IST Otokon within a restructuring South African electricity distribution industry

by

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EXECUTIVE SUMMARY

IST Otokon, a Pretoria based company, has been in the metering industry for more than 15 years. Their client base was restricted to large users of electricity in the industrial sector. The imminent restructuring of the South African electricity distribution industry is an industry trend that might have some business opportunities for IST Otokon. In order to ascertain whether some real opportunities exist, a thorough literature study needed to be performed. This study included an investigation of electricity distribution restructuring abroad, as well as a study of the status and possible future scenarios regarding the restructuring of the South African electricity distribution industry. The study showed that the restructuring of the electricity distribution industries across the world is advanced in many countries, indicating that it is indeed a worldwide trend. It is also deduced that this initiative in South Africa is quite advanced, and that South Africa is on the brink of actual restructuring of the electricity distribution industry.

Key role players, worldwide metering and power quality trends, the competition and black empowerment are all factors that can play a major role during the restructuring process, and were all investigated in detail. It was concluded that black economic empowerment was a crucial factor in South Africa, and a strategic issue that cannot be overlooked.

The empirical study included an open-ended questionnaire which was sent to some key role players. This was followed by a comprehensive SWOT analysis. Consequently, the five forces of competition were analysed and key success factors and key economic trends were identified. Rivalry among competing resellers was identified as a strong competitive force. Additionally, marketing in these new developing markets was identified as an IST Otokon weak point. IST Otokon’s highly skilled work force was a definite strength, and some opportunities exist for vertical integration, when the core business of other IST divisions is taken into account.

A summary overview was compiled, taking the literature study and empirical study into account. Some broad guidelines were consequently derived, on which the detailed action plans would be based. The action plans were grouped into metering, power quality and general action plans. The action plans focused on meter sourcing, marketing and software changes for metering, power quality certification and skills development, as well as Black expected results were discussed, which indicated that the successful implementation of the action plans can lead Economic Empowerment and strategic alliances. Details on these action plans were presented. Finally, to significant growth for IST Otokon.
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CHAPTER 1 – INTRODUCTION AND ORIENTATION

1. Introduction and orientation

1.1. Industry background

Since 1994, some drastic changes have taken place in South Africa. Many of these changes were focused on the privatisation of state-owned entities. Competition is also being introduced in some industries, like telecommunications, where the creation of a second network operator has been a priority for some time. Another sector where unbundling and restructuring was seen as a priority, is the electricity distribution industry. In summary, it is envisaged that Eskom distribution will be broken up into six or seven regional electricity distributors, which will also include all the major municipalities.

In order to obtain a bird’s eye view on the electricity industry in South-Africa, Appendix A was compiled providing some selected statistics from the National Electricity Regulator yearbook for 2002. The two tables shown in Appendix A lists the split of units of electricity consumed, as well as the number of customers per sector. The sectors identified are domestic, agriculture, mining, manufacturing, commercial, transport and general. It can be seen that the domestic sector makes up more than 90% of the number of customers, but only about 20% of electricity sales. Mining and manufacturing consumes more than 62% of electricity in South Africa.

For this study, it is important to look at the split between Eskom sales and municipality sales, because it is the area where the electricity distribution restructuring exercise will have the biggest impact. Municipalities sell close to 45% of all electricity in South Africa, and many of them depend on this income for survival. All these sales will move to the Regional Electricity Distributors, and some Eskom sales will also move to the Regional Electricity Distributors. This shows that the restructuring process will create huge opportunities for companies who specialise in the measurement of electricity, like IST Otokon. Because of these new “electricity borders” being created in South Africa, the quality of electricity which crosses these borders will be of utmost importance.

1.2. Company background

IST Otokon’s vision is to deliver best of breed, world-class technologies and services to their clients in the field of electricity measurement. Their integration capability is the important value-add portion, which gives them the competitive edge when compared to their
competition. These factors will be investigated more thoroughly in subsequent chapters. The following are the core values that IST Otokon strives to follow:

- Customer satisfaction;
- Teamwork;
- Respect; and
- Work hard, play hard.

Since 1987, IST Otokon Systems focused on the electricity usage of big industrial companies. The core business was to verify the correctness of the utility electricity account, and to do internal cost allocation to the various business units within the industry. IST Otokons' first customer was Vaal Reefs, an Anglo Gold goldmine west of Johannesburg. Originally, a system of monthly electricity consumption values was sufficient. In the early 1990's, Eskom introduced Time-Of-Use as an electricity tariff, which necessitated the measurement and integration of electricity in half-hourly intervals. Otokon Systems adapted to the changing environment by developing hardware and a software package capable of meeting these new challenges.

Otokon Systems continued its steady growth, and was becoming a well-known player in the energy management industry in South Africa. IST (Integrators of System Technology) saw the potential of Otokon Systems, and acquired the company in 1998. Otokon Systems operated as a subdivision of IST Energy during this time. In 2001, Otokon Systems became a full division of IST, called IST Otokon. In 2002, an initiative was started to move IST Otokon's head office from Potchefstroom to Pretoria. This decision was made because of anticipated growth for IST Otokon during the 2002-2005 periods. Currently, IST Otokon's measures more than 15% of all electricity consumed in South Africa on a monthly basis, and is involved in the monthly reconciliation and costs allocation for this consumption. There are around 25 ecWIN systems installed, not only in South Africa, but also Botswana, and as far as Saudi Arabia.

Like any other company in the world, IST Otokon strives to unlock value for its shareholders, to realise good profits, and to grow in its areas of business. To achieve this, IST Otokon must be aware of industry trends and restructuring processes. These developments can open new markets that they can explore. As one of the major players in the electricity measurement industry in South Africa, it is of strategic importance for IST Otokon to quantify the influence of the restructuring electricity distribution industry on its core business, clients and technologies. A thorough investigation is therefore necessary, which can lead to the identification of new opportunities, and action plans to develop these opportunities.
1.3. Problem statement

The first obvious obstacle during this transformation process is the transfer of assets from Eskom distribution, as well as from the metros and municipalities into these new entities. The second big hurdle is the reluctance of metros to lose control over their electricity usage revenue stream, which is the lifeblood of many municipalities. While these problems are not being addressed during this investigation, it will assist the reader in understanding the complexity of the envisaged electricity distribution restructuring process.

Closer to home, the question is what the impact of the electricity distribution initiative will be on IST Otokon, and what business opportunities might arise for IST Otokon. It is obvious that energy metering will now not only be important between Eskom and the client, but also on the boundaries between these new distribution entities. The quality of electricity will also become more important, as power flows between the independent electricity distributors.

1.4. Study objectives

The study objectives can be divided into one major objective and several ancillary objectives. The major objective is to develop an appropriate strategic initiative supported by effective action plans, for IST Otokon. The attainment of the following ancillary study objectives will add significant value to the IST Otokon business:

- To understand the current electricity distribution restructuring process;
- Identify the key roleplayers in the new dispensation;
- Understand worldwide trends in electricity metering;
- Understand worldwide trends in power quality;
- Gain insight from other countries where electricity distribution industries were restructured;
- Identify opportunities for IST Otokon within the new structure, regarding metering; and
- Identify opportunities for IST Otokon within the new structure, regarding power quality.

The scope of this study is limited to the main and ancillary objectives mentioned above, with clearly identified action plans and steps as the output. To achieve this, a questionnaire will also be used as an empirical tool to gain insight into the way various role players see the current restructuring process and possible opportunities for IST Otokon during this change.
CHAPTER 2 – LITERATURE STUDY AND OVERVIEW OF THE INDUSTRY RESTRUCTURING

2. Literature study and overview of the industry restructuring

2.1. Introduction

The literature study will focus on similar initiatives abroad, and identification of the key role-players in South-Africa. After this, the focus will switch to the current restructuring process locally, as well as the status of the restructuring process during this study. Because of the importance of electricity tariffs, electricity metering and power quality as key factors during the restructuring process, these will also be investigated in detail. Two other important strategic issues, namely competition and black empowerment will also receive some attention during the literature study.

2.2. International perspective

The electricity distribution restructuring process has been happening all over the world, with Norway and the United Kingdom at the forefront (Maphaka, 2004: 5). Appendix B contains a summary of where different countries find themselves on this evolutionary path. Argentina and Australia are also among those countries at the forefront of restructuring (Rasmussen, 1997: 1). Reforms undertaken in these countries are especially important because they have in many ways, become models for reforms carried out elsewhere. Since the implementation of electricity reform, Australia and the United Kingdom have both experienced a surge in foreign investment in their electricity sectors. Also following on the implementation of reform and privatisation measures, electricity prices in all these countries have either declined or have lagged behind overall inflation, even though both Australian and United Kingdom electricity prices, prior to privatisation, were within the bounds of the electricity prices of other industrialised countries. The overall financial performance of the electricity industries in each of the three countries has generally improved, subsequent to reform and privatisation.

In Australia, the industry is now divided into separate businesses comprising generation (the power stations), transmission (the high-voltage grid) and distribution (poles and wires). Generators sell electricity under contracts or in the market through wholesale electricity pools (Ran. 1998: 1). Distributors have a franchise on the region in which their poles and wires are installed, but can sell (as retailers) to customers outside their area using rival distributor's
networks. Some retailers own no poles and wires and sell electricity by using the networks of distributors, who charge for transmission.

It is clear that South Africa still has a long way to go. This implies that a lot of changes can be expected, and that there will be business opportunities that will arise for companies who are strategically well-positioned.

2.3. Key role-players

**Municipalities** are some of the most important players in the restructuring process. One of their key concerns revolves around the fact that they derive income from the surplus cash generated from electricity sales from municipal customers. Surpluses from electricity sales are a significant source of income, and are applied to fund general municipal needs (Gadsen, 2004: 4). Besides being a financial issue as already mentioned, it is also a political issue, as control over revenue sources always has a political connotation. The surpluses generated from municipal electricity sales amount to between R2.7billion and R2.4billion, with percentages ranging from 2.64% to 37.11% (Gadsen, 2004: 8). It is most probable that this surplus will be replaced by either a local levy, or a central grant. If it is a local levy, the regional distributor would collect it as a tax from electricity users, and pay it over to municipalities. At the moment, it is envisaged that the surplus will take the form of a local levy, and not a central governmental grant. This is one of the main stumbling blocks in the restructuring process. It should be monitored closely by all companies hoping to take advantage of the business opportunities in the restructuring process, as it will be an early indicator that changes are about to take place.

One point that must be made clear is that the municipalities themselves will not cease to exist. It will only be the electricity distribution portion of municipalities that will be influenced, and moved over to the Regional Electricity Distributors. They will still be responsible for all the other services that they currently deliver to residential, commercial and smaller industrial customers.

A very serious negative aspect of the slow pace of restructuring comes in the form of a decline in infrastructure expenditure by municipalities. Distributors are not spending enough money on refurbishing and upgrading their infrastructure and services, leading to degradation of infrastructure (Van Huyssteen, 2004: 1). This phenomenon is occurring, because of the expectation that the electricity distribution assets will be transferred to the Regional Electricity Distributors in the near future. A major *legal* stumbling block is that the constitution empowers local authorities to distribute electricity (Van Huyssteen, 2004: 1). If restructuring
is to be successful, the government should also attend to this problem. Recent articles in the press, as well as statements by government officials indicates that government is aware of these problems, and that their strategic intent is to move forward with the restructuring process, and address problems that hamper the process.

Large power users are the single most influential single block of electricity users in South Africa. Most of them belong to the Energy Intensive Users Group. They have more than 20 members at present, and represent around 35% of all electricity sales in South Africa. The purpose of the Energy Intensive Users Group is to promote the interests of large energy users to ensure that low cost, good quality and reliable energy is available to industry in South Africa (Anon. E. 2004: 1). This group will also be known as “contestable customers”, which means that they would be able to select from which Regional Electricity Distributor they would prefer to buy electricity. This differs from other customers, who will be obliged to buy electricity from the Regional Electricity Distributor in the area where they consume electricity.

The Energy Intensive Users Group believes that any changes contemplated for the Electricity Supply Industry restructuring must seek to achieve the following key goals (Anon. F: 1):

- Cost reflective prices and tariffs to promote a free and competitive electricity market;
- Any restructuring process should seek to satisfy the needs of the three customer groups namely domestic, commercial and industrial;
- For the domestic customer, the key objective would be the provision of accessible, affordable and appropriate electricity that is comparable to other sources of household energy;
- The commercial and smaller industrial customers should have access to cost-reflectively priced electricity with an excellent quality of supply; and
- For the larger industrial customers who trade internationally, electricity prices must be competitive in global terms and in line with similar industries in other parts of the world.

Smaller customers are customers who receive electricity directly from the distributor, but who cannot be classified as either a Large Power User, or a municipality. This group does not have much influence, and it is not expected that they will play a major role in the restructuring process. They do represent a small metering market, and some smaller metering companies will satisfy the need for metering that these customers may have.

Municipal rate payers each only uses a small amount of electricity, but economies of scale give them the muscle to be able to influence the restructuring process. At the moment, this
group has not been very involved, but once they realise that the restructuring process will have an influence on the electricity price and/or the quality and availability of electricity, they would want to become more involved in the process. Politically, residential customers will be a force to be reckoned with, especially where the government's aims regarding basic services to all South Africans are concerned. When investigating the possible business opportunities within the restructuring process, they will not influence Regional Electricity Distributor procurement, so they are not seen as a major factor when preparing for these markets.

**Electricity Distribution Industry Holdings** (EDI Holdings) was established in 2003, a 100 percent government-owned company with a mandate to conceptualise, implement and monitor the creation of the Regional Electricity Distributors. EDI Holdings will have a five-year lifespan, and has started implementing the Cabinet decision aimed at electricity distribution restructuring (Thale, 2004: 1).

