

RHODES UNIVERSITY
Investec Business School

**AN EVALUATION OF THE QUALITY CUSTOMER SERVICE DELIVERED BY ESKOM
TO RURAL HOUSEHOLD CUSTOMERS IN THE EASTERN CAPE.**

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by

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DECLARATION

I, MNCEDI ERIC MYOLI hereby declare that this research thesis, entitled “A survey of customer satisfaction, expectations and perceptions as a measure of service quality in Eskom” is my own original work.

All sources used or referred to have been accurately reported and acknowledged.

I further declare that this research report or any part thereof, has not been submitted in the past or will be in the future, for degree or other purposes, to any other educational institution.

ABSTRACT

Background

The quality of service is a critical factor that defines most businesses in the present and will be for sometime in the future. Eskom, as a power utility that has a monopoly on electricity, needs to assess from time to time how it satisfies its customer base through its services. Eskom is a national entity that generates more than 95% of South Africa's electricity and that also has a monopoly on transmission of electricity. Distribution of electricity to municipalities and other entities though monopolised by Eskom because other distributors purchase power from it, it is by no means as unique as in the other two mentioned divisions. Electrification programme for household users of electricity was started in 1991 through Eskom's "Electrification for all" campaign. This campaign was focused mainly on urban black and coloured residential areas near existing electrified white towns. It was, however, a focus of the new government that came into power in 1994 that electrification needs to be extended to largely poor non-electrified rural areas. Due to this focus, a large number of rural residential customers were connected to the national electricity grid and with other sectors formed part of the integrated demand for electricity. No formal inquiry was conducted on how these new customers (rural prepaid residential electricity users) were experiencing electricity services being rendered, hence the need for the study.

The organization used for the study is Eskom Distribution at a Regional Eastern Cape level. The study seeks specifically to:

- 1) Determine satisfaction of designated customers (rural prepaid household customers) with service they are receiving from Eskom using the five dimensional SERVQUAL scale that has been modified to the specific service quality requirements of the electricity supply industry.
- 2) Establish these designated customers' perception of actual service using a multiple item, five dimensional scale for measuring customers' perceptions of service quality.
- 3) Establish customers' expectations of service quality and contrast them with the perceptions of service quality actually received. The contrast is made along the five dimensions of the same service in different geographical areas and across the same customer type, that is, rural prepaid household customers.
- 4) Recommend appropriate service quality improvements as identified through empirical evidence.

Methodology

The data for the study was acquired from a perceptions and expectation survey conducted in 2006 from customers extracted from an Eskom customer database. The survey was conducted by administering questionnaires to an audience of people assembled at designated points among the twelve rural villages that were chosen for the study. The questionnaire was based on the five dimensions, multiple item SERVQUAL scale modified for particular use on customers within the electricity supply industry. The data for the study was collected from 220 questionnaires administered on the twelve geographical spread of villages chosen for the sample.

The data is analysed by comparing different parts of the service as defined in the five broad dimension of the SERVQUAL scale across diametrically located villages within the Eastern Cape Province.

Results

The results support the alternate hypothesis ($H_1: \mu_1 \neq \mu_2$) and reject the null hypothesis ($H_0: \mu_1 = \mu_2$). The expectations ratings are higher than perceptions ratings, as across all villages, expectation of Eskom service stood at the maximum of the scale. The perceptions ratings for the “Tangibles” dimension remained equally high (it stood at maximum of the scale) across all villages creating a zero variance between the two. The perceptions ratings for all other dimensions were variable and thus created a gap between expectations and perceptions of service quality.

The largest service quality gap was in the “Reliability Dimension”, that is, consistency and dependability of Eskom service. This is a service provision dimension and relates to how good or bad service is provided from a customer viewpoint. The lowest rating could also be due to rural nature of these customers and the frequencies of electricity supply interruptions in their networks as mentioned in the literature study.

The reliability dimension has one of the lowest mean ratings among other dimensions and yet is rated as the most important dimension of all other dimensions. The dimension mean of the responsiveness dimension is the lowest among all other dimensions including the reliability dimension. Comparison of means of different villages is not statistically different to each other implying consistency of responses to items of various dimensions.

Conclusion

This research study confirms the theory in the literature review on delivery of quality service to customers and premise that there is a statistically significant difference between Eskom service as perceived by rural prepaid household customers and their expectations. This study also highlights the need for Eskom management to take into cognisance the unique rural prepaid customer service needs and how to meet them, perhaps a differentiated service approach rather than a one strategy-fits-all approach. This is in view of gaps created between expectations and perceptions of service, especially in the reliability dimension that could require a concentrated or changed performance approach to close them.

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CHAPTER 1: THE PROBLEM AND ITS CONTEXT

1. INTRODUCTION

This chapter introduces the background to the problem and the context of the study. This is done by presenting arguments as to why the satisfaction of the rural household prepayment electricity customers of Eskom needs to be investigated. The discussion of both the historical and industrial context of the rural household electricity customers exposes the importance of this inquiry and of Eskom's position in particular. Problems of satisfaction of rural prepayment customers with Eskom service will culminate with a problem statement. Lastly, the discussion of the research question itself is broken down into its constituent subsets.

1.1 BACKGROUND AND CONTEXT OF THE RESEARCH

Rural electrification in South Africa has been conceived by the national government through its Reconstruction and Development Programme (RDP) through an agreement with Eskom starting in 1994 up to 1999 (DME Feedback Documentation on New National Electrification Planning and Implementation Workshop, 2004). The programme of electrification in rural former self-governing states or homelands had to take place in the context of Eskom's take-over of these areas. After takeover, Eskom was then able to fund these former self-governing states' electrification programmes and thereafter maintain the networks thus created. Eskom would then service and collect revenue from these customers. In licensed re-distributors or municipalities an agreement of a certain percentage levy in the bulk price as surcharge was used to fund the programme of electrification inside those entities (DME Feedback Documentation on New National Electrification Planning and Implementation Workshop, 2004).

The industry programme nationally yielded 2.8 millions new households connected to the electricity grid by the end of 1999 (NER 2000). Eskom's commitment to the industry figure was 1.75 million homes or 62.5% (Eskom Annual Report, 2004). The industry figure of 2.8 million households electrified translates to 450 000 homes per annum between 1994 and 1999 (NER, 2000). A further agreement for Eskom to continue funding the programme for an extra year was reached with government and yielded approximately 403 000 household connections for the industry at the end of 2000 (NER, 2000). Eskom and Photo Voltaic non grid installations accounted for 250 000 and 23 000 of this figure respectively and mainly rural household connections (NER, 2000). Local government or licensed municipalities on the other hand accounted for 130 000 new connections of an urban and peri-urban type (NER, 2000).

National government had to take over the responsibility of rolling out the programme after this period and the Department of Minerals and Energy assumed this responsibility through its line budget via disbursements from National Treasury (DME Feedback Documentation on New National Electrification Planning and Implementation Workshop, 2004). This new programme had to fund electrification of rural areas within Eskom licensed and take-over areas and also inside licensed municipal areas and metropolitan municipalities. This meant that both rural and urban rural household electrification were funded from the same source.

Electrification lessons from the seven years of the National Electrification Programme were the following (DME Feedback Documentation on New National Electrification Planning and Implementation Workshop, 2004):

- the electrification programme is not commercially viable for any distributor without subsidies
- rural areas are particularly costly and difficult to electrify
- the electrification programme is fundamentally a long-term social investment programme with indirect future return on capital

The problem of viability cannot be more pronounced when it is considered that for electrification to be viable a calculated 350 Kwh on average per household is required to be consumed (National Electrification Programme (NEP) Volume 1, 1994-1999). However, in reality electrification consumers use a little over 100 Kwh per month and rural customers even less (National Electrification Programme (NEP) Volume 1, 1994-1999). This makes rural prepayment customers least attractive from a return on investment point of view. If government was not subsidizing these rural household connections it would have been difficult for individual redistributors and Eskom to fund the programme of electrification on their own.

Another lesson for rural electrification networks are that cost subsidies to electrify even extend to further subsidies for maintenance and operations (National Electrification Programme (NEP) Volume 1, 1994-1999). This situation poses a risk of sustainability for future electrification especially with regards to future restructuring of the distribution industry into independent viable Regional Electricity Distributors (REDs).

The following table depicts the costs of electrifying as per the preceding discussion:

Table 1: Factors which influence the cost of electrification (Adapted from EDRC Report on Electrification, 1994 – 1999).

Item	Typical costs	Factors which influence costs
Connection at household	R898 (24%)	▪ Prepayment more expensive than credit metering. Unmetered (2.5 Amp) connection the cheapest ▪ Marginal reduction of costs per connection for larger projects. ▪ Household structure (are kicker poles required or is a wall strong enough that cable can be attached directly to wall) ▪ Costs have reduced over the last few years.
Low voltage reticulation	R2265 (60%)	▪ Density of households – costs reduce as the number of households connected per km of reticulation line decreases ▪ Terrain – hilly or rocky terrain can increase costs ▪ Material choice ▪ Design After Diversity Maximum Demand (ADMD)
MV-LV Transformers	Included in above LV reticulation costs.	▪ Medium voltage rating ▪ Load factor ▪ Peak demand ▪ Density of households – number of connections that can be served by one transformer ▪ Design ADMD
Medium voltage local distribution	R235 (5%)	▪ Density of households, distance between clusters
Medium voltage grid extension	R131 (4%)	▪ Distance from existing grid infrastructure ▪ Number of households to be electrified per km of grid extension ▪ Terrain over which lines must be built ▪ Number of settlements which can benefit – clustering ▪ Design ADMD ▪ Load factor
High voltage bulk supply line (Not always required)	R292 (8%)	▪ Distance ▪ Capacity of existing infrastructure – does it need to be upgraded ▪ Number of settlements which can benefit – clustering potential ▪ Design ADMD
HV-MV substation (Not always required)	Included in figure above for MV substation	▪ Peak Demand ▪ Load Factor
Labour and consultants fees	Included in above costs	▪ Local, contractor, or Eskom staff ▪ Clustering of projects to reduce travel and establishment costs ▪ Productivity

To emphasise the cost element as one of the lesson points of the National Electrification Programme described previously one is pointed to certain items in the table above. The items such as “Low voltage reticulation”, “Medium voltage local distribution” and “Medium voltage grid extension” point out a number of factors which influence costs especially for rural supplies.

Item “connection at household” explains the cost for supplying a service connection to a single household. In the table it has been described as contributing 24% to the total cost of bringing supply to a household. In rural supplies cost of bringing a service connection to a household will be affected by the type of house structure to securely attach a connection and the need to have further reinforcement to attach that supply. When one takes a rural household into this context it is clear that costs to connect a household may go up instead of coming down. A 2.5 amp supply described in the table as a cheaper supply option is being phased out due to its limiting capability to households when its thermal needs have to be met. A 2.5 amp supply is also deemed as contradictory when taking into cognisance the magnitude and cost of infrastructure built sometimes only to supply these rural households.

Item “low voltage reticulation” refers to the distribution network infrastructure that has to be built in and around houses or villages that enables service connection to a household. It is impacted by aspects mentioned in the table such as; the rocky or hilly terrain, density of households, clustering and material choice. All these factors impact negatively on electrification costs as one experiences all these extremes in rural areas. The table estimates these costs to be 60% of the total costs of bringing supply to a household. Due to the factors peculiar to rural areas such as low settlement densities and a traditional clustering of homesteads, reticulation costs could be adversely affected thus compounding the problem of supplying fewer households using on average more material per household.

The table also refers to “MV-LV Transformers” as part of low voltage reticulation and being affected by the same factors described under that section. It most importantly refers to settlement density as it affects the number of household connections per transformer. Again low density and traditional clustering of rural homesteads mean that fewer households can be served by one transformer thus increasing costs. In the design of ADMD and the load factor it becomes important for one to understand that these are determined via estimated usage of electricity by these customers. The load for a particular area is affected by affluence of an area, that is, affordability threshold of individual households to purchase electricity appliances and also electricity.

The item “High voltage bulk supply line” contributes 8% to the total cost of electrifying. It refers to link lines or backbone that links an un-electrified area to those that already have electricity. In a typical urban supply it is sometimes not necessary but in a rural context longer link lines may be as far as 50 kilometres from the nearest supply. In this particular case construction of such a line is absolutely necessary to feed these areas and the cost ratio goes above the norm of 8% mentioned in the above table.

The other items associated with costs to supply, that have been mentioned in the table comprise of “medium voltage local distribution” and “medium voltage grid extensions”. The former refers to proximity between household clusters to be traversed by these lines and the latter to the number of households to be electrified per square kilometre. All these items contribute negatively to electrification costs in the rural areas. These two items contribute 5% and 4% to the total electrification costs respectively.

The last line item referred to in the table is “labour and consultants fees” which are included in the electrification costs. This often refers to external consultants and contractors or internal Eskom staff such as project managers, design engineers and construction personnel. This last line item is critical in the management of electrification projects and to ensure project milestones are reached at appropriate times and cost-effectively by utilising and managing the allocated resources. Consultants and contractors, however, have to tender for these projects and rigorous processes are undertaken by Eskom to choose the preferred supplier in line with market benchmarks and inflation.

In terms of the Eastern Cape provincial context, the province is regarded as one of the poorest in the country and this has prompted special development attention and intervention by the government (DBSA Operations Evaluation Unit, 2004). The poverty in the province is exacerbated by the fact that its rural hinterland is huge and was an integral part of the former Transkei and Ciskei homeland systems (DBSA Operations Unit, 2004). Around 70% of households’ income is approximately R1500 per annum, meaning that majority of these households are exposed to poor socio economic living conditions (DBSA Operations Unit, 2004).

In terms of provision of basic services a slight increase in access to electricity was registered between 1996 and 2001; the period between the two Censuses (DBSA Operations Unit). In this period it had moved from 32% to 50% respectively (Census, 2001). In the same period

unemployment was registered as between 55% - 60%, which was the highest in the country (DBSA Operations Unit, 2004). In terms of this assessment more than half of the labour force could not be absorbed by the formal economy and this situation is even worse for those who reside in the rural areas (DBSA Operations Unit, 2004). The Development Bank of Southern Africa (DBSA) conducted the above impact assessment due to the fact that it, in partnership with Agence Francaise de Development (AfD) funded certain electrification projects in the Eastern Cape between 1996 and 1998 via an investment loan made to Eskom (DBSA Operations Unit, 2004). Projects funded in this manner were a mixture of rural, peri-urban and urban and were funded to a total tune of R43 670 000 of which R30 829 000 was from Agence Francaise de Development (DBSA Operations Unit, 2004).

Servicing rural electrification and rural prepayment electricity customers in particular is a recent phenomenon in Eskom. Eskom historically has been a provider of bulk electricity to big customers like the mines, the licensed municipalities (licensed to distribute electricity beyond the bulk point) often referred to as re-distributors, and the railways. Often the smaller municipalities due to lack of resources could not extend electricity networks to all their constituencies especially rural areas and farmlands. They could only supply up to a limited distance from their bulk supply points meaning only those customers closer to the central business district would be supplied. Other smaller distributors could not even extend these networks to their areas of jurisdiction. Where these distributors of electricity could not supply, Eskom would take over and supply often at a cost in terms of maintaining those networks. Most of these remote supplies included some industrial activity or agricultural-linked industrial activity and also national strategic points like dams and reservoirs. These supplies would also include small-scale commercial and mining concerns but exclude pure household supplies due to lack of financial viability of making available and servicing such supplies.

The aftermath of electrification is servicing customers thus created and this is where the quality of service and customer care issues emanate from. The nature of problems in the rural household prepayment category of customers that seems to be common regardless of geographical area as reported in DBSA's impact assessment study are; access of and distance to vendors to purchase prepayment tokens, affordability issues, length of time to process new supply applications, reporting of faults to the Eskom call centre, problems with inserting electricity tokens into prepaid meters, weak electricity that goes off at the slightest wind or rain, length of time to restore power after a fault and accurate communication for power outages due to network maintenance (DBSA Operations Unit, 2004).

