriers*: Barriers to exit are high due to demand and capacity dynamics. Telkom, Vodacom and MTN cannot afford to have their networks idle (or have excess spare capacity) as fixed costs (i.e. depreciation) has to be recovered, however, unused capacity can allow them to offer price cuts to attract new customers in order to spread fixed costs over a greater sales volume.
- iii. *Product Differentiation*: Product and service offerings in the cellular mobile market are relatively close therefore switching costs for buyers are similarly relatively low. The introduction of a second fixed line operator will provide buyers with an alternate service provider in terms of fixed line and Internet

services, switching costs may therefore decline especially in the Internet domain. However, Neotel will still have to recover its cost of capital which will largely influence its pricing strategy.

- iv. *Cost Conditions:* Fixed costs relative to variable costs for established incumbents such as Telkom, Vodacom and MTN, are high due to capital outlays in infrastructure. Scale economies therefore, encourages them to compete aggressively on price in order to gain the cost benefits of greater volume. Other operators such as Cell C and Virgin Mobile do not have this benefit.

### 2.5.3 Threat of Substitutes

The extent to which substitutes limit prices and profits depends on the propensity of buyers to substitute between alternatives (Grant, 2005, pg.74).

Cellular mobile technology is a disruptive innovation in its own right as it has proven itself as an effective alternative to fixed line telephony. Switching costs have increasingly decreased as mobile cellular operators compete for the South African market on the basis of bundled packages. Buyer propensity to switch to alternative service providers in the mobile cellular market may be limited by fixed term contracts that lock customers in for the duration of the contract.

The relative price performance of substitutes such as broadband wireless technologies have further introduced alternatives ranging from voice to data services (e.g. VoIP/Skype versus Fixed/Mobile telephony).

### 2.5.4 Bargaining Power of Customers

Competitive pressure and availability of substitute products have increased customer bargaining power which in turn has created a downward movement in pricing (Grant, 2005, pg.81).

The liberalisation of the South African Telecommunications market has significantly increased the bargaining power of customers as new service providers (e.g. Virgin Mobile and Neotel) are entering the South African market compelling industry participants to focus their competitive advantage around a bundle of services (e.g. mobile cellular services, DSTV/CABLE TV, Internet and data) at a competitive price.

As South Africa's economic performance improves buyer volume will increase and buyer concentration will decrease thereby increasing buyer bargaining power of customers as competitors in the industry compete for increased market share.

Number portability has further compelled established mobile cellular service providers (e.g. Vodacom and MTN) to increase their focus on customer service in order to ensure that their market penetration increases and thereby, recover their considerable cost of capital. Mobile cellular service providers are also aware that customers are more informed and have less of an appetite to be locked into fixed term contracts, prepaid packages and operators offering alternative package deals (e.g. Cell C and Virgin Mobile) and who position themselves as 'anti-establishment' will not only increase buyer bargaining power, but will also introduce a disruptive business model that contrasts with established fixed term contract business models.

The introduction of a second fixed line operator, Neotel, may also have the potential of increasing buyer bargaining power in this sector of the telecommunications industry and thereby potentially threaten the long standing monopoly of state owned Telkom. However, Telkom has both years of industry experience and capital with which to launch its own price 'war', improve its customer service and streamline its operations. How elastic Telkom's prices will be is dependant upon recovering its cost of capital relating to an enormous network infrastructure.

#### 2.5.5 Bargaining Power of Suppliers

The key issues are the ease with which the firms in the industry can switch between different input suppliers and the relative bargaining power of each party (Grant, 2005, pg.83).

Suppliers have little bargaining power as the importance of volume to suppliers is high as operator concentration is low. The high demand from operators for devices that enable new technological platforms from which operators can offer new services and products as a means of differentiation, means that switching costs for the operators are low. There is no threat of forward integration from suppliers due to barriers of entry (e.g. high sunk costs).

## **CHAPTER 3: LITERATURE REVIEW**

### **3.1 Introduction**

The literature review aims to provide an integrated synthesis of literature pertaining to the research topic. The Researcher has identified relevant sources and each has been analysed and evaluated with reference to the research problem statement and objectives of the research topic.

The Researcher does not provide any opinions or conclusions in the literature review and the results and analysis are reserved for Chapter's 5 and 6 of the Research Report respectively.

### **3.2 A Resource Based View of Disruptive Innovation**

Christensen (2001) contends that with the advent of new innovations, the pace of change has accelerated such to the extent that organizations don't have the capability to react in a way that enables them to keep pace with required changes. Three classes of factors are identified that affect what an organisation can and cannot do, namely; resources, processes and values (Appendice 2).

#### **3.2.1 The Influence of Resources on Disruptive Innovation**

Resources as defined by Christensen (2001), are those things or 'assets' that contribute toward what an organisation can and cannot do, within themselves resources do not adequately explain capabilities. Organisations create value when they transform inputs of resources into products and services of greater worth, this transformation process is accomplished through processes. The third factor which determines what an organisation can or cannot do is values, here Christensen (2007) refers to the criteria by which people make decisions about priorities.

Christensen (2001) believes that the reason large established incumbent firms have a disability in managing disruptive innovation is due to their entrenched resources, processes and values. Disruptive innovations by nature bring to market those products or services not valued by mainstream customers. Therefore, due to the unconventional nature of disruptive innovations, established incumbents do not have the resources, capabilities and values to succeed at meeting the challenge of the disruptive innovation.

### 3.2.2 The Influence of Cost Structures on Disruptive Innovation

The incumbent's cost structures and scale economies are inevitably geared toward profit margins derived from their mainstream customers and as such any diversification into markets where products or services are not valued by their mainstream customers is considered as destroying shareholder value.

Although smaller entrants lack the resources of incumbent firms, their values and cost structures don't inhibit them from entering those customer segments not serviced by the incumbent firms thereby allowing them to exploit this market niche with disruptive innovations. The threat to incumbent firms is when the disruptive innovation attracts the incumbent's mainstream customers and the incumbent finds itself unable to respond adequately due to its entrenched resources, capabilities and values.

### 3.2.3 Response Strategies to Disruptive Innovation

Christensen (2001) put forwards that there are essentially three options that the incumbent firms can deploy to deter the threat from new entrants deploying disruptive innovations, namely; acquire a different organizations whose processes and values who are a close match to the new task, try to change the processes and values of the current organisation, and create an independent organisation and develop within it the new processes and values required to address the new problem. Christensen (2001) after some evaluation, recommends the creation of an independent organisation as disruptive innovations require processes and values that are not mainstream to the incumbents business.

Christensen (2007) concludes that the reasons why innovations are so difficult for established firms is that they work with processes and values (i.e. Business Models) that were not designed to facilitate the new task at hand. In developing his framework, Christensen (2007) focused on the disk-drive industry and collected a sample of 5000 models introduced by any company in the world between 1975-1995, the data was then used to correlate companies' leadership or laggard-ship in using new technologies and their subsequent fortunes (or misfortunes) in the market.

### **3.3 Business-Model Innovation and Radical Product Innovation**

Markides (2006) on the other hand, argues that Christensen's original theory (1997) around disruptive innovation has been incorrectly used to describe all forms of disruptive innovation. Markides asserts that different kinds of innovations have different competitive effects and produce different kinds of markets. Disruptive innovation, according to Markides, should distinguish between business-model innovations and radical product innovations. By inference, it would appear that there is an unclear understanding of what constitutes disruptive innovation.

#### **3.3.1 Business-Model Innovation**

Business-model innovation is a discovery of a fundamentally different business model in an existing business (Markides, 2006:20). In this situation, the new business model either increases market share by attracting new customers or attracts new customers, in both cases, through existing products and services. The business-model innovation is disruptive as the company is now deploying both low cost and differentiation strategies. The dilemma for existing firms is that it is difficult for both strategies to coexist due to entrenched resources, processes and values.

#### **3.3.2 Separate Organisational Units**

According to the literature, disruptive innovations are associated with the replacement of incumbents by entrants and according to Christensen (2007), the only way to respond is to create a separate organisational unit. However, Markides (2006) asserts that this is not the case as the disruptive innovation will fail to completely overtake the traditional way of competing (Markides, 2006).

Markides (2006) demonstrated the options that incumbent firms have and coined the phrase "disrupt the disruptor" and further asserts it makes no economic sense for established firms to follow these disruptive business models that instead they should be allocating scarce resources into its existing business model in order to expand market share.

#### **3.3.3 Radical Product Innovations**

Radical product innovations are disruptive because they introduce products and value propositions that disturb prevailing consumer habits and behaviours in a major way (Markides, 2006:4). Under these conditions, radical product innovations are

disruptive because they undermine the basis upon which existing competitors have built their success.

New entrants will come and go until the industry's dominant design settles which according to Markides (2006), is the beginning of growth in the industry. Therefore, disruptive innovation must be seen as a process, not an event. In the literature review, no mention is made regarding the research method and correlation of results, rather a critique is offered primarily with regards to the definition of disruptive innovation and Markides illustrates by means of reference to other author's work to draw inferences.

### **3.4 The Predictive Power of Normative Theory on Disruptive Innovation**

Christensen (2006) responds to critiques of his work on disruptive innovation and makes additions and corrections to his original theory (1997). Christensen (2006) offers a model for the theory building process and puts forward a set of constructs, namely; observation, categorization, association, anomaly, descriptive theory and normative theory. It is not the purpose of the Research Report to test the validity or reliability of Christensen's theoretical constructs but rather to draw inferences from them with which to achieve the objectives of the Research Report.

However, the predictive use of the theory is of importance for the purposes of the Research Report as the purpose of the Research Report is to use predictive traits of the theory to help incumbent leaders respond to innovative disruptions. In this regard, the following observations are made from Christensen's revision of his theory.

#### **3.4.1 A Disruptive Model of Normative Theory**

According to Christensen (2006), normative theory has far greater predictive power than descriptive theory and asserts that well researched categories of circumstances, predict accurately what company's may or may not choose to do. In this regards, Christensen (2006:7) offers a model to predict the impact of disruptive innovations across the spectrum: (1) a technological concept around which a product has not yet been developed; (2) a promising technology that was just beginning to be manufactured and marketed, (3) an early-stage threat that had taken root but that had not yet affected the health of the industry leader; and (4) the future viability of the

leading company's strategy of responding to a disruption after the disruption already was well under way.

#### 3.4.2 Disruptive Innovation Further Defined

Christensen (2006) further clarifies the definition of disruptive innovation, a disruptive innovation "is financially unattractive for the leading incumbent to pursue, relative to its profit model and relative to other investments that are competing for the organisation's resources" (Christensen, 2006:11). Christensen (2006) went through an elaborate descriptive and normative theory building process to revise his theory in response to critiques of his work.

### **3.5 Forecasting Characteristics of Disruptive Innovation**

Husig (2005) puts forth the position that attempts to predict the future of the telecommunications industry is very difficult. The basis for this assertion is that disruptive innovations have the potential to substantially alter the basis of competition to the disadvantage of incumbent firms.

Husig (2005) believes that although the theory surrounding disruptive innovation is well developed (especially from an *ex post* perspective), there is essentially still no comprehensive and easily applicable method with which to analyse disruptive innovation. In response to this demand, Husig (2005) puts forth a method with which to enhance the identification and forecasting of disruptive innovation from an *ex ante* perspective, and in doing so, enhance the predictive value of the theory and assist industry participants in identifying the effects of disruptive innovation in their industry.

#### 3.5.1 The Performance Trajectory Phases of Disruptive Technologies

Disruptive technologies are defined as technologies that disrupt an established trajectory of performance improvement, or redefines what performance means (Husig, 2005:20). These technologies stand in contrast to what Husig (2005) refers to as 'sustaining technologies' which have a sustaining impact on an established trajectory of performance improvement.

In their early phases of development disruptive technologies are simple innovations which are mostly used in emerging markets because their performance



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characteristics are inferior to those of the established products measured along the same dimensions of performance in mainstream markets. Initially, the leading established customers will reject the disruptive technology due to its performance characteristics, however, they do appeal to a smaller usually unattractive set of customers who often use simpler, cheaper and more convenient disruptive technology in new or low end applications (Christensen, 2002). Sustaining technologies always improve the performance of established products along the dimensions of performance that mainstream customers in major markets have historically valued (Christensen, 1997).

In the early phases of development, incumbents find the disruptive technology unattractive as it serves the low-end market. Instead they focus their investment on known customers in established markets to obtain higher margin. It is at this juncture that entrants are able to develop their technology and improve their cash flow by serving the low-end market.

Entrants start to sustain their improvements and extend their networks to a level sufficient enough to start serving mainstream customers of the incumbent firms. Although the performance of the disruptive technology remains inferior to the performance of the established technology, it starts to attract the mainstream consumers. At this point, the rate of improvement in performance of the disruptive technology exceeds the rate of improvement required in the less demanding segments of the mainstream market and enables the entrants to attack the incumbent firm's established markets (Husig,2005:19).

The cost structures of the entrant are better suited to serve the initially smaller market. Incumbents find it difficult to adapt their cost structures of their mainstream business to fit the new emerging market of the disruptive technology and as a consequence experience delays in defending this position. According to Christensen (1996), the entrants will have an attacker's advantage over an industry's incumbent firms when their business model is born of a disruptive technological change (Husig,2005:19).

The explanation for this lies in the power of the incumbent's mainstream customers and its resource dependent nature. The response strategies that the incumbent firm can choose from are limited by the interests of their existing customers and investors who provide the sources of their survival. Therefore, established firms allocate their resources towards sustaining technologies that address the interests of their existing customers rather than towards disruptive technologies for customers and markets that are highly uncertain (Husig,2005:20).

According to Husig (2005), the failure of incumbent firms lies not in their technological abilities but rather in their inability to change their strategy when the impetus from customers is lacking. Christensen (1997) reiterates this notion by stating that the difference lies in their capabilities, organisational processes, values and culture which impact their ability to develop value from emerging disruptive technologies and identifying them early.

### 3.5.2 Forecasting Disruptive Innovation from an *Ex Ante* Perspective

After extensive literature reviews (especially the works of Christensen) and qualitative research on W-LAN as a disruptive technology, Husig (2005) identifies a number of consistent characteristics that typically indicate the threat of disruption, these characteristics are as follows (Husig,2005:21);

- i. *Cheap, simple, initially lower performing and then fast moving* - Disruptive technologies start as inferior innovations that are simpler, cheaper and lower performing with accelerating improvement in price/performance characteristics,
- ii. *Performance oversupply* - Potentially threatening mainstream technologies improve at a faster rate than the market can absorb, new attributes therefore become more valued and a vacuum can emerge at the low end of the established market,
- iii. *Leading customer rejection* - The incumbent firms' most valuable customers initially reject the disruptive technology because it under-performs the mainstream market along the dimensions of performance when first introduced,

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- iv. *Lower margins and profits* - Disruptive technologies are less profitable until an appropriate business model is found,
  - v. *Emerging market success* - Disruptive technologies are initially introduced by entrants and achieve success in smaller, emerging markets where their advantages are valued,
  - vi. *Asymmetrical preference overlap* - The functional shadow of disruptive technologies is larger relatively than that which the established and emerging markets cast on each other,
  - vii. *Intersecting trajectories* - When the disruptive technology's trajectory of performance supply intersects with trajectory of performance demand at the low end of the established market, the entrants start to invade the incumbent's market segments, and
  - viii. *Other characteristics* - Complementary goods, compatibility, standards, switching costs, customer lock-in, regulation and network externalities are other characteristics in forecasting disruptive innovation in the ICT industry.

