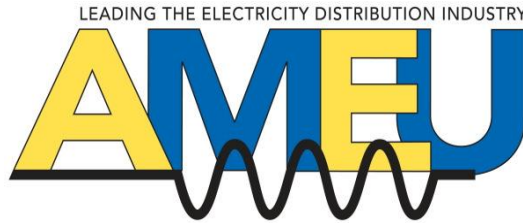


# BENCHMARKING IN THE SOUTH AFRICAN EDI CONTEXT



**Author and Presenter: Dr. W. J de Beer PhD; MBA; GCC Electrical;  
GCC Mechanical – Chief Operations Officer EDI Holdings**

**Co-authors: Mr. N Waters BA; B Ed; M Ed - Regional General Manager  
EDI Holdings**

**Mr. L Annamalai BSc Engineering; M Eng (Electronics) – Executive  
Manager – Operations EDI Holdings**

## **1. Introduction:**

The purpose of this paper is to discuss an approach to benchmarking distribution electric utility industry performance and contextualize the value add for the South African environment. In addition, given the performance data now available as a consequence of the 33 completed municipal ringfencing projects undertaken by EDI Holdings, the paper provides a contextualization of the data and an interpretation of the relative performance of the ringfencing participants, by utilizing benchmark data and best practice information sourced in the broader international distribution utility context.

The basic definition of benchmarking in a utility context that is applied in this instance is:

**Measure performance** against **comparable utilities**, using a predetermined set of **indicators** to understand **relative performance** and initiate **performance improvement** through pursuit of **applicable best practices**.

In the South African context, this performance comparison can be initially undertaken by using data available from the EDI Holdings Ringfencing project. Aspects of the outcomes of such research are shared in this paper. However, in order to provide for a more comprehensive and balanced set of data for comparison, the intention is to encourage a sample of municipalities to actively participate in a survey in the fourth quarter of 2010, with results being made available, and best practices shared, in a conference scheduled for February 2011. In the longer term it would be wise to make Operational Benchmarking part of the SA Electricity Distribution Industry in a drive for continuous business performance improvement and move the EDI from current performance levels to real world class service delivery businesses, irrespective of any changes in the industry structure as a consequence of reform initiatives.

## **2. The Benchmarking and Best Practice Approach**

### **a. Why Benchmark?**

Internationally, benchmarking of distribution companies has been applied to enhance efficiencies and by regulators to compare efficiencies of entities. Two well cited studies performed in 2001 and 2003 (Jamasab and Pollit) have indicated the value of international benchmarking, while stressing the importance of careful and proper variable selection. Similar studies have shown that information asymmetry can be reduced by cross country analysis. However international benchmarking studies raise important empirical and methodological concerns. The problems arise from the many practical and technical aspects of the definitions and fields of activities and responsibilities of the national distribution companies. Cullment, Crespo and Plagnet site as examples of these challenges voltage levels, divisions between transmission and distribution activities, distributors that are not constrained by the same political and regulatory obligations, and variations in standards of quality.