1.2 EVOLUTION OF CUSTOMER SATISFACTION

As recently as 1994, Eskom has been measuring satisfaction on important issues to customers (Eskom Annual Report, 2003). The objective of customer perception measurement has been to guide development of appropriate action plans to improve the service (Eskom Annual Report, 2003). A customer satisfaction score-card on all customers is kept to arrive at a Customer Service Index (CSI) score for each Eskom region (Yanelisa, 2005). The data to populate this score-card are from an independent survey tool, called Enhanced Maxicare, conducted on a monthly basis on all Eskom customers including urban/rural household prepayment customers. This tool measures perception of customers that have been receiving electricity for longer than six months on a monthly basis (Eskom Annual Report, 2003).

Prepayment household customers as a category are a separate entity from the category of households using a conventional credit metering. The CSI score per region is linked to financial reward for each region at year-end and determines percentages that each region will receive from a pre-determined bonus pool (Yanelisa, 2005). The lower the CSI score overall for a region the smaller the slice that region will claim from that bonus pool. This compels each Eskom region to look at the satisfaction of its total customer base regardless of which categories of customers contribute towards favourable income for that region. This tool reflected the scores of household electricity prepayment customers in general from the Southern Region of Eskom, where this study will be conducted. In 2005, an average score of 69% was achieved against a predetermined benchmark of 80% to 100% regarded as an acceptable level of satisfaction (Yanelisa, 2005). These scores display a general level of dissatisfaction trend with Eskom service for this category of customers as measured by this tool. Among other things, dissatisfaction stems from a range of problems like; unreliable supplies where faults in the network are caused by light rain, lightning etc. which is ascribed to weak designs of network which are perceived as an attempt to minimise costs in order to connect more people (Cowan, 2003). However, one is quick to add that these surveys are conducted telephonically and may bias the results towards urban household prepayment electricity customers. Challenges of telecommunications and difficulties of access in rural areas may be the main possible causes affecting adequate rural representation in samples used for these surveys.

The above factors, coupled with the fact that rural household prepayment electricity customers have been a growing customer base for Eskom due to the rolling electrification programme, presents a compelling case to study them. In the customer database 507905 customers are household prepayment electricity customers out of 533944 total customers for Southern Region.

(Eskom Sales and Revenue Forecasting, February, 2005). The first step in the process of attempting to satisfy customer needs is to survey those needs to determine what they really are from a customers' viewpoint (Bluestein et. al., 2000).

Determining first what the customer wants equips any marketer with knowledge about its customers and seems to support the notion that if companies leave customers with problems or questions, some competitor will answer them (Vavra, 1997). This would not necessarily be the case with either Eskom or the industry due to lack of competition in jurisdictional licensed areas. However, the value of dealing with customer problems impacts on Eskom's image and relationship with all its customers. In an extended gaps model (Zeithmal et. al., 1990), suggest that an organization's gap in their planning to satisfy a customer is a function of the gap between customers' expectations and perceived service quality. In the rural prepayment household environment this view supports knowledge about first knowing expectations of these customers in terms of current Eskom service before putting strategies in place to improve or satisfy them.

Modern business regardless of where it is situated in the world and whether publicly-owned or privately-owned thrives mainly in situations where it is in control of its destiny. The larger part of this destiny is a focus on its customers, what their expectations and perceptions are about quality of service and how to satisfy them in order to retain them and expand that base. Businesses continuously adapt their processes and systems by aligning them to serve the customers better in order to gain a competitive advantage. A prerequisite, however, to alignment of processes is the knowledge of what customers want and expect from a service provider and this is often misunderstood by management (Bluestein et. al., 2000). The down side of this misunderstanding is inaccurate assumptions made by company executives about what customers want, thus leading to the building of models that are out of synch with what customers require (Financial Mail, October 27, 2000).

Eskom as an organization requires an assessment of its existing customer base from time to time, and hence electricity and it's related services need to be evaluated with regards to the extent to which they meet customer expectations. Customer satisfaction as argued by Fornell et. al., (1996) is determined by what he calls perceived quality, perceived value and customer expectations. These are what Fornell terms antecedents of customer satisfaction with consequences being customer loyalty or customer complaints. In this context, Eskom should be attempting to influence the antecedents of customer satisfaction for its service, that is, enhance perception of its quality offering by meeting customer expectations. Fornell et. al, also believed

that perceived quality is based on prior experience and that any comparison is based on that experience. Once these are enhanced, perceived value in the eyes of customers regarding Eskom's service will be affected. Overall customer satisfaction of rural customers may be positively impacted thus increasing trust in the services offered. These desired effects presuppose knowing exactly what customers perceive about Eskom service quality and their expectations of that service. These two; customer perceptions and expectations have to be measured before one can be certain about what to address in terms of satisfaction or dissatisfaction of service quality or put differently, which interventions to implement to improve quality of service and satisfy customers.

Measurement of customer satisfaction has been identified by various authors as being difficult (Zeithaml and Bitner, 1996) and Vavra (1993). Zeithaml and Bitner (1996) identified three key aspects of measurement:

- (a) key predictors of satisfaction, that is, specific aspects of service with the largest impact on satisfaction;
- (b) consequences of satisfaction, that is, positive and negative expected outcomes of satisfaction and
- (c) overall satisfaction measures that merely look at satisfaction of a range of services offered by the firm.

Deng et al., (2003) argue that instruments used in measurement require equivalent measures across national cultures to eliminate questions of whether the results represent true differences due to culture or the fact that there is just a cultural bias in measurement. In relation to this study, a homogeneous population of study has been chosen to eliminate the language and cultural bias problems mentioned here.

The rural prepayment customer type has not been formally studied by Eskom partly because of the reasons stated and partly because of the poverty in these rural areas where affordability even for basic necessities is a challenge. A tendency has been for Eskom to survey those customers that can be serviced cost-effectively and contribute a larger percentage to its revenue base. It can be said that the need to do this research is related in part, to humanity's compulsion for improvement and ultimately growth (Remenyi, 1996). In this context in particular, the aspect of satisfaction of rural prepaid electricity household customers is a call for improved performance by Eskom (Remenyi, 1996). The issues widely mentioned as concerns from this category of Eskom customers by many authors and word-of-mouth in meetings, necessitates an in-depth study. These concerns, although not peculiar to only rural customers, deserve attention because

of their severity and frequency in a rural setting. While other categories of Eskom customers such as industrial, commercial and redistributors of electricity do experience these problems, in the rural household prepayment category little has been done and no formal research has been conducted to date.

It can be said that this category of Eskom customers is not well understood by management and thus no proper processes tailored for it have been designed. The scale and speed with which these customers have grown into an Eskom database surpasses all other customers and thus no concerted effort to date has been done to study it. It is not surprising then that due to changes in business processes and emphasis that it is imperative that this post-electrification service to these customers be considered.

1.3 RESEARCH QUESTION

The following research question offers a framework for evaluating satisfaction of customers with the current service, and it further emphasises the importance and need for the research as argued above.

The main overall question is: Is there a significant difference (gap) between electrical services provided by Eskom as perceived by its rural household prepayment customers and the expectations of these customers? Based on the SERVQUAL model this research question is broken down into various sub-questions.

1.3.1 Research question 1

Are Eskom electricity's rural household prepayment customers satisfied with the quality of service they receive. This is concerned with ascertaining the extent to which rural household prepayment customers are satisfied or dissatisfied with the service they are receiving from Eskom.

Eskom is a licensed distributor of electricity and conditions of its licence are the provision of electricity to its licensed area and operating and maintaining the assets thus created. This conditionality is based on all customers supplied by Eskom including those that are either subsidised through a programme like electrification or self-funded, to receive a fairly constant supply of electricity. The grantor of areas of supply to Eskom and other distributors of electricity like the licensed municipalities is the National Electricity Regulator of South Africa (NERSA). NERSA also regulates standards of the quality of supply by licensed distributors based on a set of criteria that also compels customers to adhere to certain requirements (NER,

2002). The bulk of electrification customers and rural prepayment in particular are in Eskom's licensed areas and by implication where most supply problems are located.

Electricity is an intangible service and its quality affected by the weather elements like storms, winds and floods. Rural customers however, are vulnerable to these elements due to the nature of their networks, that is, rural networks with long spans of line traversing miles of open space. The installed electricity asset like a cable, transformer, a meter, conductor, insulators etc. can also malfunction in the field thus impacting on the quality of supply provision. These factors are well understood by the customers and the regulator but tolerance standards in terms of restoration of supply after a fault have to be managed. Each distributor is obliged to minimise such interruptions especially if the fault is not on the customer's side either by the fact that the customer has possession of equipment that may cause or enhance these interruptions or exceeding the available limit of his contracted installed capacity. Also a number of interruptions of certain lines are monitored and Eskom needs to make submission of these to NERSA as per their licensed conditions (NER, 2002).

Electricity supplies being a regulated environment, customers do have recourse in law when they are unhappy with services from their supplier. On taking supply, customers sign supply agreements with their supply authority and these stipulate both parties' responsibilities and accountabilities. NERSA is also another vehicle customers could use when in dispute with the supply authority and NERSA plays a mediating role between the two parties (NER, 2002). The nature of a supply licence is such that within a jurisdiction of a licensed area no other distributor can operate in that same area thereby affording monopoly of areas of supply to licensed distributors.

In a competitive environment an industry will be looking at competition as a driver of levels of satisfaction thereby as Vavra (1997) says, one would look at customer retention. In the electricity distribution industry as already explained this would not be the case as there are no competitors and hence the customer is likely to be retained until a reasonable alternate source of supply becomes available (Vavra, 1997). One would say in a monopolistic situation like the electricity industry one still needs to look at service quality in view of impending changes in this environment, like the creation of independent Regional Electricity Distributors (REDS). This is restructuring of electricity distribution where entities like municipal electrical engineering departments will merge with Eskom Distribution to form these REDS. This move by the government is seen as a precursor to introducing competition in the electricity distribution

environment. One would say such changes are in keeping with growing globalization and increased competition and thus it is important for individual distributors to improve service quality.

It is important that in spite of the electricity industry situation where there is lack of competition and a lot of government regulation that all distributors satisfy their customers with their service. This view is supported by a statement by (Levitt in Lele & Seth, 1987:3) that “an industry is a customer satisfying process, not a goods-producing process, is vital for all businessmen to understand”.

1.3.2 Research question 2

How important do electricity's household rural customers rank each of the constituent elements of Eskom's electricity service.

It becomes imperative that any organization evaluates how they provide service to their customers by talking to the customers themselves. In obtaining these perceptions it becomes important from an Eskom viewpoint and from this study in particular to first establish what elements of service such as power loss restoration, response to meter failures, convenience of prepaid vending, and availability of prepaid tokens, outage notification, and timing of new connections are considered critical for these customers' satisfaction. It is also important that these customers rank these elements in order of importance before they express an opinion on them. The tool that has been used to ascertain how customers perceive current performance, the Maxicare tool mentioned previously, unilaterally decides which dimensions are important for customers. In this manner it is difficult to establish what a priority from a customer's viewpoint really is and this is why a survey of these perceptions on a one-on-one, face-to-face basis is important. This is a viewpoint that this study would take seeing that it has never been done before.

1.3.3 Research question 3

How do rural household prepayment electricity customers' perceptions of actual service received compare with their expectations of what they should receive? (Mququ, 2006). This question ascertains these customers' expectations of service and compares them with their perceptions of Eskom current service to identify gaps in how the service is provided.

In the past, an attempt was made to have compliments/complaints boxes in all area offices of Eskom in order to obtain these for analysis as these were walk-in centres to which customers go

to. This exercise has never been effective mainly due to the rural consumers' level of literacy, sending of minors to these centres and lack of resources from the company's side to manage this aspect. Rural customers' expectations of electricity service emanate from the level of service they experience in urban areas in their places of employment and also where some live and work and on vacations go back to their rural homes for family and cultural gatherings. Sometimes what they see in captive media, for an example on television, that is, the glamour, sophistication and prosperity in urban areas creates that desire and compels them to heighten their expectations of what they should be receiving. The research will identify gaps between these two aspects; perceptions and expectations along the same dimensions or elements considered critical by customers. As a result of these gaps having been identified, it is hoped that meaningful interventions can take place. As Lele and Seth, (1987) put it, satisfaction of a customer with a product or service depends more on their expectations and on their perceptions of performance than on the actual, measurable quality of the product or service itself.

1.3.4 Research question 4

What action steps should Eskom take on the evidence of identified gaps in the provision of the service? Recommendations of appropriate interventions to eliminate gaps, to increase and enhance customer satisfaction of rural household prepayment electricity customers, can then be made.

The interventions required to change the status quo in how these customers are serviced rests on the identified service elements. Clearly, the biggest gaps should be closed first. It will be imperative to look at the causes of these problems and identify solutions by putting processes in place to eliminate them or modify existing processes to talk to these problems. Currently Eskom has a workgroup that looks at service to prepayment customers in general. Primarily it looks at how this service affects internal processes and how internal processes affect service to these customers, as well as how these customers access vending points for buying of electricity tokens. This workgroup looks more at an administrative aspect of Eskom business in as far as it affects service to rural prepayment customers. This is an attempt to streamline internal processes on what is important to customers about the quality of the service delivered. It goes further to look at how the technical aspects impact on quality of service to those customers. These technical aspects take the form of the restoration response time taken by Eskom following an electricity outage or supply interruption, frequency of interruptions and meter replacements when reported faulty. All these technical issues are viewed in terms of predetermined sets of standards of performance.

CHAPTER 2: LITERATURE STUDY

2. LITERATURE REVIEW

Customer satisfaction has been identified in marketing theory as being part of and central to the marketing concept. Customer satisfaction has, however, been identified by theorists and researchers as having many and varied interpretations. Literature on the subject of satisfaction in general and customer satisfaction in particular will reveal how comparative these concepts are from both a theoretical perspective and an applied business practice. Definitions of customer satisfaction will focus more in the context of a business enterprise rather than on a larger national macro-economic perspective.

The nature of the concept of customer satisfaction and how it is measured does warrant review of and further discussion (Stewart, 2001). At this juncture it will be particularly important to zoom in on the critical factors impacting on how Eskom Distribution conducts itself in meeting and perhaps exceeding customer expectations of its service. The SERVQUAL theory with its emphasis on its gap model of service quality will be discussed in the context of the electricity distribution industry and also as applied in evaluating Eskom service which is the subject of this study.

2.1 DEFINITIONS OF CUSTOMER SATISFACTION

Customer satisfaction is described as an “outcome” or a “process” where the “outcome” definition emphasises an end state after consumption and the “process” definition stresses a series of ongoing perceptive, evaluative and psychological thought processes that contribute to satisfaction (Yin, in Vavra 1993). Traditional marketing theory supports the latter definition as it interprets buyer behaviour as a consequence of psychological influences or factors such as perception, motive, learning, attitudes and personality (Ferrell and Pride, 2000). This process view of satisfaction has merit in that instead of perceiving a customer as a passive post-evaluative consumer it realises that a lot of factors and their analysis is done pre, during and post purchase of a product or service. This process view of satisfaction is also endorsed by Ferrell and Pride (2000) as relevant in that it helps the consumer eliminate confusion by establishing what is familiar with the service or range of services to satisfy him.

Oliver (1997) in a move away from a literal meaning of satisfaction that purports that there is no psychology of satisfaction but simply a response to good or poor product/service performance, proposes his own definition. He believes that satisfaction is a response of fulfilment by a

customer and that it is a judgement that a product or a service feature, or the product or service itself, provides a pleasurable level of consumption-related fulfilment (Oliver, 1997). By implication he refers to pleasurable in his definition as meaning that fulfilment creates or increases pleasure, or reduces pain as in the removal of a life threatening problem (Oliver, 1997). He also contends that dissatisfaction is also a factor in the satisfaction definition continuum as, although no definition is warranted but displeasure and under-fulfilment can lead to dissatisfaction (Oliver, 1997). He also contends that fulfilment may be desirable up to a point and if that point is exceeded it may result to unpleasantness as in the case where one overdoes things to a point of undesirable effects like over-eating (Oliver, 1997). All these points are raised in order to understand the satisfaction process from how it is conceived, logically argued and finally drawing its conclusions (Oliver, 1997). Oliver also dispels the myth of a simplistic and naïve description of satisfaction as mere fulfilment with a product or a service and supports the notion that satisfaction is complex and is subject to a lot of other factors that are physiological and psychological in nature (Oliver, 1997).