Husig (2005) prepared a questionnaire (qualitative and quantitative), which starts with a definition of what disruptive innovation is based on the characteristics listed above. Guidelines were attached to the questionnaire to assist participants in understanding the requirements of the study. Husig (2005) then collated responses from a target sample (mobile telecommunication network companies) and calculated the amount of fulfilled disruptive characteristics. The value of Husig's research is that it provides a systematic process for identifying and forecasting the potential effects of disruptive innovation in a particular industry from an *ex ante* perspective.

### **3.6 Disruptive Innovation and Economic Growth in Developing Economies**

Further applications of the concept of disruptive innovation relate to triple bottom line performance of developed economies and how developing economies can apply the concept using telecommunications as a case study. Hart and Christensen (2002) propose how disruptive innovations can help companies combine sustainable corporate growth with social responsibility. Two dilemmas are identified, firstly,

companies need to continuously find new products and new markets, and secondly, antiglobalisation demonstrations have made it apparent that any corporate expansion at the expense of the poor and the environment will face resistance.

Hart and Christensen (2002:51) assert that companies can achieve both growth and corporate responsibility through a “great leap to the base of the economic pyramid”. The base of the economic pyramid refers to underdeveloped markets, whereas the apex of the pyramid refers to those markets in industrialized nations that are already saturated.

The authors believe that it is in these underdeveloped economies where disruptive innovation can meet both social and environmental challenges. As an illustration, specific mention is made to disruptive innovations in the telecommunications industry in Bangladesh where micro-credit facilities were extended to the rural poor to gain access to mobile telecommunications as fixed landline networks were too expensive. Similarly, prepaid “real-time” cellular technologies were pioneered in South Africa as a means of bringing telecommunications to the people who could not qualify for credit.

Potential entrants are able to grow their business in markets which established competitors choose to ignore due to the effects of disruptive innovations. These effects are defined in terms of two broad categories; (1) the product or service is not as good as those offered to mainstream markets and as a result can only take root in new or less demanding markets, and (2) established competitors are continuously under pressure to pursue innovations in mainstream markets in order to sustain growth rates.

Hart and Christensen (2002:51) believe that the social good is achieved in that disruptive innovations can allow entrants to employ local factors of production, promote economic growth in less developed economies, and thereby move up from the base of the economic pyramid to the apex as their products become more mainstream. However, there are also opportunities for existing competitors to enter these ‘untapped’ markets through their own deployment of disruptive innovations, which once again can facilitate the social good in these economies.

Hart and Christensen (2002:51) suggest that existing mainstream markets are the wrong place to exploit disruptive innovations for the reasons mentioned previously. Instead, innovative business models employed at the base of the economic pyramid can lead to more sustained corporate growth and macroeconomic policy. Hart and Christensen (2002) used illustrative case studies in developing their theory on the benefits of disruptive innovation in developing economies

### **3.7 Industry Standards and the Impact of Disruptive Innovation**

Dekleva (2004) believes that the telecommunications industry is in distress due the rapid increase in wireless devices, lack of standardization, technology evolution paths, market saturation in older markets and disruptive technologies. The industry is characterised by many new entrants but at the same time industry participants do not know what the winning technologies and business models are. So many devices with different characteristics are in use that no single company can support them all.

The rapidly growing number of wireless users has resulted in telecommunication companies incurring large expenses with regards to licenses and upgrading existing wireless networks. After presenting numerous statistics (ratio of users vs. revenues) for North America, Western Europe and Japan, Dekleva (2004) deduces that although the number of wireless subscribers is impressive, revenues are less so. The reason is that telecommunication companies worldwide are burdened with debt amounting to \$2 Trillion due to acquiring licenses and increasing capital expenditures.

Other disruptive technologies are identified that can render 3G wireless networks irrelevant, e.g. i-Burst stations with smart antennas performs better than 3G at a fraction of the cost and is about 40 times more efficient. These technologies will challenge existing ways of providing wireless connectivity. Furthermore, agreement on a global international standard for wireless technology has not yet been achieved due to international politics, patent licensing costs and technical constraints in upgrading existing networks (Dekleva, 2004:116).

Dekleva (2004) provides examples for the commercial use of wireless applications such as logistics and field force enablement and concludes that generally applicable business models are still developing and have not matured as yet.

### **3.8 Disruptive Innovation and Cycle Time to Market**

#### **3.8.1 Pre-emptive Product Generation Strategies**

Under the circumstances discussed previously, how is the potential of disruptive business models identified in the telecommunications industry? Barrie and Vandebosch (2000) identify conditions under which an entrant will launch a next generation product making it difficult for the incumbent to deploy a protection strategy. These conditions are where there are multiple product generations and rapid technological evolution. These conditions continuously test the ability of the incumbent to stay ahead of potential entrants who have the potential to disrupt the incumbent's leading position.

Barrie and Vandebosch (2000) assert that under these conditions incumbents often protect their position by launching their next generation products prematurely in order to retain their position. For incumbents to maintain their lead over several product generations they sacrifice current leading products, the strategy is to be pre-emptive.

Barrie and Vandebosch (2000) use complex mathematical theorems with which to test the conditions under which incumbents and entrants alike can launch next generation products in the telecommunications industry in order to gain competitive advantage.

#### **3.8.2 Capabilities Advantage through Next Generation Products**

Barrie and Vandebosch (2000) define capabilities advantage "as the ability to develop and launch a next generation product at a lower cost than the competitor, and a product with a greater market response is one with greater profit flows" (Barrie and Vandebosch, 2000:304).

Barrie and Vandebosch (2000) find that an incumbent with a capabilities advantage in one next generation product can be overtaken by an entrant with a capabilities advantage in another next generation product only if the entrant's capabilities advantage is in a disruptive technology that yields a greater market response, and that this may occur even though both next generation products are available to both firms.

### **3.9 Diminishing Marginal Returns and Performance Improvements**

Adner (2002) provides an alternate view, that of the demand-based view of disruptive technologies, i.e., how consumers evaluate technology and its performance. The demand-based view of disruptive technologies is based on the work of Christensen's (1997) notion of technologies with initial inferior performance can eventually displace established incumbents. Adner (2002), therefore, identifies the demand conditions that enable disruptive dynamics.

The demand conditions of these 'disruptive dynamics' are; incumbent technologies that are displaced from the mainstream market by technologies that under-perform them on the performance dimensions that are most important to mainstream customers, mainstream customers who shift their purchases to products based in the invading technology even though those products offer inferior performance on key performance dimensions, and, incumbent firms that do not react to disruptive technologies in a timely manner (Adner, 2002, 669).

Adner (2002) makes use of Christensen's research, case studies and the concept of marginal utility to develop his model on the demand-based view of disruptive competition. The model explores the influence of the structure of consumer demand on innovative rivalry. One of the most prominent features of Adner's model is the implications of consumer's decreasing marginal utility from performance improvements and their willingness to pay for new products.

"When consumers face diminishing marginal returns to performance improvements, technologies that offer lower relative performance at lower price become increasingly attractive" (Adner,2002:684). These performance improvements change the segmentation of markets and introduce new competitive models, the reason for this is that consumers with sufficiently satisfied functional requirements are now more concerned with differences in price than with differences in price vs. performance.

Adner's model suggests that consumer choice allows disruptive displacement due to decreasing marginal utility. In order to identify potential disruptions, incumbents should not just focus on the performance provided and performance demanded dimensions, but on the price of competing offers.

### **3.10 The Breakdown Point of Business Designs**

Slywotzky (1999) illustrates how value migration in the market occurs when business designs no longer satisfy customer priorities. Slywotzky (1999) uses industry examples, such as the loss in market share of IBM to Microsoft from 1984 to 1994, to illustrate how value migrates from outmoded business designs to new ones that are able to better satisfy customer's most important priorities.

#### 3.10.1 Customer Priorities and the power of the Business Design

Value migration occurs when the mechanism that matches the company's business design to the structure of customer priorities breaks down (Slywotzky, 1999:4). The 'break down' point can be attributed to business designs remaining static while customer priorities and product life-cycles constantly change.

A business design according to Slywotzky (1994) is the entire system for delivering utility to customers and earning a profit from that activity. Market value is used as a metric to measure the power of a design to create and capture value. The size of a company is also independent of its business design being able to successfully create value as new small firms often introduce innovative business designs that are able to capture a large share of their industry's growth value.

As a result, the power of a business design is measured by the amount of market value relative to the size of the company. Revenue is used to measure the mass of the business design and the market value/revenue ratio provides a means to compare the relative power of business designs and the direction in which value is migrating in an industry (Slywotzky, 1994).

#### 3.10.2 Phases of Value Migration

Three phases of value migration are identified, namely; value inflow, stability, or value outflow. A business design can exist in only one of these phases and each respective phase describes its relative value-creation power (i.e. the ability to satisfy customer priorities better than competitors).

The three phases of value migration can be described as follows (Slywotzky, 1999:7);



- i. *Value inflow*: A new competitor deploys a new business design and responds to customer priorities in a way that established competitors have failed to do. As a consequence, the new competitor starts to absorb value from the industry (e.g. Microsoft),
- ii. *Stability*: This phase is characterised by business designs that are well matched to customer priorities and by overall competitive equilibrium, and
- iii. *Value outflow*: Value starts to move away from an organisation's traditional business activities towards business designs of competitors who can more effectively meet customer priorities (e.g. IBM).

### 3.10.3 The Challenge for Managers

Value migration is not a new phenomenon, however, since the mid 1980's new entrants have succeeded in deploying business designs that do not rely on size, market share or speed to market to capture substantial market growth. By deploying new, nonspeed-based skills such as identifying and owning the strategic control points in the industry, new players (e.g. Microsoft, Telecommunications, Inc. and Southwest Airlines), were able to erode the protection of mass and market share by convincing customers that the business designs of incumbent firms were not matched to the future priorities of customers (Slywotzky, 1999:8).

The task of management is to change and adopt new business designs to meet changing customer priorities, failure to do so, will result in the 'break down' point mentioned earlier. Management have to use a different set of assumptions in assessing what is important, Slywotzky (1999) illustrates these changes in the business landscape accordingly (Table 1).

**Table 1: Management Assumptions for assessing Importance**

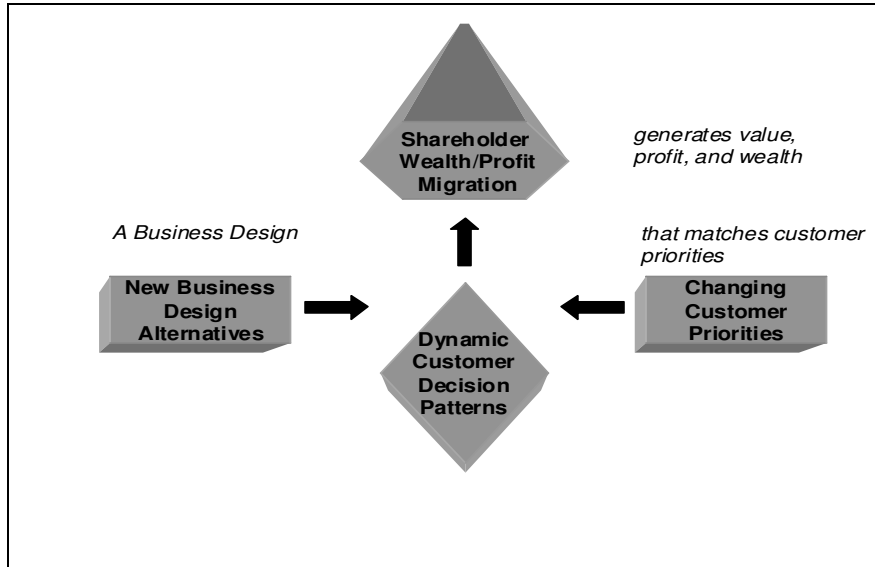
FROM	TO
Revenue	Profit
Share of Market	Share of Market Value
Product Power	Customer Power
Technology	Business Design

Source: Slywotzky (1994:11)

### 3.10.4 Developing the Business Design

Slywotzky's mechanism of value migration (1994) places strategic emphasis on the customer's decision-making system for determining priorities (Figure 3). "Priorities analysis determines what business design creates the greatest utility for customers and profit for the provider" Slywotzky (1994:15).

**Figure 3: The Mechanism of Value Migration**



Adapted from: Slywotzky (1996:16)

Anticipating value migration provides the impetus for constant change, it allows a business to see threats, recognise the need to adjust changing customer priorities and new competitive business designs. Creating an effective business design is a critical function of management and Slywotzky (1994) provides a systematic approach for developing a business design (Appendice 3).

Profiting from value migration therefore, requires the invention of new business designs and the managing of older ones, how companies respond to customer priorities according to Slywotzky's concept of value migration, will determine how they will succeed in creating sustained value growth.

### **3.11 Re-inventing the Business Design**

#### **3.11.1 The Existing Industry Model**

Hamel (1998) is of the opinion that only those companies that are capable of reinventing themselves and their industry in a profound way will survive into the future. This assertion is made in the context of profound change within the competitive environment with specific reference to value creation. Strategy innovation is the capacity to re-conceive the existing industry model in ways that create new value for customers, wrong foot competitors, and produce new wealth for all stakeholders (Hamel, 1998:8).

The concept of “strategy innovation” is used to describe how newcomers can succeed in the face of resource disadvantages, and how it is the only way for incumbents to continuously revive their success. The key feature is whether the entire industry model can be reinvented, reengineering is no longer deemed sufficient if industry participants want to create sustained value.

Newcomers are likened to “revolutionaries” as it is usually new entrants who are creating new wealth (e.g. Amazon.com and Microsoft). Incumbents who fail to challenge their own orthodoxies usually succumb to unconventional rivals (e.g. Kmart and IBM) (Hamel 1998). Examples of incumbents who have been able to continuously reinvent themselves are Coca-Cola and Procter & Gamble.

#### **3.11.2 A New Metric to Value Corporate Success**

Hamel (1998) redefines the metric of corporate success as share of new wealth creation, traditional metrics such as EVA (Economic Value Add) are only a starting point, the goal should be more than just covering the cost of capital, it should be to capture a disproportionate share of industry wealth. Hamel (1998) also points out another important metric that of improving shareholder returns. A comparison is made between the average compound annual growth in revenues (25.3 percent) and operating margins (6.7 percent) of the Fortune 1000 companies between 1985 and 1995, the results indicate that only forty of these companies grew total shareholder returns by more than 25 percent per annum.

Hamel (1998) believes that the only leverage companies have in improving shareholder returns is from revenue growth and not operating margins as there is very little room for improving operating margins (e.g. cost reduction through reengineering or downsizing). However, Hamel does qualify this assertion by stating that focusing only on growth rather than strategy innovation can also destroy wealth (e.g. market share battles that lower industry profitability – airline industry). The companies (e.g. Nike) that managed 25 percent growth rates in shareholder returns grew by radically changing the basis for competition in their industries, the companies either invented totally new industries or dramatically reinvented existing ones (Hamel, 1998:9).

### 3.11.3 Strategy as a Non-Linear Process

Hamel (1998) believes that strategy should be an emergent process and he draws from the works of complexity theorists to develop a non-linear process to strategy formulation. Hamel firmly contests that today's managers do not know how to foster the development of innovative wealth-creating strategies that their focus is more on the content than conduct of strategy. From a complexity theory point of view, emphasis must be placed on the preconditions that give rise to strategy innovation. In this regard, the fundamental challenge is to discover and make explicit the linkages between; the rules of strategy, industry revolution and the creation of new wealth (Hamel, 1998:9).