The **National Electricity Regulator** was established on 1 April 1995 as a successor to the Electricity Control Board. Its mission is to regulate the energy industry in accordance with government laws, policies, standards and international best practices in support of sustainable development (Anon. G: 1). This implies that the National Electricity Regulator will play a significant role in the setting of standards regarding electricity delivery, power quality and metering, and that emerging standards and policies from the National Electricity Regulator should be closely followed.

The **Department of Minerals and Energy** is the main driving force behind the electricity restructuring process. Their mandate is the provision of services for effective transformation and governance of minerals and energy sectors and for sustainable development, thereby improving the quality of life for all South Africans (Anon. H: 1).

When looking at business opportunities, EDI Holdings, the National Electricity Regulator and the Department of Minerals and Energy regularly use consultants to advise them regarding issues in the electricity supply industry. While these opportunities will also be developed by IST Otokon, it is not the focus of this investigation, and will therefore, not be investigated further.

**Eskom** is certainly one of the most important roleplayers. Eskom generates around 98% of all electricity in South Africa, is owned by the South African government, and is among the top seven utilities in the world in terms of generation capacity, and among the top nine in terms of sales. During the latter part of 1999, Eskom took the first of a series of steps to
prepare itself for the impending restructuring by splitting its business into regulated and non-regulated divisions (Anon. I: 1). Key changes pertaining to differentiating Eskom’s regulated and non-regulated businesses, include:

- The creation of Eskom Enterprises, which will be responsible for all of Eskom’s non-regulated business activities, both within South Africa and beyond its borders;
- The transfer of some functions from Eskom’s regulated structure to Eskom Enterprises; and
- The strengthening of Eskom’s regulated business divisions.

2.4. The current restructuring process

The restructuring process started in 1997, but was formalised with the electricity distribution restructuring act of 2003, with the following as a preamble (Anon. D: 1):

“To establish a national framework for the restructuring of the distribution industry; to provide for the creation of regional electricity distributors into which the relevant officers, employees, assets, liabilities, rights and obligations may be transferred, to provide for certain structures and functions in the restructured electricity distribution industry, and to provide for matters connected therewith.”

The electricity distribution industry in South Africa had been fragmented and inefficient (Thale, 2004: 1). There are disparities in tariffs, and different service standards, quality and different rates for electrification. What is South-Africa’s current power industry status? This can be summarised as follows (Maphaka, 2004: 13):

- Good infrastructure (generation, transmission, distribution);
- Running out of peak capacity soon;
- Good technical expertise;
- Slow market reform has started;
- Considerable load growth (>5% per year for last two years);
- Stable currency and good international rating;
- Participating in Southern-African power pool in SADC region; and
- Well developed internal market that is running well.

Eskom, a state utility that is the 4th largest in the world, provides 98% of the country’s electricity (Anon. B: 1). They directly distribute power to about 40 percent of the country’s approximately three million electricity customers with local authorities servicing the balance (Van Huyssteen, 2004: 1).
On the generation side, South Africa has a licensed capacity of 43 142 Mw of which 39 870 is provided by Eskom's 24 power stations and 2 436 by municipal power generators. Eskom's generation capacity is concentrated in the 9 coal-fired stations, although both the Koeberg Nuclear power station and the 3 pumped storage stations contribute significantly to total output. Municipal generation is almost completely coal-fired.

Eskom is the world leader in the use of low-grade coal for electricity generation and over the years it has been upgrading its stations to make them more efficient. The overall thermal efficiency of its power stations has increased from 29.6% in 1980 to 34.5% in 1997 and efficiencies of scale have been found in its newer power stations, which are among the largest coal-fired stations in the world.

An important factor regarding electricity generation in South Africa is that Eskom will run out of generation capacity in about 3 to 5 years. This will result in electricity blackouts, similar to those that have been experienced across the world in recent years. An opportunity related to metering exists because of this, in the form of energy management. If electricity is being measured, the use thereof can be managed. Therefore, this factor will increase the market for electricity and power quality measurement which will open up during the restructuring process.

Regarding transmission, Eskom owns and operates the national electricity grid, which connects the power stations and large urban and industrial areas, as well as all neighbouring states. Eskom is a world leader in transmission technology with approximately 240 000 km of transmission, primary distribution and reticulation lines. It was the first utility to successfully operate 765 kV transmission lines at high altitude.

The plan to restructure distribution was unveiled in August 1997. At that stage, the Electricity Distribution Industry Restructuring Committee was organising the planning and implementation of the introduction of the Regional Electricity Distributors, which was expected to begin in 2001. The Department of Minerals and Energy has appointed a consortium led by PricewaterhouseCoopers (PwC) to assist with the restructuring of the Electricity Distribution Industry (EDI) (Anon. C: 1). Since the appointment of PricewaterhouseCoopers (PwC) as advisors to the Department of Minerals and Energy, a picture of the restructured Electricity Distribution Industry (EDI) is emerging, based on their initial thinking presented at a series of six workshops to stakeholders between 23 May 2000 and 14 June 2000 (Yelland, 2003: 1). The stages of the restructuring process are as follows:

- Number and boundaries of the Regional Electricity Distributors;
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- Arrangements for ownership and control of the Regional Electricity Distributors and Transitional Structure, their legal status and constitution;
- Basis for the transfer of assets and businesses into the new structure;
- Overall arrangements for the regulation of the restructured Electricity Distribution Industry, and for energy purchasing and competitive supply;
- Financial constitution of the new businesses and broad parameters for transition to future financial viability; and
- Overall organisational structures and Human Resources transition arrangements for the transfer of the businesses into the new structures.

In summary, 230 municipal electricity distributors and Eskom's distribution arm are being combined into six Regional Electricity Distributors (Anon. A: 1). Xolani Mkhwanazi, chief executive of the National Electricity Regulator, also commented that the restructuring of the electricity distribution industry would probably be the largest and most complicated restructuring ever undertaken in South Africa. Some of the issues regarding the restructuring that needs to be taken into account are the following:

- Making sure that the regional distributors are viable, sustainable businesses;
- Customers should benefit from the new arrangements by way of improved service levels and lower tariffs;
- Interests of employees of the municipalities and Eskom are protected;
- Finalising the implementation plan;
- Deciding on the structure of the holding company;
- Funding of the holding company;
- Sufficient Regional Electricity Distributor size to capture basic economies of scale in electricity distribution;
- Scale of Regional Electricity Distributors must match the management skills available in the sector;
- The balance between Regional Electricity Distributors should take the following factors into account:
  - Size (customer numbers, asset base);
  - Load density (sales per km of line);
  - Customer mix (domestic, commercial, industrial and mining);
  - Domestic income mix (high, low);
  - Geographic mix (urban, rural); and
  - Future electrification obligations and growth potential.
- Number of Regional Electricity Distributors should be able to support the establishment of a future competitive supply market;
Number of Regional Electricity Distributors should represent a reasonable balance of market position in any future wholesale market;

Number of Regional Electricity Distributors should enable regulatory benchmarking of distribution business efficiency and performance;

Regional Electricity Distributor boundaries should be geographically contiguous and consistent with new municipal and provincial boundaries;

Regional Electricity Distributor boundaries should take account of major geographical features;

Regional Electricity Distributor boundaries should be consistent with the electrical configuration of the network, and the disposition of communication and control facilities; and

Regional Electricity Distributors should each be centered on a significant urban centre of economic activity, to give access to the required managerial skills.

An estimated 25% efficiency gain from restructuring is expected. This is based on comparative international examples. When Eskom restructured its distribution business during the 1980's [merging a large number of distribution regions into five], it achieved efficiency gains of that order.

Eskom has highlighted some stumbling blocks, which include its financial viability and compensation for the loss of its distribution assets. Eskom needs to increase finances to construct new power station capacity and shedding its assets will reduce its ability to raise finance on the international markets and increase the cost of that finance as well as to service existing debt (Van Huyssteen, 2004: 1).

The expected benefits of the electricity distribution restructuring process can be summarised as follows (Anon, K: 1):

- Electrification targets will be met;
- Low-cost electricity will be provided;
- Better price equality will be facilitated;
- The financial health of the industry will be improved;
- Quality of service and supply will be improved;
- Proper co-ordination of operations and investment capital will be fostered; and
- Competent employees will be attracted and retained.
2.5. Current status

Currently, it is envisaged that 6 Regional Electricity Distributors will be formed (De Beer, 2004: 3). These will now be discussed.

**Regional Electricity Distributor 1** will consist of Cape Town, going northwards. This will cover most of the Western Cape and Northern Cape. The Head Offices will be situated in Bellville. Some good infrastructure exists in this area for the network control centre, contact centre, work management centre and stores.

**Regional Electricity Distributor 2** will consist of Ekuruleni (old Kempton Park), going southwards. It will cover Eastern Gauteng, Free State and parts of the Northern Cape. Head office can be in Ekurhuleni or Mangaung (Bloemfontein). The same infrastructure exists as in Regional Electricity Distributor 1.

**Regional Electricity Distributor 3** will cover most of the Eastern Cape. Infrastructure exists in Nelson Mandela (Port Elisabeth) and in Buffalo city (East London).

**Regional Electricity Distributor 4** will cover Johannesburg going westwards, consisting of Western Gauteng, North West Province and selected parts of the Northern Cape. City Power in Johannesburg and Braamfontein can house the head offices of this Regional Electricity Distributor. While this Regional Electricity Distributor is fairly small, it is very complex, and also has some ageing infrastructure.

**Regional Electricity Distributor 5** will consist of Kwa-Zulu Natal with a few minor additions. Good infrastructure exists for head offices at eThekwini (Durban) and New Germany.

**Regional Electricity Distributor 6** will consist of Tshwane, and also the Northern Part of South-Africa. This is Northern Gauteng, Limpopo, most of Mpumalanga and a small part of the North West Province. Candidates for the head offices are Tshwane, Menlyn, Polokwane and Witbank.

It must also be noted that the numbering of the Regional Electricity Distributors do not specify the order in which the Regional Electricity Distributors will be formed. It is also not envisaged that all the Regional Electricity Distributors would be formed simultaneously. The timeline at the moment is for the first Regional Electricity Distributor to be formed in Q3, 2005 and for the second Regional Electricity Distributor in Q4, 2005 (De Beer, 2004: 10). Phindile
Nzimande, CE of the Electricity Distribution Industry, said the restructuring would be finalised in the next five years (Phasiwe, 2003: 1).

2.6. Electricity tariffs and metering trends

While studying the electricity restructuring process, it becomes clear that the single most important thing for the Regional Electricity Distributor would be its income from electricity sales. In order to generate the income, electricity usage must be accurately and timeously measured. Tariffs must be accurately implemented, and customers must be accurately billed. In addition, the new boundaries between Regional Electricity Distributors are also important, because electricity flowing across Regional Electricity Distributor boundaries forms part of the national electricity balance. It is therefore, important to understand what the technology trends are that can influence this market, and also, how metering was handled by other countries during the electricity distribution restructuring process. It is also one of the major tasks of the EDI to determine all the IT capabilities and system requirements (De Beer, 2004: 17).

The most basic way of measuring electricity, is with a meter that integrates (summates) electricity usage over a monthly billing period. This period is termed the metering month, and might not coincide with a calendar month. The meter has an internal register, which counts forward for every kWh used. The price is then defined as a c/kWh price, and the monthly cost is simply the rate multiplied with the number of kWh used. This is called a flat rate. Right at the other end of the scale, the price of electricity may change every 10 minutes, depending on many parameters related to the usage, generation, transmission and distribution of electricity. Generally, these tariffs are referred to as time-of-use (TOU) tariffs. It can now be deduced that more sophisticated metering would be needed to implement TOU tariffs, because the meter should now be capable of not only measuring how much electricity was used, but also when it was used. When approving tariffs, the National Electricity Regulator and municipalities should adhere to the following objectives and principles (Ferrando, 2004: 9).

- Promotion of economic efficiency;
- Cost reflectivity;
- Non-discriminatory;
- Transparency;
- Revenue recovery;
- Affordability; and
- Uniformity, simplicity and predictability.
Besides paying for actual electricity used, the following components are also part of an electricity tariff. Network charge components are used. These are differentiated by location, voltage, volume, reliability and usage pattern. Connection charges, which is related to the size of the electricity connection to the premises. Use-of-system charges refer to the maximum peak of electricity (maximum demand), that a user reached. The period for this measurement has traditionally been one month, but new proposals for tariff changes are looking at a yearly charge for this component. There are also administration and service charges, which are derived from meter reading and billing and time spent on customer services. There is also a fair amount of cross-subsidisation built into current tariffs, which will be addressed during Regional Electricity Distributors restructuring.

With Eskom and municipalities all setting their own tariffs, the result is increased fragmentation, confusion among customers, inequitable tariffs and complicated tariffs. The electricity restructuring process creates an opportunity to standardise tariffs, and simplify them. There is an obvious business opportunity here, for companies with expert knowledge on tariffs and metering (Ferrando, 2004: 22).

As early as in 1998, the Energy White Paper (part 1) declared that energy (electricity) governance should establish suitable energy information, and statistical and database systems (Anon, L: 1). All of these systems have been the core business for IST Otokon for the last 10 years, and will now need to adapt to the changing external environment with the establishment of the Regional Electricity Distributors.

Metering trends all over the world have been closely linked to the demand that measurement, and tariff calculations have placed on metering devices. The first level of metering that developed was electromechanical meters. These meters consisted of a measuring unit, and a register that increased as electricity was consumed.

The second level was meters that were able to measure electricity, and store the hourly usage pattern internally for download at a later stage. Shortly after these developments, communication modules were added, to simplify and streamline the communication process. It was also during this phase that protocol standardisation was starting to emerge.

The third big improvement occurred when meters became capable of implementing the tariff calculation in the meter itself, making it much easier to do the costing component of electricity retailing.
It is expected that future metering devices will become more intelligent in terms of decision making processes regarding electricity control. Newer devices will also be able to communicate to other intelligent devices in a home or industry. This implies that newer metering devices will be able to add value for its owner regarding the optimum use of electricity. Standardisation regarding physical communication layers, as well as protocols will continue, especially where connectivity to the Internet is concerned.