Other definitions have emerged as customer satisfaction evolves into one of the major focal areas for setting up and running a business. Bitner and Hubert; Oliver; in (Schinjs, 2003) describe customer satisfaction as relation specific, that is, it is a cumulative effect of a set of discrete service encounters or transactions with the service provider over a period of time. It is then clear when considering this definition that customers evaluate service and formulate a perception based on a number of experiences. It is also clear that consciously or unconsciously that a relationship develops as these experiences of service continue. Marketers as a consequence need to exert influences on the customer through consistent quality of service in order to retain their patronage.

Mittal et al., in Koskela (2002) notice that although satisfaction is a subjective factor dependent on the level of customer knowledge about a product or service gained through use and encounters, satisfaction is also a function of the level of sophistication of consumers. This view seems to concur with the fact that consumers of durable goods take a long term view of these experiences and become very knowledgeable about a product or service over time (Helfert et al., 2002). Customer satisfaction in this study deals with a mature type service and hence an experiential response to service quality will be sought.

Other theorists believe that customer satisfaction is influenced by individual customers' perception of service performance in the areas of quality, equity and value (Crosby and

Stephens, 1987), (Fornel et al., 1996) and (Zeithaml, 1988) in Kenelly and Hellier (2001). Following this view, (Anderson and Sullivan, 1993); (Bolton 1998) and (Selles, 1998) in Kennelly and Hellier (2001) conclude that the degree of satisfaction experienced by the customer positively affects the individual's judgement about acquiring products or services again from the same company. This view seems to impact on repeat purchases and customers' loyalty to the company's products and services.

In economic theory the issue of satisfaction is described by looking at what a household will do based on its wants that are governed by its budget and its choice of taste (Lipsey et al., 1999). This macro view of satisfaction differs to the micro perspective as it looks at individual households or firms as a unit of analysis rather than to an individual customer. This view also looks at the description of satisfaction on a premise that all micro analysis on the basis of individual customers has been taken care of and hence excluded from an economic viewpoint. This is due to the economics' broader definition of satisfaction, that of looking at satisfaction of an individual household (Salvatore, 2004).

2.2 CONCEPTS OF CUSTOMER SATISFACTION

The following theories of satisfaction will provide different perspectives on how to look at the satisfaction concept and how the preceding discussion on the subject is further reinforced or challenged. These different perspectives will also further demonstrate how the definition of customer satisfaction cannot be superficially viewed if it has to be thoroughly understood. Also service quality and customer satisfaction will be used interchangeably to describe satisfaction of customers with a product or service.

2.2.1 Contrast theory

The contrast theory of service quality is premised on the fact that any discrepancy between what is being experienced and what is expected follows the direction that there will always be a discrepancy (Vavra, 1997). In this theory, expectations are the focal point regardless of their origin. These expectations would be derived from either promises made in the mass media on the benefits of a product or service or word-of-mouth from early adopters or opinion formers. Products or services that perform slightly less than expected either through a trial purchase or wholesale use will be rejected as totally unsatisfactory (Vavra, 1997). Conversely, Vavra (1997) says under-promising in advertising but over-delivering in service quality will lead to an exaggerated positive disconfirmation.

2.2.2 Hypothesis testing theory

This theory entails a two-step model for satisfaction generation (Deighton in Vavra, 1997). The first hypothesis says pre-purchase information impacts greatly on expectations about products and services customers will eventually acquire and use (Deighton in Vavra, 1997). Other information would be from persons whose opinion the customers value either because of their vast knowledge about products and services or because they are early adopters and leaders in embracing new technology. This view also suggests that customers use their experience with products or services to test their expectations (Vavra, 1997). The second hypothesis according to Deighton as cited in Vavra, 1997 asserts that customers will tend to attempt to confirm rather than disconfirm their expectations. This theory is of the view that customers have a positive bias in confirming their product or service experience (Vavra, 1997). This creates an optimistic view of customers and how to market to them based on this assertion (Vavra, 1997). Having made the purchase the customers will want to reinforce their purchase by convincing themselves of having made the right choice otherwise negative dissonance creeps in.

2.2.3 Catastrophe theory

This theory of customer satisfaction is said to compare varying degrees between varying degrees of involvement with the product or service with differences in satisfaction (Oliva et al., 1995). The proponents of this theory believe that at low levels of involvement with the product or service there seems to be a direct relationship between influences caused by the comparison between expectations and perceptions of actual performance with a customer's behaviour towards that product or service (Oliva et al., 1995). This low level of involvement simply means that the ease of switching to other products or services is apparent when there is a discrepancy between comparisons of expected performance to perceived actual performance. This discrepancy is defined as expectancy disconfirmation, commonly a comparison of what is expected to what is actually observed (Oliva et al., 1995). On the other hand, the high level of involvement means that the relationship between the customer and the product or service is more intense and deep, eliciting no fluctuations over a range of observed performances (Oliva et al., 1995). In terms of this theory, if a marked decline is perceived between expectations and the perceived actual performance, sudden abandonment of a product or service in favour of a competitor occurs (Oliva et al., 1995). It is further said that if this abandonment occurs, no purchase of the same will occur even if the product or service improves unless a huge benefit will result in doing so (Oliva et al., 1995).

2.2.4 Expectation confirmation theory

Expectations-confirmation theory advances that expectations, coupled with perceived performance equates to post-purchase satisfaction (Oliver, 1980). This theory, though distinguishes between positive and negative disconfirmation of expectations and performance (Oliver, 1980). According to this theory, if a product or service outperforms expectations (positive disconfirmation) post-purchase satisfaction will occur (Oliver, 1980). If however, a product or service falls short of expectations (negative disconfirmation) the consumer is likely to be dissatisfied (Oliver, 1980; Spreng et al., 1996). The result of positive and negative disconfirmation is either satisfied, loyal customers or dissatisfied unhappy customers ready to switch to alternative services or competitors. Due to the nature of the electricity industry in South Africa where each distributor has a sole distribution right in its licensed supply area all electricity customers have no choice to switch to an alternative supplier but have a recourse in the form of the electricity regulator, NERSA.

2.2.4 Dissonance theory

Applying Festinger's theory of cognitive dissonance to affirmation and disconfirmation of expectation one concludes that customers might try to eliminate any dissonant experiences of any inferior service (Vavra, 1997). According to this theory a customer experiencing lower performance than expected on a product or service that he is heavily involved in, might mentally work to minimise the dissonance by either lowering his expectations or in positive affirmation increase the perception of performance (Vavra, 1997).

Applying this theory to practice, one distinguishing factor is the high level of involvement of the customer with the product or service as mentioned in the catastrophe theory. This means that instead of switching to alternative products or services the customer psychologically adjusts his expectation of performance to soften the impact of adverse experience of current performance.

All these theories have a common thread going through them, and that is expectations and perceptions are core to fulfilment and ultimate satisfaction with a product or a service. The customers, besides regarding service as either bad or good have a psychological motivation to satisfaction of products or services and these theories have exposed that fact. The performance of the company in meeting its customers' expectations is also a key determinant of how those customers judge that particular company. The definition and theories of satisfaction have put an emphasis on the importance of experience with the product or service and how it impacts on the customer's decision-making process. Marketers will be evaluating these customer decision-

making processes in order to position their products or services. In the case of rural prepayment household consumers it is clear that experiential encounters with the electricity service are evaluated against a set of expectations. It is also important that expectations of the service are first determined before embarking on perceptions of quality of current service by these customers.

2.3 CUSTOMER SATISFACTION MEASUREMENT

Customer satisfaction has been described by various authors to be a difficult concept to measure. Zeithaml and Bitner (1996) identified three key aspects of measurement in developing their service measurement strategy. These are *key predictors of satisfaction*, that is, specific aspects of service with the largest impact on satisfaction, *overall satisfaction* measures – satisfaction with total company offering and *consequences of satisfaction*, that is, positive and negative expected outcomes of satisfaction (Zeithaml and Bitner, 1996).

Vavra (1997) also highlights the difficulties of measuring customer satisfaction. One misconception that he regards as problematic is the assumption that an organization knows what to ask customers in order to measure their satisfaction (Vavra, 1997). He emphasises that an effective customer satisfaction survey is a function of balancing internal operational issues with external issues focused on customer needs (Vavra, 1997). Martin (1990) concurs with the litany of opinion that support going out to customers to find out what would be the most important factors for their satisfaction with a product or a service. He proposes that for one to understand customer needs one needs to know the timing and requirements for quality customer service (Martin, 1990). The importance of knowing the requirements for quality service helps in focusing on those requirements instead of implying them and the timing of quality service is important because of perishability of service, that is, service cannot be stored. Once questions on satisfaction have been explored with customers, then the survey design to measure satisfaction has clear guidelines (Scott, 1991). Scott (1991) emphasises this point by saying that one needs to set targets for the company on scores relevant to keep the customers happy.

Deng et al., (2004) on the other hand question evaluations used to determine customer adoption, consumption and the assessment of the ability of products and services to provide satisfaction. They argue that instruments used require equivalent measurement across national cultures, that is, verification of why each group would adopt and consume certain services or products (Deng et al., 2004). Deng et al., 2004 also argue that if these equivalent measures are not implemented results thus obtained may be viewed with caution due to uncertainty whether they represent true

differences due to culture or merely a cultural bias in measurement. These are measurement questions that are fundamental in our South African context but this study is only concentrating on a homogeneous social group that is unique and shares a similar cultural orientation. In the particular geographic area of the study; ethnic orientation, language, rituals and symbols are the same and hence differences due to culture will be avoided in evaluating buying behaviour. Models used for measuring customer satisfaction are discussed briefly below to arrive at conclusions regarding their merits and demerits in determining true measures of satisfaction.

2.3.1 The Kano model

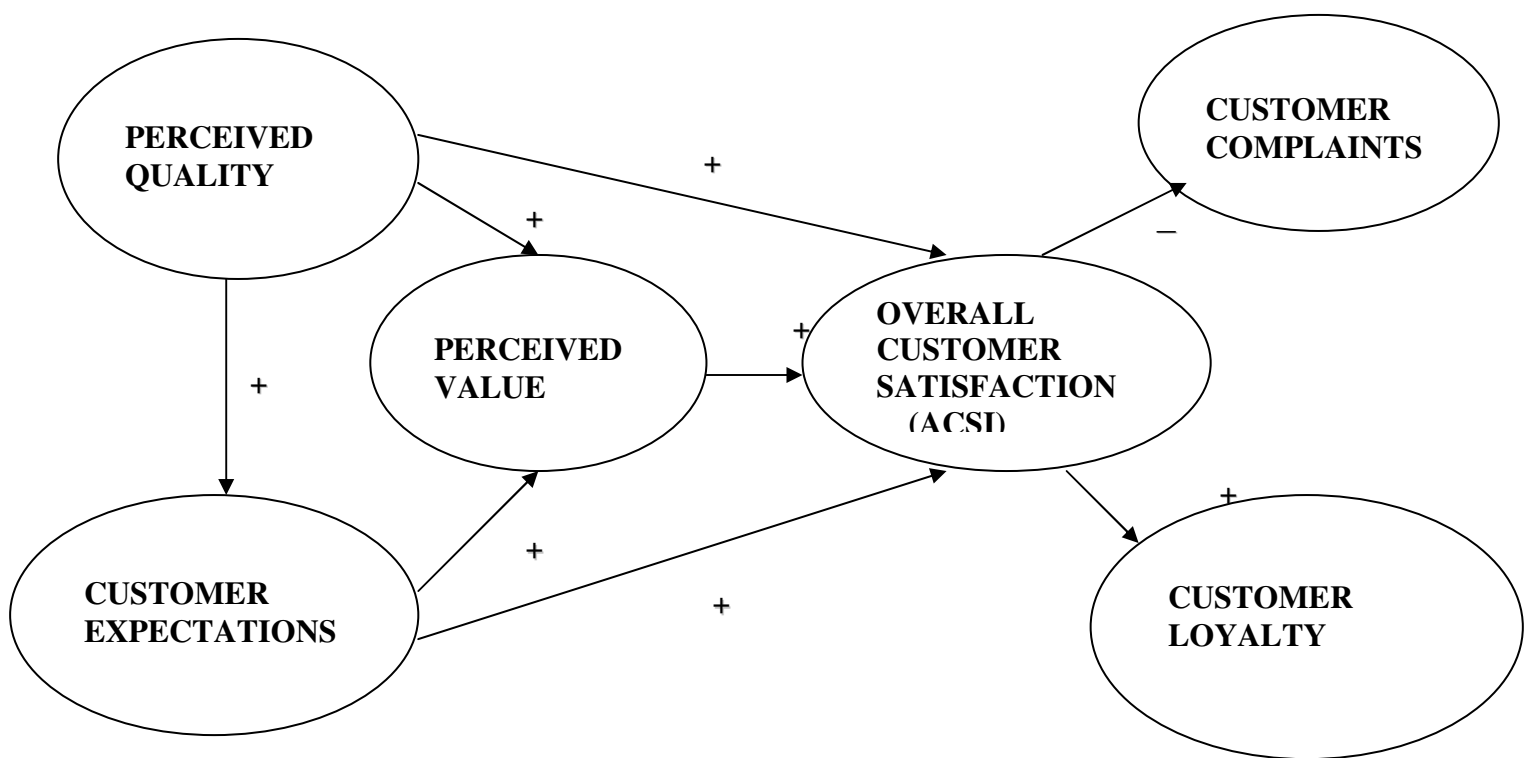
“Kano’s model of customer satisfaction is a quality management and marketing technique used in measuring customer happiness (<http://www.methods/kanomodel.html>; 27/07/2005). It is a model useful for deciding which features you want to include in a product or service and puts emphasis on how best to delight a customer by developing features that will appeal to that customer (<http://www.mindtools.com>; 26/07/2007). It distinguishes six categories of quality attributes three of which influence customer satisfaction (<http://www.methods/kanomodel.html>; 27/07/2007).

The features that influence customer satisfaction are basic/threshold attributes, performance factors and excitement factors (<http://www.methods/kanomodel.html>; 23/07/2007). Threshold or basic factors are the minimum requirements that, if not fulfilled by the product or service, will cause dissatisfaction but which, on the other hand, will not cause satisfaction if they are fulfilled or exceeded (<http://www.methods/kanomodel.html>; 27/07/2005). It is said that the customer regards these as prerequisites and take them for granted (<http://www.methods/kanomodel.html>; 27/07/2005). Secondly, performance attributes are said to be factors that cause satisfaction when performance is high and dissatisfaction when it is low (<http://www.methods/kanomodel.html>; 27/07/2005). Excitement factors are factors that increase satisfaction if delivered but no dissatisfaction when they are not delivered as customers do not expect them but are delighted when they find them (<http://www.methods/kanomodel.html>; 27/07/2005). The additional three attributes making up the six in the Kano model are; indifferent, questionable and reverse attributes (<http://www.methods/kanomodel.html>; 27/07/2005). These three attributes are self-explanatory and they are (a) features the customer does not care about, (b) unclear whether it is expected and (c) the reverse of this feature was expected by the customer respectively.

2.3.2 National centre for quality research (NCQR) model

This method consists of a system describing relations among six constructs namely, perceived quality, customer expectations, perceived value, customer satisfaction, customer retention and customer complaints (Stewart, 2001). These constructs are each measured using a multiplicity of questionnaires to get more precision (Stewart, 2001). The data to validate these constructs is analysed using partial least squares modelling and produces a customer service index that has a high correlation with customer/client repurchase intention and price tolerance (Fornell et al., 1995). This methodology is said to be flexible in use between micro and macro levels of economic activity and its macro manifestations are the Swedish Customer Satisfaction Barometer and American Customer Satisfaction Index (Fornell et al., 2005). Consequently it is said to be a national measure of how well or bad companies and industries service their customers (Fornell, 1992). In its micro application, emphasis is more on measurement of variables impacting on customer satisfaction and retention of existing customers than it is on attracting new ones (Fornell, 1992).