Hamel (1998) provides five preconditions for the emergence of strategy and they are as follows;

- i. *New voices* - strategy creation is a participative process, all stakeholders must be involved not just top management,
- ii. *New conversations* - create dialogue across organisational and industry boundaries so that new ideas can emerge, do not always have the same audience,
- iii. *New passions* - provide people with a chance to have a share in inventing the future of their company, by discovering and sharing their own unique insights individuals people will embrace change not resist it,

- iv. *New perspectives* - search for new conceptual ideas to allow individuals to reconceive their company's capabilities, customer needs and aid the process of strategy innovation, and
- v. *New experiments* - launching a series of small, risk-avoiding experiments in the market serves to maximise a company's rate of learning about just which new strategies will work and which wont.

### **3.12 Strategy Innovation as a Paradigm on Disruptive Innovation**

#### **3.12.1 Traditional Planning vs. Creativity**

Krinsky and Jenkins (1997) reiterate Hamel's notion that growth and not reengineering is required for sustainability in the long term. They distinguish between two schools of thought, that of traditional strategic planning, and creativity and innovation. In their opinion, these two schools of thought are on a collision course and companies that act to leverage the beneficial implications of this collision will create sustainable competitive advantage, improve revenue growth, and establish themselves as market leaders (Krinsky and Jenkins,1997:36).

Krinsky and Jenkins (1997) attribute the fundamental causes of this collision to three factors; firstly, companies are seeking sustainable double-digit top-line growth. However, "in today's economy, multi-billion-dollar corporations need multi-billion-dollar growth platforms to achieve and maintain these rates, this is why growth by acquisition has been so attractive but as a growth strategy, acquisition alone is typically not sustainable in the long term" (Krinsky and Jenkins,1997:36).

A second cause is shorter product life cycles, today, companies require bigger revenue generating products because products are on the market for a shorter time. Lastly, global competition is blurring the boundaries as companies face new and unexpected competitors (e.g. financial services industry), multinational companies are aggressively pursuing new markets that expand the field from where competition may arise, and patent infringement is resulting in imitations.

According to Krinsky and Jenkins (1997), the most significant and sustainable business growth is generated by the creation of new markets, new product

categories, or new industries. To this end, ‘fusing’ strategy with innovation requires strategic planning to evolve into a creative “growth-visioning process” which requires companies to look beyond their current constraints and create an ideal picture of the future (Krinsky and Jenkins, 1997).

The collision between traditional planning approaches and creativity has created a new paradigm for corporate growth, which according to Krinsky and Jenkins is the paradigm of strategy innovation. Strategy innovation, in their opinion, offers the following key benefits over traditional planning approaches (Krinsky and Jenkins, 1997:40);

- i. *Near-term planning is driven by the long-term view* - adopts a future pull orientation;
- ii. *A willingness to transcend existing business boundaries opens up new ground* - new ground allows for a more creative process (e.g. differentiation);
- iii. *Imaginative opportunities can be pulled out of current and emerging trends* - dissect trends and pull imaginative implications and opportunities out of it.
- iv. *The process requires a broad-based perspective* - input must come from both internal sources (e.g. all levels of staff) and external sources (e.g. customers).

### 3.12.2 An Integrated Approach to Strategy Innovation

Schoenberg (2003) provides an integrated approach to strategy innovation and introduces new strategic techniques which a business can use to change the ‘rules of the game’. Schoenberg (2003) cites examples of companies (e.g. low cost airline industry) that successfully created a new business model which changed the rules of the game in their industry.

Drivers for strategy innovation occur at both the industry and firm level. At the industry level, strategic thinking often assumes that industries will evolve in a steady life-cycle fashion. This is particularly the case in mature industries with entrenched competitors and business models (Schoenberg, 2003). The low cost airline industry

can be considered mature yet relative new entrants have been able to transform the industry in new ways (e.g. easyJet).

Schoenberg (2003) points out that this provides a challenge to industry forecasting abilities because traditional industry analysis would have incorrectly forecasted these new entrants and their business models. The reason being that traditional industry analysis, especially in mature contexts, “often makes the implicit assumption that historical trends will continue into the future, that the industry evolution will be linear” (Schoenberg, 2003:96). Strategic innovation must therefore, compliment traditional industry analysis and enquire as to who might transform the industry and also how they might do it (i.e. non-linear transformations).

At the firm level, linear forecasting analysis brings firms paradoxically closer to their competitors (as the majority is all playing by the same set of rules). This results in competitive imitation and consequent lack of product differentiation, which in turn leads consumers to buy on price resulting in declining profit margins. Strategy innovation provides a means to avoid the head-to-head competition that strategic convergence inevitable leads to (Schoenberg, 2003:96).

Schoenberg (2003) believes that all too often companies have a tendency to concentrate on the operational aspect of strategy (i.e. *how* to deliver) rather than focusing on *who* their customers should be and *what* their needs really are. The value gap analysis is put forth as a technique to develop innovative strategies by focusing on who the customers are and what their needs really are. Schoenberg (2003) puts forth four questions that can be posed for companies to source ideas for strategy innovation using the value gap analysis, the questions are follows;

- i. What factors should be eliminated that the industry has taken for granted?
- ii. What factors should be reduced well below industry standard?
- iii. What factors should be raised well beyond the industry standard?
- iv. What factors should be created that the industry has never offered?

The value gap analysis highlights the relative strengths of a product and how it is valued by different types of customers. A related approach to generating novel

insights into the *Who* and *What* questions is to actively think beyond the accepted industry logic (Schoenberg, 2003:100). According to Schoenberg (2003), most industries have a standard definition of what their product is, thinking beyond traditional boundaries, can expose opportunities for strategy innovation in the following manner;

- i. In terms of products (i.e. the *What* question) look across substitute and complimentary industries and provide the customer with a complete experience,
- ii. In terms of the market (i.e. the *Who* question) look critically at who the industry has conventionally seen as its customer, segment customer groups and determine their different criteria in making their product choice, and also target those customers who lie outside the conventional industry definition.

### **3.13 Re-invention and Complexity Theory**

Like Hamel (1998), Shona and Brown's (1998) model of strategy has its intellectual roots in complexity processes (i.e. complex adaptive systems) and is premised on the construct that organisations in rapidly changing industries are superior performers when they are able to combine these processes and continuously reinvent themselves. Shona and Brown (1998) depict models of strategy as varying from industry analysis, leveraging unique skills, playing the right moves, and viewing companies as complex adaptive systems (Appendice 4).

Shona and Brown's (1998) competing on the edge strategy contrasts with other approaches to strategy, it assumes that industries are rapidly and unpredictably changing and as a result the central strategic challenge for an organisation is managing change. Because the competitive landscape is in a continuous state of flux, competing on the edge requires a semi-coherent strategic direction which is achieved through creating an organisation that can continuously change and then allow for a continuous flow of competitive advantage to emerge (Shona and Brown, 1998:11).

In Complexity Theory terms, industries are part of a complex adaptive system with 'agents' (i.e. businesses) operating in a continuously changing competitive



landscape. The key strategic driver from a Complexity Theory perspective is managing change and ‘growing’ strategy. In meeting this challenge of managing change, self organising, co-evolving and patching (or re-aligning) businesses to market opportunities, is a key driver of reinvention for companies.

### **3.14 The Impact of Industry Structure on Innovation**

Grant (1991) makes reference to industry structure in understanding competitive analysis. Grant (1991) takes a different approach to Porter’s five forces model in understanding industry dynamics, he asserts that industry structure is not as stable as Porter’s model suggests. Rather than structure determining competition in a predictable way, competition – particularly technological competition – may reshape industry structure very rapidly (Grant 1991:101).

Grant (1991) uses Joseph Schumpeter’s the theory of creative destruction to explain this phenomenon. Joseph Schumpeter viewed competition as a “perennial gale of creative destruction” through which favourable industry structures – monopoly in particular – contains the seeds of their own destruction by attracting incursions from new and established firms deploying innovatory strategies to unseat incumbents (Grant, 1991:105). Schumpeterian industries are those subject to rapid product innovation, the telecommunication’s industry is one characterized by what Grant (1991) refers to as hyper-competition.

Therefore, competition is a dynamic process that continuously evolves as firms deploy innovative strategies and as such industry structure is not as stable and does not exclusively determine competitive behaviour. This point of view emphasizes the dynamic forces of innovation where hyper-competition is so intense and fast moving that competitors are continuously compelled to create advantages in order to disrupt an opponent’s competitive advantage.

Central to the concept of hyper-competition is the idea that competitive advantage is transitory (Grant 1991:106). So if competitive advantage is not sustainable it would then suggest that the only way to survive is to continuously recreate competitive advantage.

### **3.15 National Innovation Policy on Economic Growth**

From a macroeconomic perspective, Hospers (2005) provides an overview of Schumpeter's theory of "creative destruction" and its role on economic and societal development. Creative destruction is presented and referred to in pointing the importance of entrepreneurship, technological development and economic policy for economic development.

Schumpeter (1942) argues that equilibrium thinking can only explain the economic system as stationary, i.e., the circular flow of resources in an existing economic system (Hospers, 2005:23). Instead, he developed a model to show that capitalism is an evolutionary process, the economy continuously changes as industries, markets and innovations constantly start up and die out. Schumpeter (1942) sees the introduction of innovations as the key process of economic change and where innovations disturb whatever equilibrium exists in the economic system (i.e. constant evolution).

According to North (1997), an advocate of modern Schumpeterian theory, technological development is also linked to the rate at which a society's institutions are able to change (Hospers, 2005:27). The theory therefore, creates a link between a country's institutions, its innovative performance and economic development.

Schumpeter's view on economic policy matters was that the State's national innovation policy must be seen as a legitimate way to contribute to the process of "creative destruction" and thus to an economy's development (Hospers, 2005, 30). Hospers (2005) argues that no matter how innovative a State's innovation policy is equilibrium will soon follow as policy makers in their concern for national competitiveness, base their forms of innovation policy on best practices elsewhere.

Hospers (2005) does agree with Schumpeter (1942) that the economic system must be open for change as policy can both hinder and promote innovation and economic growth. Hospers (2005) asserts that policy makers should look at their existing economic and institutional structures and thereby place their policies in context. In following best practices countries essentially undermine their competitiveness as the forces of creative destruction tend toward equilibrium and over-supply.

Hospers (2005) concludes that Schumpeter's theory in many respects still holds value today as it explains how innovative entrepreneurs set in motion a process of creative destruction that disrupts the equilibrium to which the capitalist system tends, and, that entrepreneurial innovation is not only about economics but also its institutional effects as well (Hospers, 2005:34).

### **3.16 Conclusion**

In concluding the literature review, the main findings and its implications for the Research Report have been summarized.

New innovations have accelerated the pace of change such to the extent that organizations don't have the capability to react in a way that enables them to keep pace with required changes. How do organisations then close the 'innovation gap' and compete against disruptive innovations especially when disruptive innovations by nature bring to market those products or services not valued by mainstream customers?

Disruptive innovation is distinguished between business-model innovations and radical product innovations. By what criteria then, is disruptive innovation characterised and what predictive methods can be applied to forecast its impact?

Authors put forth the notion that potential entrants are able to grow their business in markets which established competitors choose to ignore due to the effects of disruptive innovations. Does disruptive innovation then allow entrants to employ local factors of production, promoting economic growth in less developed economies?

The industry is characterised by many new entrants but at the same time industry participants do not know what the winning technologies and business models are, do incumbents then protect their position by launching their next generation products prematurely in order to retain their position?

Consumers with sufficiently satisfied functional requirements are now more concerned with differences in price than with differences in price vs. performance and as such the segmentation of markets has changed. By what mechanism does the company's business design then meet customer priorities especially when new

entrants have succeeded in deploying business designs that do not rely on size, market share or speed to market to capture substantial market growth?

The implication is that only those companies that are capable of reinventing themselves and their industry in a profound way will survive into the future. In achieving re-invention a new school of strategic thought, Strategic Innovation, is identified in solving this dilemma. To what extent does Strategy Innovation as a school of thought forecast new entrants and their business models in a non-linear fashion and does it necessarily lead to sustainable business growth by generating the creation of new markets, new product categories, or new industries?

Technological development is also linked to the rate at which a society's institutions are able to change. Is there a causal link between a country's institutions and its innovative and economic performance?

## CHAPTER 4: RESEARCH METHODOLOGY

### 4.1 The Nature of the Research Problem Statement and Research Objectives

The nature of the Research Problem Statement and Research Objectives has a direct bearing on selecting the appropriate research methodology. In selecting the appropriate research methodology, the nature of the research problem statement and research objectives has been 'screened' against the various research methodologies available in order to achieve the highest degree of objectivity and relevance.

*A qualitative research methodology* has been selected as the most appropriate research strategy as it is consistent given the exploratory nature of the research problem statement and research objectives (Appendice 5).

The criteria for selecting a qualitative research methodology for the Research Report are as follows (Leedy, Ellis & Ormond, 2005:135);

- i. *Description* - reveal the nature of disruptive innovation in a particular setting, namely, the telecommunications sector in South Africa,
- ii. *Interpretation* – The Researcher will be able to gain insights about this phenomenon by exploring how this specific type of innovation that has the potential to substantially alter the basis of competition impacts the sector's business models and differentiates shapers from adopters of this type of innovation,
- iii. *Verification* - The Researcher will be able to test the validity of certain theories and assumptions discussed in the literature review on disruptive innovation within a real-world context, and
- iv. *Evaluation* - The Researcher will be able to judge the effectiveness of disruptive innovation as a construct.

## 4.2 Target Population and Sampling Frame

“A population is the total collection of elements about which we wish to make inferences” (Donald & Pamela, 2003:179). “The sampling frame is closely related to the population. It is the list of elements from which the sample is actually drawn”. (Donald & Pamela, 2003:188). The sampling frame for the study will be selected specialists (i.e. non-probability sampling) within the telecommunications sector in South Africa.

The sample size will consist of one individual Marketing/Technology Intelligence Specialist selected on a non-random basis from each company/category specified below;

- i. Fixed line Operators: Telkom and Neotel,
- ii. Cellular Operators: Vodacom, MTN, Cell C and Virgin Mobile,
- iii. Participants identified as Disruptors: MWEB,
- iv. Future observers of the ICT Industry,
- v. A proficient private user of fixed line, mobile and broadband technology, and
- vi. A proficient corporate users of fixed line, mobile and broadband technologies.

## 4.3 Data Collection

“Reduced to its basic elements an questionnaire, is quiet a simple design. The Researcher poses a series of questions to willing participants; summarises their responses with percentages, frequency counts or more statistical indexes; and then draws inferences about a particular population from the responses of the sample” (Leedy, Ellis & Ormond, 2005).

The data collection process will be conducted through non-random face-to-face interviews using an unstructured open-ended questionnaire as the primary research instrument. The data collection process will be exploratory by nature and will include

identification of the specific material to be analysed and coding of the material in terms of predetermined and defined characteristics. The questionnaire will be used to align the research objectives and subject to the interview questions in order to collect the data.

Primary data will be collected using non-random face to face unstructured in-depth interviews as the primary research method for the purpose of gathering primary data that refers to the awareness and knowledge of the subject. Secondary data sources will be collected from the Internet, articles, journals, annual reports and company-specific data.

As the sample size is relatively low, a qualitative research methodology using in-depth exploratory interviews will reduce the risk of bias or misrepresentation of the characteristics observed.