2.7. Power Quality trends

Currently, the level of power quality in the country is prescribed by standards as issued by the National Electricity Regulator, specifically the NRS048 specification. They evaluate technical performance of electricity supply systems, compile power quality statistics, do dispute resolution and conduct audits of the power quality measurement system.

The Energy White Paper of 1998 (part 2) also addresses the issues of power quality (Anon, L: 1). It states that poor quality and reliability of electricity supply can endanger workers, damage equipment, and cause production and revenue loss. Most importantly, it mentions that the issue of supply quality is particularly relevant in the light of the restructuring envisaged for the electricity distribution industry. This leads to the deduction that an electricity distribution restructuring exercise normally leads to reduced power quality, which will then create a demand for power quality measurement and reporting systems and services.

Power quality has many facets, some of which are mentioned below (Koch, 2004: 7):

- Voltage quality, referring to positive or negative drift of the voltage from nominal voltage;
- Harmonics, which refers to the distortion of the electricity wave through multiples of the base frequency;
- Voltage unbalance, which means that the voltages on a three phase system are not similar;
- Voltage dips are very short (<3 sec), and are sudden dips in the supply voltage; and
- Interruptions are dips with a longer duration than 3 seconds.

With the electricity redistribution process, one distribution entity will be split into 6 Regional Electricity Distributors. This will make the management of power quality even more important than it is at the moment. It has traditionally been very difficult to trace the source of power quality problems, as they can come from either the generator or from machines inside the customer’s plant. The term "emission levels" is sometimes used to describe power quality...
problems emanating from a plant or electricity utility. High technology instruments, which is more advanced that even TOU metering will be necessary to firstly monitor power quality, and secondly locate the source of power quality problems. This will then determine where solution placement should take place.

In this market, three players are of importance, namely the electric utility (future Regional Electricity Distributors), the end user and the equipment supplier (Koch, 2004: 46). It is in this space where there might be some business opportunities for IST Otokon. Power quality contracts, which defines minimum limits of power quality to cross the demand/supply border are already being used, and will become more complicated with the introduction of the Regional Electricity Distributors. This will again necessitate highly advanced electronic solutions. On top of these sophisticated power quality measurement solutions, it will also be necessary to implement power quality reporting (incident reporting), to summarise the masses of raw data into easily readable information. Some of the sources of power quality incidents are (Koch, 2004: 61):

- Bird pollution;
- Birds;
- Cane fire;
- Conductor related;
- Equipment failure;
- Other;
- Pollution;
- Storm related;
- Unknown; and
- Veld fires.

2.8. IST Otokon competitors

IST Otokon has been involved in metering, and in recent years also in power quality. In the metering market, two competitors stand out. One is Enerweb. Enerweb is a company ring fenced within Eskom, and it is uncertain how the restructuring of the electricity industry will affect them. They are dominant in providing metering services directly to Eskom on all their large power users, and their systems are well integrated with those of Eskom, like the Eskom billing system. If IST Otokon wants to become involved in providing metering services to the Regional Electricity Distributors, Enerweb will without question be their main competitor.

Power Meter Technics (PMT) and National Power Contractors (NPC) are both more focused on electricity users. PMT is more active in the commercial market (buildings, supermarket
groups etc.), although they have recently become more active in the smaller industrial market as well. NPC has always been active in the industrial metering market, and will be competing directly with IST Otokon in this area. Both these companies supply metering solutions from overseas, and are able to compete with IST Otokon regarding price, but not on competence, experience or client base.

On power quality, IST Otokon provides a high technology solution from Canada. CTLabs, a local company, has managed to manufacture their own power quality metering hardware, which is directly competing with IST Otokon's power quality products. They traditionally have a large footprint in Eskom, which is a possible market for IST Otokon to enter. Big overseas companies like Alstom, ABB and Siemens are also starting to make inroads into the power quality market, and should be monitored continuously.

2.9. Black Empowerment

Two issues need to be addressed when black empowerment is discussed with the electricity distribution restructuring process as background. The first one revolves around the issues of ownership of the Regional Electricity Distributors. Mogwailane Mohlala, CE of City Power and an executive committee member of Amef, said the forum supported the restructuring of the distribution assets of both Eskom and municipalities to establish six regional electricity distributors. He said Amef wanted to see at least 51 percent empowerment ownership of the distributors (Phasiwe, 2003: 1). While this might be the viewpoint of many individuals, there is pressure from Eskom and municipalities to receive Regional Electricity Distributor shareholding in proportion to the assets that they lose in the restructuring process (Anon, K: 1).

The second important issue would be those faced by suppliers to these new entities. The government is definitely busy to re-emphasize its commitment to the empowerment of previously disadvantaged individuals and also the restructuring of state owned enterprises (Ndaba, 2003: 1). IST Otokon's position should ideally be one of being a key supplier of products and services to the Regional Electricity Distributors. To make sure it is strategically well positioned, black empowerment is one of the most crucial factors needed to be taken into account.

**Shareholding** in companies supplying products and services should ideally be higher than 50% black owned. These companies are then classified as black owned, and will therefore be in a better position to win tenders. One level down would be black empowered, with black shareholding between 25% and 50%. The **employee profile** would be the next level of Black
Economic Empowerment evaluation. This will include management, as well as other employees. **Subcontractors** Black Economic Empowerment profiles are also increasingly put under scrutiny.

One of the stumbling blocks regarding the last two points raised on employment equity, is that the pool of PDI's (Previously Disadvantaged Individuals) qualified as engineers, technicians and technologists with electricity distribution and municipal experience, is limited (Anon, J: 1).

2.10. Summary

It became clear that South Africa still has a long way to go, and that the electricity distribution restructuring process will have a dramatic impact as an external factor for those companies who do business in the electricity sector. The key role players will be the REDs and the large power users, and any companies who wants to deliver solutions and products into this market must focus on these companies as their prospective customers. It was also apparent that this process is extremely complicated, but that a lot of benefits will arise from this restructuring process. A detailed study of metering and power quality trends revealed that metering technology is well advanced, while power quality technology is not widely available yet. Black empowerment was identified as a critical factor for success, and a detailed study of IST Otokon's competitors revealed their strong and weak points, as well as ways in which they can be considered a threat to IST Otokon.
CHAPTER 3 – EMPIRICAL STUDY AND DEVELOPMENT OF STRATEGIC BUILDING BLOCKS

3. Empirical study and development of strategic building blocks

3.1. Introduction

The empirical study will focus on several instruments that can assist in the development of a strategy and action plan for a company. The first tool used will be a questionnaire, followed by a SWOT analysis, which will focus on the industry, competition and technology. Thereafter, an analysis will be done using the Porter's five forces model of competition. This will be followed by identifying key success factors from the data gathered earlier in this chapter, as well as key economic features.

3.2. Questionnaire

In order to gain further insight in how the market perceives the envisaged electricity distribution restructuring, an open-ended questionnaire containing 22 questions was compiled. The questionnaire was emailed to targeted individuals that were identified. These individuals are either on the supply side of the market (Eskom), or are big users of electricity, like industry or municipalities. The respondents were ensured of their anonymity, and their names would not be mentioned in this report. Appendix C contains the original questionnaire, and Appendix D contains all the responses received from these individuals. For clarity purposes, the responses to every question were grouped together.

3.3. Industry SWOT analysis

A SWOT (Strengths/Weaknesses/Opportunities/Threats) analysis is performed to ascertain the fit between an organization and its environment (De Wit & Meyer, 2005: 117). The basic principle is to produce a good fit between the firm's resource capability and its external situation (Thompson & Strickland, 2003: 117). The expected outcome is sustainable competitive advantage.

The first step is to look internally at strength and weaknesses. Strength will be something that an organisation can do very well, and will establish a competitive advantage. A weakness can be defined as something that the company cannot do well, and can also indicate a lack of capacity. Some of the areas to focus on are:

- Competitors;
1ST Otokon within a restructuring South African electricity distribution industry

- Comparison with companies' history;
- Critical success factors; and
- Other relevant perspectives.

The macro environment must subsequently be investigated, which will reveal possible opportunities and threats. An opportunity is a factor which will assist the company to achieve its strategic goals. On the opposite, a threat is defined as any factor that will be a stumbling block to achieve the companies' strategic goals.

The following SWOT analysis focuses on the industry, and on how industry changes will positively or negatively influence IST Otokon business risk profile, and possibly spark a new growth phase for the company. It is deduced from the IST Otokon literature study, and responses received from industry role players who responded to the questionnaire.

Table 3.1 – Industry SWOT analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Opportunities</th>
</tr>
</thead>
</table>
| • Well defined current strategy; and  
  • Strong financial condition. | • Growth of Demand Side Management business (Commercial and industrial);  
  • Growth of Power Quality business;  
  • Growth of Automated Meter Reading business;  
  • Serving additional customer groups in Power Quality business;  
  • Serving additional customer groups in Automated Meter Reading business; and  
  • Expanding current Automated Meter Reading business into SADC region. |

<table>
<thead>
<tr>
<th>Weaknesses</th>
<th>Threats</th>
</tr>
</thead>
</table>
| • Absence of strategic alliances for Automated Meter Reading. | • Possible Decline of Demand Side Management (market decline);  
  • Stringent Black Economic Empowerment regulatory policies; and  
  • Big customers apply leverage on margins. |

The overall impression of this SWOT analysis reveals that a lot of opportunities exist because of the current changes in the industry. Demand Side Management relates to the changes in the time of electricity usage by large power users, and is not the focus of this investigation.
The other opportunities relating to power quality and Automated Meter Reading are more directly related to the electricity distribution restructuring process. As the restructuring process progresses, the demand for reliable, low cost Automated Meter Reading systems will increase, as this is directly related to the revenue streams that the Regional Electricity Distributors will rely on for income and financial survival. While IST Otokon is establishing itself in South Africa as a solutions provider in the Automated Meter Reading market, more opportunities exist in the SADC region. The Southern-African Automated Meter Reading market is also maturing, and IST Otokon will be ideally placed to gain a high market share in this area. As mentioned in the SWOT analysis, more stringent Black Economic Empowerment regulatory policies may be a threat to possible business opportunities in this area. By keeping this threat in mind, the correct strategic measures can be put in place to ensure that this threat can be turned into a competitive advantage.

The same applies to power quality. There is an expectation that the quality of electricity as supplied to consumers will generally decrease as a result of increasing constrains on the generation capacity in Southern-Africa, as well as the transmission grid.

It was already mentioned that only six Regional Electricity Distributors will operate in South-Africa. It means that the number of potential customers in this market is limited. This might create the situation where the customer can choose between many suppliers, which will have the tendency of driving margins down. It is very important to have first mover advantage, and ensure that solid business relationships are forged with these potential clients before the competition does.

One of the strengths listed in table 3.1 is a well defined current strategy. It must be stressed that this strategy is focused on the Demand Side Management and Energy Management markets. It is the aim of this investigation to expand the strategy to include the areas of Automated Meter Reading and Power Quality.

Another way of strengthening one’s position in a certain market is to align oneself with strategic partners. The absence of such strategic alliances in the Automated Meter Reading market is a definite weakness, and needs to be addressed.

One of the most difficult problems to overcome during a company’s growth phase is financing. Cash flow is normally severely constrained, which in turn impacts negatively on a company’s capability to take advantage of new, fast growing markets. IST Otokon is in the enviable position of being part of the bigger IST group, which has significant cash resources
to assist in funding the expected growth phase in Automated Meter Reading and Power Quality markets. This is why this is listed as one of the company's strengths in the industry.

3.4. Competition SWOT analysis

This SWOT analysis will focus on IST Otokon's strengths, weaknesses, opportunities and threats in relation to its competitors. It is deduced from the IST Otokon literature study, and responses received from industry role players who responded to the questionnaire.

Table 3.2 – Competition SWOT analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Competent, experienced employees;</td>
<td>• Acquire new Power Quality skills;</td>
</tr>
<tr>
<td>• Established reputation in the market;</td>
<td>• Take market share from Power Quality rivals;</td>
</tr>
<tr>
<td>• Strong brand name.</td>
<td>• Take market share from Automated Meter Reading rivals;</td>
</tr>
<tr>
<td></td>
<td>• Possible acquisition of Power Quality company;</td>
</tr>
<tr>
<td></td>
<td>• Strategic alliance with Automated Meter Reading products supplier; and</td>
</tr>
<tr>
<td></td>
<td>• Extend Automated Meter Reading / Power Quality brand name.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weaknesses</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Technical capabilities, reduced with move from Potchefstroom to Pretoria;</td>
<td>• Smaller competitors with lower overheads can compete;</td>
</tr>
<tr>
<td>• Execution speed on projects can improve;</td>
<td>• Losing key personnel; and</td>
</tr>
<tr>
<td>• Processes and procedures not 100% in place yet;</td>
<td>• Possible entry by overseas competitors (strong rand).</td>
</tr>
<tr>
<td>• Missing key Power Quality skills;</td>
<td></td>
</tr>
<tr>
<td>• Missing key technical skills;</td>
<td></td>
</tr>
<tr>
<td>• Weak Power Quality marketing skills;</td>
<td></td>
</tr>
<tr>
<td>• Weak Automated Meter Reading marketing skills.</td>
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When looking at the SWOT analysis related to competitors, one single factor stands out as the most critical. This relates to the marketing and technical skills, specifically in the Power Quality market. Because Automated Meter Reading is closely related to EMS, an area where IST Otokon has excellent experience and skills, these skills could easily be applied to the Automated Meter Reading market. This is not the case on the power quality side. Here, IST Otokon have access to the necessary high quality products, but only have rudimentary skills when it comes to high-level interpretation and reporting once data has been collected. It is also true that a company cannot successfully market a product or service it does not
understand. This means that another weakness in this area would be inadequate marketing skills. A company called CT-Labs is well established in South Africa, and is seen as the leader in the power quality market. It is a challenge for IST Otokon to take on this company on its area of expertise. This is the right time to challenge them on their own turf, because of the restructuring of the electricity distribution industry. It will be a time of market turmoil, and this creates the environment where all players will be repositioning themselves, which will create the opportunity for IST Otokon to enter this market.