Figure 1.1: American Customer Satisfaction Index (ACSI) Model (Fornell et al., 1996)



The NCQR represented graphically (See Figure 1.1 above) in an ACSI Model looks at the six constructs and how they affect and influence each other looking at the first three antecedents of perceived quality, perceived value and customer expectations (Fornell et al., 1996). One should look at these three antecedents which are determinants of customer satisfaction and how they

relate to consequences of satisfaction as represented by the last two constructs: customer complaints and customer loyalty (Fornell et al., 1996).

In terms of the diagram above the first antecedent, perceived quality/performance is a measure of the very recent evaluation of consumption experience by the customer base which would have a direct impact on overall customer satisfaction (Fornell et al., 1996). What is measured here is how the product or service is adapted to meet different needs of customers and the extent to which it is reliable in use or consumption, standardised and how it delivers on quality for expected attributes (Fornell et al., 1996). Although this determinant of customer satisfaction measures the recent perceptions of quality it is by no means saying the cumulative experience is irrelevant and the transactional experience more relevant (Fornell et al., 1996). What it means is that since this is a continuous survey, it has already taken into account previous scores and reflects it in its trend (Fornell et al., 1996).

The second antecedent, perceived value, measures the perceived level of quality in relation to the price of goods and services purchased (Fornell et al., 1996). This use of value judgements to measure performance takes into cognisance differences in income and discretionary purchasing power across respondents (Lancaster in Fornell et al., 1996). This enables the model to compare satisfaction with high and low priced products and services (Fornell et al., 1996). This distinction seems to support Gabarino and Johnson in Malthouse et al., (2003) when they considered segments in the customer base where analysis was made of different roles played by satisfaction between what they call low-relational and high-relational customers. Yi & La (2004) refer to this as “desired service” – to mean expectations that customers think they deserve taking price versus benefit fairness into account. On perceived quality the model equates an increase in perceived value with positive customer satisfaction (Fornell et al., 1996).

The third antecedent of customer satisfaction is the expectation of the customer segment being serviced (Fornell et al., 1996). According to Fornell et al., (1996) expectation means the served market’s prior consumption experience (inclusive of non-experiential information available through advertising and word-of-mouth) and a forecast of the firm’s ability to deliver quality in the future. This assertion looks at the backward and forward looking effect of expectations (Fornell et al., 1996). This model, although mentioning expectations as playing a predictive role mainly due to cumulative evaluation of the firm’s performance, they stop short of looking at satisfaction in a non-experiential sense (Fornell et al., 1996). A belief that Fornell et al., (1996)

has is that customer expectations should be positively linked to perceived quality and, as a result, to perceived value.

When one looks at the consequences of customer satisfaction, Fornell & Wernefelt in (Fornell et al., 1996) believe that results of increased customer satisfaction are a function of decreased complaints and increased customer loyalty. One should be cautious though, as Fornell et al., (1996) put it that the decrease in complaints should not be readily attributed to customer satisfaction. It should however, be understood that there are options that are available to disgruntled and complaining customers in the form of competitors (Fornell et al., 1996). This translates into fewer complaints but no customer satisfaction (Fornell et al., 1996). Looking at the diagram above one sees both negative and positive feedback to the business as reflected by the decrease and increase of complaints respectively. Loyalty is said to result from increased overall customer satisfaction, a precursor for profitability (Fornell et al., 1996).

The second consequence of customer satisfaction is loyalty which Vavra (1997) explains as the motivation to repurchase and to spread positive word-of-mouth about the product or service. Fornell et al., (1996) talk of a relationship between customer complaints and customer loyalty where they believe that if it is positive, then it implies success of firms and industries in handling customer complaints and to turn them into loyal customers. Accordingly the opposite is true if the relationship is negative (Fornell et al., 1996). Tellis (in Salgovicova (2000)) describe loyalty as leaning towards repeat purchase or desire of buying the same or similar brand again.

2.4 ELECTRICITY BUSINESS SATISFACTION

The electricity distribution business in South Africa cannot be said to be operating in a near pure or perfect competition due to monopolies of licensed areas of supply by distributors. The industry is fragmented into redistributing municipalities that apply their own tariffs and services according to their own standards of customer satisfaction. In terms of customer satisfaction and taking power quality as an example, the National Electricity Regulator of South Africa (NERSA) acknowledges that in an ideal world, power quality would be determined by competition but due to the nature of the electricity industry in South Africa some regulatory requirements on power quality will probably always be necessary (NER, 2002). This is due to lack of competition in the electricity distribution in South Africa where only through regulation by the National Electricity Regulator are factors governing quality and customer-care mediated. This situation is historical and came about through decisions of past governments to create an electricity industry by an Act of parliament and thereby promoting that the industry operates in a monopoly.

2.4.1 Customer satisfaction in near pure competition

Hetesi & Rekettye (2005) in their analysis of customers of an electricity distributor in Hungary deduced that price sensitivity plays an important role in loyalty to one or more suppliers. This situation compels distributors to be efficient in their operations so that this is passed onto the end-user in terms of affordable and competitive tariffs. Berry (1988) believes that customer loyalty to the end product, especially a service is based on a number of factors that are not necessarily price related but depends on the perceived competence of the company /utility by customers. Other factors causing loyalty to a product or a service include; ease of access, reliability in use if it is a tangible product or perceived consistency in acquiring a service when it is required and convenience.

Hetesi & Rekettye (2005) also noted in their analysis that issues like widening of the offer, simpler administration and better information were less attractive for the Hungarian customer and as a result, any promise made in the direction of these will gain the distributor very little in terms of market share.

2.4.2 Determinants of satisfaction

The following factors are said to be playing a critical role in satisfaction of customers of an electricity supply industry whether under a pure competition or monopolistic competition.

2.4.2.1 Power quality

Power quality is a factor according to NER (2002) that is a basis for a directive compiled by the National Electricity Regulator in South Africa. According to this directive, although power quality performance of licensed distributors should match quality expectations of its customers, the consumer has to ensure compliance of equipment to be used within a specific supply environment (NER, 2002). The relationship between the supply authority and its customers is governed by certain agreements that have to be adhered to by both sides and include, among other things, power quality provisions (NER, 2002). These power quality provisions take into cognisance what the network can deliver and how the customer may impact other customers supplied from the same network (NER, 2002). In a typical distribution utility it is expected that quality supply agreements should be backed by connection agreements that will specify technical requirements of equipment of both parties (NER,2002).

In power quality management, NER's specific role is in three areas, these being

- (a) Specification of a national framework for utility power quality management,
- (b) Consultation and (c) Operational activities (NER, 2002).

- a) Specification of a national framework for utility power quality management puts into perspective minimum requirements/responsibilities of utilities and associated expectations/responsibilities of electricity customers, equipment suppliers and standards bodies. Adherence to this framework by utilities forms part of licence requirements (NER, 2002).
- b) Consultation – facilitating consultation between utilities, customers and equipment suppliers (e.g. NER Power Quality Advisory Committee). As a neutral party with interest of both customers and utilities, the NER is well suited to this role (NER, 2002).
- c) Operational activities – these are activities arising as a result of Power Quality management framework and the coordination and licensing role of the NER (NER, 2002).

It is evident that customer satisfaction of electricity customers will be tied closely or will be a function of these three specific areas. Power quality is only part of the standards of performance impacting on total satisfaction of electricity services. Customers large and small owe it to themselves to be aware of these standards of performance of utilities as governed by regulation and also their rights to shape their own behaviour accordingly.

2.4.2.2 Service quality

Service quality in the electricity business is a function of price, reliability, convenience and personal interaction with the customer (American Public Power Association, June 2002). Importance of service quality is evident in the statement that acknowledges that service is any utility's primary mission, and satisfaction and loyalty of its customers its most important assets (American Public Power Association, June 2002). In an analysis of the determinants of satisfaction of a utility, service quality means providing excellent responsiveness to customers; reliability – keeping the lights burning, that is, strive to make electricity available; price – providing lower cost service than other utilities; and convenience – making it easy for customers to do business with the utility (American Public Power Association, June 2002). Personal interaction is when a utility uses surveys, focus groups etc. to learn more about its customers' needs, values and concerns (American Public Power Association, June 2002). Customer participation, on the other hand is when a company or business uses call centres or contact (walk-in) centres to service its customers (CEER, 2003). Service quality as explained here can be paralleled to “commercial” quality which merely refers to transactions between electricity companies and customers especially on encounters like connections and meter installations (CEER, 2003). Where the parallel between service quality as explained by the American Public Power Association (June, 2002) and commercial quality as explained by CEER, (2003) becomes

apparent is when classified as transactions related to conditions of distribution and supply such as information about connections to the network and prices associated with supply (CEER, 2003). Customer satisfaction related to this classification would however be connection agreements and general conditions of supply contract (CEER, 2003).

These transaction and contracts determine the utilities' performance on relevant quality factors prescribed by law and codes of good customer service (CEER, 2003). Different countries with their peculiar circumstances are said to be achieving commercial quality through use of regulation or codes, performance standards, dissemination of information to promote the quality of service including strategies to encourage participation of customers (CEER, 2003). In a typical utility, standards commonly used will be connection (supply and meter), estimating charges for simple works, meter problems, queries on charges and payments, appointments scheduling, number of meter readings within a year, response to customer letters and claims and execution of simple works (CEER, 2003). All these standards require responses from utilities in a number of days or weeks and these are set as benchmarks (CEER, 2003). These benchmarks become quality yardsticks with which to measure satisfaction of customers with a particular product or service.

2.4.2.3 Pricing of electricity services

Loyalty as a consequence of satisfaction is affected by perceived prices that customers are expected to pay for electricity especially in a near-perfect competitive environment (Hetesi & Rekettye, 2005). In South Africa's electricity distribution industry however, where individuals are price-takers in a regulated environment, it does not play much of a role, although customers do show concern when tariffs increase. The Electricity Distribution Industry (EDI) is being restructured by government into six independent Regional Electricity Distributors (REDs) nationally and although prices will still be regulated in the restructured industry, a move towards competition is being crafted (NER, 2002). The National Electricity Regulator (NER) in terms of its distribution and licensing function is also responsible for the introduction of a new economic regulatory framework and tariff system for the REDs (NER, 2002). This will ensure the current situation of a myriad of tariffs distributors apply is eliminated or at least contained.

2.4.2.4 Affordability to customers

Closely tied to electricity pricing is what customers can afford and that is at the crux of the regulation which is governed by the NER (NER, 2002). All electricity utilities service a different mix of customers and each category has unique power needs. These categories of customers are

in the case of Eskom Distribution, Redistributors; that is, municipal entities who have a licence to supply and be supplied in bulk; industrial, commercial, agriculture, traction, residential – conventional and prepaid (Eskom Annual Report, 2000). In the case of other utilities the same categories of customers except re-distributors are serviced. An example of affordability is the basic usage level afforded poor consumers which is free of charge. Other categories of customers face different tariff levels and these are closely related to their level of affordability. Although this might be the case, structural adjustments and tariff increases are from time to time a subject of evaluation and discussion between the NER and the distributing utilities (NER, 2002). What is considered fair in the charging of customers is regulated and that is linked to affordability as is determined by NER from time to time (NER, 2002).

The determinants of satisfaction of customers of electricity utilities as described complement each other rather than being mutually exclusive. To illustrate this point, satisfaction of customers is a function of information disseminated timeously about, for instance, price increases, power interruptions impacting on reliability and other matters affecting convenience and service.

2.5 ESKOM DISTRIBUTION SATISFACTION

In the preceding discussion customer satisfaction in general has been discussed. It is important, however, to evaluate how Eskom as a power utility, matches up with these criteria of customer satisfaction. Systems and processes have been adopted in the past in an attempt to improve efficiency and thereby serve the customer better. In the development of these systems and processes, Eskom decided to embark on process rather than historical functional silos where what happens within a department was critical in delivering the end product. Delivering this end product was based on company set procedures and timelines that do not necessarily take into account the end user. This has culminated in addressing issues of customer service on a value-chain basis rather than on a functional silo basis that tends to be inward looking. The value-chain is the highest summation of business process and which delivers an outcome across the entire business (Hall, 1998). Key value chains are in turn described as those key processes that cut across Engineering Distribution Process (EDP) and Customer Relationship Process (CRP) processes (Hall, 1998). These processes are key to customer satisfaction such as power loss reported, cut-offs, account operations, energy accounting and customer application (Hall, 1998).

Business value chains mainly consist of the following broad activities namely, research product, develop product, purchase electricity, deliver electricity and deliver the service (Hall, 1998).

2.5.1 Key value chain performance indicators

In terms of business structured along process lines, Eskom Distribution looks at the five broad areas; research product, product, purchase electricity, deliver electricity and deliver the service as mentioned above and how value is going to be delivered to the end customer (Hall, 1998). The Maxicare tool mentioned previously is designed to determine customer satisfaction of various customer categories to about 80 per cent satisfaction level. Key indicators to support this goal comprise of power loss restoration milestones, time taken to respond to meter failures on the field, reconnection after cut-off etc. (See Table 1.2 below).

Table 2.1 Value Chain Performance Indicators – Hall 1998

Power Loss restored: minor urban	<4 hours
Power Loss restored: minor rural	<24 hours
Power Loss restored: major	<12 hours
Respond to meter failure	<24 hours
Perform Cut-offs	<3 days
Reconnection after cut-off	<24 hours
Outage notification residential	>7 days
Outage notification other	>14 days
Quotations residential	<14 days
Quotations other	<30 days
New connections residential rural	<14 days
New connections residential urban	<7 days
New connections agricultural	<90 days

The above reflected key value chain indicators and their milestones are in support of a service concept driven through value chain management (Hall, 1998). These key performance indicators are in recognition of customer service/satisfaction created as realistic benchmarks for providing service to customers and value for Eskom.

A typical example of a value-chain that has direct implications for customer satisfaction is the “Optimise Customer Interactions” value chain (Optimise Customer Interaction Process Overview, September 1999). This value chain is aimed at defining the mechanism through which Eskom interacts with its customers (Hall, 1998). This processes recognises 14 services that need to be optimised and these are: power loss reports, account queries, payments, meter readings, service requests, claims, complaints and compliments, applications, outbound services, direct

marketing, emergency reports, misdirected call, sales/product advice requests and information requests (Optimise Customer Interaction Process Overview, September 1999).

These 14 services aimed at optimising a customer's interaction are mapped in a process manner where one-stop service to the customer is targeted despite business functional lines dealing with those customer issues (Hall, 1998). One also notices that with the 14 services mentioned they are linked with different value chain processes, for example, power loss report is linked to Manage Availability of Supply Value Chain (MAoS VC) whilst applications are linked to Acquire Customer Value Chain (ACVC) (Optimise Customer Interaction Process Overview, September 1999). The linking of these services to the value chains means that one is able to give one-stop service most of the time by accessing the systems supporting these processes to solve customer service issues and problems.