#### **4.4 Data Analysis**

“Data analysis usually involves reducing the accumulated data to a manageable size, developing summaries looking for patterns, and applying statistical techniques”. (Donald and Pamela, 2003:87).

As the primary source of research data, qualitative data will be analysed by means of descriptive or inferential analysis to answer the research problem statement and research objectives. As qualitative inquiry is fundamentally interpretive or inferential, a “data analysis spiral” will be used to analyse qualitative data to limit Researcher bias or misinterpretation.

The data analysis spiral entails the following steps (Leedy, Ellis & Ormond, 2005:151);

- i. *Organise the data* – break down large bodies of text into smaller units like sentences or individual words,
- ii. *Peruse the entire data set several times to get a sense of what it contains as a whole* - note possible categories or interpretations;

- iii. *Identify general categories or themes* – classify each piece of data and observe patterns to obtain a sense of what the data means; and
- iv. *Integrate and summarise the data* – describe relationships among categories and collate the data into an organisational scheme (e.g. figures and tables) and provide propositions that describe relationships among the categories.

As a secondary source of research data, quantitative data will be analysed by measuring the occurrences of observations expressed as a percentage of the total sample to record and measure the frequency of the characteristics observed (Table 2).

**Table 2: Data Set Methodology**

<b>n =</b>	Units of Analysis	Respondents
	Response Rate	Number of actual responses received expressed as a percentage of total target sample population
<b>Variables =</b>	Characteristics	Themes identified from interviews and literature review
<b>Values =</b>	Responses	Yes / No correlation to characteristics observed from the Literature Review, and expressed as a percentage of the total population
		Measure the frequency of common themes / characteristics observed across sample population (e.g. counting specific phrases or words as an indication of their importance)

Both methods will allow for relationships among variables to be explored and will be used inter-changeably when analysing the research results. Results will be checked to determine if they are consistent with the theories/constructs and how they relate to the research problem statement and objectives. The discussion, conclusions and recommendations will be made based on the analyses.



## **4.5 Measuring Instruments**

### **4.5.1 Instrument**

The Researcher in many respects is the research instrument when using a qualitative method. The measuring instrument itself however, will comprise of a questionnaire that will be based mostly on unstructured questions in an open ended discussion in order for the Researcher to explore and observe subsequent themes, patterns and characteristics during the course of the interview (Appendice 6).

The questionnaire will essentially serve as a discussion guide and the Researcher will not endeavor to lead the participant but rather use the questionnaire as a checklist of themes and characteristics so as to prompt the participant for data collection purposes.

### **4.5.2 Validity and Reliability of the Measuring Instrument**

The validity and reliability of the measuring instrument influences the extent to which something can be learnt about the phenomenon under study, it also influences the extent to which meaningful conclusions can be drawn from the data (Leedy, Ellis & Ormond, 2005:27).

The selected research methodology is qualitative by nature and as such obtaining statistical significance from the data analysis will not influence the validity and reliability of the research instrument as the interpretation of results will be inferential. The research instrument will be premised upon “Construct Validity” which is the extent to which an instrument measures a characteristic that cannot be directly observed and measured but must instead be inferred from patterns (Leedy, Ellis & Ormond, 2005).

Due to the low sample size the Researcher will target Marketing and Technology Intelligence Specialists within the sampling frame to ensure that the sources of data are credible and thereby ensure that the validity of the research instrument is not compromised. An adequate measure of the response rate will also enhance the validity of the research instrument and as such an 80% response rate will be deemed as adequate.

## **4.6 Research Ethics**

The Researcher has identified those companies from which data will be gathered and has on a non-random basis targeted participants who due to their position (i.e. Marketing and Technology Intelligence Specialists) within the company would be able to provide meaningful data to the research process.

The Researcher will make contact with the participant by telephone and introduce himself, explain that the purpose of the Research Report is for academic purposes alone and extend an invitation to the selected individual to participate. The participants will be advised during the telephonic invitation that the Researcher will apply ethical norms in the data collection process.

### **4.6.1 Protection from Harm**

Participants will not be subjected to any harm or prejudice during the course of the data collection process and each will be fully briefed with regards to both the research objectives and methods to be applied at the time of the telephonic invitation.

### **4.6.2 Informed Consent**

Participants will be fully briefed during the telephonic invitation with regards to the nature of the study to be conducted and participation will be strictly voluntary.

### **4.6.3 Right to Privacy**

Participants will be advised during the telephonic invitation that the data gathered from research participants will be strictly confidential. Each research participant will remain anonymous and their particulars will not be disclosed.

Where required, confidentiality agreements will be signed with research participants and no information will be divulged to any third party without the explicit consent of the participants.

### **4.6.4 Honesty with Professional Colleagues**

Data and findings will be disclosed in a complete and honest manner and will not be misrepresented or fabricated to support a conclusion. Acknowledgement of all material belonging to other authors will be mandatory in order to avoid plagiarism.

Furthermore, the Researcher declares that the research report is his own work, except to the extent indicated in the text and reference, and that the research report is being submitted solely for the purposes of partial fulfillment for the requirements of completing the Masters Degree in Business Leadership with the University of South Africa.

#### **4.7 Reporting Findings**

Interpretive narratives from the data will be recorded in Chapter 5 in order to capture the complexity of the phenomenon under study.

## CHAPTER 5: RESEARCH RESULTS

### 5.1 Respondent Profile

A biographical profile of the respondents is not provided as each research participant will remain anonymous and their particulars will not be disclosed. Furthermore, the nature of the study is qualitative by nature and due to the low sample size biographical data has no relevance to the research findings.

A respondent profile has been compiled indicating the respondent's designation for the purpose of assuring the reader that the research data has been collected from credible sources (Table 3).

**Table 3: Data Set**

n = Units of Analysis		Designation
1	Future Observer	Editor: Technology and Telecommunications - Financial Mail
2	Telkom	Senior Manager Marketing
3	Neotel	The Researcher was unable to obtain a respondent to participate in the research study.
4	Vodacom	Technology Strategy Consultant
5	MTN	Research & Development Technology Manager
6	Cell C	Manager CRM and Cell C Direct
7	Virgin Mobile	Head of Customer Operations
8	MWEB	Manager of Product Development
9	Proficient Corporate User	Chief Technical Officer – Standard Bank
10	Proficient Private User	Services Manager

Due to the specialist technical expertise of the respondents, and that they were selected on a non-random basis, the respondents are hereafter representative of their company/category in the analysis section of the Research Report. Therefore, respondents and their respective companies/categories are hereafter considered as synonymous.

## 5.2 Response Rate

Due to the low sample size, the Researcher targeted Specialists within the sampling frame to ensure that the sources of data were credible to ensure that the validity of the research instrument was not compromised. Although not a quantitative study, an adequate measure of the response rate served to enhance the validity of the research instrument and as such, an 80% response rate was deemed as adequate.

The response rate is calculated as the number of actual responses received expressed as a percentage of the total sample population as at the time of closing the data collection process (Table 4).

**Table 4: Response Rate**

Total Sample Population	Target Sample Rate for Validity	Actual Responses Received	Response Rate (%)
10	8	9	90%

The Researcher obtained an actual response rate of 90%, the target sample rate of 80% served as a basis for research validity, therefore, in terms of the research methodology, the research instrument is deemed to have achieved “Construct Validity”.

## 5.3 Analysis

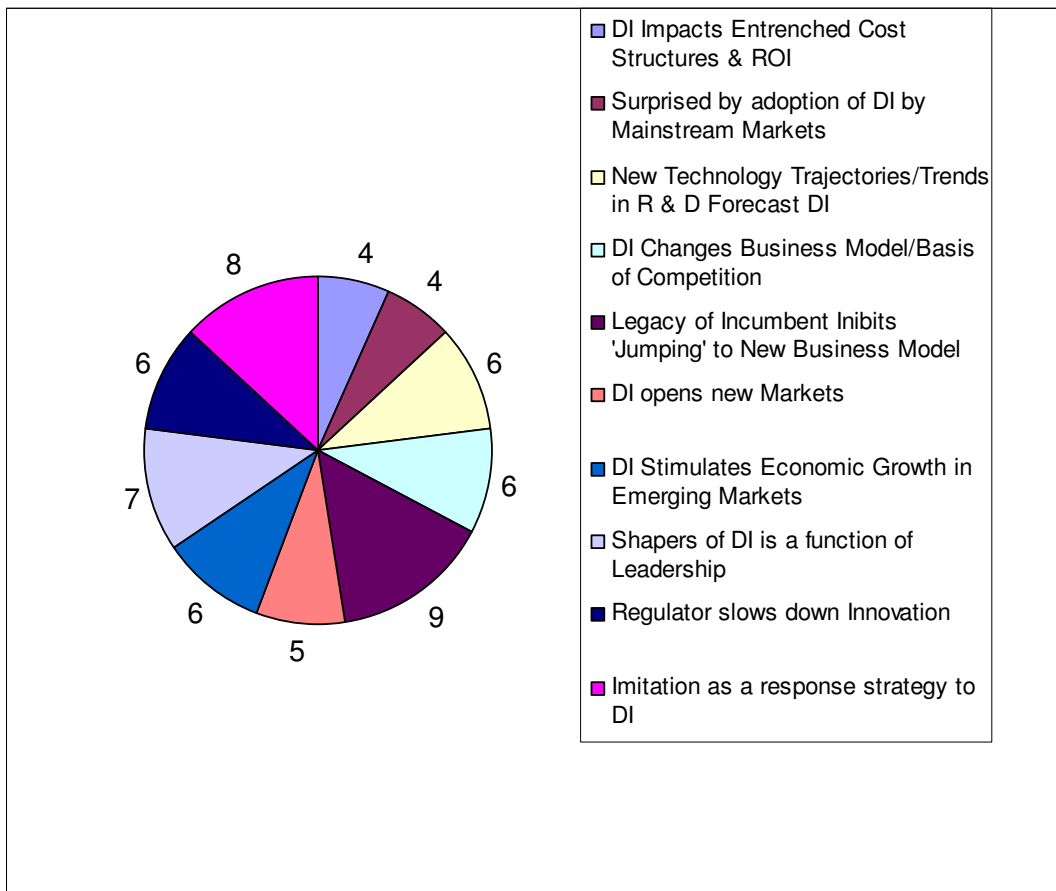
In the “Analysis” section of the Research Report the results from the data collection process will be interpreted, no reference is made to the literature review at this point as it is reserved for discussion in Chapter 6.

Analysis of the data has been conducted as prescribed in the research methodology in Chapter 4. With reference to the Data Analysis Spiral, the data has been organized per unit of analysis (i.e. Respondent), the entire data set has been perused several times in order to obtain a sense of what it contains as a whole, general categories or themes has been identified and the data has been integrated and summarised.

Reporting on the findings relates sub-conclusions to the evidence, data and analysis, and the research problem statement.

### 5.3.1 Identification of Common Themes/Characteristics

As a measure, the frequency of common themes or characteristics identified across the sample population provides the Researcher with a basis for subsequent inferential analysis of the data, i.e. Data Analysis Spiral methodology. Due to the exploratory nature of the study, and to remain objective by not concealing results, important findings not obtaining a high frequency 'mention', have been included and in many cases juxtaposed to the common themes or categories observed (Figure 4).



**Figure 4: Identification of Common Themes/Characteristics**

### 5.3.2 The Relevance of Disruptive Innovation

All Respondents other than Vodacom (and to a lesser extent Telkom), were not familiar with the construct of Disruptive Innovation. However, given their technical expertise and industry experience, the remaining Respondents (except for the Futurist) were able to formulate an opinion as to what could be regarded as Disruptive Innovation in the telecommunications industry.

Generally, Disruptive Innovation was characterised by the Respondents as anything that changes or challenges the legacy of traditional business models and the basis of competition of the telecommunications operators. This form of ‘innovation’ (i.e. “anything”) was equated with;

- i. technological developments that offer new capabilities,
- ii. less complex in terms of performance,
- iii. uses a different platform creating cheaper means of delivering a service/product,
- iv. more cost effective to provide product/service,
- v. a technological change that alters the direction of how technology is used,
- vi. an inferior technology to current products,
- vii. a new value proposition that changes pricing and customer segments, and
- viii. popularity and hype around the innovation steals the consumer’s mind share from existing products.

Vodacom’s perspective was “that there is no disruptive innovation, only innovation that allows disruptive business models”. Therefore, from Vodacom’s point of view, it could be inferred that disruptive innovation is a function of disruptive business models and whether the decision was made to take the technology forward or not. This broad contrast between Vodacom and the remaining Respondents has implications for the research problem statement with regards to what distinguishes shapers from adopters of Disruptive Innovation.

Disruptive Innovation was generally associated with technological innovation and to a lesser extent with business model innovation. Therefore, no clear distinction was made between Business-Model Innovation and Radical Product Innovation. Standard Bank (Corporate User) provided the most varied categorization ranging from a change in value proposition, technology innovation, changing customer segments to changing pricing strategies. An interesting finding was that the ICT Futurist could not provide any illustrative examples of Disruptive Innovation.

‘Disruptive dynamics’ was not prevalent in responses of the Respondents and as such it was inferred that the construct did not influence the industry trends, business models and response strategies of the Respondents.

The finding that Disruptive Innovation as a construct is largely unknown has implications for the primary research problem statement to the extent that Disruptive Innovation has little relevance in terms of the form it takes and its potential to substantially alter the basis of competition, impact business models, and explain the changes in the telecommunications sector of South Africa. It can therefore be inferred that other factors are responsible for explaining the dynamics of the telecommunications sector in South Africa.

### 5.3.3 The Effects of Economic Useful Life on Next Generation Products

The impact of Disruptive Innovation on the telecommunications sector in South Africa was largely identified as the extent to which incumbents were able to adequately recover their cost of capital in the face of a Disruptive Innovation.

Telkom, Cell C, MTN and the Private User referred to the effects of the mature phases of industry life cycles and payback on capital infrastructure as important components in understanding the impact of an entrant deploying Disruptive Innovation. Telkom put forth a compelling illustration, “when incumbents typically have invested substantial amounts of capital in their infrastructure and present technologies, the new technology becomes disruptive when it allows for a new market to develop at a pace faster than which the incumbent can ‘payback’ its depreciation in existing technologies and have sufficient funds with which to adopt and respond to the new technology”.

The pace at which an entrant’s new technologies are introduced further exacerbates this dilemma in that their economic useful lives are depreciating a rate faster than that of existing technologies (which means shorter payback periods and flexibility in fixed and variable pricing in the short term). The Private User provided a useful example in the fixed line sector of the industry to illustrate Telkom’s point. Incumbents such as Telkom have invested heavily in their fixed line infrastructure. New entrants deploying wireless technology are far more flexible as they are not inhibited by entrenched network cost structures.



The finding of a correlation between an incumbent's present stock of assets (and payback period of depreciation) with that of having the ability (or inability) to launch next generation products has implications for the research problem statement to the extent that incumbents in the telecommunications sector of South Africa find it difficult to 'jump' to new innovative business models and close the innovation 'gap' due to their entrenched cost structures.

#### 5.3.4 R & D as a Measure of Forecasting Disruptive Innovation

As a measure of forecasting Disruptive Innovation, Telkom, MTN, Vodacom, Cell C and Virgin Mobile identified the monitoring of Research and Development activities of competitors as a means of tracking technological advancements. The other Respondents maintained that it was either very difficult or not possible to forecast the effects of a disruptive innovation.

The barometer for tracking the trajectory of technological change was how the technology disrupted the links with the market place and to the extent to which the new technology disrupted incumbent's business models by allowing new entrants to meet the needs of customers at a lower price.