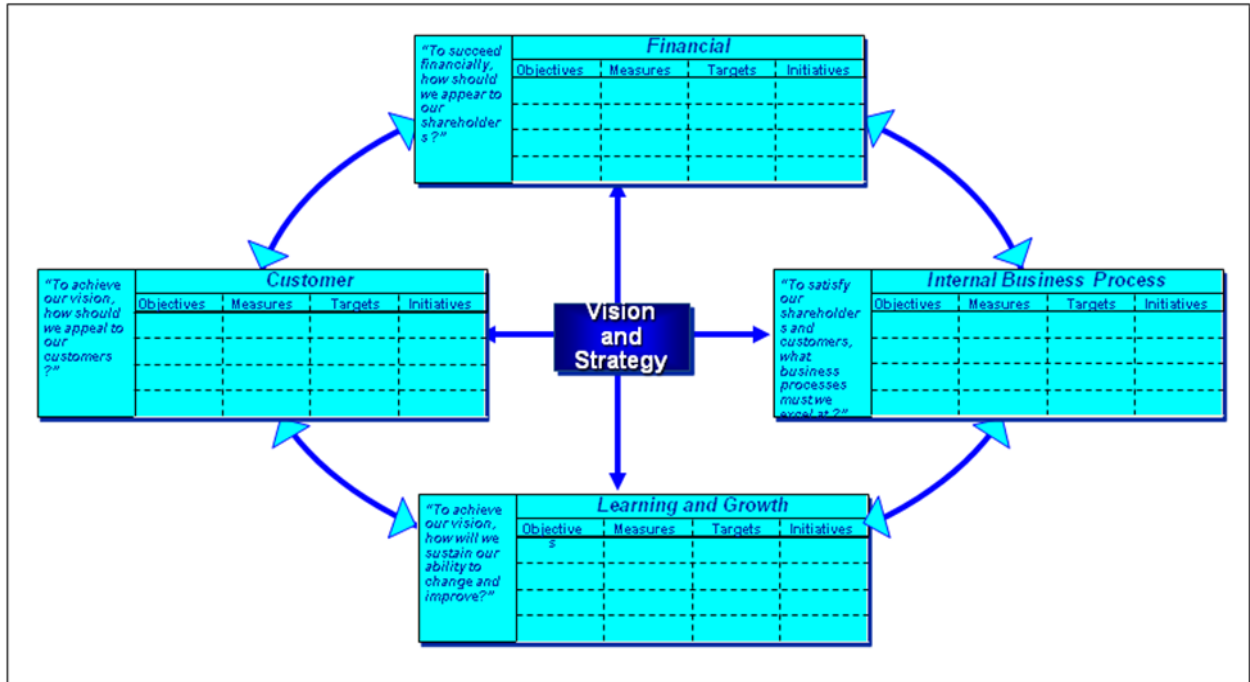
The rationale adopted by most utilities in building a case for participating in a credible benchmarking programme includes the fact that benchmarking performance against other similar businesses can provide some insights into your business performance and best practices offer a perspective of what the leaders in the industry internationally are doing. The primary objection to comparing performance and practices against others is the argument of uniqueness. However International utilities are remarkably similar in terms of business operations fundamentals and panels can be compiled to factor in certain differentiators such as geography, customer base, customer mix, density, climate, governance structure etc.

In the South African context, efficiency analysis through benchmarking is particularly important in identifying cost drivers and efficiency improvement opportunities to address shortcomings and limitations in the current practices and performance of the industry and also to prepare for the migration to a competitive industry structure with some form of market-oriented regulation.