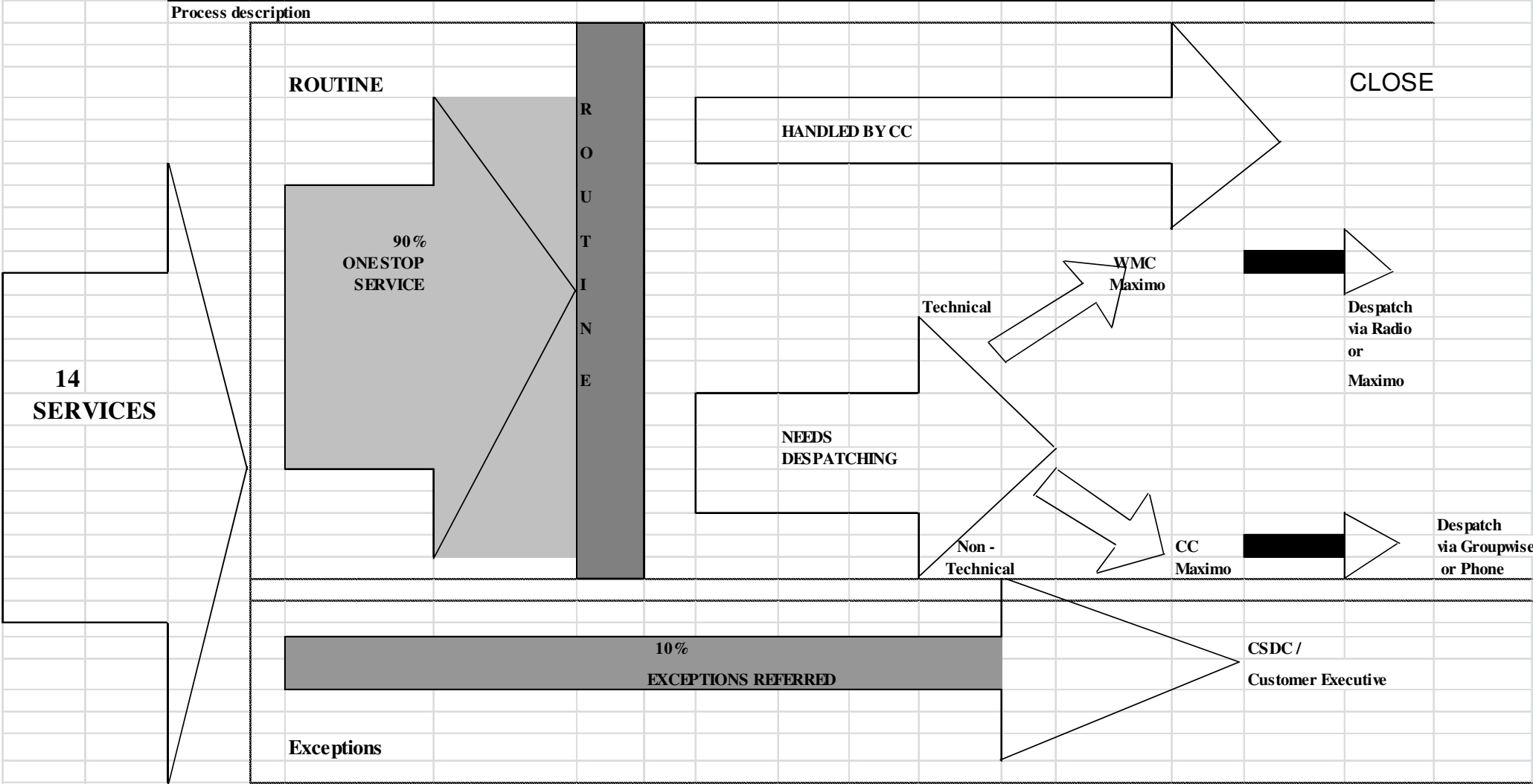
Diagrammatically the mapping of the 14 services illustrated in Figure 2 below depict that all service issues go into the business via the same route or system and queries and complaints are usually handled centrally at least 90% of the time and resolved (Hall, 1998). In one arrow in the diagram it is noted that these service types are sometimes handled at the level of the Call (Contact) Centre and resolved. However, if these cannot be resolved, the one who is responsible for dispatching them needs to have collected enough information to route them to the relevant technical or customer service environment for a resolution.

The “needs dispatching” arrow identifies a service type needing attention as either technical or non-technical and those that are technical are dispatched via a Work Management Centre (WMCC) Maximo system (Optimise Customer Interaction Process Overview, September 1999). This is a routing to where technical services are reported for resolution. However, one also dispatches to Customer Care (CC) Maximo system for all non-technical service requirements as well (Optimise Customer Interaction Process Overview, September 1999). The Maximo system logs in request or queries from customers and tracks them through the process until they are resolved. These will go to a customer service environment or area relevant to where service is required. These work order requests are communicated to relevant personnel in the areas close to where the service is needed (Optimise Customer Interaction Process Overview, September 1999). Consequently, the service levels per value chain facilitate the duration it takes for a customer to get their service request resolved (Optimise Customer Interaction Process Overview, September 1999). Dispatching of works orders via radio transmission is done for technicians working on the field whose vehicles are fitted with these radios to receive and send messages

(Optimise Customer Interaction Process Overview, September 1999). Dispatching via internal e-mail or telephone is utilised for customer service queries and complaints (Customer Interaction Process Overview, September 1999).

The 10% of the service requests that cannot be resolved through the Call (Contact) Centre, sometimes called one-stop resolution, is an exception that is handled via referral communication to the customer service environment (Customer Interaction Process Overview, September 1999). Personnel in that environment will be the Customer Service Delivery Controller (CSDC) and Customer Executives and between them they would resolve the escalated customer query or service request (Customer Interaction Process Overview, September 1999).

Figure 1.2: Process Description: Optimise Customer Interaction Process Overview (Customer Interaction Process Overview, September 1999).



2.5.2 MaxiCare Surveys

Independent surveys on Eskom customers called Maxicare and Precare measure satisfaction of customers across a wide range of services specific to each customer category. The tool itself needs to be evaluated in terms of its effectiveness in measuring customer satisfaction. In terms of this study, the Maxicare/Precare tool will be examined on how it sufficiently measures rural household prepayment customers' satisfaction. It will, more specifically, be evaluated on how effective it is in aiding management in decision-making.

The Maxicare and Precare scores determine the customer service index for each Eskom region and the higher the index the more satisfied the management will be with their efforts. However, Kanji (1995) caution that customer satisfaction measures what the company is doing at one point in time and between satisfaction indices, that is, one good index achieved and the next index, management seem to relax whilst customer tastes change. They assert that whilst a company is satisfied with customer satisfaction it is unable to capture the changing perceptions over a short period of time that could lead to misunderstanding of its customer wants (Kanji, 1995).

The MaxiCare questionnaire is designed to capture responses to customer satisfaction questions along seven service quality dimensions. The seven dimensions are not in any particular order, for example the quality of supply dimension is divided into those statements deemed a top priority and those that are low priority. The evidence for this can be seen when one looks at the questionnaire below. One is not sure how the top and low priority for statements the customers have to respond to, was determined but for Maxicare – Township (Prepaid), for example, two dimensions are a top priority, namely payments and quality of supply. In payments what is deemed top priority is the convenience of the location where these customers purchase prepayment tokens. On the other hand in terms of quality of supply, the number of power surges and voltage drops (dips) and how they impact on the supply of electricity to these customers, is deemed top priority. Dimensions that constitute low priority according to this tool are outage management; other categories are quality of supply, customer relationship interface, safety, advisory service, other categories of payments and environment.

The question whether the MaxiCare tool measures what it is supposed to measure is answered in two ways: firstly it is difficult to assess whether the customers were approached first to determine the priority areas in terms of the services rendered by Eskom or did the independent

company conducting the surveys arbitrarily determine this or only asked management. Secondly the responses would appear to be more objective (conducted by phone) although one cannot discount the value of a face-to-face interview where one would even assess body language and repeat or probe for responses, where necessary.

2.5.3 Evaluation of Viva Customer

In 2003, Isabel Jones was tasked by Eskom to assess the impact of a new process and system called Customer Relationship Process (CRP). This system was designed to service the end-use customer better. The “Viva” customer series was designed to unblock the blockages caused by systems and processes so that service to customers improves. A few of these cases, however, are not system related but expose the manner in which customers are served. A review of these cases will highlight the relative importance of each problem to different customer categories. These cases will also highlight issues of regulation by NERSA with regards to responsibilities of suppliers and also customers in terms of equipment they use.

A Large Power User (LPU), an aluminium smelter was experiencing power dips in its plant thus causing loss of production hours and hence reducing the potential of the smelter to produce and make money (Jones, 2003). Investigation of the problem was discussed and agreed by the two parties, that is Eskom and the technicians of the company (Jones, 2003). An investigative team was chosen by the two parties and although initially the two parties were pointing fingers at each other but it was the willingness of the team to work together to resolve the problem, that was commendable (Jones, 2003). In the end it was found that the design of the smelter’s systems was causing the dips and that these were occurring on the Eskom’s networks (Jones, 2003). The cooperation between the customer and service provider in this case worked to isolate the problem and reveal how these should be resolved (Jones, 2003).

The lesson from the case was that the service provider should first listen to the customer and know what the requirements are (Jones, 2003). Secondly, the right attitude and cooperation between the customer and Eskom made the troubleshooting action to increase the trust for one another (Jones, 2003). Power quality solutions were affected because of the closing of the loopholes in the process that serves customers, thereby resulting in a win-win situation.

MaxiCare– Townships (Prepaid): Enhanced

For date:

For CSR(s): SOUTHERN All Questions: For all Quadrants

Sample Size:

Median for Segment:

TQI For Selection:

DIMENSION	QUESTION NO.	STATEMENT	IMPORTANCE SCORE	DELIVERY %
		TOP PRIORITY		
Payments	1	How convenient the place where you buy prepaid electricity coupons is located		
Quality Of Supply	2	The number of power surges and voltage drops (dips) in your electricity supply impacting you		
		LOW PRIORITY		
Outage Management	3	How well Eskom keeps to the notified dates and times of planned electricity interruptions		
Quality Of Supply	4	The number of interruptions in electricity supply that you experience		
Quality Of Supply	5	How easy it is to find out from Eskom why there is an electricity interruption and how long it will last		
Customer Relationship Interface	6	How well Eskom staff solve your problems or answer your queries without you having to contact Eskom more than once		
Customer Relationship Interface	7	How much respect Eskom staff treat you with		
Safety	8	How well Eskom promotes the safe use of electricity		
Quality Of Supply	9	How long it takes Eskom to switch your electricity on again after an interruption		
Payments	10	The hours that the place where you buy prepaid electricity coupons stay open		
Advisory Service	11	How much information Eskom has given you about the prepaid electricity coupon system		
Customer Relationship Interface	12	How easy it is to get assistance from Eskom if you have a problem with electricity		
Advisory Service	13	How well Eskom responds to your requests for information about electricity		
Customer Relationship Interface	14	How good the service is that you get from the shops and places where you buy electricity coupons		
Customer Relationship Interface	15	How well Eskom informs you about planned electricity interruptions for maintenance or repairs		
Customer Relationship Interface	16	How good Eskom staff are solving your problems or answering your queries		
Customer Relationship Interface	17	The meetings Eskom has with the community to talk about electricity		
Environment	18	How much Eskom cares about what it does to the environment		

National TQI

Segment TQI %

Township Prepaid (Southern)

DIMENSION

DQI %

Advisory Service
Customer Relationship
Environment
Outage Management
Payments
Quality Of Supply
Safety

Table 2.2: Maxicare Questionnaire adapted from Eskom intranet

A second case reviewed by the series was a case of power dips and quality of supply issues that were costing the customer on lost time production and damage to the equipment (Jones, 2003). This is a cement factory and any power dip or an outage was costing the company a fortune in lost revenue (Jones, 2003). The customer had to purchase at huge cost, equipment to absorb the impact of power dips (Jones, 2003). This, to the customer was money wasted because of an investment towards an Eskom problem (Jones, 2003). The customer also felt that because there was no solution to the supply problem they are not a valued customer and the fact that should they relocate their plant would have spelt disaster for the local population in terms of employment (Jones, 2003).

The National Electricity Regulator of South Africa (NERSA) in its NRS Regulations calls for cooperation between Eskom and the customer to solve a problem and to take joint responsibility for some complex electricity dip issues. Analysis that Eskom had to conduct proved that modern equipment installed in the plant by the company's consultants was the cause of the power dips. Secondly, this factory was situated in a lightning excessive area and Eskom had to install surge arrestors in the lines bringing supply to minimise the impact of lightning (Jones, 2003). Thirdly, the vultures in the area were a hindrance because they were sitting on the lines thereby tripping the lines. Bird guards had to be installed to divert the birds away from the lines (Jones, 2003).

Eskom tried all these things to make sure they had a satisfied customer. In the end they had to spend money to conduct a study inside the customer's plant to dip-proof the plant (Jones, 2003). This was to prove to the customer that Eskom cares about their problem and that the customer has value to the organisation.

The lesson of the case is to underline the value and importance of Eskom and their customers working together in a spirit of dedication and cooperation to resolve problems as a top priority (Jones, 2003).

On the household prepayment side, several cases indicating customer problems with the service are highlighted. When customers purchase electricity they are given a prepaid token with a 20 digit code indicating a credit that they should punch into their meters (Jones, 2003). In this particular case the customer entered this code to activate credit into the prepayment meter without success as the meter rejected the code, time and time again (Jones, 2003). This resulted in the customer not being able to cook and thus affecting her family (Jones, 2003). This situation was further exacerbated by the fact that the customer at a huge cost had to travel to an Eskom walk-in centre to report the fault and she was ignored (Jones, 2003). This situation exposed the fact that the customer is not always treated with respect and that Eskom should have a HELP-Line to the prepaid customers (Jones, 2003).

Other examples of prepaid card problems experienced are when one customer had their meter changed following a fault but their prepaid swipe card to legitimise their purchase was never changed. This caused problems of credit purchased not being able to be accepted by the new meter (Jones, 2003). In yet another card/meter problem, a correct code was entered into the meter but the meter showed an error meaning that the supply group code with the meter was wrong (Jones, 2003). This error resulted in the customer not being able to purchase for three months whilst trying to sort out the problem (Jones, 2003).

These customers are not sophisticated and the cost they have to incur to travel to report faults or endure time in call centre queues when they phone-in a fault, is not justified and results in their being dissatisfied. These are both system and human side problems of the service that could be avoided. The customer, however small, deserves to be treated with dignity and people who service them need to change their attitudes.

In recommendations to Eskom, emphasis was put on clear and unambiguous communication to customer, placing easy-to-read labels on the meter, having telephone numbers imprinted on the prepaid voucher that a customer purchases, ensuring meters are installed with correct coding, updating meter records urgently to avoid meter code errors, training of vendors selling prepayment tokens to help customers, and most importantly, placing employees with passion and correct attitudes for customer service in the customer service environment (Jones, 2003).

In evaluating the above cases one should note that the first two cases were about continuity of supply affecting the conducting of normal business of two big industrial customers. Continuity of supply refers to the number and duration of supply interruptions (CEER, 2003). It becomes clear that satisfaction with service in such organizations, other things being equal, is a function of continuity of supply. It must also be remembered that it is a widely accepted fact that it is neither technically nor economically feasible for a power system to guarantee continuous supply of electricity whenever demanded (CEER, 2003). Emphasis is put more on the basic supply of a power function meaning supply of power to satisfy system load and energy requirements economically at acceptable levels of continuity and quality (CEER, 2003).

The above facts about continuity of supply address the realistic expectations of the industry on which customer perceptions should be based and supported by regulation (NER, 2003). Quality of supply is said to be measured by means of acceptable capacity or values of voltage while continuity of supply is measured by uninterrupted electricity supply (CEER, 2003). Continuity of supply and quality of supply are by no means expectations of only the large industrial customers but also the small power user like a rural prepayment customer. The two preceding factors discussed, that is, quality of supply and continuous supply may be said to play a significant role in how quality of service is perceived by customers and cannot be emphasised enough (CEER, 2003). However, it may be said that regardless of the manner in which they occur they are likely to affect the behaviour of customers towards the company's service based on prior expectations.

To understand continuity of supply one has to analyse four features characterising it and these are; type of interruptions, duration of each interruption, the voltage level of faults and other cases of interruptions and types of continuity indicators (CEER, 2003). Further description of these four features will further highlight how continuity of supply components impact on customer satisfaction of all categories of customers.