While it was already mentioned that IST Otokon do have the Automated Meter Reading technical skills, there is a lot of work related to Automated Meter Reading marketing to the Regional Electricity Distributors. IST Otokon has traditionally marketed their products and services to the Industry (Mining, Minerals, Metals), and one of their biggest challenges would be to break into the Regional Electricity Distributors market.

The single underlying set of skills necessary that acts as an enabler for Automated Meter Reading, EMS and Power Quality, is the appropriate technical skills. While IST Otokon employees possess excellent technical skills, these are limited to only three individuals. A lot of skills were lost when the company moved its head office from Potchefstroom to Pretoria. The current skills base will not be able to handle the amount of work once IST Otokon grows in the Power Quality and Automated Meter Reading markets.

IST Otokon has grown from an R10m company to an R40m company within a three year time period. This also creates pressures related to project delivery, and ensuring that quality does not suffer as a consequence of company growth. This is why project execution speed and process/procedure effectivity are also listed as competitive weaknesses.

When looking at strengths, IST Otokon must leverage its current reputation and brand name in the Demand Side Management and Energy Management Systems markets to enter the Power Quality and Automated Meter Reading markets. The company has highly qualified and experienced individuals whom have established themselves as experts in various areas of energy management. With the correct training and possible new appointments, the abovementioned weaknesses can be addressed, and the necessary technical and marketing skills can be acquired to be competitive in the Automated Meter Reading and especially the Power Quality market.

Although there is an expectation that the Power Quality market will grow significantly with the establishment of the Regional Electricity Distributors, there is an existing Power Quality market, which is dominated by CT-Labs, as already mentioned. One opportunity is therefore
to not only get a share of the new Power Quality market, but also to take market share away from CT-Labs in the existing Power Quality market, which is mainly Eskom. The same applies to Automated Meter Reading, where the current Automated Meter Reading market is represented by municipalities throughout South Africa. Some issues exist relating to product, which will be discussed during the technology SWOT analysis.

An additional threat is the price competitiveness of smaller competitiveness. While being part of a bigger corporate company bring certain advantages relating to access to financing and brand name, increased overhead costs structures translate to higher prices to customers, which lowers price competitiveness. One option (which is already being pursued), is to form a strategic alliance with a smaller company, who would be able to compete with smaller competitors on price. This can also lead to a broader installed base of IST Otokon's products, and increased market share. While the margins will be lower using this arrangement, the added advantage of "keeping competitors busy" will increase IST Otokon's chances of gaining market share with the Regional Electricity Distributors.

During a market growth phase, the demand for technical and marketing personnel increases, and IST Otokon should take this threat seriously, and make sure that IST Otokon's employees' job satisfaction is high, and that IST Otokon's climate and culture will contribute to the retention of the key individuals.

Another threat which should be kept in mind is the one of overseas competitors entering the local Power Quality and Automated Meter Reading markets. It is a worldwide trend of product driven companies to grow downward into the supply chain, and become services driven companies. This is not only a threat for the Power Quality and Automated Meter Reading markets as discussed here, but also for the Energy Management Systems market where IST Otokon is established as a market leader. A strong rand also contributes to make these companies more competitive. One possible advantage for local companies could be if they are strategically well positioned where Black Economic Empowerment is concerned. This might create barriers to entry for overseas companies who will attempt to enter the local market.

3.5. Technology SWOT analysis

This SWOT analysis is deduced from the IST Otokon literature study, the discussion below and responses received from industry role players who responded to the questionnaire. Before going into the SWOT analysis, it is important to give a brief summary of the products that IST Otokon currently offers to its target customers.
• ecWIN – In-house developed software product, focused on energy data collection and verification. It is used for utility account verification, internal cost allocation, tariff analysis and load data mining;

• ION – Canadian company (PML) provides IST Otokon with high-quality metering and software solution which focuses on the growing power quality market;

• Support Services – Service to corporate clients, relating to hardware support, software support, daily system integrity checks and monthly reconciliation and cost allocation services;

• Energy Management Systems, mainly selling to industry (Metro's, Chemical, Mining, Metals, Paper, Pulp, Minerals) and Automated Meter Reading systems, selling to Municipalities;

• Demand Side Management – Selling to industry as well as commercial markets, making use of Eskom funding (focusing on energy efficiency and demand side management), and

• Power Quality – Regulation and Legislation as well as reduced quality of electricity, is opening this market in industry, utilities and metro's/municipalities.

Table 3.3 – Technology SWOT analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• High quality products;</td>
<td>• Adding meters for Automated Meter Reading;</td>
</tr>
<tr>
<td>• Market leader with Energy Management Systems;</td>
<td>• Vertical integration (not only product delivery, but also services delivery) for Power Quality and Automated Meter Reading;</td>
</tr>
<tr>
<td>• Proprietary technology (ecWIN); and</td>
<td>• Exploit new technologies (communication); and</td>
</tr>
<tr>
<td>• Excellent Power Quality product.</td>
<td>• Exploit new Automated Meter Reading technologies.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weaknesses</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Not the leader in Automated Meter Reading products and solutions;</td>
<td>• New technology.</td>
</tr>
<tr>
<td>• Not the leader in Power Quality solutions; and</td>
<td></td>
</tr>
</tbody>
</table>
IST Otokon is undeniably the market leader in the Energy Management field. The foundation of its products is the ecWIN software package, which was developed by IST Otokon. With big corporate customers like AngloGold, Sasol and bhpBilliton, IST Otokon is firmly placed in this market. This is a very important strength, and should be leveraged by IST Otokon to gain market share when the Regional Electricity Distributors are being formed in the next few years. The ecWIN package can also be the foundation of Automated Meter Reading systems, but might not be suitable to be used as a base for the Power Quality market. IST Otokon can adapt easily to a changing external environment, because the ecWIN source code is available in-house. This might be the biggest strength that IST Otokon has at the moment.

When looking at technology weaknesses, IST Otokon is very fortunate to have a distribution agreement with PML, a technology company in Canada. They provide very high technology metering and software solutions to the power quality market, and this is listed as a technology strength. As mentioned elsewhere, a product on its own does not provide a value-add solution to a client. Because of this deficiency, power quality solutions are listed as a technology weakness. This corresponds to the competitive weakness of not having the appropriate power quality skills.

Another weakness is mentioned, namely a narrow product line. Currently, IST Otokon has its ecWIN package, and the PML range of power quality products. IST Otokon has no Automated Meter Reading hardware products, and this is a very serious weakness. Without the necessary Automated Meter Reading hardware available, IST Otokon would not be able to compete with local and international companies who are currently able to provide turnkey solutions to customers in the Automated Meter Reading market.

Apart from this weakness, IST Otokon should also explore Automated Meter Reading and Power Quality related products, which do not form the heart of Automated Meter Reading and Power Quality solutions, but will be able to add value to clients, increase IST Otokon's competitive advantage or create barriers to entry to new entrants into these markets.

When studying the technology opportunities, it only confirmed the discussion above related to the weaknesses. By exploiting the technology opportunities mentioned above, IST Otokon will also address its weaknesses related to technology.

A threat on the technology side will always be present in the form of new technology. When studying the technology S-curve, it is clear that no technology can stay competitive for an indefinite amount of time. This is true because technology always improves in terms of
functionality or in terms of affordability. A high technology company, such as IST Otokon should therefore always be aware that substitute products might come into the market, which might deliver better functionality, or greater affordability. This threat will normally not emerge from big, established competitors, but from smaller high-tech companies where the innovative and entrepreneurial spirit is still very apparent.

3.6. Porter's five forces model of competition

One of the most useful analytical tools in analysing a company's current and future strategic position is the five forces model of competition (De Wit & Meyer, 2005: 182). These will consequently be applied in terms of the changes envisaged in the electricity distribution industry. The first area of focus will be the metering industry changes as the electricity distribution industry restructures, and the second area of focus will be the power quality industry.

3.6.1. Buyers (metering)

The buyers in this industry will be the six Regional Electricity Distributors that will be formed in the next few years, specifically their ability to exercise buying power and leverage. When looking at the current industry, where Eskom distribution is a single company, it follows that buying power will be decreased, because more buyers will exist. At the moment it is a well-known fact that Eskom wields enormous buying power, and that suppliers to Eskom find it extremely difficult to maintain acceptable profit margins. They are the country's only electricity utility, and purchase more than 70% of substation infrastructure products in the country.

When looking at metering, Eskom distribution's metering is mainly situated on the demand/supply border. Apart from this sophisticated metering, a lot less sophisticated metering exists within industry and municipal borders. In the case of industry, it is focused on internal cost allocation, and ensuring accurate calculation of plant efficiencies, which could then be confidently used for benchmarking. At municipalities, it is more important to do sub metering, because it has a direct influence on the revenue stream. All electricity users within a municipality need some kind of metering. At the lowest level, it will be a meter capable of measuring a monthly usage value, and for larger electricity users it will be a more sophisticated meter capable of integrating electricity usage over a metering period (15/30/60 minutes), and storing these load patterns for at least a month.
It is clear that the Regional Electricity Distributors would not be the only buyer of metering in South Africa, which assists in diminishing the buying power of the Regional Electricity Distributors, municipalities and industry. They will, however, definitely be the biggest customers in the country, which will increase competition to capture them as clients.

Because newer software packages exist that integrate to all the important meters available in the world, and that metering protocols are becoming more standardised, it implies low switching costs for buyers. The functionality of meters is fairly standard at the moment, and no opportunity exists to build a barrier to entry regarding to meter functionality. This reasoning also indicates that buyers do have the flexibility to buy from several sellers at once. An important factor to keep in mind is that the metering industry does not only exist of providing hardware and software, but the opportunity also includes value-added services. In this case, switching costs may be substantially higher, and that the buyer would need to select a supplier, and would not be able to buy from more than one supplier at any one time.

In addition, services might also become standard. This standardisation will take around five to seven years, because of the current differences among tariffs as implemented by Eskom and the various municipalities.

Another factor that gives buyers power, is when the product does not save the buyer money, or has low value to the buyer. In this case, no money is saved, but metering is essential to ascertain the amount of electricity that is used, and therefore has a direct influence on the Regional Electricity Distributor's income. We can deduct that because of the strategic importance of metering for the buyer; the buyer force is diminished, and shifted to one of the other five forces of competition.

After the discussion above, we can deduct that the competitive force of the buyer is moderate.

3.6.2. Suppliers (metering)

Two areas of focus will be discussed here. One would be the suppliers who supply metering hardware, but secondly also the suppliers who use these meters to supply solutions to clients.

All of the current metering sectors use hardware that can be described as commodities. All meters have very similar functionalities and specifications, which means the cost of
switching is fairly low, and meters are seen as black boxes which can be directly compared when it comes to price. While it is true that this is a crucial component of the electricity seller’s business, which can affect the income stream, it is a fairly easily replaceable component, where the interface to the electricity carrier is standard, as well as most of the interfaces (medium and protocol) going into the software information systems upstream.

These thoughts lead to the conclusion that the competitive force of metering suppliers is weak.

The situation is somewhat different when it comes to the supplier of the solution to the client. Here, the supplier uses the metering hardware (a commodity) as specified by the client, and integrates it into the metering solution. The metering solutions market can be defined as a commodity market from a reporting, or output point of view, but not from a functionality point of view. While clients might be happy with the system interface to SAP for certain billing information, the calculations needed from client-to-client will be very different. Switching costs related to the software solution can be very high, because a lot of data related to clients; contracts, tariffs and others will have to be ported from one software and database platform to the next. Once a company has shown that their metering solution is better than their competitors, their product will be in demand, and cost would play a lesser role than functionality. One area which does decrease the competitive force of suppliers is that buying firms of metering solutions are mostly important customers. There are only a few big customers, and they are all very important.

The competitive force of metering solutions suppliers can be seen as being moderate.

3.6.3. Potential new entrants (metering)

The one huge competitor for IST Otokon at the moment is Enerweb. They have more than 80% of the market with Eskom distribution at the moment. It creates the situation where IST Otokon will actually act as the new potential entry, and that they should see IST Otokon as a threat as Eskom distribution is split into six Regional Electricity Distributors and integrated with municipalities. IST Otokon has a definite desire to enter this market, and to make resources available to compete in this market.

When looking at barriers to entry, these are not related to metering hardware, but more to services rendered, and the knowledge on how meters will integrate into the data collection systems, and more importantly on how these middle end systems integrate to
the customers' billing systems. This is the core business of Enerweb, and it is expected that they will react immediately to protect their competitive edge, which is the knowledge and systems that integrate with current billing systems.

The opportunity for IST Otokon will be when Eskom distribution is split into the six regions, which opens the opportunity for other players to enter this market. This industry change also decreases the price/cost disadvantage for new entrants, because new systems needs to be implemented in any case, and it is not the replacement of current systems. This will definitely be a threat to Enerweb, and a big opportunity for IST Otokon and other metering companies.

When looking at other possible new entrants, there is a big possibility of new entrants from overseas. This is because of the recent strengthening in the South African currency, which make local markets more accessible to overseas competitors. It is also a fairly big market that will open up, which will be very attractive to potential new entrants from overseas. One factor that might count against potential new entrants from overseas will be current and future Black Economic Empowerment targets for companies doing business in South Africa. They will be forced to form strategic alliances with local companies. This, in itself might be a strategic opportunity for a company like IST Otokon.

While a learning and experience curve exists, this is the only barrier to entry and from IST Otokon's point of view as a new entrant, and this competitive force can also be described as moderate for the metering industry.