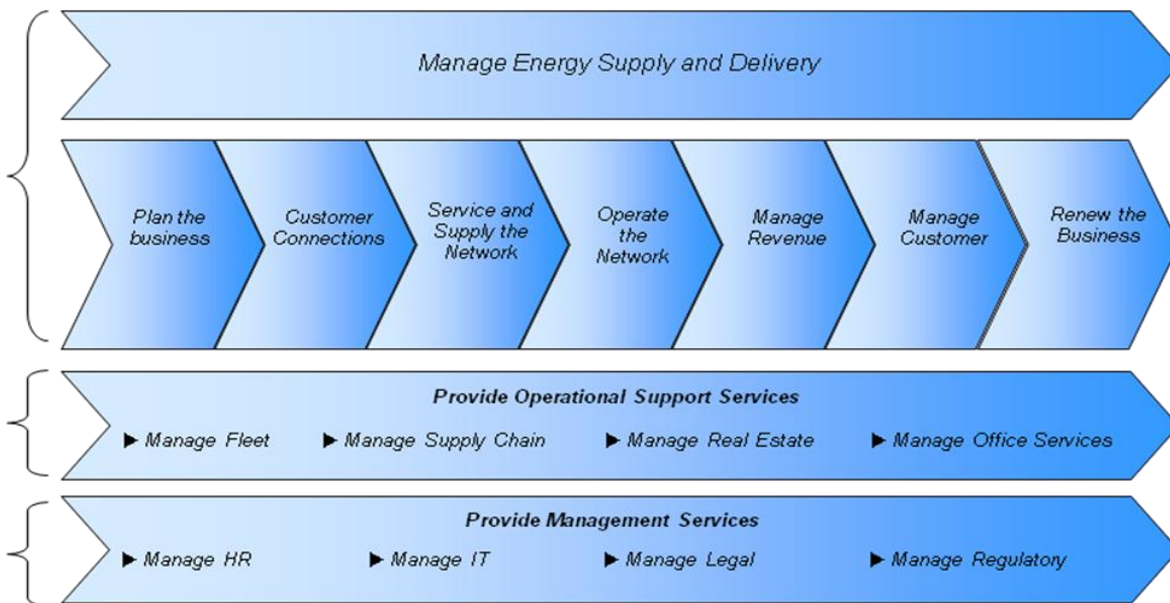
### **b. An approach to process**

Although Companies use different approaches to understand and improve performance, the fundamental elements of setting baseline performance metrics for the utility and individual business units, reflect consistently. Performance metrics can be defined as a set of comprehensive quantitative measures and targets that are representative of the business results desired, balanced across all aspects of the business, commonly referred to as a balanced scorecard. Performance Metrics that focus on results rather than activity, and metrics that have a clear line of sight from the executive level to the field manager should be the preferred approach. The performance metrics should be balanced so as to avoid sub-optimization, i.e. balance cost goals/metrics with customer goals. In addition, the approach needs to have balance and context within the broader vision and strategy of the business and across the entire business value chain.

## Indicative Balanced Scorecard



## Indicative Utility Value Chain



Typical key performance indicators that are reflective of a balanced assessment of utility performance, irrespective of governance structure, would include:

- Network reliability
- Network operations and maintenance cost
- Restoration of supply efficiency
- Technical and non technical losses

- Revenue Management efficiency
- Cost to serve
- Service Levels
- Safety
- Resourcing levels and efficiency

In addition to understanding the comparative business performance, the second fundamental component of a comprehensive Benchmarking programme is the identification of best practices and trends in the sample of participating utilities. Best practices are tested business practices or methods that contribute to superior improved performance applicable to the participants. It is a relative term that usually describes innovative business practices or methods that have been identified and implemented to achieve tangible results during a benchmarking study. The use of best practices as insight on how to improve business performance makes good business sense. However, the use of best practices to establish performance expectations is not advisable, as the solution may not fit a particular business environment. The assessment of this business fit is thus a critical step in the decision making process to identify and implement industry best practices that may be appropriate to a particular company and helpful in improving performance. The selection of best practices generally involves looking for emerging practices which have potential advantage, but which are not yet fully adopted. Timing is critical to gaining competitive advantage. Once identified, implementation, consistent execution of practices, rigorous measurement and focus on the outcomes is key to gaining significant improvements. Application of best practices is also best linked to measured performance and associated areas for improvements and is thus an integral part of the benchmarking process, rather than a stand alone activity.

International experience has shown that the cross pollination of best practices between utilities, sometimes sourced from comparable businesses outside the utility sector, results in some best practices becoming standard industry practices over time. In some instances this may require a utility to review such practices to regain a competitive edge or keep pace with technological developments. In other cases, a best practice may remain a constant for decades, for example, a proactive and consistent vegetation management programme to keep tree and bush growth out of overhead lines will always be an industry best practice, but the differentiator that changes over time would be the use of innovative approaches to achieve this industry best practice.