Planned interruptions refer to scheduled interruptions to carry out routine maintenance of the network (CEER, 2003). Consequently, if customers are not notified of planned interruptions the status changes from planned to unplanned (CEER, 2003). Unplanned interruptions could, among other things be caused by networks adversely affected by the elements, for example, floods, snow, winds and rain. Sometimes interruptions or faults occur due to the system itself, for instance; fuse failures, transformer blown or bursting, structure failures and bird electrocutions (CEER, 2003). Interruptions, planned and unplanned impact on customers negatively and lead to dissatisfaction of consumers, however a degree of discomfort is a

function of the response to correct the situation. The customer satisfaction issue is not whether these interruptions are planned or unplanned but the speed with which the interrupted service is addressed.

Duration of interruptions on the other hand may be categorised as short or long interruptions. In view of the European technical standards EN 50160, interruptions lasting longer than three minutes are defined as “long interruptions” and others as short interruptions (CEER, 2003). In South Africa, NRS-048-2 standard on interruptions is used by the NER where it views year-on-year and licensee-on-license comparative reporting (NER, 2002). This is the type of service where quality of service (duration of interruptions) is perceived and compared against the time (expectation) the utility takes to bring the supply back on.

The third feature of continuity of supply is the voltage level of faults. According to CEER (2003), the interruptions of supply to end-users can originate at any voltage level, that is; low, medium or high in the system. It is indicated that at high or ultra high voltages, not all faults can cause interruptions to end users due to network design (CEER, 2003). Medium voltage line interruptions can affect low voltage lines because of their being a backbone that taps to the low voltage lines from which individual customers are fed. This situation thus causes power outages or interruptions to customers fed off those lines. The converse is also true where the low voltage can affect the medium voltage but the impact is not as severe as when the fault has occurred in the main backbone, the medium voltage infrastructure.

The fourth feature of continuity of supply is the type of continuity undertakers, that is, the number or duration of outages. CEER (2003), states that the number of outages per customer in a year, termed Customer Interruption (CI) or Systems Average Interruption Frequency Index (SAIFI), indicates the number of times in a year electricity is not supplied. Cumulative yearly duration of interruptions per customer also referred to as Customer Minutes Lost (CML) or Systems Average Duration Index (SAIDI) looks at how long in a given year energy is not supplied (CEER, 2003). These indices, of frequency and duration assist regulatory authorities in monitoring performance of networks in view of security/assurance and availability respectively (CEER, 2003). These checks and balances also determine the standards of performance and what should be done to improve in the short to medium term. In terms of customer satisfaction, performing according to these standards reduces adverse perceptions and determines expectation levels. This can only happen under conditions of informed and knowledgeable customers and large power users would be aware of these because of the level

of sophistication of their businesses when compared for example with small power users like household customers.

2.6 THE SERVQUAL METHODOLOGY

According to Zeithaml and Bitner (2003) the SERVQUAL tool was one of the first measures developed specifically to measure service quality. They deemed the tool necessary to measure service quality by identify aspects of service needing performance improvement, and also evaluating the impact of any intervention aimed at improving service quality (Zeithaml and Bitner, 2003). Zeithaml in Vavra (1997) emphasises the possible existence of a gap between customer expectations and current perceptions of service quality. It must also be reiterated that the gap does not always exist. This gap theory entails identifying five dimensions (attributes) representing evaluative criteria customers use to assess service quality (Zeithaml et al., 1990). These dimensions are; tangibles, reliability, responsiveness, assurance and empathy (http://www.methods_zeithaml_servqual.html 2006/06/25). These dimensions were identified through a pioneering research about service quality done by Parasuraman, Zeithaml and Berry (Zeithaml and Bitner, 2003). The first dimension, tangibility, relates to appearance of physical facilities, equipment, personnel and communication material. All of these are said to provide physical representation or images of the service that customers will use to evaluate quality (Zeithaml and Bitner, 2003). In short it looks at the professionalism and presentable manner of the serving organisation. Reliability on the other hand relates to ability to perform the promised service dependably and accurately (http://www.methods_zeithaml_servqual.html 2006/06/25). It broadly means that the company delivers on its promises about delivery, service provision, problem resolution and pricing (Zeithaml and Bitner, 2003). Responsiveness refers to willingness to help customers and provide prompt service (http://www.methods_zeithaml_servqual.html 2006/06/25). Assurance relates to knowledge and courtesy of employees and their ability to convey trust and confidence. Finally, empathy entails the firm providing care and individualised attention to its customers. These five dimensions of service quality are said to apply across a variety of service contexts (Zeithaml and Bitner, 2003).

SERVQUAL is an instrument that provides a basic framework inclusive of statements for each of the five dimensions (tangible, reliability, responsiveness, assurance and empathy) of service quality (Zeithaml et al., 1990). The SERVQUAL instrument consists of a questionnaire containing an “expectation” section of twenty two statements and a “perceptions” section containing a matching set of company-specific statements (Zeithaml et al., 1990). It also has a section to ascertain customer’s assessments of the relative importance of the five broad

dimensions (Zeithaml et al., 1990). The twenty two expectations questions relate to customers rating each attribute in the five dimensions reflecting on the level of service they would expect from excellent companies in a sector such as electricity, for example (Zeithaml and Bitner, 2003). The other twenty two questions reflect rating by customers of perceptions of service being actually delivered by a specific company within that sector on the corresponding questions (Zeithaml and Bitner, 2003). It is also argued by Zeithaml and Bitner (2003) that a measurement program that only captures perceptions of service is missing the point and a critical one in the service quality equation as customers compare what they perceive they get in a service encounter with their expectations of that encounter. These surveys put simply, measure the ideal (expectations) versus the current reality (perceptions).

SERVQUAL has two basic assumptions, namely that the results of the surveys are accurate and that customer needs can be documented and captured, and that they remain stable during the whole process (http://www.methods_zeithaml_servqual.html 2006/06/25). The survey itself requires customers to respond to questions along each of the five dimensions that deal with (a) the relative importance of each attribute, (b) a measurement of performance expectations that would relate to an excellent company and (c) a measurement of the performance for the company in question (http://www.methods_zeithaml_servqual.html 2006/06/25).

The strengths of the SERVQUAL method lie in the benefits it provides in terms of provision of detailed information about service needs and service quality (http://www.methods_zeithaml_servqual.html 2006/06/25). The detailed information is specifically about customer perceptions of service, performance levels as perceived by customers, customer comments and suggestions and impressions from employees with respect to customer expectations and satisfaction (http://www.methods_zeithaml_servqual.html 2006/06/25).

Although SERVQUAL addresses the gap between expectations and perceptions of actual service, criticism is levelled at the validity of the five dimensions (Zeithaml et al., 1990). The criticism levelled at its gap model is the fact that there is little evidence that proves that service quality is viewed by customers as a gap between perceptions and expectations (Buttle, 1996). Iacobucci et al. in Buttle (1996) review the SERVQUAL debate in the context of the conceptual and operational differences between service quality and customer satisfaction. This view argues that these two constructs may be related to each other, different to each other, or may be conceptual cousins whose family connections may be dependent on a number of other considerations (Andersen, 1992) in Buttle (1996). This view is conceived by the lack of

consistency in defining and differentiating these two constructs from each other in literature. Cronin and Taylor (1992; 1994) in Buttle (1996) assert that Parasuraman et al., erred in not defining perceived service quality in attitudinal terms although they initially claimed that service quality was in more ways similar to an attitude. Anderson (1992) in Buttle (1996) also believe that Parasuraman et al., collect service quality data using ordinal scale (Likert scales) but yet perform analyses with interval-level data methods (factor analysis). Babakus and Boller (1992) in Buttle (1996) found the use of gaps appealing but suspected that difference scores do not provide more information than what is already contained in perceptions. This they found to be true since expectations by their very nature are usually rated higher in general terms and that the only dominant contributor to the gap scores will be your perceptions. The method has also been criticised with regards to mutually exclusivity of dimensions and statements that it purports will yield reliable and valid results (Vavra, 1997). A further criticism of SERVQUAL is that it fails to capture the dynamics of evolving expectations since consumers learn from experiences (Buttle, 1996).

Lam and Woo and Crosby and LeMay in (Potgieter et al., 2005) also question SERVQUAL's long term results and the general applicability of its five dimensions. In terms of the 22 attributes in the original instrument it was believed that not all of these attributes accurately describe all aspects of a given service (Gronroos, 2000). SERVQUAL, however, as an instrument, is widely used by both business and academics. Service businesses especially use it to improve service delivery and also for the development of an understanding of the perceived needs of target customers (Zeithaml et al., 1990). In the tourism sector in particular, SERVQUAL although highly criticised, still continues to thrive in respect of its focus on the centrality of quality in service research and management and its emphasis on the complexity of managing service experiences (Laws, 2002).

2.7 SERVPERF Methodology

The SERVPERF model was developed as a response to criticisms of SERVQUAL's expectations versus perceptions emphasis and this model discarded the expectations portion of the SERVQUAL model (Qin, 2008). Although this model uses the same five broad dimensions of the SERVQUAL model, it adds a sixth dimension, "recoverability" to measure service quality (Qin, 2008). Cronin and Taylor (1992) discovered that the performance component outperformed SERVQUAL in terms of reliabilities (Fogarty, G., Catts, R. and Forlin, C., 2000). Due mainly to this criticism of SERVQUAL, Cronin and Taylor (1992) proposed a perception quality model called SERVPERF as an alternative which hypothesised that an individual's perception of service quality is only a function of its performance.

The basis for SERVPERF besides measuring of performance or service outcome it has been hailed for its focus on overall importance of dimensions (Cronin and Taylor, 1992). It is also because of this factor that the model is said to be best suited for measuring and that it also includes attitude measurement which Parasuraman et al., chose to overlook in the SERVQUAL model (Cronin and Taylor, 1992). Richard and Allaway (2003) found in their research of effectiveness of the two models that neither was effective when used alone. Although the perception based evaluation (SERVPERF) seemed to have merit when looking at importance measures SERVQUAL seems to use extensively (Buttle, 2003). Grootenboer (2000) adds that SERVPERF as the measurement instrument may be the best and most valid alternative of measuring perceived service quality through an attribute approach, measuring actual experiences of the service. This observation augurs well with pronouncements from other researchers about SERVPERF validity but also acknowledges use of SERVQUAL attribute approach in this model. It must however be said that, in validating these models' approaches to measuring service quality, more information comes to the fore that critically evaluates these models' weak and strong arguments for measuring service quality.

2.8 SERVPERF versus SERVQUAL

The debate about which of the two models (SERVQUAL or SERVPERF) best measures service quality has been captured in a study comparing the two models in a cross-cultural context using meta-analysis (Carrillat et al, 2007). The purpose of study was to assess both the SERVQUAL and SERVPERF scales on their predictive validity of overall service quality (Carrillat et al, 2007). The findings have interesting implications where they question the superiority of SERVPERF over SERVQUAL since according to the meta-analysis approach used, both scales yielded adequate and equally valid predictors of service quality (Carrillat et al, 2007). Yet another exploratory study by Elliot (1994) suggests that SERVQUAL is preferable to SERVPERF when it comes to providing value and managerial insights to service marketers for strategic decision making. Elliot (1994) also believes that debate will still continue regarding conceptual, measurement and practical value of these two scales in measuring service quality. In yet another assessment of these two scales by Gupta and Jain (2004), SERVPERF has yielded better convergent and discriminant valid explanations of the service construct whereas SERVQUAL is said to possess superior diagnostic power to identify areas for managerial intervention.

Other significant findings of this comparative study by Carrillat et al, (2007) suggest that the need to adapt the scale to the context of study is greater when using SERVQUAL than

SERVPERF. Their results also show interesting pattern where SERVQUAL and SERVPERF having been designed and developed in the USA, expectation was it would yield similar results in cultures and language similar to the US (Carrillat et al, 2007). The results, however, show that predictive validity of SERVQUAL and SERVPERF on overall service quality was higher for non-English speaking countries and for those cultures with lower levels of individualism (Carrillat et al, 2007). One of the major observations though was a need to adapt the SERVQUAL scale to meet a particular cultural context in studies conducted in non-English speaking countries with lower levels of individualism (Carillat et al, 2007). This meant that scale modification rather than the cultural context would be driving the results hence the need to conduct both modified and non-modified scales on non-English countries to isolate the effects of national culture and language (Carillat et al, 2007).

2.9 The Gaps Methodology

The central focus of the gaps model of service quality is the customer gap, which is the difference between customer expectations and perceptions (Zeithaml and Bitner, 2003). According to Zeithaml in Vavra (1997) there would be in certain different ways a discrepancy between what the customers desire and what firms and service providers offer. Customer expectations, however, are a function of prior experiences with a service performance and will influence how one adjusts one's future performance expectations (Vavra, 1997). In this study, the expectations of rural electricity prepayment household customers may be ascertained by Eskom's past performance and comparing that to how they perceive Eskom is performing currently. Eskom, as a national public utility with its well-known performance track record may influence how these customers adjust their performance expectations.

It is further argued that satisfaction is the function of a gap between predicted service (expectation) and perceived service (Zeithaml et al., 1993). This means that if there is a gap between what has been experienced in terms of service performance and the current performance, depending on how big the gap is, strategies need to be devised to close the gap. On the other hand perceived service quality is said to be the function of comparison between adequate or desired service and perceived service performance (Zeithaml et al., 1993). In terms of prepayment rural household customers it would be comparing what is currently received from Eskom in terms of service performance with what they consider adequate or desired level of service. The size of the gap resulting from this comparison will determine what needs to be done by Eskom to close the gap in the servicing of these customers.

In closing the customer gap, that is, between what customers expect and what they receive the model suggests that five other gaps called provider gaps need to be closed (TCRP Report 47, 1999). The Transit Cooperative Research Program (TCRP) is a handbook used to measure customer satisfaction and service quality among transit industries at a national level in the USA (TCRP Report 47, 1999). The Transit Cooperative Research Program (TCRP) serves as one of the principal and critical means by which the transit industry can develop innovative near-term solutions to meet demands placed on it by an evolving society (TCRP Report 47, 1999). The Transit systems have high demands placed on it by the nation's growth necessitating the meeting of mobility, environmental and energy objectives (TCRP Report 47, 1999).

The five gaps that are identified are:

Gap 1: Consumer expectations – management perception gap

This gap refers to a discrepancy between executive or company perceptions and consumer expectations (TCRP Report 47, 1999). Eskom or Eskom executives in this case may not always understand what features represent high quality to rural household prepayment customers in advance, what features a service must have in order to meet these customers' needs and what levels of performance on those features are needed to deliver high quality service (TCRP Report 47, 1999). The result of this discrepancy may trigger a chain of bad decisions and suboptimal resource allocation that result in perceptions of poor service quality (Zeithaml and Bitner, 2003). Reasons for the discrepancy between management perception and customers expectations may be: executives may not interact directly with customers, are unwilling to ask about expectations or they maybe unprepared to address them (Zeithaml and Bitner, 2003).

Gap 2: Management perceptions – service quality expectations

This entails the difference between management's understanding of customer expectations and the development of customer-driven service designs and standards (Zeithaml and Bitner, 2003). The TCRP Report points to the fact that there may be constraints (resources or market conditions) which prevent management from delivering what the customers expect, or there may be lack of total management commitment to service quality (TCRP Report 47, 1999). In the case of Eskom, management may weigh up the costs of addressing rural household prepayment customers' expectations, against the revenue these customers bring in. This is a typical example of management deciding on how a service is to be performed based on a cost versus benefit justification.

Gap 3: Service quality specifications – service delivery gap

This entails differences between the development of customer oriented standards of service and actual service performance (Zeithaml and Bitner, 2003). Arguments set forth here are that there may be difficulties in standardising employee performance despite existence of guidelines for performing the service well and treating customer correctly (TCRP Report 47, 1999). This may be especially so with a service oriented business where performance is intangible compared to a tangible product.

Gap 4: Service delivery – external communications gap

This gap entails the difference between actual service performance and what is communicated about the service to customers. Media advertising and other forms of communication can influence consumer expectations. However, when there is a gap between the message communicated and actual performance, perceptions are either lowered or enhanced (TCRP Report 47, 1999). Difficulties here may occur when a campaign that promises exceptional service is not communicated to the staff that deals with those customers resulting in a distortion of the message and low perceptions of that service. Eskom may for an example promise a twenty four hour vending service to rural household prepayment customers when in reality it is not possible to do so in a rural set-up.