3.6.4. Rivalry among competing resellers (metering)

The metering industry in South Africa can be split into the following sectors:
- Eskom distribution. This part will in future become six regional distributors. It is expected that this part of the industry will grow, because additional metering will become necessary on the borders between Regional Electricity Distributors, which did not exist before. Until now, Enerweb was the dominant player, with very little direct competition.
- Industry. This sector consists of all the bigger industry players, like Sasol, bhpBilliton, and the coal, gold and platinum mining industries. Here, IST Otokon is by far the biggest supplier.
- Residential. In this industry, less sophisticated metering is used at every household in South Africa that uses electricity. It is a commodity sector of the metering market,
1ST Otokon within a restructuring South African electricity distribution industry

with possible new developments in prepaid metering. IST Otokon is not interested in becoming involved in this market, with companies like Grintek firmly established.

- Commercial. This sector of the metering market consists of big buildings and chain stores spread throughout the country. When studying the National Electricity Regulator statistics, this part of the metering market is the biggest user of electricity in South Africa. While being a fairly young part of the metering market, the current biggest supplier is PMT. They have succeeded in capturing some of the bigger commercial clients in South Africa, and are a force to be reckoned with.

- Municipalities. This market consists partly of the residential market mentioned before, metering at the demand/supply border, and more sophisticated meters for large power users who are normally charged at time-of-use tariffs. While IST Otokon is not interested in the residential market, the demand/supply and large power users metering are more technically advanced, and IST Otokon might be able to play a role in these markets. IST Otokon has the biggest share in this market, with PMT always becoming active in these areas.

The above discussion shows that Enerweb and PMT are IST Otokon's main competitors in South Africa, although they operate in different parts of the metering industry. Because it is possible for both these companies to migrate their offerings into any of the metering areas above, it is important to analyse these two companies to determine how competitive they would be in any of the metering sectors where IST Otokon would like to be the dominant supplier.

Enerweb has traditionally been the main metering provider to Eskom distribution, and it is definitely their strategic intent to stay the dominant player after the restructuring process has been completed. It is not envisaged that they would like to enter any of the other metering sectors. The conclusion is that they would not become a main competitor to IST Otokon in other metering areas. It is more probable that IST Otokon will follow a strategy of trying to enter Enerweb's strategic markets. They do not have the flexibility to adapt to the differences between their metering environment, and the other metering sectors that they might consider entering. They are used to the corporate business environment, and would find it very difficult to adapt their corporate systems to the levels of flexibility as demanded by the industrial, commercial and municipal metering environments. While there has been some informal communication between IST Otokon and Enerweb management, on possible cooperation, Eskom senior management has indicated that cooperation and alliances between Enerweb and IST Otokon would not be possible. This will make it even more difficult to compete with Enerweb, and to break the strong relationship between Eskom distribution and Enerweb.
In the preceding paragraphs, it became clear that Enerweb is the more mature, settled company, with the disadvantage of not being able to adapt to changes taking place in the industry, while having the definite advantage of having their systems integrated with their current client. On the other hand, PMT is a smaller company, which implies that they will be able to adapt to the changes in the electricity distribution industry, and may already be planning their own strategy to enter the Regional Electricity Distributors metering market. During the last two years, they captured a few industrial clients, as well as some very important commercial clients. Their leadership has also made it clear that they see IST Otokon as their major competition in the metering market, and their current success must indicate that they are a force to be reckoned with.

One difference between IST Otokon and PMT must be mentioned, which might be a competitive edge for IST Otokon in the future. PMT is a reseller of an overseas metering hardware and software product, while IST Otokon developed their own metering software. It implies that IST Otokon will be more flexible, and would be able to meet clients' different needs quicker, and cheaper than PMT. IST Otokon’s software is also able to integrate to most of the metering hardware products available in the market. IST Otokon has been able to capture two big municipal clients, who purchased PMT metering before. PMT refused to make their proprietary hardware protocol available to IST Otokon to integrate into ecWIN. The result of this strategic move was that these big clients now refuse to buy metering hardware from PMT, because they would not be able to integrate these meters into ecWIN.

While the products, size and maturity of the mentioned competitors in the metering industry differ quite dramatically, they are fiercely competitive in their metering sectors for different reasons, and, as a result, the competitive force of competing resellers is seen as strong.

3.6.5. Firms in other industries offering substitute products (metering)

When looking at the types of hardware that can be found in a substation, various distinguishable products are identified:

- Electricity transmission products. These items are mainly transformers, transmission lines, capacitors and inductors. They are the passive elements that are directly responsible for electricity transmission, and are not the focus area of this investigation.
• Protection products. These products are specifically designed to protect the passive elements in the substation, but several high technology means.

• Automation and control. These products are used to alter the functionality of the passive elements in the substation, and specifically to be able to do this from a distance.

• Metering. These elements in a substation are used solely to measure the status and electricity flow parameters in a substation. These can be stored in the metering device for downloading at a later stage, and they normally also have the capability to make real-time data available.

Traditionally, different product development and supply companies were responsible for the supply of these different products. They were also managed and controlled by different software systems, and used different protocols and mediums for communication. The protection, automation and control products are supplied by well-known worldwide companies like ABB, Siemens and General Electric. Metering is a younger market, with more suppliers all over the world, which are all smaller companies.

One current industry change is that protection and control products are being developed that also include metering capabilities. If this trend persists over the next five years, metering companies will find it very difficult to survive in specific metering sectors, like electricity distribution, because products supplied by bigger substation infrastructure companies will make their products obsolete. This functionality integration might open new opportunities regarding integration of metering software systems with the new substation protection, automation and control hardware, which now also has metering capabilities.

These substitute products will therefore be a serious threat to metering hardware companies, but less of a threat to integration companies like IST Otokon, where their core business is focused more on the business systems integration regarding to metering.

Substitute products from other companies are therefore seen as a moderate threat, because suppliers of metering systems must be able to integrate to the newer hardware systems installed in a substation.
3.6.6. Buyers (power quality)

When looking at power quality, the situation is much different than metering. While some sectors of the metering industry is nearing maturity, power quality is a much younger industry. Standards are still being drawn up, and technology is being developed to conform to these standards. If we state that power quality is a young industry, the reader should not interpret this as an industry that has only been around for a short while. Power quality as a scientific field of research has been around for a long time, and the measurement of power quality by high technology measurement devices has been around for as long as electricity has been around.

The quality of power delivered to customers by Eskom distribution has been regulated by supply contracts. Historically, the quality of power delivered to Eskom's customers has also been higher than that of electricity delivered to customers in the rest of the world. Two factors can change this. Firstly, the fact that it is possible that Eskom can run out of generation capacity as early as 2006/7, which in turn can lead to a degradation of power quality. Secondly, the electricity distribution restructuring process can also lead to lower, less acceptable levels of power quality.

This leads to the conclusion that a relatively small power quality market can be expected to grow during the next three years. In the case of the six Regional Electricity Distributors, there can be a sudden increase in market size, which will give the buyer more bargaining power. They are also expected to buy large volumes of power quality meters.

The cost of switching between suppliers of power quality hardware will initially tend to be fairly high. At the current time, some standards are starting to emerge regarding data transfer between power quality systems. The standardisation does not reach down into the power quality hardware, where every supplier is still using proprietary protocols. Some work is being done regarding standardisation of power quality reporting, and it can be expected that a South African standard will be available within six months. Buyers will have the flexibility to buy metering hardware from more than one supplier, provided that they all comply with the international data transfer standard, called PQDiff. In some way, the product can be seen as standardised if they all comply with the data transfer standard. While the product will not be able to directly save the buyer money, he will be obliged to comply with contractual and regulatory requirements related to power quality.
On the demand side, customers who use electricity will also want to check whether the electricity supplier is complying with his contractual obligations. They would therefore also be an increasing market of buying power in the power quality market.

Keeping all these factors in mind, the competitive force of buyers is classified as being *moderate*.

3.6.7. Suppliers (power quality)

When comparing the price of power quality meters to other electronic equipment, the price of these meters is more than ten times those of standard electronic equipment. This is only one indication of the sophistication and high technology nature of power quality measurement instruments. Consequently, there are only a few companies worldwide who possess the expertise to design and manufacture these meters.

One of these companies is called CTLabs, a South African company who started developing a power quality meter with Eskom funding. Today, this company dominates the power quality market, with Eskom still being their biggest client. They have expertise in manufacturing, installation, integration and data interpretation of power quality. Their system is also able to provide data in the PQDiff format that was already mentioned previously.

Another provider of power quality meters is a Canadian company called PML. While they specialise in power quality meters, they also provide electricity metering, and a software package to program these meters, and to extract data into a SQL Server database. Their system is also capable of exporting data in the PQDiff format. IST Otokon was appointed as a PML distributor in the SADC regions, with IST Otokon being the exclusive distributor in South Africa.

It can be safely stated that the power quality metering hardware cannot be described as commodities. Because of protocol differences, substitute and switching costs are high. Additionally, there will not only be buyers from the supply side (the six Regional Electricity Distributors), but also from demand side customers who would like to verify their power quality. Another important point to mention is that, while the measurement of power quality is important from a contractual and regulatory point of view, it is not crucial to an industry's production process. Poor power quality however can play a significant role to negatively influence, or even stop, an industry's product quality. These facts lead
to the conclusion that suppliers will have some bargaining power, and the supplier competitive force can be described as moderate.

3.6.8. Potential new entrants (power quality)

As already mentioned, the power quality industry is as old as electricity itself, but also that the demand for measuring power quality in South Africa will increase considerably during the next three years. The development of power quality metering is not trivial, and to develop a meter that complies with international power quality standards can take years. Technology is therefore a major barrier to entry into the power quality market. The interpretation of power quality data is also an advanced engineering field, with only a handful of experts in South Africa. The learning curve is also a significant barrier to entry. These facts lead to the conclusion that the competitive force of potential new entrants is weak.

3.6.9. Rivalry among competing resellers (power quality)

A discussion has already taken place on CTLabs, and their competitive edge and knowledge related to the power quality field. While some industry experts feel that their technology is relatively old, they do have a solid installed base, and a good reputation with customers. The status of their technology will definitely be a threat to them as a company, while PML in Canada has made great strides during the last six months in improving their technology. While CTLabs is an established player, the current restructuring process will create new markets and client expectations, and IST Otokon might be able to capitalise on first mover advantage.

Some other companies, like Alstom, also have some power quality products, and additional competitors will quickly enter the South African market if their currency continues to strengthen, and the restructuring process of electricity distribution continues as planned.

While price, quality, features and product innovation are all important factors, brand acceptance and better customer service will be the two areas which will indicate which companies will be able to take the biggest market share.

If IST Otokon wants to take advantage of the power quality market opening with the forming of the Regional Electricity Distributors, they will need to take on CTLabs at their own game. At a time when new standards are being developed, an established company
such as CTLabs might not be able to adapt easily, where IST Otokon might be more flexible to adapt to these new changes. Nevertheless, CTLabs will be a formidable competitor, and for that reason the competitive force of rivalry among competing resellers is classified as **strong**.

### 3.6.10. Firms in other industries offering substitute products (power quality)

For such a young and fast developing industry, the development of substitute products is not a factor. Sophisticated electronics, protocols and software is needed for the differing and complicated data structures needed for power quality. It will take up to ten years to develop a generic electricity measuring device that will be capable of measuring sophisticated power quality data, and be able to act as a substitute product for current power quality measurement devices. This leads to the conclusion that the competitive force of substitute products can be classified as **weak**.

### 3.7. Key success factors (metering)

At this stage of the report, the four sources of investigation, namely the literature study, questionnaire, SWOT analysis and the five competitive forces must be taken into account to deduct what the key success factors are in the emerging Regional Electricity Distributors metering and power quality markets. Once these key success factors are identified, strategic objectives can be identified, and action plans can be compiled that will give strategic direction, and ensure that IST Otokon is able to meet the criteria to comply with the key success factors.

The following three questions will determine which key success factors are applicable to the emerging metering industry during Eskom distribution restructuring:

- On what basis do customers choose between competing resellers;
- What resources and competitive capabilities does a seller need to have to be competitively successful; and
- What does it take for sellers to achieve a sustainable competitive advantage.

When contemplating possible **technology** related key success factors, one needs to consider where the competitive advantage is. In this case, actual metering hardware is close to being a commodity, which tends to exclude technology as a possible key success factor. Closely related to this would be the ability to use these commodity building block to put together a solution – this will be discussed when looking at possible skills-related key success factors.
The same reasoning is used with **manufacturing** that was used for technology. Quite a few suppliers exist which will be able to manufacture the building blocks, at fairly similar pricing. This excludes manufacturing as a possible key success factor.

**Distribution-related** key success factors are more focused on retail type businesses, and do not apply to the engineering solution environment that we are discussing at the moment.

As already identified during the SWOT analysis, **marketing factors** are some of the weaknesses of IST Otokon in these new environments. On top of this, a solid marketing plan is also seen as a key success factor for gaining market share in the metering environment. Advertising will be most important, but not in the sense that television and radio should be leveraged for this purpose. In this case, the focus should be on building long-term relationships with prospective clients, build up their confidence in your solution and product, and to give them the peace of mind that your company will be able to satisfy all their needs in this area of business. One area that IST Otokon will be able to leverage will be its solid reputation for energy management and metering systems in the industrial sector, with clients like AngloGold, Goldfields, bhpBilliton and others.

In the modern society of today, the strategic importance of products is diminishing, while the strategic importance of people skills is always increasing when competing for market share. It is only real cutting edge technologies that weigh more heavily on the scale on strategic importance. Therefore, a **highly skilled workforce**, which includes design, quality control, project management and especially systems integration skills, is also seen as a very important key success factor.

In a small, stable company without many changes, **organisational capability** does not play such a crucial role. When a company is in a growth phase, or in a rapidly changing industry, or both, organisational capability becomes increasingly important. Because both these factors apply to IST Otokon, organisational capability is also seen as a key success factor.