### **c. The South African context**

Benchmarking is currently treated with some trepidation and suspicion within the utility industry in South Africa. This concern is based on a number of factors, including availability of data, resource constraints to undertake the exercise and suspicion that the outcome will reflect poorly on the individuals and their electricity departments. In order to address these concerns, a serious change management exercise must be considered first and must be sustained to change the overall behaviour towards meeting the primary objective of improving overall industry performance and sustainability. However, a number of the municipal utilities have indicated an interest and willingness to participate in a pilot programme, which, with appropriate effort invested in data collection, will yield immediate insights and potential operational performance improvement opportunities to the participants.

A balanced scorecard is under development that contains a set of metrics that create a baseline measurement standard for the industry and which provide a balanced insight into industry performance. Participation in this process by multiple municipalities will lead to the establishment of a real data baseline of current performance across the Electricity Distribution Industry. This scorecard will be based on the minimum number of data points that can provide a good indication of business performance across operational areas, with consideration being given to the nature of the municipal electricity business and availability of baseline data. A number of optional fields will also be created to afford participants who have access to a more in depth range of data to get more detailed and specific feedback and benefit from the programme. This programme provides the opportunity to achieve efficiency analysis gains from cross country analysis by providing a broader view of the industry performance, especially given a wide disparity in the operational performance of the South African entities.

Score card preparation will be based on experience gained and lessons learnt from the pilot programme run with the City of Cape Town, data fields that were successfully populated by a range of municipalities during the EDI Holdings Ringfencing exercise and more recent data collection exercises associated with EDI Holdings support to specific local municipalities. The Scorecard will reflect why certain data points are critical and mandatory and what they reveal about the business operations, as well as regulatory compliance. Furthermore, consideration will be given to what data is accessible or retrievable from the municipalities, (which may involve some data collection or interpretation from other indicators; data cleanup and normalisation to the standards prescribed). Statistical information will also form part of the data set, in addition to the scorecard.

EDI Holdings will work with all stakeholders to implement a programme that meets the needs of the industry and that of individual stakeholders.

#### **d. A sample of comparisons of South African performance, based on available Ringfencing data, and the International Mean.**

The Bar Charts below provide an example of the type of analysis that can be done once a more representative data set is available from South African utilities. In this instance, the EDI Holdings Ringfencing data has been used as a source and compared to an International Mean. In a more comprehensive study, South African sample size and nature, as well as the sample that makes up the International Mean, would be more refined and discreet. These graphs are thus illustrative of the type of analysis that is possible. In all instances, the conclusions drawn would need to be validated with individual entities and any strategies developed to address performance gaps, including the introduction of best practices, would need to be verified for local circumstances and application.