Telkom made a salient point in that only tracking new technological inventions to forecast the effects of the invention on the market place was insufficient. Incumbents had to be aware that the disruption would initially target the low end of the market and that it would not require the same performance attributes of mainstream technologies. According to Telkom, "the cardinal error that incumbents could make was to disregard the disruption as it would not (in the short term) affect their mainstream customers". Telkom applied Moore's Law to this observation, over time, the new entrant's inferior technology would improve and start taking over the mainstream market at a lower price since new technology cost less.

The Private User had a contradictory point of view to most of the Respondents in that there was no correlation between the research and development activities of an incumbent and its ability to launch successful innovations, rather, that some companies were more adaptive because of their vision and leadership qualities.

The majority of Respondents (particularly Virgin Mobile) made reference to monitoring the R & D of competitors and to a lesser extent using analysts and observing developments and trends in overseas markets as a means of forecasting disruption. South African based operators are therefore, essentially reactive in their mindset.

This inference is further supported by virtue that Cell C, MTN, Telkom and the Private User admitting that they were “surprised by the rapid uptake of certain technologies (or the application of existing technologies in new ways) by the mainstream market”. The common example provided to illustrate this observation is that of SMS (Short Message Service) and fixed voice services. The Respondents claimed the industry in general forecasted a slow growth trajectory of Short Message Services however the industry was taken by surprise by the rapid uptake by the market which essentially disrupted the fixed services profit models of the mobile cellular providers (i.e. SMS cannibalized voice call services which led to idle resources impacting payback on network infrastructure). The same example was made of 3G, Instant Messaging and now the prediction is that data services will have the same effect.

This finding that South African operators prefer to have a ‘wait and see’ disposition with regards to forecasting Disruptive Innovation has implications for the research problem statement to the extent that operators in the telecommunications sector of South Africa cannot adequately define the characteristics that both identify and forecast disruptive innovation from an *ex ante* perspective. The inference could therefore be made that operators in the telecommunications sector of South Africa have little predictive use for these characteristics and as such they are all essentially ‘adopters’ of Disruptive Innovation which impacts their ability to deter new entrants deploying disruptive business models or technologies.

#### 5.3.5 Legacy of the Past does not Imply Change

The mature phases of industry and product life cycles all signal the incumbent’s dilemma, the legacy of its entrenched past and the ability to adopt new innovative business models. This was the view of all Respondents except for MTN.

The legacy of incumbents was attributed to the following features;

- 
- i. Outdated Legacy Information Systems,
  - ii. Being 'stuck' with depreciating infrastructure,
  - iii. Difficulty in deploying new technologies as they must be integrated with the legacy systems
  - iv. Customers migrate towards new technology which has new and better features and interfaces which makes it difficult for the incumbent to continuously adapt to rapidly changing technology,
  - v. Loss of proprietary information,
  - vi. Changing the organisational structure and leadership is cumbersome due to political infighting, and
  - vii. Incumbents are geared towards the mass market as they require higher profit margins, therefore they find it difficult to reframe their business models and allocate resources to meet the new needs of customers,

There were however, compelling reasons why the incumbent should not have to re-invent itself, the reasons are listed per Respondent as follows;

- i. Standard Bank (Corporate User) - if an incumbent is highly successful why change, regulation may also inhibit the incumbent from changing and certain industry standards and best practices may first prescribe that an incumbent has to follow an elaborate process before adopting an innovation,
- ii. Futurist & Cell C - The incumbent must first and foremost protect its existing revenue streams, adopting new business models or innovations may be detrimental to the incumbent's mainstream business, rather let someone else take the risk, and
- iii. MWEB - Imitate the new entrant or innovation and leverage off learning from the mistakes of others.

MTN was the only Respondent that proclaimed that "the telecommunications industry was the quickest to adapt to new business models and technologies due to the fact that it was so closely associated with the convergent ICT industry and due to the

rapid rate of change within the industry” (reference was once again made to Moore’s Law).

The finding that most Respondents correlated incumbent’s in their mature phases with the inability to ‘jump’ to new innovative business models, and, that there is not necessarily a need for change, has implications for the research problem statement to the extent that incumbents in the telecommunications sector of South Africa find it difficult to differentiate or re-invent themselves and thereby close the ‘innovation gap’.

#### 5.3.6 Disruptive Innovation Opens New Markets

Observations from Respondents on the impact that Disruptive Innovation had on emerging markets varied considerably. With the exception of MWEB, all other Respondents identified Disruptive Innovation as having a positive effect on emerging markets.

The common themes that correlated the positive effects of disruptive innovation on emerging markets were as follows;

- i. *Infrastructure:* Virgin Mobile and the Private User correlated telecommunications infrastructural development within the emerging market as a stimulus for economic growth (e.g. electricity to supply network operators and employment). An emerging market’s competitive ability was correlated with its ability to develop infrastructure.
- ii. *Competing for Emerging Markets:* The Futurist and Standard Bank (Corporate User) provided an alternative point of view. Incumbents in the developed world are continuously seeking new growth opportunities in the emerging markets. Incumbents from the developed world who operated an infrastructure orientated service (e.g. Fixed line telephony) in the emerging market could be disrupted by a new technology (e.g. VoIP). Wireless technology as an alternative to fixed line services would threaten the incumbents profit model in the emerging market as the new entrant would not be encumbered by high payback costs on capital expenditure and may not be exposed to the risk of financing international operations that could impact the financial position of the mainstream business in the developed world. The incumbent would therefore,

have to radically alter its value proposition before entering an emerging market as disruptive innovation would always tend to target the low end of the market and compete on cheaper prices with fewer features which is more accessible to the mass market (i.e. away from its mainstream market in the developed world).

iii. *Disruptive Innovation opens new markets and stimulates economic growth:* A common theme expressed by Vodacom, Telkom, Cell C, MTN, and the Private User was that Disruptive Innovation opens new markets in the developing world and stimulates economic growth. The stimulus associated with this observation was identified as follows;

- New technology enables new features which appeals to a new market segment not serviced by incumbents, thereby enabling a new market (e.g. wireless broadband over voice services),
- Low social environments provide opportunities for incumbents to utilize informal sector entrepreneurs as a ‘distribution’ channel for products and services (e.g. MTN make use of Public Access Operators who purchase discounted airtime and then re-sell their airtime to the public at a mark up), informal sector entrepreneurs therefore have a residual impact on the economy and the incumbent’s revenue stream,
- Governments may want to reach under serviced areas of the populace, a new technology or a new application of an existing technology may bring down the cost of providing the service allowing deeper penetration per capita and increased revenue for the State in the form of license fees and taxes (e.g. prepaid packages over contract packages), and
- The application of a new technology invariably goes through various rates of adoption in developed markets (e.g. voice – mobile – data – broadband), however, in emerging markets rapid deployment and adoption in the latest technology means that no ‘evolution’ is required

(e.g. MTN in Nigeria). The impact is dual fold, due to the higher adoption rate the incumbent experiences a quicker return on investment, however, the ‘flipside’ is that the incumbent requires substantial financial resources which may be a risk to the incumbent if the market adoption rate is not steady, in this instance, the incumbent may not adequately recover its cost of capital or return on investment.

As the only respondent who did not associate disruptive innovation with positive effects in emerging markets, the observation from MWEB was that “the most disruptive act would not be technological, but rather regulatory”. Regulatory change was deemed as too slow to allow for any disruptive change in any telecommunications market.

The finding that Disruptive Innovation has a positive impact on emerging markets, and potentially a negative impact on incumbent’s profit models, has implications for the research problem statement to the extent that the construct can explain changes in the telecommunications sectors of other African countries (e.g. Nigreria).

#### 5.3.7 Shapers of Disruptive Innovation is a Function of Leadership

Identifying the characteristics that distinguish shapers from adopters of Disruptive Innovation in the telecommunications sector of South Africa is central to the research problem statement and has a direct bearing on the title of the Research Report.

With the exception of the Futurist and Standard Bank (Corporate User) who could provide no distinguishing characteristics, and Virgin Mobile who related distinguishing characteristics of Disruptive Innovation with that of tracking the research and development activities of competitors (i.e. reactive disposition), all other Respondents correlated leadership attributes with the ability to distinguish shapers from adopters of Disruptive Innovation.

The leadership attributes identified from this observation are described per Respondent as follows;

- 
- i. Cell C - entrepreneurial leadership always look ahead for new ways of doing business (ironically, Cell C made reference to Virgin Mobile's Richard Branson),
  - ii. Private User - the pace or rate with which the leadership can drive through new products, and a predetermined proportion of revenues must be entirely earned from new products (this observation correlates to the concept of time pacing associated with Complexity Theory),
  - iii. Telkom – leadership ultimately decides their companies differentiation approach, new entrants can base their business models on new technology (e.g. VoIP) but incumbents can also use their leading brands to either imitate or lead with a new innovation (e.g. HSDPA),
  - iv. MWEB – the leadership of a company determines how risk averse the corporate culture will be in shaping or adopting its future,
  - v. MTN - African countries are adopters of Disruptive Innovation as they are inhibited by the leadership of their respective nation states through their regulatory agencies. From a theoretical point of view however, the leadership of an organisation must be willing to “prune the tree”, i.e. be willing to cannibalize current revenues in order to adopt the innovation, “rather loose the money than loose the customer”, and
  - vi. Vodacom - leadership must be proactive in changing the business model (or value proposition) and allocate resources accordingly to re-design the competitive environment. As the exception, Vodacom proclaimed that “there is no way to identify distinguishing characteristics of shapers from adopters of Disruptive Innovation as there is no causality between Disruptive Innovation and business reframing”.

The finding that ‘shapers’ of Disruptive Innovation is a function of leadership has implications for the research report to the extent that the characteristics that

distinguish shapers from adopters of Disruptive Innovation is essentially non-technological by nature from a South African perspective.

### 5.3.8 South Africa's Regulator slows down Innovation

The impact that the State's regulatory agencies have on innovation was generally portrayed as one of not keeping pace with the rapidly changing technological environment and slowing down the rate of innovation in the telecommunications sector of South Africa.

Observations across the sample population to support this finding are listed as follows;

- i. MTN - technology is moving too fast for the political process (e.g. the time taken to approve a new technology like WIMAX at ICASA hearings, approval is thereafter required by the National Assembly and Provincial Government). This lag in time impacts competitors as they can't execute their business plans fast enough which ultimately impacts the man on the street by not benefiting from the competition. Cell C reiterated this point by characterizing the State as a "poor regulator" and as being too slow. Cell C similarly pointed out that the delay in approving number portability limited Cell C's ability to come up with delivering certain products with which it could compete (Virgin Mobile used VoIP as an illustrative example to support this observation). Cell C further emphasizes the point with reference to the introduction of Neotel in 2001, ICASA was slow to make decisions regarding the granting of licenses to the second operator which hampered innovation (e.g. it may have changed broadband pricing). MTN made a profound statement by declaring that Neotel "was too little too late" with regards to the State addressing competition within the sector,
- ii. MWEB - the sector is heavily licensed, as such, there is no true free market forces, liberalization of the sector has not changed its monopolistic tendencies,
- iii. Standard Bank (Corporate User) - State sponsored innovation is low and consequently drives out innovation, and



- 
- iv. Private User - the State constrains innovation as it has vested interests in Telkom and Vodacom, this conflict of interest influences market dynamics which has impacted South Africa's ability to compete on the basis of the industry not being "opened up",

In order to provide a more balanced perspective on this topical question, observations from both the other respondents, and previously mentioned respondents, have been included even although there was no common theme identified across them, the observations are listed per respondent as follows;

- i. Telkom – the Regulator is becoming more progressive in terms "technology agnostic regulation", i.e. less restrictions on technology and innovation used in the industry (e.g. broadcasting licenses awarded recently that permit terrestrial cable based broadcasting and wireless broadcasting). Telkom acknowledged that a monopolistic telecommunications environment was not conducive for economic growth as anti-competitive behaviour did not stimulate competitive forces from which new and more efficient means of doing business could evolve. However, as a trend world wide, it was initially necessary in order to finance the establishment of a telecommunications infrastructure within a country.
- ii. Futurist - the State had very little effect on innovation in South Africa (no reasons could be provided by the Respondent as to why),
- iii. Virgin Mobile - the State has forced down prices of cellular rates with the granting of mobile number portability,
- iv. MTN – the State's resources must be protected otherwise chaos will erupt within the 'airwaves' especially with regards to ensuring that the spectrum is well managed, and
- v. Vodacom – the State has a significant impact on innovation, but not Disruptive Innovation. From Vodacom's point of view, the State largely influenced innovation at a resources level such as the availability of spectrum and the

degree to which it was provided to companies. The observation from Vodacom once again clearly distinguishes itself from the other respondents as none of the other respondents made specific reference to “disruptive innovation” which alludes once again to the understanding (or misunderstanding) of the construct.

The finding that the State’s regulatory agencies (i.e. ICASA) generally hinders innovation in the telecommunications sector of South Africa has implications for the research problem statement to the extent that although national innovation policy is ‘opening’ up the telecommunications sector, it has hindered the ability of incumbents and entrants alike in adopting or shaping disruptive innovation and thereby competing both nationally and abroad.

#### 5.3.9 Imitation as a Response Strategy to Disruptive Innovation

Imitation as a response strategy to Disruptive Innovation was identified as a common theme across all respondents with the exception of the Futurist.

Imitation provided the incumbent with a means of determining whether the disruption was of a temporary or permanent nature (i.e. time lag), allowing the incumbent to choose whether to adapt its business model accordingly. If incumbents determined that the disruption was of a temporary nature they would not react at all rather letting the novelty wear off and letting customers return to their usual spending patterns (a point of view of Cell C). If on the other hand the disruption was of a more permanent nature, incumbents would invest in additional resources and accept the risk of introducing new value propositions that added new features to products or services in order to deter customers from moving to competitors.

Other response strategies that were worth noting are featured per Respondent as follows;

- i. Standard Bank (Corporate User - have “deep pockets”, compete on price and margin to disrupt the disruptor,
- ii. Virgin - engage in strategic alliances,

- 
- iii. Vodacom – adopt the new technology to negate the impact of the disruptive innovation and adopt a fixed fee bundling profit model (i.e. access model and not per unit usage model),
  - iv. MWEB - scan international markets “and see what’s happening overseas”,
  - v. Private User - Improve customer service to prevent customers from switching, and
  - vi. MTN - the convergent nature of the ICT industry must be clearly understood, the company must have a strategy that “embraces rather than fights” the rapidly changing nature of the industry by ensuring the organisation’s architecture is flexible enough to respond.

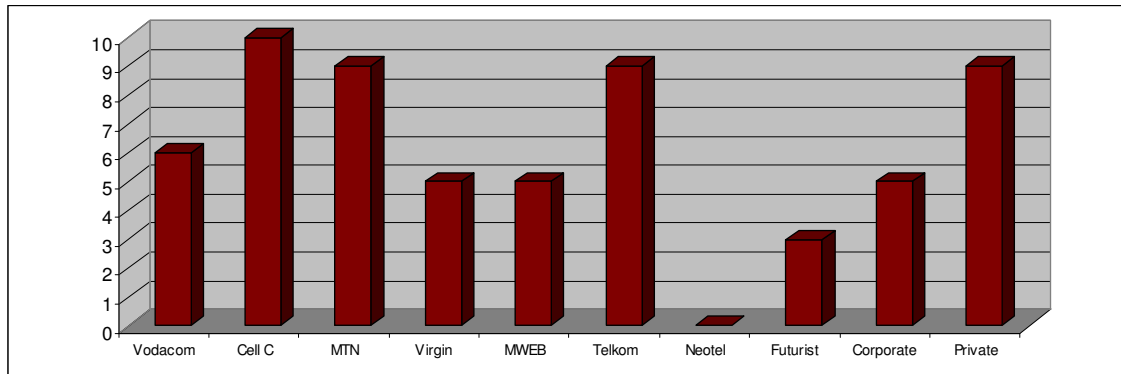
Although all of the above response strategies to Disruptive Innovation are varied, they are all essentially reactive by nature. Surprisingly, the only respondent that did not have a reactive response strategy was Telkom, namely, “to have a migration plan to adopt and deploy new technologies, and to acquire a new start up venture with the abilities to address new innovations” (a point of view shared by Vodacom).