From the previous paragraphs, the following three key success factors were identified:

- Excellent marketing, especially on building long-term relationships with prospective clients, building up their confidence in your solution and product, and to give them the peace of mind that your company will be able to satisfy all their needs in this area of business;
- A highly skilled workforce, which includes design, quality control, project management and especially systems integration skills; and
• Organisational capability.

When testing these three key success factors against the three questions previously posed at the beginning of paragraph 3.6, they all contribute to answer these questions in the affirmative. Customers will choose on the basis of their confidence that the supplier will be able to deliver, that his workforce can do the job, and that the organisational infrastructure and experience exists to keep risks low, and success rates high. Also, these key success factors will contribute to gain competitive advantage, and be successful through quality, highly skilled people, and a solid organisational structure.

3.8. Key success factors (power quality)

Many of the factors discussed in 3.6 will also apply to power quality. All three key success factors identified there will also be applicable to power quality. Of course, in this case the marketing and workforce skills will be in relation to power quality systems and not metering systems. There is, however, an additional key success factor that is identified when discussing power quality.

As mentioned in previous paragraphs, the technology related to power quality measurement is still developing, and the cost of high-end power quality devices are still high. Several companies all over the world are still investing heavily into technology advances in this area, and it is expected that functionality will continue to increase, and also that costs will start to decrease within a few years’ time. Keeping these factors in mind, it is clear that a technology related key success factor can also be formulated for the emerging power quality market in South Africa. While IST Otokon is not planning to become involved in actual product development, it is important to align with the correct product supplier, who is expected to keep abreast of new technology in the long term. Preferably, their technology should also be based on some common technology platform, in order to decrease possible compatibility, scalability and upgrade problems. A key success factor related to power quality technology for IST Otokon would be to ensure that a skilled workforce keep up to technology improvements and functionality, as well as the impact of these of emerging standards and existing installed systems. Apart from product technology advances, this key success factor should also include advancements related to communication systems, as well as the integration opportunities that will grow out of this basket of technologies that will become available.
The questionnaire results also suggest that current and new clients will also expect the supplier of systems to play the role of a consultant in the rapidly changing power quality industry, and supplier confidence and good reputation will be a crucial key success factor.

3.9. Key economic features

While some of the key economic features have already been mentioned, a structured discussion of these features will enhance understanding of the industry.

Please refer to Appendix A for some selected statistics on the power quality and metering market sizes. From previous discussions, it is clear that both these markets will be restructured by breaking up Eskom distribution into six Regional Electricity Distributors. These new Regional Electricity Distributor boundaries will need to be services by new metering and power quality systems. As mentioned before, Enerweb is the biggest player in the metering environment, while CTLabs is very active in the power quality market, with the biggest market share. Initially, the metering market size will definitely be bigger than the more sophisticated power quality market. The number of points needed to be measured for metering will be more than those for the power quality market.

The growth rate of these industries will also increase over the next five years, because of new legislation that will make time of use electricity available to most bigger users of electricity. This will not go unnoticed by possible new entrants, and market and competitor intelligence over the next five years will be of crucial importance.

Because this type of restructuring has already taken place across the world, it can be deducted that these markets have already matured in other parts of the world, and that capacity surpluses will exist abroad. This is not the case in South-Africa yet. This leads to the conclusion that margins in these markets can be quite high in the short term, but that will quickly mature, with lower prices and profit margins.

With metering being a mature technology, it can be expected that the metering industry profitability will be low, when compared to the power quality technology, where new advancements and improvements are still being implemented. Another factor to keep in mind is the fact that the power quality market will be smaller than the metering market.

The barriers to entry for the metering market will be low in terms of technology, but high because of the established position of Enerweb. The same applies to the power quality market. As mentioned in the competition SWOT analysis, there are also factors related to
experience and expertise in the marketing and implementation environments that can be classified as barriers to entry.

In the metering market, quite a few products exist that is in competition, but on the system integration side, there are only a few competitors. Therefore, the opportunities for higher profits are not available for product suppliers, but higher margins will be available for system integrators that include the products mentioned, as well as for related services. **Standardisation on product** specifications are already in place for metering and for power quality, which implies that the only factor that would influence buyer decisions would be price, and that this fact would influence margins negatively.

For metering, functionality and **technology change** has stabilised, but this is not the case for power quality. This leads to the conclusion that there is some risk in the power quality market, which accompanies the possible higher margins. Decisions on which technology and products to apply will also be very important, because of rapid changes still taking place.

**The capital requirements** for different companies who are already in this market, or who are planning to enter the market will be very different. In this report, we will only be looking at this aspect from IST Otikon's point of view. Because of the fact that IST Otikon has been in the metering market for more than ten years and in the power quality market for approximately three years, many of the aspect of these markets have been sorted out. No big capital requirements are expected to be necessary for IST Otikon. The areas where capital will be required, relate to people skills, and the focus on developing these new markets, but these will not be excessive.

There exist some very exciting possibilities related to **vertical integration**. Some of the other divisions in IST are involved in the electricity infrastructure business (IST Energy), and higher up in the value chain, IST Data is planning to become involved in Energy Trading. This places IST Otikon in the middle of this value chain with the necessary metering and power quality skills. This can increase IST's competitiveness as a group, while maintaining the core focus of every division.

While the South African market can be seen as fairly small compared to some international firms, the possibilities for **economies of scale** in Africa are enormous. The possibilities of establishing a good customer base in South Africa, and then leveraging knowledge gained here for growth into Africa are many, and should be kept in mind by all South African firms. When only looking at South Africa, economies of scale are still significant for a small
company like IST Otokon, and even without the African market, IST Otokon will be able to increase volume, and achieve acceptable profit before tax as a percentage of turnover.

3.10. Summary

Key role-players responded to the questionnaire, which provided valuable insight into the perspective of these individuals on the process and expected market changes. Some of these perspectives were used to do a SWOT analysis. Opportunities were identified, as well as some very significant threats, including stringent BEE policies and buyer leverage. Rivalry among competitors was identified as a strong competitive force in the metering as well as the power quality industry. A highly skilled workforce and organisational capability were identified as key success factors in the restructured electricity distribution industry.
CHAPTER 4 – SUMMARY AND RECOMMENDATIONS

4. Summary and Recommendations

4.1. Summary

When reviewing the literature study, empirical study, SWOT analysis and the five forces evaluation, it can be deducted that the Electricity Distribution Restructuring creates quite a few opportunities for IST Otokon. When this is linked to IST Otokon’s current core competencies, and mapped to the identified key success factors, it confirms that growth opportunities do exist for IST Otokon.

On the metering side, IST Otokon has more than 10 years visibility in the industrial market, as well as locally developed software which can be adapted to the new markets that will open up during the restructuring process. This will be made possible by experienced individuals, who will be able to adapt IST Otokon’s products and processes to the expected new environment.

A solid installed base in the industrial sector can be leveraged to convince the new Regional Electricity Distributors that IST Otokon will indeed be able to mirror its success in this sector with the Regional Electricity Distributors. While there are many smaller companies who are doing metering systems in South Africa, IST Otokon has been able to achieve critical mass regarding turnover and number of people, to be able to handle the possible demands that bigger metering projects with the Regional Electricity Distributors might have. This, together with the fact that IST Otokon has formalised its internal processes and procedures through ISO 9001:2000 registration sets an ideal platform from which to build additional competitive advantage.

A major obstacle in the metering sector would be the strong position that Enerweb is maintaining at the moment. Being the traditional metering systems supplier to Eskom distribution, they would like to become the preferred supplier when Eskom distribution is broken up into the six Regional Electricity Distributors, and amalgamated with all the municipalities in South Africa. Because they have never been able to break into the municipality metering market, while IST Otokon has had limited success, there is a very real chance that IST Otokon will be able to hold on to its market with installed systems at the municipalities, and grow into projects and service offerings to the Regional Electricity Distributors.
While IST Otokon is fairly confident about its abilities in the metering sector, it is a fairly new competitor in the power quality market, where abilities are limited to access to world-class product, as well as product implementation knowledge. The additional levels of complete system integration (including standardised reporting), as well as experience in power quality data interpretation are still lacking.

CTLabs is also a formidable competitor in the power quality market, with a solid installed base at the utility, as well as extensive power quality knowledge. Some comments by influential power quality experts in South Africa do suggest that CTLabs has a disadvantage on the technology side, where their technology is outdated, with new technology life cycles making it very difficult for them to compete.

4.2. Recommendations

Before going into specific action plans and IST Otokon's proposed strategy, it is necessary to give a loosely defined list of recommendations. These are based on the literature and empirical study, as well as the comments made in the conclusion above. Here are some of the important points to keep in mind during the compilation of the strategy and action plans:

- Ensure that metering products used in systems integration are well accepted by the Regional Electricity Distributors. Certification may be necessary;
- Ensure that ecWIN will be able to comply with functionality specifications and expectations that the Regional Electricity Distributors might have. One of the most important components in ecWIN would be a generic tariff calculation and reporting structure;
- Ensure that some metering experts in IST Otokon are familiar with the applicable metering standards that will be used by the Regional Electricity Distributors;
- Ensure that relationship building starts as soon as possible with key decision makers at the different Regional Electricity Distributors. This will apply for metering and power quality sectors;
- Keep on gathering market intelligence regarding the movements of a major competitor like Enerweb, and anticipate their strategic initiatives. Also be aware that a major market development like electricity distribution restructuring might attract some global competitors as well;
- Make key staff retention and appropriate training a priority;
- Start initiatives that will culminate in the correct Black Economic Empowerment structures, which will comply with current Black Economic Empowerment frameworks. This is one of the most important aspects of business in South Africa in the next five years, and any company who does not attend to this will definitely go out
of business. It must be accepted that Black Economic Empowerment, which might provide a competitive advantage at the moment, will diminish in importance at some stage, as more and more companies comply to Black Economic Empowerment legislation;

- Be sensitive to technology changes regarding power quality instrumentation;
- Build up appropriate expertise in the interpretation of power quality data;
- Develop a generic reporting structure which will be able to comply to current and possible future power quality reporting standards;
- Continuing with the gathering of market intelligence regarding the movements of a major competitor like CTLabs, and anticipate their strategic initiatives. Also be aware that a major market development like electricity distribution restructuring might attract some global competitors as well;
- Ensure that the correct resources, processes, procedures and infrastructure exists in order to be able to market and implement products and services in the emerging metering and power quality markets. This does not only include internal facets, but also possible suppliers and subcontractors that should comply with the same quality guidelines than those that IST Otokon will comply to. Most of these suppliers will be technical companies who will be able to assist during the project execution process, but also include technology suppliers;
- Broaden access to world-class products in both the metering and power quality sectors through appropriate distribution agreements;
- IST Otokon must establish a reputation that it creates value for the customer through uniqueness of its solution, which is not limited only to products. If the perception of value-add is not created with customers, it will have a very negative impact on profit margins and growth;
CHAPTER 5 – IST OTOKON PROPOSED STRATEGY

5. IST Otokon proposed strategy

Before going into the detailed action plans, it is necessary to look at factors which must be addressed by the action plans. These factors are collectively known as the new competitive paradigm, which is a requirement for sustained competitive success in the highly competitive 21st century.

Reinvention is the goal. This concept can also be seen as continual improvement, and it must be accepted that reinvention should take place in IST Otokon's industry on a continual basis. This process will be most intensive during the next few years, but will never stop. Therefore, this aspect must form part of IST Otokon's culture, and all employees must always look for ways to do things better. This will also assist in maintaining or achieving competitive advantage.

Think more and do less. There is always time to rectify problems, but never time to plan properly and do it right the first time. It is very important to apply the correct intellectual processes when analysing the marketplace and these should take place at all levels in the company, and at regular intervals.

It is important to note that low prices, high quality and good service do not offer sustainable competitive advantage, and are merely market entry and market maintenance requirements. When compiling action plans, it does not mean that these factors should not be addressed. It only means that the compiler of the action plans must understand that other factors should also be included that will lead to sustainable competitive advantage. When compiling action plans, take note that competition, mistakes and problems lead to competence, and that action plans should not try to ensure that mistakes are not made, but should indeed be very close to being risky at times.

Networks, strategic alliances and joint ventures are extremely important and these initiatives (if chosen carefully) will tend to have a multiplying effect on IST Otokon's capabilities and competencies. Be very careful not to lose intellectual property and competitive advantage by outsourcing to suppliers. By outsourcing incorrectly, a company will actually weaken its strategic position, instead of strengthening it. When looking at the action plans related to networks, this fact should be considered.

An appropriate strategic plan should conclude with a number of effective value-adding and implementable action plans. These plans are the building blocks of sustainable competitive
advantage. The following action plans represent the critical strategic activities required from IST Otokon in positioning itself within a restructuring South African electricity distribution industry.

The metering action plan deals with the new, expected metering market that will emerge with the formation of the Regional Electricity Distributors.

Table 5.1 – Metering action plan

<table>
<thead>
<tr>
<th>Nr</th>
<th>Action steps</th>
<th>Measurement</th>
<th>Responsible person</th>
<th>Target date</th>
<th>Resources required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Source an Automated Meter Reading meter</td>
<td>Meter found</td>
<td>Hennie Naude</td>
<td>30 August ’05</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>Adapt ecWIN for Automated Meter Reading</td>
<td>Comply to functional specification</td>
<td>Gerrie Combrink</td>
<td>28 Feb ’06</td>
<td>Gerrie Combrink hours</td>
</tr>
<tr>
<td>3</td>
<td>Focused Automated Meter Reading marketing</td>
<td>Successful first sale</td>
<td>Hennie Naude</td>
<td>28 Feb ’06</td>
<td>Hennie Naude hours, marketing material</td>
</tr>
</tbody>
</table>

The sourcing of an Automated Meter Reading locally is not the only acceptable outcome of action step number 1. An attractive alternative is a possible alliance to current overseas suppliers of Automated Meter Reading meters. It is important to note that this action plan does not exclude the sourcing of and overseas meter, which can still be pursued, even if this action plan is executed successfully. The ecWIN software package can already communicate to these alternative Automated Meter Reading meters, and the sourcing of an additional Automated Meter Reading meter supplied by IST Otokon will increase IST Otokon’s competitive edge, and make vertical integration into the Automated Meter Reading hardware market possible. This will lead to increased IST Otokon profitability and market share.