Gap 5: Expected service – perceived service gap

This entails how customers perceive the actual service performance in comparison with what they expected (TCRP Report 47, 1999). The quality that a consumer perceives in a service is based on the magnitude and direction of the gap between expected service and perceived service (TCRP Report 47, 1999). This is in essence what this study seeks to measure based on Parasuraman et al., (1991) using the SERVQUAL method. Service quality as perceived by the consumers is dependent on the number of encounters they have had with the service and is a function of their needs and desires. Satisfaction of customers is also a function of their expectations and what gap is perceived between what they expect and actual performance.

Figure 1.3 below illustrates the identified five gaps in the service process and how each affects customers' evaluation of the quality of service. The illustration is said to convey a clear message to managers that to improve service quality they should close gaps one to five and keep them closed.

A criticism of the GAPS model has been that there is little evidence that customers evaluate service quality in terms of perception and expectation gaps (Buttle, 1996). Babakus and Boller

in Buttle (2006) found that the dominant contributor to the gaps score is actually the perceptions score. This is due to a generalised response tendency to rate expectations higher (Buttle, 1996).

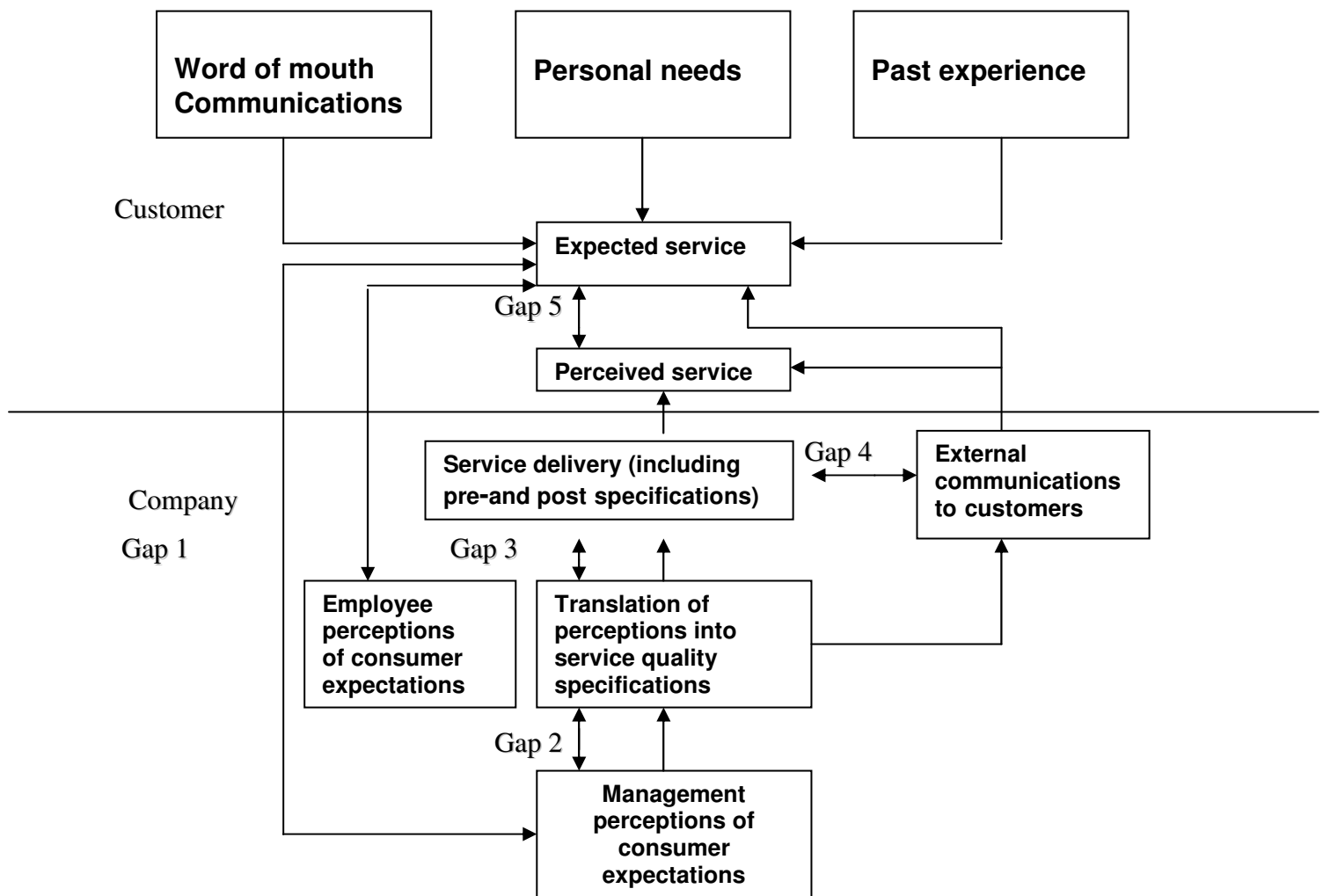


Figure 1.3 Gaps Model of service quality (Parasuraman et al., 1985; Curry, 1999; Luke and Layton, 2002)

Figure 1.3 above illustrates how the service gaps are formed and provides a framework with which to model service quality. The integrated gaps model is according to Zeithaml and Bitner, (2003) compelling us to focus on the five gaps in delivering and marketing services. These service gaps as denoted in Figure 1.3 above are viewed in two broad levels; how they affect the customer and how they affect the company providing that service (Laws, 2002). Figure 1.4 below is a further development of the original gaps model as depicted by Figure 1.3. It looks at

possible causes of gaps and how to overcome obstacles in eliminating these gaps. The preceding gaps methodology discussion has focused on the Figure 1.3 above.

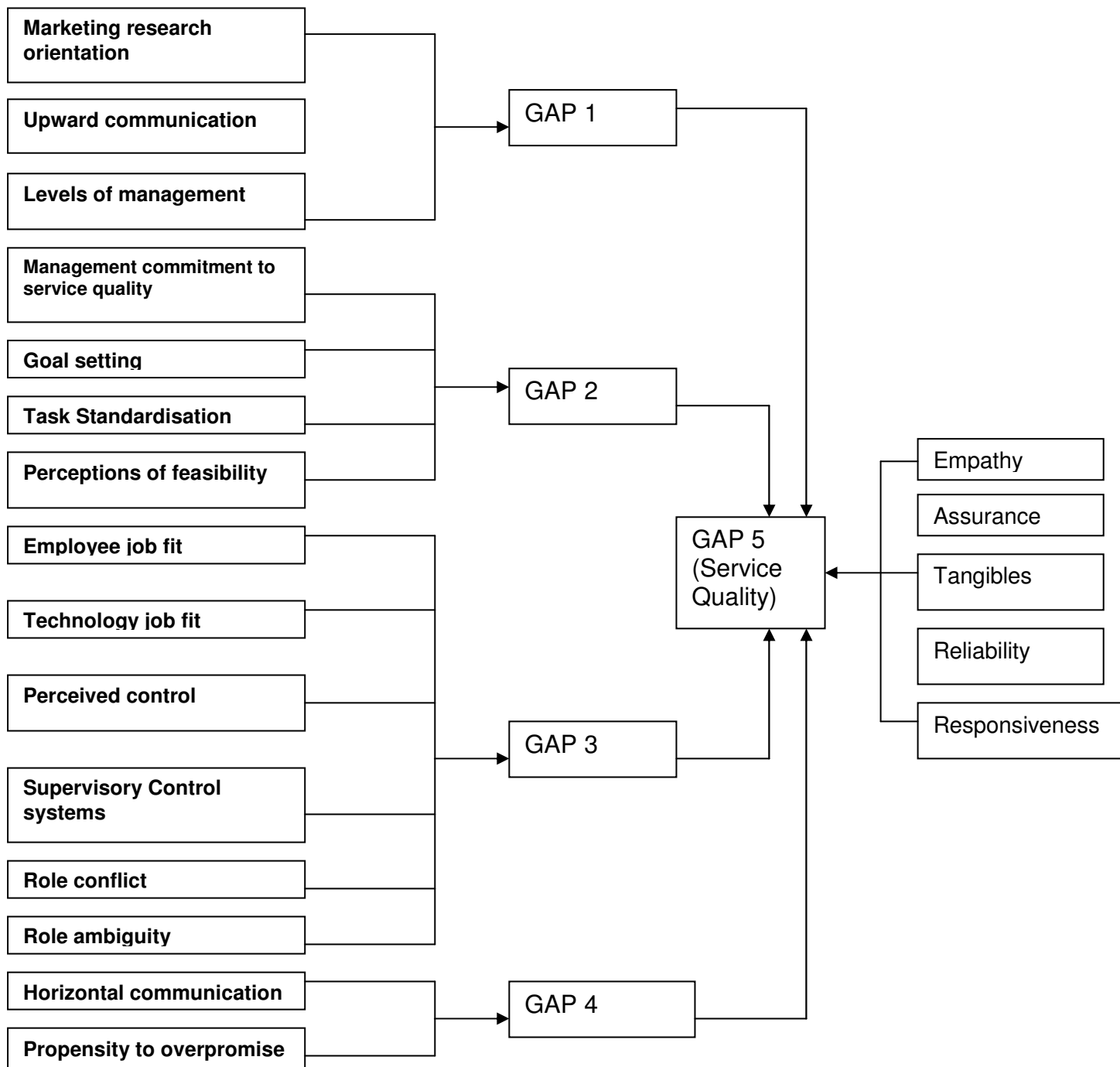


Figure 1.4: Extension of Gap Model (Reproduced from Parasuraman, Zeithaml and Berry, 1988)

Figure 1.4 can best be described in conjunction with Figure 1.3 in as far as the explanation of gaps is concerned. Gap 1 indicates a discrepancy between customers' expectations and management understanding of those expectations. This is a result of lack of marketing research orientation which leads to inadequate upward communication and too many layers of management (Singh and Khanduja, 2010). These elements are depicted in Figure 1.3 as what causes service delivery Gap 1.

Figure 1.3 above also puts for an example service delivery Gap 3, that is, the company not delivering to service standards. This is interpreted as development of service delivery specification in line with what is perceived by management to be consumer needs. This gap between company specification and the delivery of service itself leads to difficulties in standardising employee performance despite existence of guidelines for performing the service well (Singh and Khanduja, 2010). This leads to role conflict and role ambiguity by employees in delivering the service as customers may respond negatively to how the service is delivered. If there is no commitment by management in delivering service quality, incorrect job fit and technology fit may occur thus exacerbating the service delivery gap (TCRP Report 47, 1999).

2.10 Eskom and industry quality

Eskom currently measures the quality of its services through independent scores from the MaxiCare and Precare surveys that evaluate perceptions of customers that have been in the Eskom system six months and longer and less than six months respectively. MaxiCare and Precare constitute its Customer Service Index (CSI) whereas SAIDI and SAIFI constitute its Technical Sustainability Index (TSI). The former two surveys are conducted independently of Eskom and the latter conducted internally and constitutes reports that go to the regulator on an annual basis (Eskom Annual Report, 2003).

Although proponents of quality would emphasise Total Quality Management (TQM) because they realise that increasing customer expectations require the development of a new management led strategy focusing on total quality (Joubert, 2002), it is however important that from a customer viewpoint that the quality issues critical in serving them be maximised. It then becomes important that electricity supply entities determine those service quality issues by talking to customers and understanding those from the customers' own viewpoint.

Other role players in the electricity distribution industry like municipal entities do measure their customer satisfaction as well. These entities' electricity regulations and compliance issues are guided by the body they subscribe to, called the Association of Municipal Electrical

Undertakers (AMEU) and the Department of Labour ensures certain stipulations of the law are adhered to. These regulations will be closely linked to how service is rendered in municipal entities but in line with the Regulator's stipulations regarding power quality and other compliance related issues included in their licence conditions. In terms of quality issues regarding power interruptions frequency, voltage dips, restoration of power supply and services to customers these municipal entities as distributors of electricity in their own right are subjected to similar compliance stipulations as other role players in the industry. An important difference of these municipal entities is that their functioning is guided by public legislation or acts mediated by municipal council laws and by-laws and by implication are non-profit driven. Eskom on the other hand, although a state owned entity functions under the company's act and is profit-driven and declares a dividend to the only shareholder, the State.

The preceding argument about customer satisfaction that looks at satisfaction in a broader sense which regards service quality as only its constituent part may be argued further. The dichotomy of electricity supply; Eskom and municipal re-distributors discussed above may differ in emphasis per entity, that is, whether customer satisfaction or its subset of service quality is more relevant. Although the aspect of customer satisfaction and service quality is not under scrutiny here in as far as comparing the two entities supplying electricity is concerned, it does point to perhaps important differences between the two role players. One may look at satisfaction both from an internal quality service provider's perspective and also from an external customer perspective. If the entity is satisfied with what they think they deliver to the consumers from an internal service provider's perspective then it should be good enough for those consumers. One may seem to align this approach with a public entity rather than a profit-driven marketing entity. A market driven entity like Eskom for instance, although not facing any competition as is the case currently, may look at a whole range of services impacting on its external customers, as well as its current performance measured in MaxiCare/Precare customer satisfaction surveys.

Broadly looking at the industry and Eskom service quality in particular, one recognises that perceived performance (the customer's recognition of performance) measurement is critical if one is interested in knowing whether or not they deliver quality to the end user (Vavra, 1997). This is done via customer surveys as seen in the preceding discussion on MaxiCare/Precare and the Technical Sustainability Index (TSI). However, what these surveys do not do is look at customer expectations about service, the factor which has been identified by Vavra, (1997) as lacking in most customer satisfaction surveys. He acknowledges this when he says that of forty customer satisfaction surveys collected and published by the Society of Consumer Affairs

Professionals (1996) only two contain questions linking customer satisfaction appraisal to expectations (Vavra, 1997). Unlike the SERVQUAL scale which measures expectations based on an ideal situation, Lele and Seth, (1987) emphasise creating the right expectations for one's service. They suggest this be done by controlling communications (advertising messages, promises by sales personnel and promotions programs), choosing their intermediaries (in Eskom's case it will be vendors purchasing prepaid electricity cards, the call centre and the walk-in centres that the Viva customer surveys exposed as needing some hot-lines) and close monitoring of performance versus expectations (Lele and Seth, 1987). This view of expectations by Lele and Seth, (1987) is supported by Vavra, (1997) where he is of the view that expectations are influenced by prior experience and that the more satisfying that prior experience the more the expectation for future performance is adjusted.

Satisfaction with the service is always important in view of the context within which it should occur as opposed to satisfaction with the product. Service characteristics influence delivery of services in different ways than it would a tangible products (Zeithaml and Bitner, 2003). Importance of this distinction must be clear when Eskom electrical services are delivered and how they impact on satisfaction as perceived by customers.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

The previous chapter has reviewed the literature regarding customer satisfaction and its various constituent components. Satisfaction in general and customer satisfaction in particular has been central to the discussions. The company's own modus operandi in determining how its service is perceived by its customers was also explored. Various customer satisfaction theories and models were discussed culminating in an explanation of the models that are alternatives to dealing with studying the subject matter. Considerable debate with regards to the South African situation in terms of servicing of electricity customers was reviewed and most importantly how they compare with their international counterparts. Electricity as a commodity is subject to similar evaluations as any other product or service and hence one would like to know what the customer expects from the service and what they think they have received. In rural areas in particular one senses because of difficulties of access and remoteness to other economic activity it is imperative to measure any service being provided there and most so electricity. SERVQUAL was chosen as an instrument with which to measure customer satisfaction with an electricity service among a select group of Eskom customers.

The main objective of the research is concerned with customer satisfaction with an electricity utility based in the Eastern Cape Province of South Africa. In the context of broad objectives of this study research questions were developed culminating in the development of a hypothesis for the study. The basic understanding of what needs to be done is captured in the subsequent text where customer satisfaction will be examined using perceptions and expectations of service quality.