The Futurist, Vodacom and MTN, identified visionary leadership as a means of responding or pre-empting disruptive innovation. The Futurist made reference to Microsoft’s entrepreneurial management style versus IBM’s autocratic management style attributing IBM’s entrenched culture and structures with its inability to both identify and respond to Microsoft’s ‘disruptive’ business approach.

The finding that imitation is largely used as a response strategy to Disruptive Innovation once again reiterates the reactive nature of competitors and has implications for the research problem statement to the extent that operators in the telecommunications sector of South Africa are essentially adopters of Disruptive Innovation and have no significant response strategies against new entrants deploying Disruptive Innovation.

### 5.3.10 Conclusion

Although the sample population is too low to infer any statistical significance from the scores, the summary of the results provides an interesting illustration as to how varied perspectives were across the sample population. For example, one would tend to infer that the cellular mobile operators would tend to 'think alike', yet the results show a surprising inconsistency (Figure 5).



**Figure 5: Summary of Common Themes/Characteristics Identified**

Cell C, MTN, Telkom and the Private User scored the highest 'mention', i.e. they all related their responses in a similar fashion. They were followed by Vodacom, Virgin Mobile, MWEB and the Corporate User, the Futurist ranked the lowest. From the result it can be inferred that Disruptive Innovation as a construct, has many varying perspectives from the respondents which within itself has implications for the research problem statement to be discussed in Chapter 6.

The sample was selected on a non-random basis (i.e. Marketing and Technology Intelligence Specialists), therefore the result does not imply that those Respondents who obtained lower scores did not provide useful and important findings, but rather, that in terms of synthesizing and integrating the research data, the results and analysis would have been scattered and incoherent had all varying insights been detailed.

## CHAPTER 6: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

### 6.1 Discussion

The outcome of the study is fully discussed with cross-references to other relevant studies as covered in the literature review in Chapter 3, and the underlying foundation covered in Chapter 2.

In conjunction with discussing the research results from the analysis in Chapter 5, the Researcher identified central themes from the literature review and extracted key phrases that would serve the purpose of qualifying statements from which the themes/characteristics observed from the research data could be correlated to the literature review. The implications for the research problem statement in correlating the research analysis data to the literature review (in the form of “Yes” for positive correlation and “No” for a negative correlation), was to determine how relevant the theoretical construct of Disruptive Innovation was in assessing the impact that Disruptive Innovation had on the business models of the sample population and whether it explained the changes in the telecommunications sector of South Africa, hence addressing the research problem statement and objectives.

#### 6.1.1 Awareness of Disruptive Innovation as a Construct

Disruptive Innovation is defined as an innovation that is financially unattractive for the leading incumbent to pursue, relative to its profit model and relative to other investments that are competing for the organisation’s resources (Christensen, 2006:11) (Figure 6).

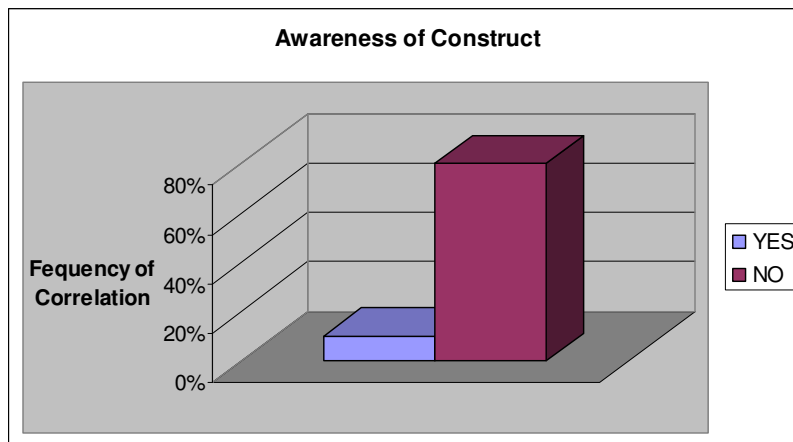
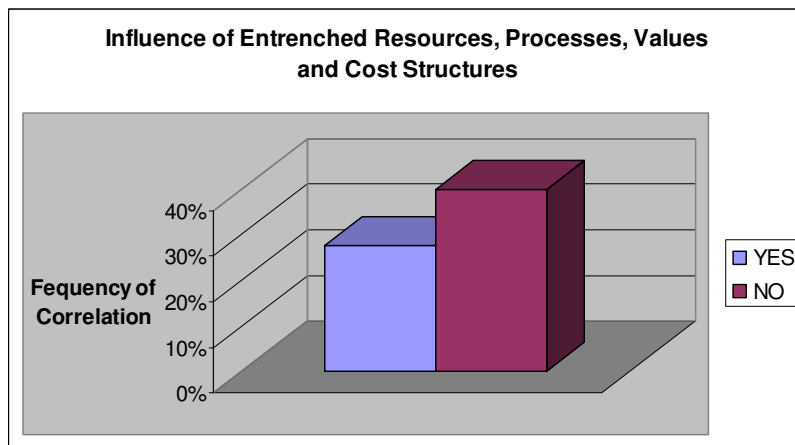


Figure 6: Awareness of Disruptive Innovation as a Construct

### 6.1.2 The Influence of Entrenched Resources, Processes, Values & Cost Structures

Disruptive innovations by nature bring to market those products or services not valued by mainstream customers. Therefore, due to the unconventional nature of disruptive innovations, established incumbents do not have the resources, capabilities and values to succeed at meeting the challenge of the disruptive innovation.

The incumbent's cost structures and scale economies are inevitably geared toward profit margins derived from their mainstream customers and as such any diversification into markets where products or services are not valued by their mainstream customers is considered as destroying shareholder value (Figure 7).

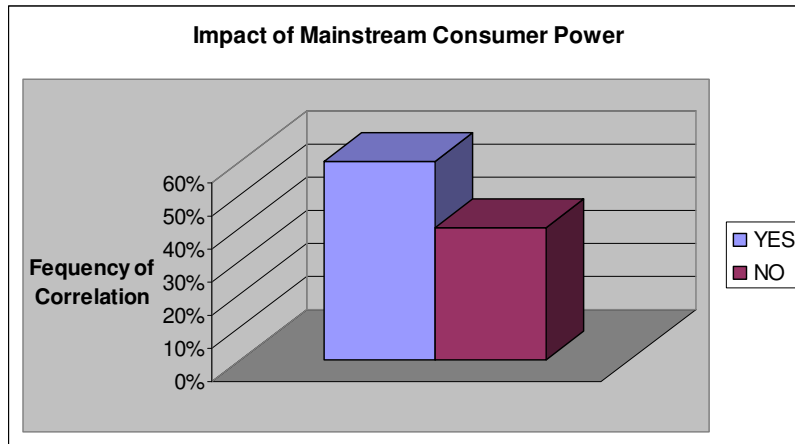


**Figure 7: The Influence of Entrenched Resources, Processes, Values and Cost Structures**

### 6.1.3 The Impact of Mainstream Consumer Power

According to Christensen (1996), the entrants will have an attacker's advantage over an industry's incumbent firms when their business model is born of a disruptive technological change (Husig,2005:19).

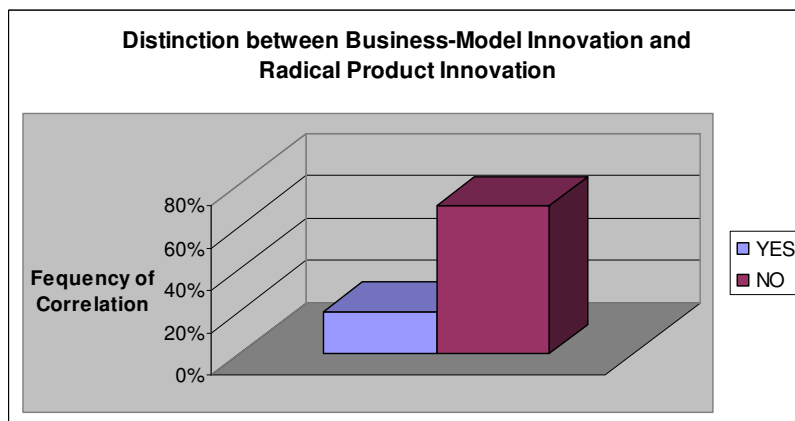
The explanation for this lies in the power of the incumbent's mainstream customers and its resource dependent nature. The response strategies that the incumbent firm can choose from are limited by the interests of their existing customers and investors who provide the sources of their survival. Therefore, established firms allocate their resources towards sustaining technologies that address the interests of their existing customers rather than towards disruptive technologies for customers and markets that are highly uncertain (Husig,2005:20) (Figure 8).



**Figure 8: The Impact of Mainstream Consumer Power**

#### 6.1.4 Distinguishing Business-Model from Radical Product Innovation

Business-model innovation is a discovery of a fundamentally different business model in an existing business (Markides, 2006:20). Radical product innovations are disruptive because they introduce products and value propositions that disturb prevailing consumer habits and behaviours in a major way (Markides, 2006:4) (Figure 9).



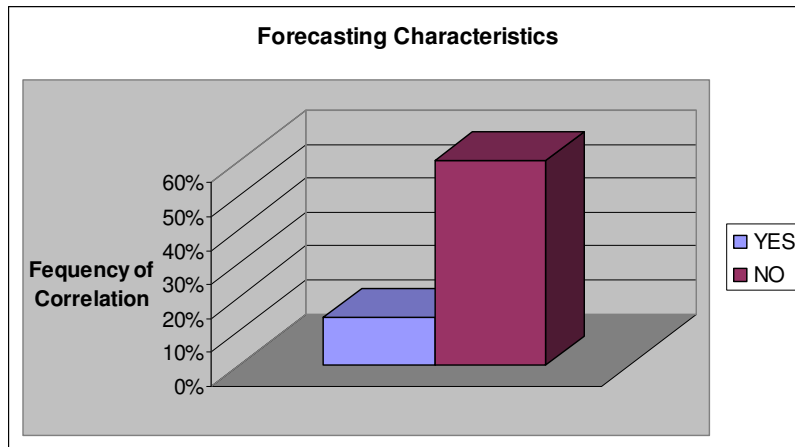
**Figure 9: Distinguishing Business-Model from Radical Product Innovation**

#### 6.1.5 Forecasting the Characteristics of Disruptive Innovation

The forecasting characteristics of Disruptive Innovation from an *ex ante* perspective are as follows (Figure 10);

- i. Cheap, simple, initially lower performing and then fast moving,
- ii. Performance oversupply,
- iii. Leading customer rejection,
- iv. Lower margins and profits,

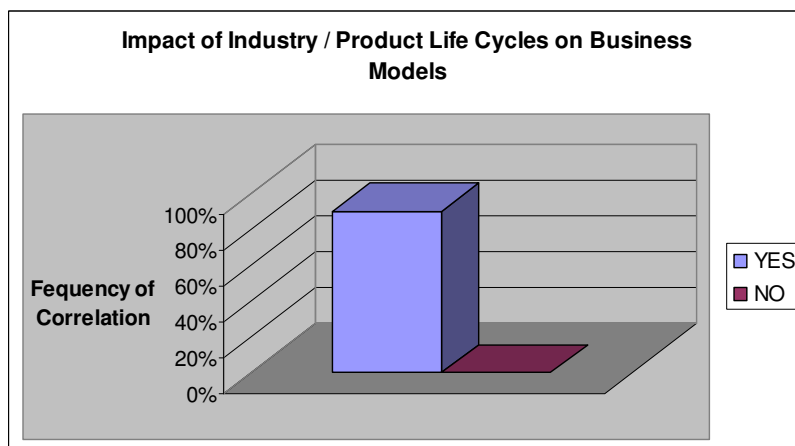
## v. Emerging market success,



**Figure 10: Forecasting Characteristics of Disruptive Innovation**

#### 6.1.6 The Impact of Industry & Product Life Cycles on Business Models

As industry and product life cycles reach maturity, commoditisation of products and services restrict growth options as businesses are compelled to compete on price (Figure 11).



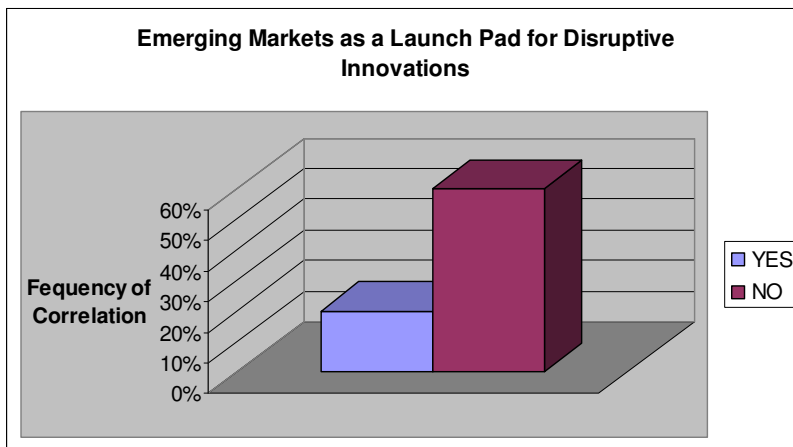
**Figure 11: The Impact of Industry and Product Life Cycles on Business Models**

#### 6.1.7 The Impact of Disruptive Innovation on Emerging Markets

Potential entrants are able to grow their business in markets which established competitors choose to ignore due to the effects of disruptive innovations. These effects are defined in terms of two broad categories; (1) the product or service is not as good as those offered to mainstream markets and as a result can only take root in new or less demanding markets, and (2) established competitors are continuously



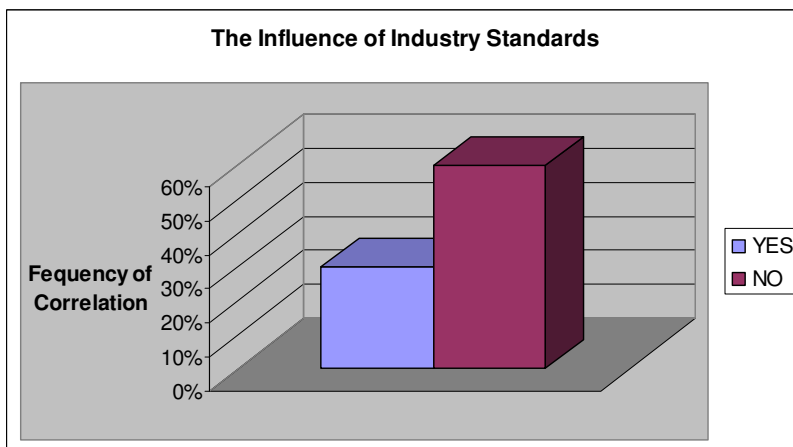
under pressure to pursue innovations in mainstream markets in order to sustain growth rates (Figure 12).