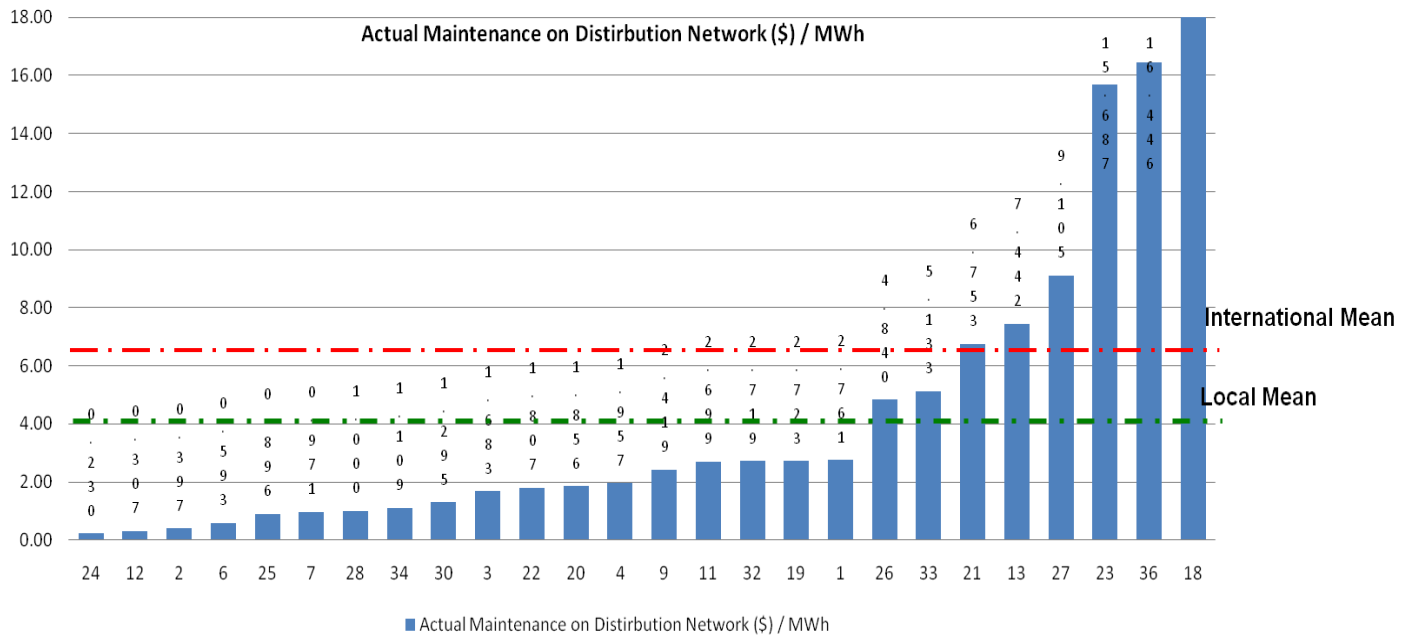
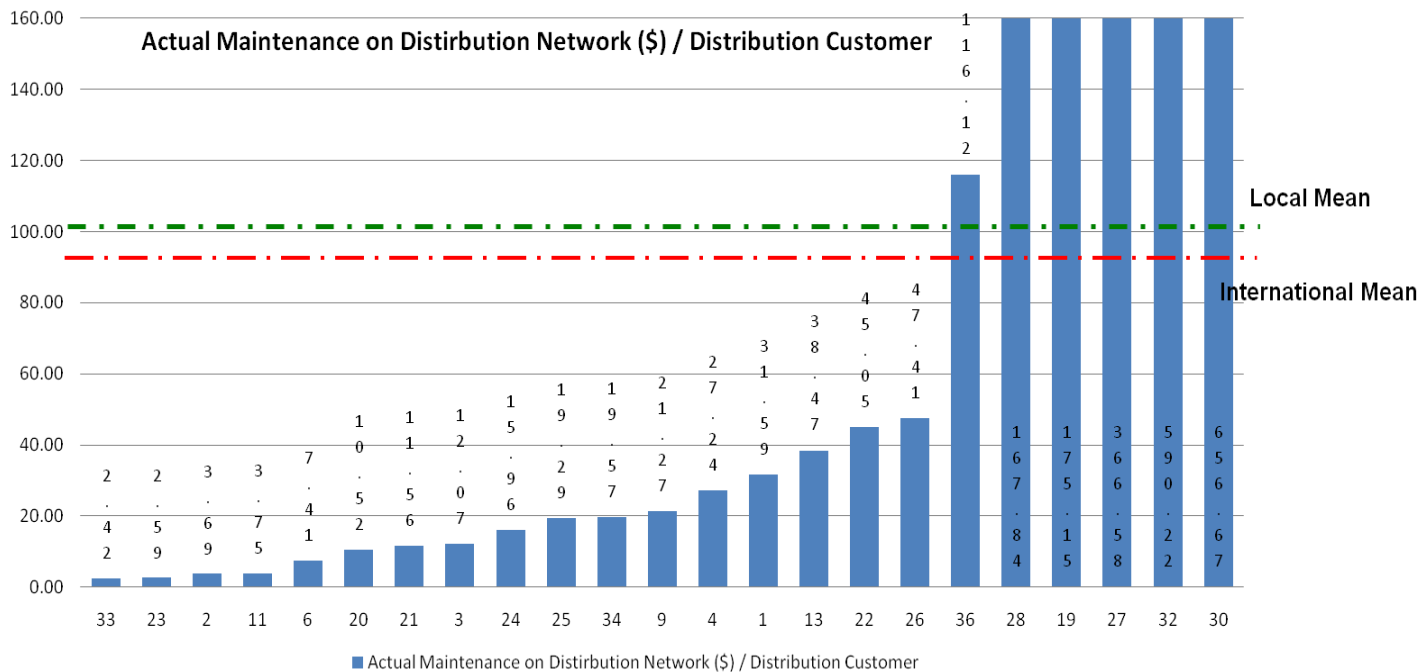