While the ecWIN package was developed for the industrial Energy Management Systems market, the ecWIN building blocks can be used as a basis for an Automated Meter Reading system. Some adaptations regarding tariff calculations, reporting, as well as financial systems integration will be necessary. An attractive alternative that was also evaluated was to obtain distribution rights to an overseas Automated Meter Reading product. The licensing and purchase costs of this alternative would, however, lead to lower profitability levels as well as decreased adaptability and flexibility regarding the functionality of the system.
As with any new market that is opening up, relationship building, brand awareness, and confidence in the proposed solutions by prospective clients are all very important factors to be addressed. The detail of this action item would include the identification of the prospective clients, as well as their expectations regarding the Automated Meter Reading solution that they would be planning to buy and implement. There are no easy alternatives to this business development initiative. A few options and alternatives do exist, related to the way that Automated Meter Reading marketing will be approached when looking at marketing material. Here, the focus should be on addressing the customers' needs from a technological point of view, as well as from a functional point of view. The marketing material should also include some local and overseas case studies, to help build the client's confidence in the proposed system.

Below is a summary of action plan two regarding the new expected power quality market that will emerge with the formation of the Regional Electricity Distributors.

**Table 5.2 – Power Quality action plan**

<table>
<thead>
<tr>
<th>Nr</th>
<th>Action steps</th>
<th>Measurement</th>
<th>Responsible person</th>
<th>Target date</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Obtain Power Quality certification for PML meter</td>
<td>Certification achieved</td>
<td>Hennie Naude</td>
<td>28 Feb '05</td>
<td>Cost of certification</td>
</tr>
<tr>
<td>2</td>
<td>ION Enterprise, ecWIN integration</td>
<td>Factory acceptance test</td>
<td>Eugene Britz</td>
<td>30 August '05</td>
<td>Eugene Britz hours</td>
</tr>
<tr>
<td>3</td>
<td>Increased power quality expertise</td>
<td>Official Power Quality qualification</td>
<td>Marius Esterhuizen</td>
<td>28 Feb '06</td>
<td>Marius Esterhuizen hours, overseas visit costs</td>
</tr>
<tr>
<td>4</td>
<td>Focused power quality marketing</td>
<td>Successful first sale</td>
<td>Attie van Jaarsveld</td>
<td>28 Feb '06</td>
<td>Attie van Jaarsveld hours, marketing material</td>
</tr>
</tbody>
</table>

The first action plan related to power quality will be the foundation on which the entire power quality business will be built. As discussed previously, some power quality standards related to power quality exists worldwide, and some of these standards have also been adopted in South Africa. Without the correct certification, IST Otokon will not stand a chance when attempting to enter this market. The following points can be used to assist in the execution of this action plan:
• Investigate worldwide power quality standards;
• Investigate South African power quality standards;
• Search for technology (meters) that might comply with these standards. The search should include current and possible future partners;
• Form a relationship with such a partner, in the form of a distributor agreement; and
• Apply for SABS certification for selected meters for the South African; and in particular the new Regional Electricity Distributor's market.

The second action point is a highly technical one, which will not be discussed on a technical level. Suffice to say that ecWIN is a South African product which focuses on metering functionality, while ION Enterprise is a Canadian product, which is real-time based, with significant power quality functionality. The integration of these two systems will enable IST Otokon to combine metering and power quality functionality into one system. During this exercise, attention should also be focuses on ensuring that power quality reporting is done according to the international standards for such reporting. The advantages of such an integrated system are as follows:

• Flexibility and adaptability, because ecWIN intellectual property resides in IST Otokon;
• Access to cutting edge technology related to power quality;
• One system can supply the client with metering, power quality and real-time information. Traditionally, three different systems were needed to supply these three different types of information; and
• Increased market, because the integrated system is combining three different markets.

When looking at power quality, three areas are of importance:

• Measuring and collecting power quality data;
• Generate monthly and yearly reports which comply to the international standards for power quality reporting; and
• The interpretation of power quality data.

The first two criteria have already been addressed. The third one is related to action point number three for power quality, and is not related to the first two. It is also the most difficult one to achieve. The first step in achieving this goal is for an IST Otokon employee to obtain a formal power quality related qualification. This is also noted as the measurable target for this action point, but it is not the only goal of this point. Once a formal qualification is obtained, a mentor must be identified who already has extensive experience in the interpretation of power quality data, and the employee must be allowed to undergo informal, on the job training from this
individual. This is a long-term initiative, which includes the fact that the employee must also start to build a reputation in the South African industry as a power quality expert, and this might take three years or more.

The power quality marketing initiative must be initiated at the same time as the other action plans noted for power quality. Although there are some risks involved with this approach, one cannot wait for the technology certification, systems integration and training initiatives to be completed before marketing starts. The following explains in more detail what the marketing plan should include:

- Proper market size evaluation;
- Revenue, margin and costs estimates;
- Marketing material;
- Advertising and marketing campaign; and
- Relationship building with key decision makers in the industry.

Below is a summary of the third action plan. This is a general strategic action plan and is expected to have a positive influence on IST Otokon’s growth and competitive position.

**Table 5.3 – General action plan**

<table>
<thead>
<tr>
<th>Nr</th>
<th>Action steps</th>
<th>Measurement</th>
<th>Responsible person</th>
<th>Target date</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Improve Black Economic Empowerment profile</td>
<td>Partner found</td>
<td>Chris Nell</td>
<td>28 Feb ‘05</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>Investigate strategic alliances</td>
<td>New alliances</td>
<td>Chris Nell</td>
<td>28 Feb ‘06</td>
<td>None</td>
</tr>
</tbody>
</table>

The first action point is probably the most important strategic objective that any company in South Africa must have with recent changes in South Africa. It will also be applicable for the metering and power quality markets. This action plan follows after effective identification of current legislation trends related to Black Economic Empowerment. It is also clear that no alternatives exist to this plan, and that it is a “must do” action list item. There are also no problems on this item related to feasibility or ethics.

The following points are supportive of this action plan, and can be used as a guideline to ensure success:

- First focus area is Black Economic Empowerment shareholding;
- Second focus area is Black Economic Empowerment in managerial positions;
• Third focus area is Black Economic Empowerment for employees. This not only involves appointing Previously Disadvantaged Individuals in the company, but also focuses on social responsibility, and training;

• Fourth focus area is Black Economic Empowerment status related to suppliers. Bigger companies must not only demand specific Black Economic Empowerment profiles from suppliers, but should also be involved with assisting suppliers in this process;

• Investigate partnerships and joint ventures with existing Black Economic Empowerment firms; and

• Investigate possible funding options for increasing Black Economic Empowerment profile, when measured against the four criteria mentioned above. There are a number of avenues that the government and business communities use to make funds available for the promotion of Black Economic Empowerment in South Africa.

The second action plan was purposely defined widely. The decision to go into these types of agreements is important, and the long-term impact of such decisions will have a very big impact on the long-term future and success of a company. Ethics also play a major role, and once these alliances are formed, transparency becomes of utmost importance. Strategic alliances related to Black Economic Empowerment have already been addressed, and will not be discussed here. It is, however, important to note that some possible strategic alliances will assist IST Otokon’s Black Economic Empowerment profile, and contribute to other important factors, like marketing skills or technology. If a partner can be found that assists IST Otokon in achieving two of its objectives through one action, a lot of value can be realised. The possible areas where strategic alliances could be considered are as follows:

• Automated Meter Reading /metering – product supplier from abroad;

• Automated Meter Reading /metering – integration partner for project execution (preferably Black Empowered);

• Automated Meter Reading /metering – alliance with current smaller competitor, like PMT;

• Power Quality – integration partner for project execution (preferably Black Empowered); and

• Power Quality – alliance with current smaller partner.
CHAPTER 6 – CONCLUSION

6. Conclusion

Winning organisations are often measured against 4 characteristics:

An organisation must be fast. When IST Otokon implements the action plans mentioned in the previous chapter, this can be defined as IST Otokon being fast to react to changing market conditions. If IST Otokon can manage to grasp the first mover advantage here, it will cause IST Otokon to be the winner in the race for clients, growth and profit.

The winning organisation must also be friendly. While this aspect was not really addressed in this dissertation, it is seen as crucial to IST Otokon's success as those factors mentioned in the action plan. A continuous, concerted effort will be made to make sure that IST Otokon's culture and climate confirms the image of a user-friendly company, both internally and externally.

Focus is also very important. This aspect is directly addressed by this report. After the investigation, a clear list of actions, measurable objectives, responsible persons and target dates was compiled, with the aim of focusing all the energy in the company towards these medium to long term goals.

A winning company must also be flexible. This is related to the people working for the company, as well as to the products the company has access to. If the company owns significant intellectual property, it will give them the ability to adapt to new industry developments with the correct strategic leadership. It is also closely linked to company culture.

Does IST Otokon now have a winning strategy?

Firstly, a winning strategy must lead to superior financial results. When evaluating the market size for metering and power quality with the Regional Electricity Distributors, it is clear that new revenue streams can be created with the correct solutions to the Regional Electricity Distributors in these two areas.

Secondly, the implementation of the actions plans can lead to sustainable competitive advantage. The integration between ecWIN and the PML power quality package will create a new product that will have the sophistication of an imported, cutting edge power quality system, with the adaptation (through ecWIN) to the demand of the South African customer.
Thirdly, the strategy must be well suited to the future demands and characteristics of the macro environment and the operating environment. Both of these were investigated thoroughly, and the action plans are all reactions to what the expected future external environment would be. During this process, the internal factors such as products and people were also taken into account, to ensure a best strategic fit between current abilities and external factors.

The expected outcomes of the implementation plans as detailed above can be summarised as follows:

- Expansion of existing business from industry metering to Regional Electricity Distributors metering;
- Development of new business, specifically in the power quality sector; and
- Growing sales income aggressively.

From the discussion, a conclusion is that the compiled action plan represents a winning strategy for IST Otokon over the next three to five years, which will be a foundation to take IST Otokon to new heights in five years' time.

Finally, it can be confirmed that the study objectives of this report were achieved. A thorough literature study lead to an in-depth understanding of the current restructuring process, the role players were discussed in detail, and trends related to metering and power quality were investigated. The literature study also included an investigation regarding worldwide trends in the restructuring of the electricity distribution industry. After the SWOT analysis, an investigation of Porter's five forces, identifying key success factors and analysing major economic features, it was possible to identify new opportunities for growth for IST Otokon. The detailed action plans were designed to take advantage of these opportunities.
BIBLIOGRAPHY


Maphaka, M. 2004. Scrutinizing power in Africa by looking at the latest developments and infrastructure improvements with the aim of determining where South Africa stands in relation to the rest of the continent. Institute for International Research.


23 Apr 03 Transformation challenges in the electricity industry and the light at the end of the tunnel. Date of Access: 15 August 2004.


Appendix A: Electricity supply statistics

**Table A.1** – Electricity usage by Customer (Electricity Supply Statistics for South Africa, 2002:20)

<table>
<thead>
<tr>
<th>Customers</th>
<th>Eskom</th>
<th>Municipalities &amp; Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>Number</td>
<td>% Split</td>
<td>% of Total</td>
</tr>
<tr>
<td>Domestic</td>
<td>3 207 379</td>
<td>48.9</td>
<td>95.6</td>
</tr>
<tr>
<td>Agriculture</td>
<td>78 438</td>
<td>74.0</td>
<td>2.3</td>
</tr>
<tr>
<td>Mining</td>
<td>1 297</td>
<td>62.6</td>
<td>0.0</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>2 772</td>
<td>5.8</td>
<td>0.1</td>
</tr>
<tr>
<td>Commercial</td>
<td>13 053</td>
<td>4.8</td>
<td>0.4</td>
</tr>
<tr>
<td>Transport</td>
<td>8 641</td>
<td>47.4</td>
<td>0.3</td>
</tr>
<tr>
<td>General</td>
<td>46 254</td>
<td>66.2</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3 447 824</strong></td>
<td><strong>47.5</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

**Table A.2** – Electricity usage by consumption (Electricity Supply Statistics for South Africa, 2002:21)

<table>
<thead>
<tr>
<th>Sales, MWh</th>
<th>Eskom</th>
<th>Municipalities &amp; Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>MWh</td>
<td>% Split</td>
<td>% of Total</td>
</tr>
<tr>
<td>Domestic</td>
<td>7 087 506</td>
<td>23.3</td>
<td>6.8</td>
</tr>
<tr>
<td>Agriculture</td>
<td>3 942 787</td>
<td>84.9</td>
<td>3.8</td>
</tr>
<tr>
<td>Mining</td>
<td>32 294 640</td>
<td>99.0</td>
<td>30.8</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>50 912 236</td>
<td>61.2</td>
<td>48.5</td>
</tr>
<tr>
<td>Commercial</td>
<td>1 166 545</td>
<td>6.4</td>
<td>1.1</td>
</tr>
<tr>
<td>Transport</td>
<td>3 822 708</td>
<td>61.2</td>
<td>3.6</td>
</tr>
<tr>
<td>General</td>
<td>5 756 879</td>
<td>60.0</td>
<td>5.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>104 983 301</strong></td>
<td><strong>56.8</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
Appendix B: Electricity distribution restructuring evolution

Table B.1 – Evolution of the Restructuring of the Electricity Distribution Industry (Maphaka, 2004: 5).