**Figure 12: Emerging Markets and the Impact of Disruptive Innovation**

#### 6.1.8 The Influence of Industry Standards on Disruptive Innovation

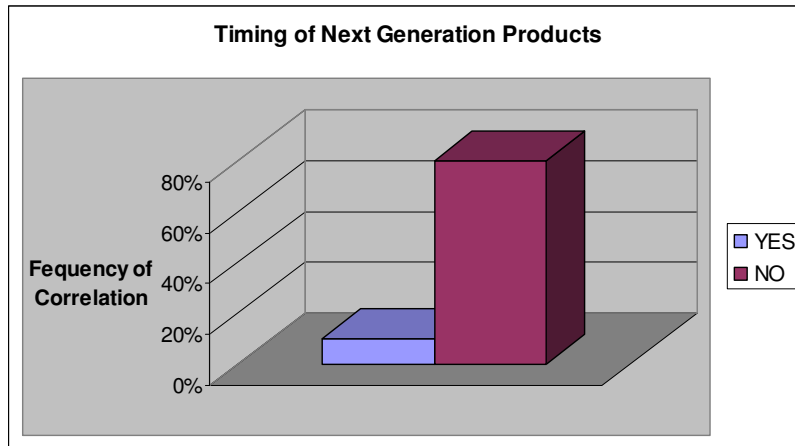
The industry is characterised by many new entrants but at the same time industry participants do not know what the winning technologies and business models are (Figure 13).



**Figure 13: The Influence of Industry Standards on Disruptive Innovation**

#### 6.1.9 The Timing of Next Generation Products

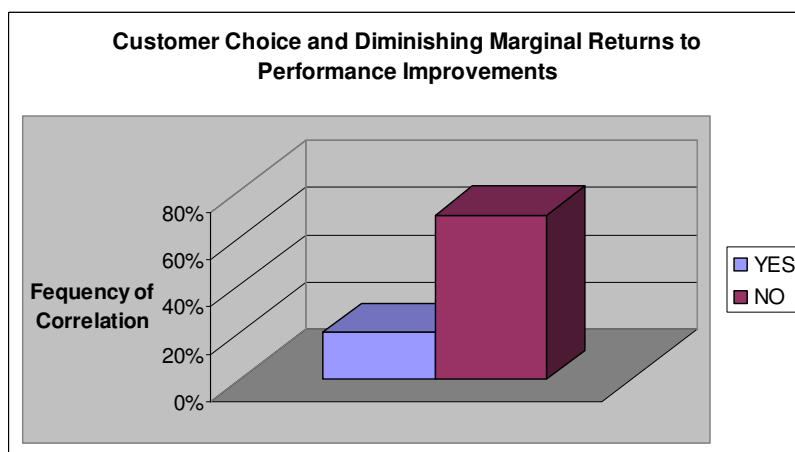
Barrie and Vandenbosch (2000) assert that incumbents often protect their position by launching their next generation products prematurely in order to retain their position. For incumbents to maintain their lead over several product generations they sacrifice current leading products, the strategy is to be pre-emptive (Figure 14).



**Figure 14: Timing of Next Generation Products**

#### 6.1.10 Customer Choice & Diminishing Marginal Returns

The demand conditions of ‘disruptive dynamics’ are; incumbent technologies that are displaced from the mainstream market by technologies that under-perform them on the performance dimensions that are most important to mainstream customers, mainstream customers who shift their purchases to products based in the invading technology even though those products offer inferior performance on key performance dimensions, and, incumbent firms that do not react to disruptive technologies in a timely manner (Adner, 2002, 669) (Figure 15).

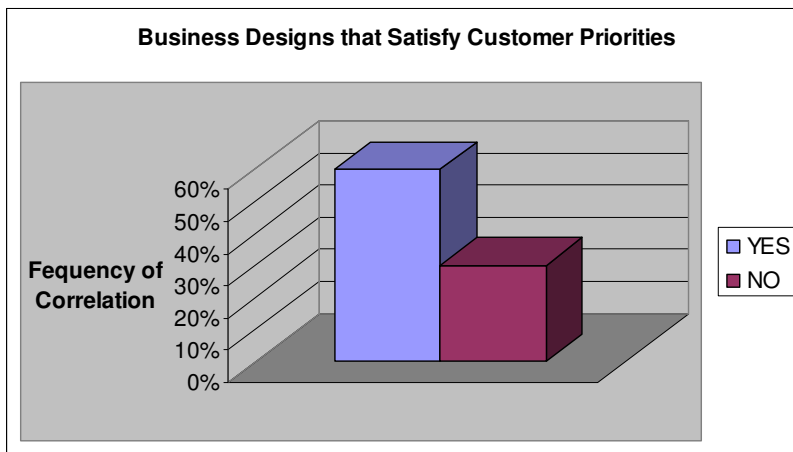


**Figure 15: Customer Choice and Utility**

#### 6.1.11 Business Designs that satisfy Customer Priorities

Value migration occurs when the mechanism that matches the company’s business design to the structure of customer priorities breaks down (Slywotzky, 1999:4). The

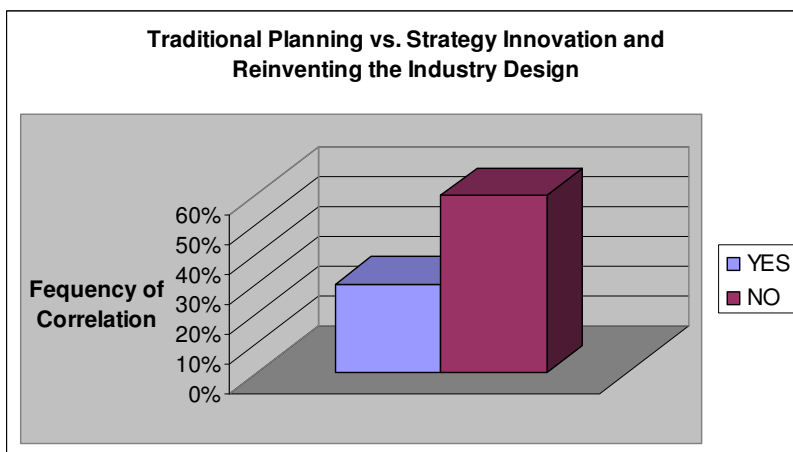
'break down' point can be attributed to business designs remaining static while customer priorities and product life-cycles constantly change (Figure 16).



**Figure 16: Business Designs that Satisfy Customer Priorities**

#### 6.1.12 Strategy Formulation Methods & Reinventing the Industry Design

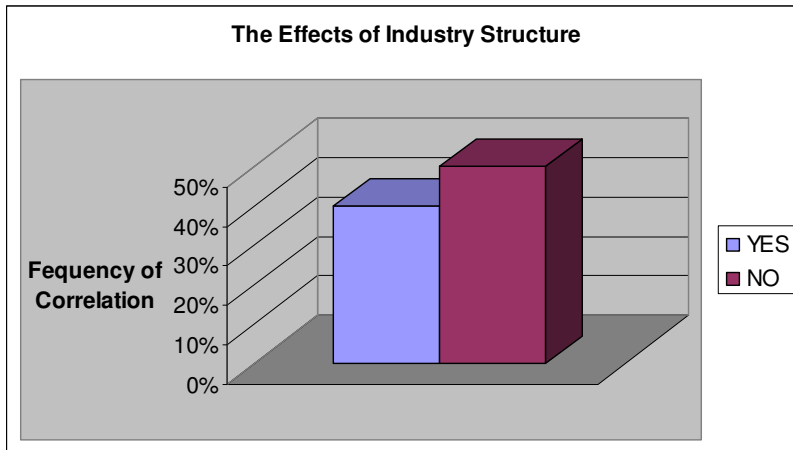
In contrast to traditional planning, strategy innovation is the capacity to re-conceive the existing industry model in ways that create new value for customers, wrong foot competitors, and produce new wealth for all stakeholders (Hamel, 1998:8) (Figure 17).



**Figure 17: Strategy Formulation Methods and Business Model Reinvention**

#### 6.1.13 The Effects of Industry Structure

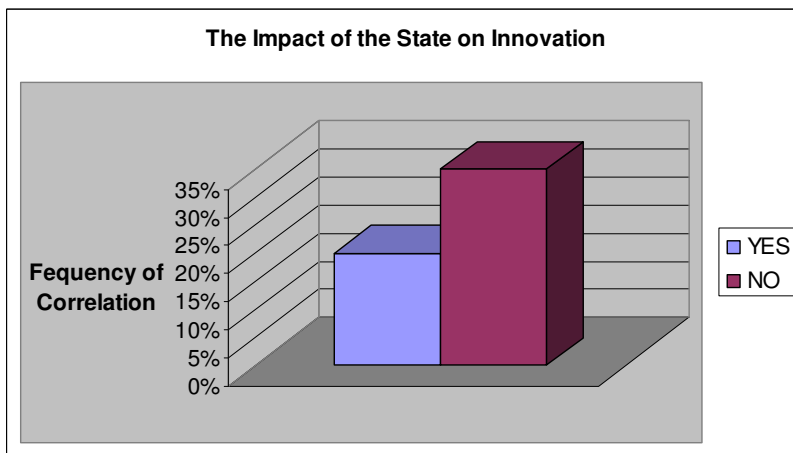
Rather than structure determining competition in a predictable way, competition – particularly technological competition – may reshape industry structure very rapidly (Grant 1991:101) (Figure 18).



**Figure 18: The Effects of Industry Structure**

#### 6.1.14 The Role of the State on Innovation in South Africa

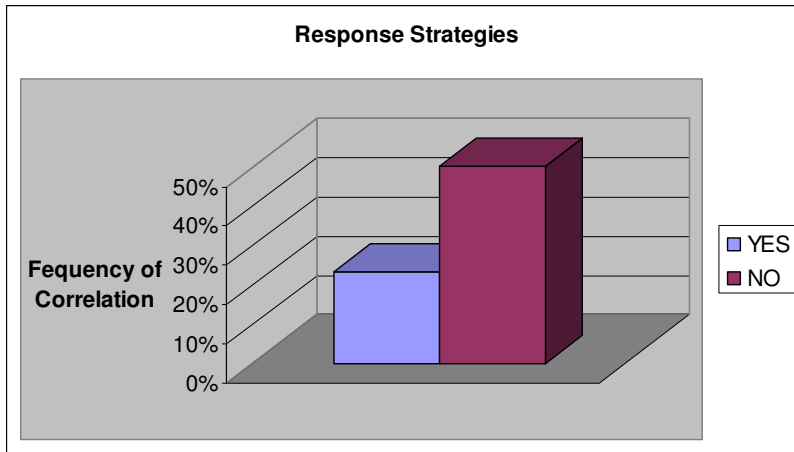
Hosper's (2005) and Schumpeter (1942) agree that the economic system must be open for change as policy can both hinder and promote innovation and economic growth (Figure 19).



**Figure 19: The Role of the State on Innovation**

#### 6.1.15 Response Strategies to Disruptive Innovation

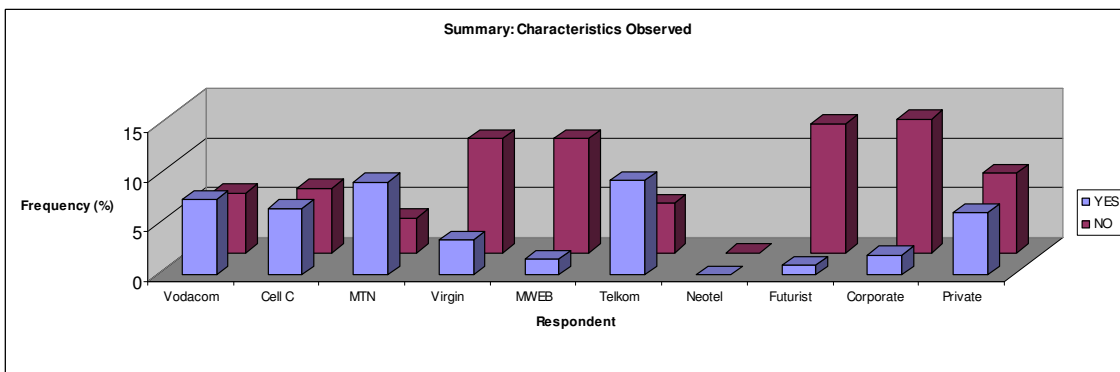
Christensen (2001) put forwards that there are essentially three options that the incumbent firms can deploy to deter the threat from new entrants deploying disruptive innovations, namely; acquire a different organizations whose processes and values who are a close match to the new task, try to change the processes and values of the current organisation, and create an independent organisation and develop within it the new processes and values required to address the new problem (Figure 20).



**Figure 20: Response Strategies to Disruptive Innovation**

**6.1.16 Summary: Correlation of Analysis to the Literature Review**

The correlation results are consistent with the analysis and questions the relevance of the construct of Disruptive Innovation, and its associated literature, on explaining the impact of Disruptive Innovation on incumbent’s business models and in explaining the changes in the telecommunications sector of South Africa (Figure 21).



**Figure 21: Summary: Correlation of Analysis to the Literature Review**

The rank ordering of correlation to the literature review, indicates interesting results with only Telkom (with the highest score), Vodacom and MTN obtaining more positive than negative correlations to the literature review which appears to be ‘consistent’ as they are South Africa’s leading telecommunications operators. All other respondents obtained more negative than positive correlations to the literature review.

The most interesting observation was that the ICT Futurist scored the lowest of all the respondents which questions the role that Futurists play in predicting the effects of Disruptive Innovation.

## **6.2 Conclusion**

Chapter 6 closes with a general conclusion and elaborates on the potential implications of the research results.

### **6.2.1 Research Limitations**

In terms of the data collection process, primary data was to be collected using random face to face unstructured in-depth interviews as the primary research instrument. As the sample size was relatively low, a qualitative research methodology using in-depth exploratory interviews was to reduce the risk of bias or misrepresentation of the characteristics observed.

The Researcher was able to conduct only two face to face interviews, all other participants preferred the interview to be conducted by telephone due to their time constraints. Time constraints may therefore have influenced the Researcher's ability to explore in-depth sub themes and in providing more illustrative examples of the themes/characteristics observed to further substantiate the findings.

### **6.2.2 Achievement of Research Goals**

The nature of the Research Report was exploratory in nature (i.e. qualitative) and as such the study did not require the confirmation of a hypothesis or proposition. Rather the goal of the Research Report was to explore the effects of Disruptive Innovation on the telecommunications sector of South Africa.

The Researcher is therefore adequately satisfied that the research goals have been achieved. In relation to the problem statement and findings, accomplishment of the research goals is set out as follows;

- i. *Research Problem Statement:* The results from the analysis attest that Disruptive Innovation as a specific type of innovation did not have the potential to substantially alter the basis of competition and impact the business models of competitors in the telecommunications sector of South Africa. Rivals regarded leadership attributes (i.e. non-technological) as the distinguishing

characteristic that differentiates shapers and adopters of disruptive innovation, however, results indicated that all rivals were adopters of Disruptive Innovation. To this extent it was determined therefore that the concept of disruptive innovation did not adequately explain the changes in the telecommunications sector of South Africa, but rather, that other factors had to be considered.

ii. *Objectives of the Research:*

- the underlying theoretical constructs of disruptive innovation was identified,
- a set of characteristics and features from existing theoretical constructs for the purposes of exploring the effects of disruptive innovation on the telecommunications sector of South Africa was developed,
- an analysis of the impact of disruptive innovation on the business models of companies in the telecommunications sector of South Africa was conducted, and
- Distinguishing characteristics that define shapers and adopters of disruptive innovation in the telecommunications sector of South Africa was identified.