Figure 1 Total Maintenance Spend on Distribution Network per MWh

### Preliminary Analysis

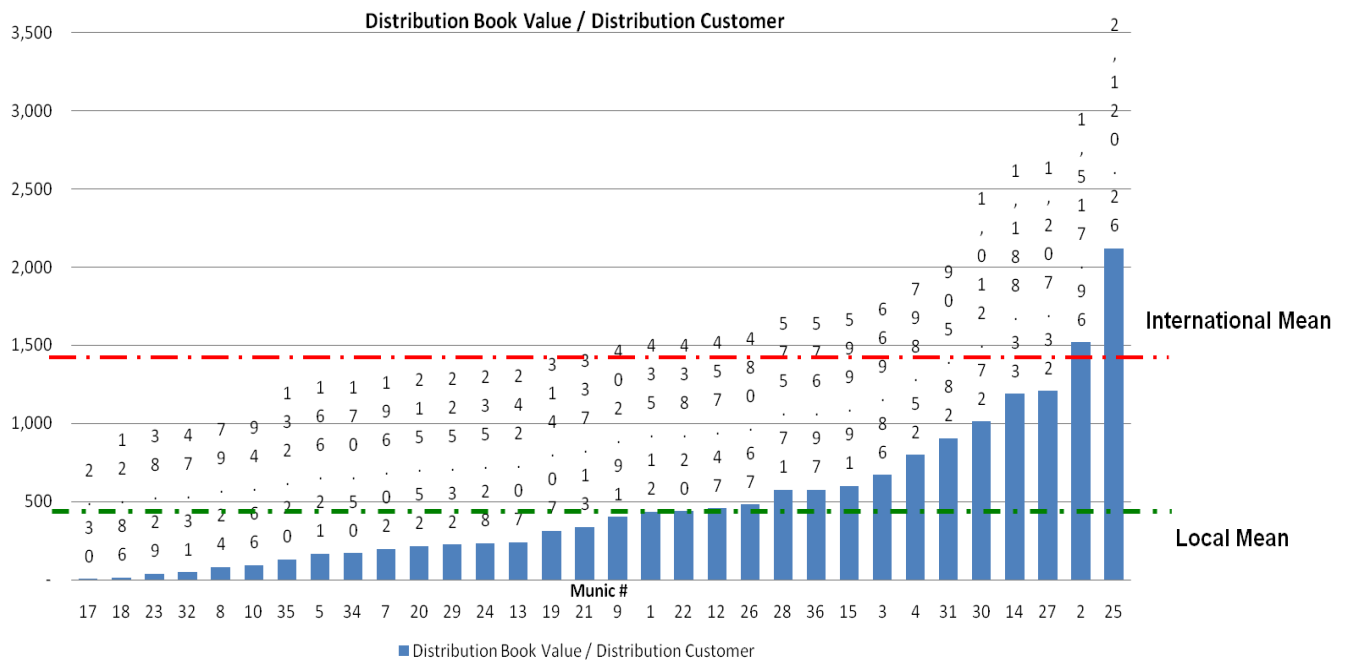
Locally the actual total maintenance spend per MWh on distribution network is lower than the international mean. The local mean is drawn upwards by very high spend within some of the municipalities within the sample set. The sustainability of this low spend practice is questionable as maintenance of the network is a primary factor for sustainable business performance over the long term. It is also important to note that the international reference panel is not confronted with a maintenance, refurbishment and strengthening backlog to the extent of the situation in South Africa.