<table>
<thead>
<tr>
<th>United Kingdom, New Zealand, Norway</th>
<th>Reformed United States</th>
<th>United States</th>
<th>Australia</th>
<th>Designs refined</th>
</tr>
</thead>
<tbody>
<tr>
<td>China and Europe</td>
<td></td>
<td>New Zealand</td>
<td>United States</td>
<td>Retail Reform</td>
</tr>
<tr>
<td>Asia, Korea, Malaysia</td>
<td>Africa</td>
<td></td>
<td>Australia</td>
<td>Market development</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Africa</td>
<td>Sell</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Need for Cash flow</td>
</tr>
</tbody>
</table>
### Appendix C: Questionnaire

<table>
<thead>
<tr>
<th>Nr</th>
<th>Question</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Metering company capabilities needed for Regional Electricity Distributor</td>
</tr>
<tr>
<td>2</td>
<td>Metering core competencies needed for Regional Electricity Distributors</td>
</tr>
<tr>
<td>3</td>
<td>Metering barriers of entry</td>
</tr>
<tr>
<td>4</td>
<td>Metering enabling technologies</td>
</tr>
<tr>
<td>5</td>
<td>Metering business models/structures</td>
</tr>
<tr>
<td>6</td>
<td>Metering services needed by Regional Electricity Distributors</td>
</tr>
<tr>
<td>7</td>
<td>Metering turnkey projects needed by Regional Electricity Distributors</td>
</tr>
<tr>
<td>8</td>
<td>Metering opportunities with Regional Electricity Distributors</td>
</tr>
<tr>
<td>9</td>
<td>Threats to current metering companies</td>
</tr>
<tr>
<td>10</td>
<td>Power Quality company capabilities needed for Regional Electricity Distributors</td>
</tr>
<tr>
<td>11</td>
<td>Power Quality core competencies needed for Regional Electricity Distributors</td>
</tr>
<tr>
<td>12</td>
<td>Power Quality barriers to entry</td>
</tr>
<tr>
<td>13</td>
<td>Power Quality enabling technologies</td>
</tr>
<tr>
<td>14</td>
<td>Power Quality business models/structures</td>
</tr>
<tr>
<td>15</td>
<td>Power Quality services needed by Regional Electricity Distributors</td>
</tr>
<tr>
<td>16</td>
<td>Power Quality turnkey projects needed by Regional Electricity Distributors</td>
</tr>
<tr>
<td>17</td>
<td>Power Quality opportunities with Regional Electricity Distributors</td>
</tr>
<tr>
<td>18</td>
<td>Threats to current Power Quality companies</td>
</tr>
<tr>
<td>19</td>
<td>Influence of Regional Electricity Distributors on industry</td>
</tr>
<tr>
<td>20</td>
<td>Influence of Regional Electricity Distributors on municipalities</td>
</tr>
<tr>
<td>21</td>
<td>Black Economic Empowerment role on Regional Electricity Distributors</td>
</tr>
<tr>
<td>22</td>
<td>Timescales on Regional Electricity Distributors</td>
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</table>

**More comments**
Appendix D: Questionnaire results

<table>
<thead>
<tr>
<th>Nr</th>
<th>Question</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Metering company capabilities needed for Regional Electricity Distributors</td>
<td></td>
</tr>
</tbody>
</table>

- Integration of diverse equipment over a geographically large area will be a capability that is needed by metering companies;
- Accuracy, reliability and reference-able data;
- The company would need to have skills related to system integration (protocols, physical interfaces, configuration, etc) for supply side level metering due to the trend towards tight integration of data within the supply side;
- On the client metering side, a good foundational knowledge of industrial demand profiles and tariff influence is essential;
- Metering services (essentially data collection services) companies may need to have "independent" status from companies that have links to utilities in other areas, so as to ensure that there can be no question with regards to the integrity of the data (client protection);
- Cost consciousness, customer-centric thinking;
- A significant ad-hoc workforce is implied in establishing a metering services company;
- Strong outsourcing contracting ability may be an essential component of such a company;
- Excellent Marketing;
- Joint ventures and alliances; and
- Rapid response capability to any customer area.

<table>
<thead>
<tr>
<th>Nr</th>
<th>Question</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Metering core competencies needed for Regional Electricity Distributors</td>
<td></td>
</tr>
</tbody>
</table>

- Integration skills;
- Communication infrastructure (e.g. network, modems) which will form the backbone;
- Pre-paid metering will be important;
- Dealing with the tariff minefield for clients is an obvious technical competency required;
- Integration skills essential;
- Hardware, software and communications systems skills; and
- Ability to execute projects within stringent time and budget constraints must be a core competency.
IST Otokon within a restructuring South African electricity distribution industry

<table>
<thead>
<tr>
<th>Nr</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Metering barriers of entry</td>
</tr>
</tbody>
</table>

- Black Economic Empowerment ownership;
- Company size (critical mass);
- Upgrade costs;
- New structures may initially not take a holistic view;
- Value of reliable data will be realised;
- Well-established current players;
- Power of the Eskom and municipal buyers might lead to low margin business;
- Increased integration of metering functions at substation level with Protection equipment can lead to the entry of substitution products entering the market; and
- Adequate infrastructure to support advanced metering technologies (that may be required in order to make large-scale metering cost-effective).

<table>
<thead>
<tr>
<th>Nr</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Metering enabling technologies</td>
</tr>
</tbody>
</table>

- Integration of diverse metering equipment;
- Automated system for meter reading;
- Telecommunications;
- Integrated services concepts (water, power, information) and servitudes; and
- Regulatory inducement to measure accurately and report on quality of services provided (important factor for metering enabling technologies).

<table>
<thead>
<tr>
<th>Nr</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Metering business models/structures</td>
</tr>
</tbody>
</table>

- Future Regional Electricity Distributors do not yet realise the NEED for this; and
- This depends a lot on the level of metering being sold (e.g. domestic versus Large Power User versus supply side). These days the metering business needs more and more to either be a world-class player with sought-after equipment that is a class winner on the basis of price or features (so that it is specified in tenders on the merits of the product or the specification is very close to the product spec), or the business must be aligned with a secondary plant supplier able to compete for turnkey work together with other players in that market.
1ST Otokon within a restructuring South African electricity distribution industry

<table>
<thead>
<tr>
<th>Nr</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Metering services needed by Regional Electricity Distributors</td>
</tr>
<tr>
<td></td>
<td>• Remote metering;</td>
</tr>
<tr>
<td></td>
<td>• Manual metering;</td>
</tr>
<tr>
<td></td>
<td>• Billing systems;</td>
</tr>
<tr>
<td></td>
<td>• Dispensing of pre-payment tokens;</td>
</tr>
<tr>
<td></td>
<td>• Independent meter data acquisition;</td>
</tr>
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<td></td>
<td>• Turnkey installation, commissioning and operation (Build/Operate/Maintain);</td>
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<td>• Fast turnaround for repairs and short lead times on supply;</td>
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<td></td>
<td>• Tariff compliance (regulatory) guidance, e.g. Quality Of Supply;</td>
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<td></td>
<td>• Metering project management; and</td>
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<td></td>
<td>• They will first try it themselves, because they think they can do it cheaper.</td>
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<tr>
<td>7</td>
<td>Metering turnkey projects needed by Regional Electricity Distributors</td>
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<tr>
<td></td>
<td>• Standardisation of varied systems currently employed by Eskom Distribution and municipalities;</td>
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<td></td>
<td>• Integration of billing systems with metering systems will be a prerequisite; and</td>
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<td>• I would think that turnkey work in the case of metering would apply mainly to large refurbishments of existing areas or new greenfields installations WHERE the metering does not form part of the existing turnkey supply contract for infrastructure (which I think is more likely).</td>
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<td>8</td>
<td>Metering opportunities with Regional Electricity Distributors</td>
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<td>• Regional Electricity Distributors will standardize on tariffs - more consumers will have an option between tariffs. This may lead to more interest within smaller industry for energy management, requiring in-house metering;</td>
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<td></td>
<td>• Standardising on metering equipment;</td>
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<td>• Replacement with TOU meters;</td>
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<td></td>
<td>• Remote metering over a larger area than was done previously;</td>
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<td>• Automated data collection services;</td>
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<td></td>
<td>• Consulting on Quality Of Supply issues (especially with regards to metering of unwanted harmonics and imbalances, when embedded/distributed generation and less &quot;total ownership of the whole network&quot; by one entity becomes a reality;</td>
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</table>
• Border situations (Regional Electricity Distributor borders) will be extremely sensitive. Integrated metering, protection and Supervisory Control And Data Acquisition data will be very important in order to determine where problems originate and how to solve them; and
• There will be opportunities, but respondent not sure what the structure will be.

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<td>Threats to current metering companies</td>
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</table>

• Standardizing could lead to less role players needed within industry;
• Regional Electricity Distributors will demand strong Black Economic Empowerment focus from suppliers - may even demand Black Economic Empowerment ownership;
• Lack of large single national contracts for meters and metering services;
• Increased competition from international companies interested in a re-regulated/rationalised Energy Distribution Industry; and
• Substitution by integration of the metering function into Remote Terminal Units/Gateways and/or (more likely) Protection equipment in some cases (there will likely always be a need for independent meters that provide check data on some system components.

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<td>Power Quality company capabilities needed for Regional Electricity Distributors</td>
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• Power quality experience;
• Metering hardware;
• Project execution capability;
• Knowledgeable on power quality standards;
• Good reputation; and
• Dependent on what is offered, either independence from suppliers of equipment, and close adherence to regulatory requirements and ease of implementation.

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<td>Power Quality core competencies needed for Regional Electricity Distributors</td>
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• Being power quality experts, if you want to become a power quality consultant;
• Low risk project execution, if you want to install power quality systems; and
• Power Quality suppliers cannot be differentiated from Metering suppliers, due to the high levels of integration in modern equipment - A strategy for Power Quality alone could be fatal, as the success will largely be determined by regulatory conditions.
which could change from one business cycle to the next, depending on what the regulator believes has to be achieved.

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<td>12</td>
<td>Power Quality barriers to entry</td>
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<td>• Wrong Black Economic Empowerment profile;</td>
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<td>• Not being well-known in the power quality</td>
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<td>• Not having a current footprint and market</td>
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<td>• Same as metering companies.</td>
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<td>13</td>
<td>Power Quality enabling technologies</td>
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<td>• Meter that measures power quality according</td>
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<td>• Low-cost communication structures;</td>
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<td>• Standardisation on communication protocols;</td>
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<td>• Same as metering companies.</td>
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<td>14</td>
<td>Power Quality business models/structures</td>
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<td>• For consulting – sells hours;</td>
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<td>• For projects, sell as many power quality</td>
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<td>• Same as metering companies.</td>
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<td>15</td>
<td>Power Quality services needed by Regional</td>
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<td>Electricity Distributors</td>
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<td>• Monthly and yearly reporting on power</td>
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<td>• Interpretation of power quality data, in</td>
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<td>• Same as metering companies.</td>
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<td>16</td>
<td>Power Quality turnkey projects needed by</td>
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<td>Regional Electricity Distributors</td>
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</table>
- Regional Electricity Distributors might only want to buy meters, and may not require turnkey projects;
- There will be a need for power quality consultancy on a case by case basis; and
- Same as metering companies.

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<td>17</td>
<td>Power Quality opportunities with Regional Electricity Distributors</td>
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- Industry may be too young – first focus will be metering and not power quality;
- Selling of power quality meters;
- Installing and maintaining a power quality system for each Regional Electricity Distributor; and
- Same as metering companies.

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<td>Threats to current Power Quality companies</td>
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- New technology in this area becoming available on a regular basis;
- If the perceived market is big new competitors from overseas is a possibility;
- Old Eskom legacy systems might not be able to meet the new demands related to power quality as seen by the Regional Electricity Distributors; and
- Same as metering companies.

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- Standardization of tariffs will continue;
- All industry will have a choice in tariffs - creating an interest in energy measurement and measuring of own consumption;
- TOU available to a larger portion of industry - requiring new meters and strengthening the case for automated meter reading;
- More cost reflective tariffs;
- Huge. Power of the buyer will be slightly diluted (used to be ESKOM); and
- Likely to be increased emphasis on Turnkey contracts.

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<td>Influence of Regional Electricity Distributors on municipalities</td>
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1ST Otokon - within a restructuring South African electricity distribution industry

- In terms of electricity supply, Regional Electricity Distributors will take over the responsibility from the municipalities;
- Income stream removed from municipalities, replaced by dividends from Regional Electricity Distributors;
- Who will pay for street lighting and other municipal loads? There could be a need for metering of these installations;
- Negative in the beginning – loss of revenue, assets; and
- Huge, but could be mitigated by legislation that compensates the municipality for loss of power revenue (I am not as close to this as I need to be to answer this question fully).

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<td>Black Economic Empowerment role on Regional Electricity Distributors</td>
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- Regional Electricity Distributors will be publicly owned and have the spotlight on Black Economic Empowerment;
- Strong emphasise on Black Economic Empowerment role in all its suppliers/partners;
- Huge. Be there or you lose out - could be more stringent than Eskom; and
- VERY important.

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- Already started - will be rolled out over the next 3 years;
- May depend on constitutional ruling with regards to the right of municipalities to supply electricity;
-Apparently Cape Town Regional Electricity Distributor next year;
- Regional Electricity Distributor one by the middle of next year latest - Western Cape; and
- Timescale thereafter is anyone’s guess.

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- Regional Electricity Distributors need to measure supply to customers;
- Regional Electricity Distributors need to interface to Eskom Transmission (bill verifying);
- Regional Electricity Distributors need to interface with embedded customers being supplied by Eskom Transmission or a different Regional Electricity Distributor;
Customers will already be measured;

Interface with Eskom Transmission is measured by Eskom Transmission but not always by current Municipality;

Embedded customer probably already measured as a current customer;

A large opportunity exists for standardization of measuring equipment. A mix of Eskom Distribution and Municipality systems exist, of which some readings are automated and some are hand-read. Could lead to a large project to standardize on equipment and measuring system;

As the Regional Electricity Distributors will be publicly owned, Black Economic Empowerment will be a very important criterion for selecting a metering partner; and

Quality work will be very important, but it will only help if you have Black Economic Empowerment.