### 6.2.3 Implications of the Research Results

The results of the research analysis indicate that Disruptive Innovation, as a construct, does not adequately describe the changes within the telecommunications sector of South Africa. Instead, the implications of the research results are that other factors or features, such as the role and impact of the State and liberalisation of the telecommunications sector, play a role in explaining the landscape of the South African telecommunications sector.

Therefore, further research is required and recommendations in this regard are provided in the subsequent section.

### **6.3 Recommendations**

Recommendations for further research in relation to Disruptive Innovation are provided for the purpose of building onto the existing body of knowledge surrounding the construct.

#### **6.3.1 National Culture, Leadership & Disruptive Innovation**

The impact of the State and its regulating bodies on innovation and the influence of leadership on shaping new innovative business strategies in the Telecommunications Sector of South Africa were commonly identified by the majority of respondents as reoccurring themes.

A relatively new topic of research within South Africa is how transformation and leveraging of cultural diversity impacts leadership styles. To what extent would leadership at both the national and corporate level then be affected by South Africa's cultural diversity and its ability to shape innovation?

More specifically, would there necessarily be a correlation between the various sub-cultures within South Africa and the rates at which they can assimilate or shape disruptive innovation?

Further research may provide a better understanding as to what encourages or impedes innovation and thereby improve South Africa's ability to compete more effectively in international markets for the purpose of stimulating economic growth.

#### **6.3.2 Disruptive Innovation & the Re-invention of Telkom**

The legacy of incumbent firms as inhibiting incumbents to 'jump' to new innovative business models was a theme commonly observed by all respondents.

In the Researcher's opinion, a more topical study would be how Telkom is going to respond to broadband wireless technologies and their associated business models in the context of a more 'liberalized' telecommunications sector, and the introduction of its closest new rival Neotel.

Further research with regards to the feasibility of applying the forecasting characteristics from an *ex ante* perspective, as put forth by Husig (2005), and the



response strategies of Disruptive Innovation, as postulated by Christensen (2007), for the purposes of reinventing Telkom as a potential ‘disruptor’, may provide more practical insights into the construct of Disruptive Innovation and therefore contribute towards the existing body of knowledge surrounding the construct.

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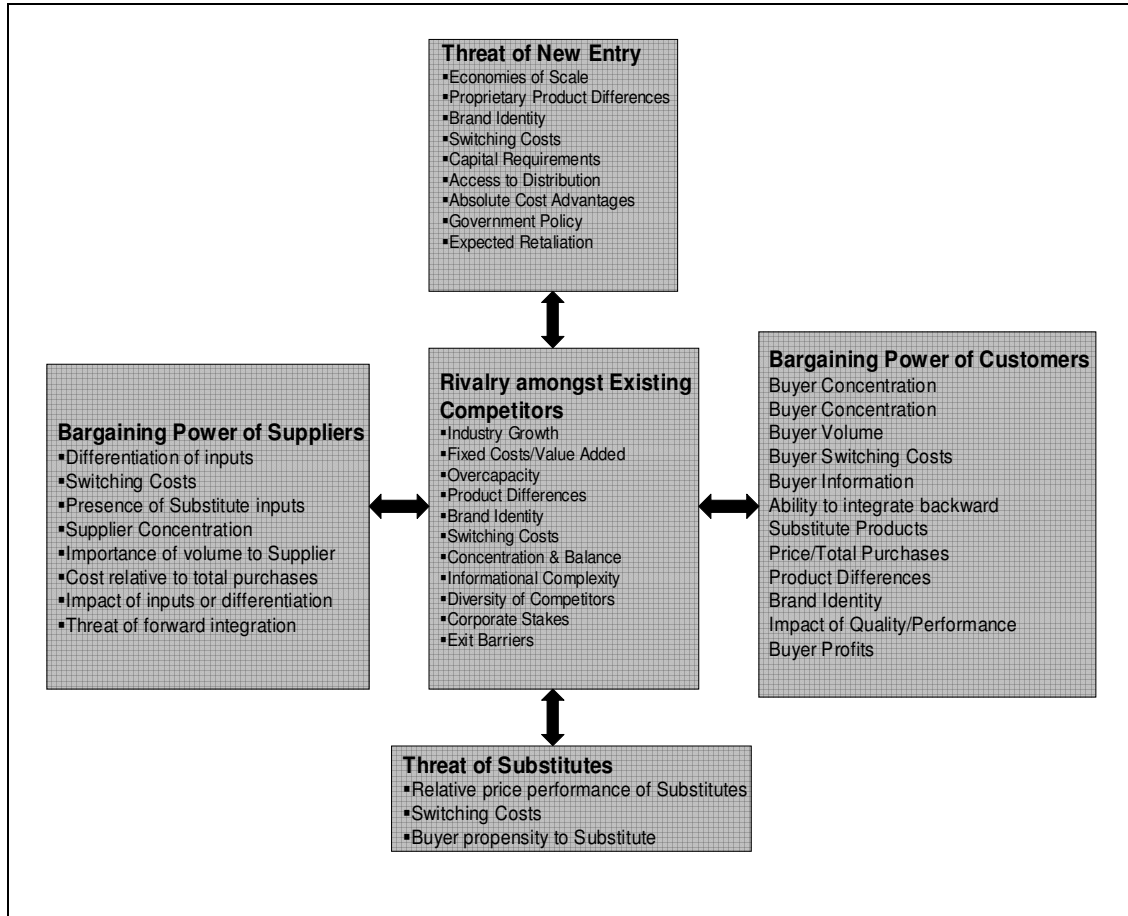
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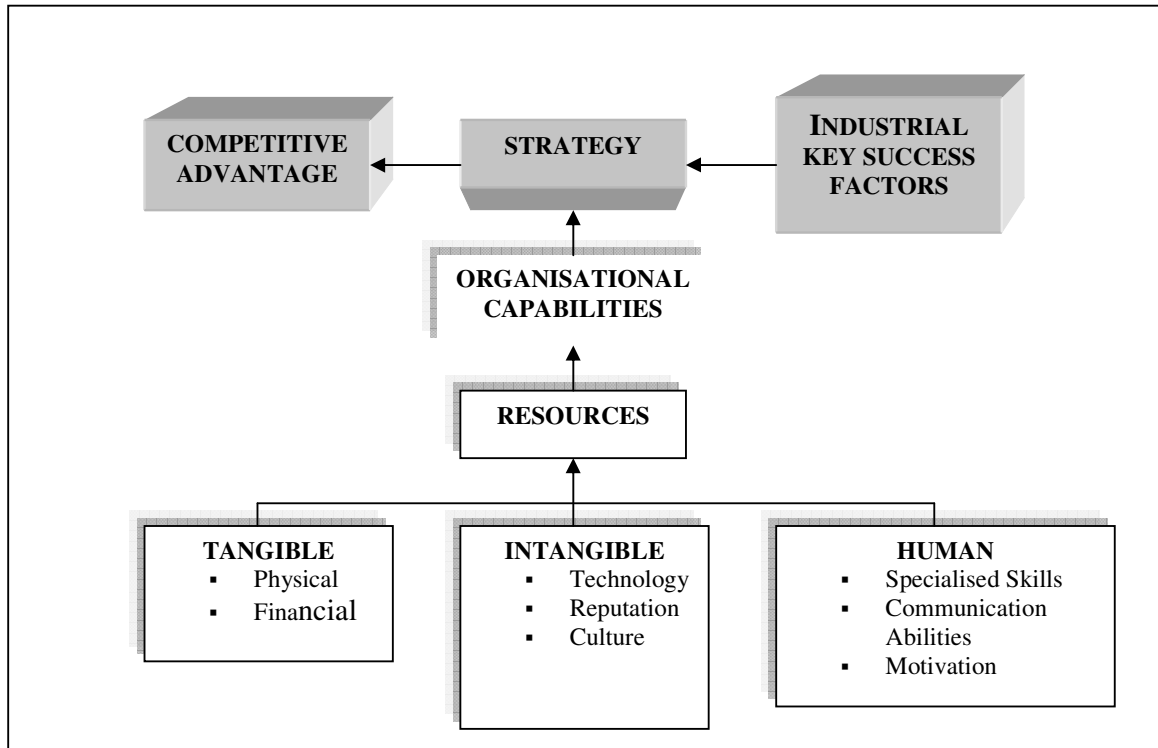
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**APPENDICES**

**Appendice 1: Industry Analysis: Factors To Consider**

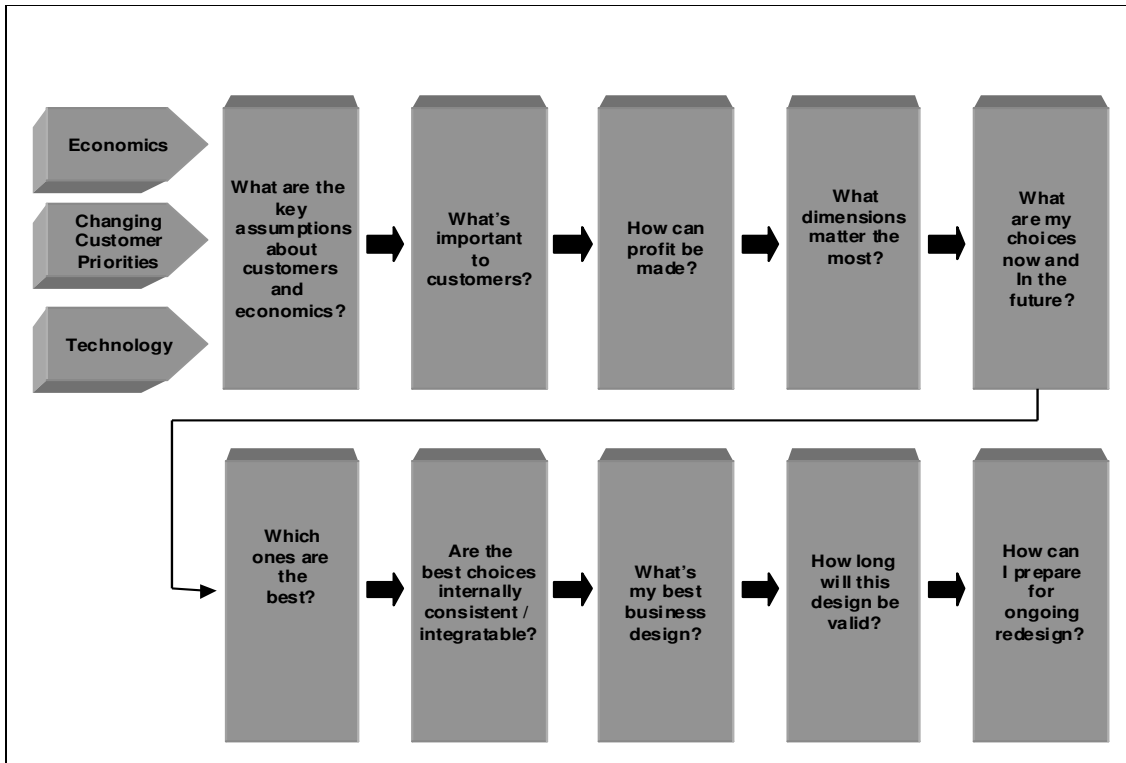


Adapted from: Grant (1991:136)

**Appendice 2: Resources, Capabilities & Competitive Advantage**

Adapted from: Grant (2001:139)

### Appendice 3: Business Design Process



Source: Slywotzky (1994:285)

**Appendice 4: Models of Strategy**

	<b>Five Forces</b>	<b>Core Competencies</b>	<b>Game Theory</b>	<b>Competing on the Edge</b>
<b>Assumptions</b>	Stable industry structure	Firm as a bundle of competences	Industry viewed as dynamic oligopoly	Industry in rapid, unpredictable change
<b>Goal</b>	Defensible position	Sustainable advantage	Temporary advantage	Continuous flow of advantages
<b>Performance Driver</b>	Industry structure	Unique firm competencies	Right moves	Ability to change
<b>Strategy</b>	Pick an industry, pick a strategic position, fit the firm	Create a vision, build and exploit competencies to realise vision	Make the “right” competitive and collaborative moves	Gain the “edges”, time, pace, shape semi-coherent strategic direction
<b>Success</b>	Profits	Long-term dominance	Short-term win	Continual reinvention

Source: Shona and Brown (1998:8)



**Appendix 5: Characteristics of Qualitative Research Approaches**

Question	Qualitative Approach
What is the purpose of the research?	<ul style="list-style-type: none"> <li>▪ To describe and explain</li> <li>▪ To explore and interpret</li> <li>▪ To build theory</li> </ul>
What is the nature of the research process?	<ul style="list-style-type: none"> <li>▪ Holistic</li> <li>▪ Unknown variables</li> <li>▪ Flexible guidelines</li> <li>▪ Emergent methods</li> <li>▪ Context bound</li> <li>▪ Personal view</li> </ul>
What are the data like, and how are they collected?	<ul style="list-style-type: none"> <li>▪ Textual or image-based based data</li> <li>▪ Informative, small sample</li> <li>▪ Loosely structured/non-standard observations and interviews</li> </ul>
How are the data analysed to determine their meaning?	<ul style="list-style-type: none"> <li>▪ Search for themes and categories</li> <li>▪ Acknowledgement that analysis is subjective and potentially biased</li> <li>▪ Inductive reasoning</li> </ul>
How are the findings communicated?	<ul style="list-style-type: none"> <li>▪ Words</li> <li>▪ Narratives, individual quotes</li> <li>▪ Personal voice, literary style</li> </ul>

Source: Leedy, Ellis & Ormond (2005:96)

**Appendix 6: Measuring Instrument**

Question to Participant	Themes/Characteristics to be explored
1. What would you regard as disruptive innovation?	<ul style="list-style-type: none"> <li>▪ Awareness of construct and what form it takes</li> </ul>
2. What impact does it have?	<ul style="list-style-type: none"> <li>▪ Influence of entrenched resources, processes, values and cost structures</li> <li>▪ Impact of mainstream consumer power</li> <li>▪ Distinction between Business-Model Innovation and Radical Product Innovation</li> </ul>
3. Is there anyway to identify and forecast disruptive innovation?	<ul style="list-style-type: none"> <li>▪ Forecasting characteristics from an <i>ex ante</i> perspective</li> </ul>
4. Do you think some companies / industries find it inherently difficult to jump to new innovative business models?	<ul style="list-style-type: none"> <li>▪ Impact of industry / product life cycles on business models</li> </ul>
5. Does disruptive innovation have any impact on emerging markets?	<ul style="list-style-type: none"> <li>▪ Emerging markets as launch pad for disruptive innovations</li> <li>▪ Stimulus for economic growth</li> </ul>
6. What would distinguish shapers from adopters of disruptive innovation?	<ul style="list-style-type: none"> <li>▪ The influence of industry standards</li> <li>▪ Timing of next generation products</li> <li>▪ Customer choice and diminishing marginal returns to performance improvements</li> <li>▪ Business designs that satisfy customer priorities</li> <li>▪ Traditional planning vs. Strategy Innovation and reinventing the business model</li> <li>▪ The effects of industry structure</li> </ul>
7. What kind of impact does the State have on innovation in South Africa?	<ul style="list-style-type: none"> <li>▪ The role of the State on innovation</li> </ul>
8. What can be done to respond to disruptive innovation?	<ul style="list-style-type: none"> <li>▪ Response strategies</li> </ul>