## Preliminary Analysis

Actual maintenance spend per distribution customer, ignoring the current maintenance, refurbishment and strengthening backlog, indicates that there is not too much of a difference between the international benchmark mean and the local mean. However the local mean is definitely pulled upwards by the investment of a few municipalities while the majority are well below the bench mark. These statistics reinforce the need for addressing the backlog while investment levels in a number of the current utilities must be improved.

While there might be opportunities for some municipalities to review their asset investment approach, for the majority of the sample, attention will need to be given to the distribution infrastructure maintenance spend, as the network would be at risk.



## Preliminary Analysis

Locally the distribution network value per distribution customer is substantially lower than the international benchmark. This indicates that either renewal of the network infrastructure is not occurring, or that the existing infrastructure is being used to service a large and growing customer base with little new asset creation.

### e. Key opportunities

The most significant opportunity associated with Benchmarking is to achieve sustainability and long term viability in the South African EDI through operational performance improvement.

Performance improvement areas can be identified through regular assessment of a balanced suite of performance indicators, both internally and relative to a comparable national and international panel. Analysis of the data collected within this balanced suit of indicators leads to an enhanced understanding of business imperatives and provides indications of where methods to identify best practices should be applied.

A second opportunity is the formation of a community of practice that facilitates structured interaction and sharing of best practices for best fit, the business case for implementation thereof and monitoring of results that yield business change.

Finally, achievement of an industry standard score card for data collection will go a long way towards assisting, from a common basis, the needs of the industry to put in place Ntional relevant strategies, especially ones that deal with human capital development, infrastructure maintenance levels, bad debt and energy consumption.

### **3. Conclusion:**

Identification of cost drivers and efficiency improvements can have an immediate impact on the operational performance of municipal distributors. Whilst it is acknowledged that a number of the improvement initiatives are likely to require significant funding, resources and a multiyear implementation plan, there are areas of best practice that only require a reallocation or refocusing of existing resource, budget and effort to effect an improvement. Adopting a mindset of effecting change and improving operational performance without a major funding step change can lead to incremental improvement that provides a business case for big ticket projects.

In the longer term, the focus on internationally accepted key parameters in the business, used to drive KPIs, efficiency improvements realization through trend analysis and the application of best practices will yield more sustainable business improvement beyond quick wins.

An integrated approach can lead to industry performance optimization where operational benchmarking is institutionalized as a preferred means of business performance improvement. Validated and credible data can be made available to the industry, the regulator and decisions makers to assess distribution performance and risks. In addition, a focused and consistently implemented benchmarking programme in the EDI will lead to improved business strategy formulation to address South Africa's socio-economic drivers, aligned to supporting the countries growth, rather than presenting a potential risk to that growth.

## **REFERENCES:**

- (1) EDI Holdings Ringfencing Programme**
- (2) Polaris International Benchmarking Programme; A product of PA Consulting**
- (3) The Balanced Scorecard: Translating Strategy into Action; Kaplan R.S. and Norton D.P. ; Harvard Business School Press; 1996**
- (4) International Benchmarking in Electricity Distribution: A Comparison of French and German Utilities; Astrid Cullmann, Hélène Crespo, Marie-Anne Plagnet; October 2008**
- (5) Jamasb, T, Pollitt M. Benchmarking and Regulation: International Electricity Experience. Utilities Policy 2001;9; 107-130.**
- (6) Jamasb, T, Pollitt M. International Benchmarking and Yardstick Regulation: An Application to European Electricity Distribution Utilities. Energy Policy 2003;31; 1609-1622.**