3.2 GOALS OF THE RESEARCH AND THE HYPOTHESIS

This research is about measuring perceptions of actual current performance of Eskom in providing service to its prepaid rural household customers and then comparing those perceptions with the level of service that those customers expected. This is done in order to identify gaps in the delivery of electricity services to this category of customers as basis for making recommendations to management.

The study will explore whether there is a statistically significant difference between perceptions of quality of service of prepaid rural household customers and their expectations. This study

will attempt to answer this question by dealing with the subsets of the broader problem and relates to the following:

1. To determine from the prepaid electricity rural household customers' own perspective the level of their satisfaction or dissatisfaction with the current service from Eskom using the five generic dimensions of the SERVQUAL model as developed by Parasuraman, et al., (1991). The model's five factors were modified slightly to align with specific requirements of an electricity service utility. A representative pre-survey of a focus group interview was held to be able to modify the SERVQUAL instrument accordingly.
2. To establish customers' perceptions of the current service they receive using a modified five dimensional, multiple item SERVQUAL scale.
3. To ascertain these customers' expectations about electricity service and compare them to their perception of the level of the current service received. This comparison will be done along the five quality dimensions of the SERVQUAL scale for the same type of customers in various rural settings with almost similar cultural backgrounds. `
4. To facilitate decision-making for service improvements around service quality performance gaps identified in the comparison between the perceptions of current service and customer expectations. These gaps, depending on their magnitude and whether positive or negative, will aid relevant decision-making and focus on those actions that will directly improve performance in the identified problem areas. It may also help refocus the organization's intent where positive areas of performance are identified.

Based on the above research goals, the following assumptions on the outcomes of this investigation were developed in order to achieve the aims of this inquiry:

Null Hypothesis. Ho: $\mu_1 = \mu_2$

There is no significant statistical difference between the services of Eskom as perceived by its prepaid electricity rural household customers compared to their expectations of service. Put differently it means that Eskom current service performance as perceived by these customers meets their expectations.

Alternate Hypothesis. H1: $\mu_1 \neq \mu_2$

There is a significant statistical difference between services of Eskom as perceived by its prepaid electricity rural household customers compared to their expectations of service. Put differently it means that Eskom's current service as perceived by these customers does not meet their expectations.

3.3 RESEARCH PARADIGM

The research conducted is based on objective empirical techniques where observed behaviour (empiricism) as opposed to thought or discourse is held as satisfactory claims to enhance the body of knowledge (Remenyi, 1996). This positivist view of observed phenomena takes cognisance of the fact that an analogy is made between how society works and the study of physiology, that is, society is functional just like a human body. If one organ is failing to fulfil its function, it affects the functioning of the whole body since it exists as part of a system (Babbie and Mouton, 2004). If the observed phenomena can be replicated in another study and produce similar results then it will have added to the body of knowledge as proponents of co-variance or correlation might argue. Evidence that will be used in the study using a SERVQUAL questionnaire that has been modified to particular requirements of an electricity utility will subscribe to the above facts concerning correlation and also an ability for it to be replicated with comparative results.

The quality of the research design and method of collecting data has been mediated through the use of an objectively designed SERVQUAL questionnaire where field information has been tabulated immediately it is received as coming from a village chosen in the random sample. These questionnaires have been self-administered by the researcher/writer in the field and explained such that respondents had a common understanding of what was expected. This was done with the awareness that different geographic areas although similar in culture and language may have slight variations in understanding a similar message, for example people residing in Gcaleka Tribal versus the Pondoland Tribal areas. Care was however taken to deliver a similar message to all those chosen as respondents in the study so as to obtain similar interpretation of the message and responses.

3.4 PRE-SURVEY FOCUS GROUP INTERVIEWS

A pilot focus group interview involving a representative sample of 20 people was conducted to determine what the typical rural household's opinions were with regard to the quality of electricity services delivered by Eskom, as well as the level of electricity service which they expected from Eskom. This was an exploratory survey where people had to speak out about features of service they considered important, as well as about how Eskom fared currently in its performance in delivering those services. This pre-survey had to be done, first to modify the SERVQUAL scale to make it appropriate for this study, and secondly to hear from the customers' own viewpoint which features of service they considered important in order of priority.

The quality of supply and the time it takes to restore electricity supply once interrupted was the principal service feature identified as the group's most salient in the supply of electricity. In the discussion it was clear that the rural customers expect the quality of supply to be comparable to that in the urban areas and they believed that with Eskom's expertise this could be achievable. In their minds the departure from traditional ways of satisfying their energy needs, for example, using candles and paraffin lamps, collecting wood to cook and having to cook and eat food at once to prevent spoilage was what separates having electricity and not having it. It was then spelt out by the sample of respondents that a predictable and stable supply was important in order to realise the benefits of having electricity.

Convenient access to Eskom either by way of Eskom vendors selling prepaid electricity tokens or by way of reporting of faults and general queries about electricity services, was considered the second most important feature of service. In terms of access to the Eskom vendors it was revealed that they are often too far away thus impacting on their meagre income because they have to incur travelling expenses to buy electricity tokens. This impacts on the convenience factor and is further exacerbated by vendors either not having enough tokens to sell or operating hours that are not suitable for them, the customers. In terms of the reporting of faults, having to incur costs to communicate and also the time it takes to have these faults fixed, was a problem. It was revealed that the same fault had to be reported several times before it is actually fixed.

Difficulties in new applications as well as the affordability to pay connection fees, were also articulated as difficulties. It is often not clear how long it takes between a customer applying and paying for a new connection, and that connection to be made. The payment of connection fees for new supplies was said to be a burden where people living in rural areas struggle to even afford basic necessities. However, having paid these connection fees there is no guarantee as to when they will receive supply and this has been interpreted as poor service delivery to rural customers that is not comparable to a service in an urban setting. The perception is that since the urban connection brings bigger revenue compared with a rural connection, Eskom has decided to apply different standards of service, thus negatively impacting on rural customers.

The load limiting supplies of 2.5 amps per customer was said to be inadequate for the rural customers' electricity needs since they do not only have lighting needs, but other needs like preserving food (freezers), entertainment (radio and television), other household uses (boiling water in an electric kettle and ironing) and to a certain extent cooking. The 2.5 amps limit bears

no connection costs and is upgradeable to 20 amps adequate for rural needs but one has to pay R165 for that upgrade which constitutes a problem. This has unintended consequences of people tampering with supplies by having bogus electricians bypassing the system at a considerable safety risk to the household but fulfilling the need for a bigger supply of electricity and not paying for consumption. During electrification all customers are supplied with a 2.5 amp load limiting supply that is free in terms of connection fees and when an individual customer feels that there is a need for an enhancement in supply an upgrade fee has to be paid. This is communicated to customers up front prior to electrification construction and during customer education interventions, but since attendance of people at these interventions is not guaranteed some customers miss out on this information.

The four elements of service mentioned above have been identified as most critical and key for satisfaction of rural customers in the focus group interviews and serve as inputs in the modified SERVQUAL instrument which was used in the study. This is critical since these four elements reflect the rural household customers' expectations of service quality and also relate to their actual experiences with regard to services they currently receive from Eskom. It is however, critical for one to understand that although SERVQUAL has its five dimensions not all the information collected in the pre-survey will necessarily be relevant or fit the five dimensions. See Appendix B for other issues raised in the focus group discussion that would not necessarily be relevant in the survey as it reflects historical non-repetitive service issues that have nothing to do with how service or installation of services is performed.

3.5 ASSESSMENT OF THE SERVQUAL INSTRUMENT

The refined SERVQUAL model of Parasuraman et al., 1991 has been modified in this study to satisfy the requirements of an electricity utility setting. This resulted in changes in some of the original items of the SERVQUAL instrument and by implication those of this study. The five SERVQUAL dimensions representing essential facets of service quality are also said to be interrelated and although that would not be emphasised in this study, they need to be evaluated in terms of their impact here (Parasuraman et al., 1991).

Tangibles dimension

The tangibles dimension relates to the ability of the organization to stay abreast of technological innovation of its equipment, the condition of its physical premises and neatness of staff and the general visual appeal of its communication tools like invoices, letterheads, pamphlets and adverts. Each of these statements impact on quality of service to be delivered by the organisation, in Eskom's case for instance a meter although installed in the premises of

customers to measure their consumption, it remains the property (equipment) of a supply authority. A recent example is the change from a prepayment card meter technology to a prepaid key pad meter system. The change has made it easy for customers to just punch in numbers into their meters to enter their credit instead of the old system where you had to feed the token (card) itself into the meter to load credit with a risk of that card bending and being unable to be accepted by the meter. This innovation also helped customers, especially rural customers to easily operate the key pad prepayment meter system as it was similar to using telephone keys. These meters get calibrated and when necessary replaced by the supply authority to bring in new technology either to minimise failure so that revenue is collected, or to keep up with changes in technology for efficiency and improvement purposes.

Reliability dimension

This dimension relates to what the service provider does or does not do in terms of provision of service to its customers as promised or expected and what it does when problems impact negatively on their promises. In terms of providing electrical services, each of the statements relating to the reliability dimension reflects how Eskom is able to meet its customers' expectations by delivering in time what it promises as seen in the value chain performance indicators in Table 2.1. The key value chain indicators and their respective milestones on delivery of electrical services, forces Eskom to adhere to these milestones and reinforces customer relationships and customer satisfaction.

The key issues in so far as rural households' prepayment customers are concerned, relate to the delivery of vending services for customers to conveniently purchase their electricity prepaid tokens. Rural customers, as new users of electrical services, expect a lot of information and support from Eskom in terms of problems relating to faulty metering, relocation of metering and restoration of supply after an outage. These problem areas have a lot to do with how employees of Eskom handle these service enquiries from taking the calls (Call Centre staff) and forwarding them to dispatchers (Work Management Centre) who forward them to those who have to action them in the field or in customers' premises (Field Services). The response to these problems becomes important to rural customers when they get delivered at promised times or their expectations exceed by even delivering before promised times. This impacts to a great extent on their satisfaction with the quality of service.

Responsiveness dimension

This dimension relates to how the employees of service-oriented businesses react to queries about service and how soon they solve such problems. This has more to do with the motivation

of these employees to alleviate or provide solution to problems. They have to communicate when services will be delivered and follow up with action, be willing to help and or give themselves enough time to react to those queries and do it promptly.

If a query taken by a call centre service agent for instance is handled poorly it will reflect on the information received by dispatchers and down the chain by field service staff. This will impact on response times to fix faults and waste of resources Eskom could have put to better use. The promptness of service is not only when the query is taken by first call resolution staff (Call Centre) but the speed with which the service is restored, repaired and supplied. Better still for customers is when their problem or query is solved immediately by probing of call centre staff and resolving that particular problem.

Assurance dimension

This dimension relates to the trust relationship between customers and service providers' employees. This is more of a transactional relationship between the organization as represented by its employees and the customer – a customer needs to be assured that his problem will be solved by whoever is tasked to deliver the service. Also the customer need not fear when allowing field staffs into their houses to fix faults – customers require the service personnel to be courteous, professional, and knowledgeable and to have integrity.

In the case of rural customers for instance, when their prepaid meter is faulty and Eskom field service staff remove it to be repaired elsewhere then there should be confidence that the credit that was in the meter would be transferred to the new meter accurately. The requirement is that the customer needs to be informed and fully understands the process. Communication in this case implies knowledge of what these agents are doing. The reputation of the service organization does not always transfer to its employees and vice versa and both need to be earned from a customer's viewpoint.

Empathy dimension

The statements in this dimension reflect understanding and anticipation by the employees of service providers, of the service requirements of customers. This implies understanding and appreciation of particular circumstances of the customers and how best to handle them from a humane perspective. Firstly, the service provider needs to give these customers individual attention instead of relating to them as statistics in its customer database. The service provider also needs to have operating hours that are convenient to the particular circumstances of its

customers. It needs also to give personal attention to problems raised by its customers and in discharging its obligation to these customers show that it has their interest at heart.

These statements, in as far as rural household prepayment customers are concerned, will need Eskom to be knowledgeable about the particular circumstances of rural customers and how to deal with them through the provision of service. A typical example would be when there is an area-wide fault and customers flood the call centre with calls enquiring as to what happened. These should be handled firmly but courteously and politely. A tendency for instance, is for employees when faced with such situations, to reduce these customers into a statistic and deliver a cold response that may easily be interpreted as a company not caring for its customers' welfare. These customer service contexts need to be clearly understood by Eskom in order to effectively address the problems without isolating customers even further. One tends to think these statements refer more to the attitudes of Eskom employees than to the unreasonable expectations of customers. The latter assertion may lead to an error of judgement that could be made by decision makers if not fully analysed and understood.

3.6 QUESTIONNAIRE LAYOUT

In the survey for this study, the service quality of Eskom is determined using a modified SERVQUAL questionnaire as shown in Appendix A. It is simply an evaluation of customer expectations and perceptions (on a rating scale of 1 for strongly disagree and 7 for strongly agree) for five different dimensions in the questionnaire. It is further required that respondents rate the five dimensions in their order of importance in respect of electricity services by apportioning a percentage importance out of 100. The various responses to the survey are area based, that is, administered in several rural areas of the Eastern Cape and is focused on those customers who have had electricity for more than 3 years.

3.7 DATA COLLECTION METHODS

Rural household electricity customers in the Southern Region's area of the Eastern Cape are a population from which the sample for the study has been drawn. The sample has been chosen from an Eskom database of rural household customers that has had electricity for at least three years. Primary data has been collected by means of survey questionnaires being administered to respondents in each rural area chosen in the sample. The information thus collected, which is original information, gathered to solve the problem is downloaded on an Excel coded database that includes statements of each of the five dimensions as modified for the study. This method makes it easy to organise the data where the end result is a set of data measuring customers' expectations on the one hand, and customers' perceptions on the other. The data thus collected

will provide the basis for analyzing customer behaviour of a general population from which the data are sampled.

3.8 SAMPLE SELECTION

Rural areas' household electricity customer is a unit of analysis for this study. As the entire population is somewhat impossible to survey, a simple random sample in the Eskom database was chosen as a representative sample covering those customers who have experienced the electricity service for at least three years. The decision concerning the survey sample was made to target the rural population benefiting from central government's mass electrification programme as opposed to the urban one. The decision to arrive at a sample with customers who have had electricity for at least three years was taken to verify issues raised earlier in a Development Bank of Southern Africa's impact study in 2004 in which rural areas of the former Ciskei electrified between 1996 and 2001 were evaluated to see what impact electricity has had in improving their lives since electrification of their area.

The composition of the sample for the study is biased towards the former Transkei which continues to be electrified and fits the criteria of customers who have had supply for at least the last 36 months since the start of the survey. The geographical spread of the villages chosen in the sample covers an area of approximately 80000 square kilometres covering three of the Eastern Cape's big district municipalities, namely, O R Tambo, Amatola and Chris Hani (See Figure 3.1 below). Not all areas within these district municipalities are covered in the survey, such as for instance, portions within Amatola and Chris Hani Districts that used to fall under the former Ciskei or the old Republic of South Africa. These areas have had electricity for longer than five years and may sometimes not be fed off rural networks.

The survey instrument consisting of two sections containing 22 statements each from a revised SERVQUAL study by Parasuraman et al., 1991 was adapted to the Eskom customer satisfaction situation. These statements consist of customers' perceptions and expectations along the five service quality dimensions and modified for the express purpose of electricity supply industry's specific service quality requirements. See Appendix A.

3.9 Survey Analysis

It was discovered early in the study that a house-to-house visit to administer questionnaires would not be ideal and a different method was designed. Time constraints, elimination of researcher fatigue and the speed of gathering information were cited as reasons why that approach was eliminated. Ward councillors were then identified in each area chosen in the

sample to facilitate having respondents gather in a central point where the questionnaires were administered to a group of distinct individuals. A message about the research including the covering letter authorising the research was delivered to each assembled group and questionnaires were individually filled by respondents. As soon as they were received, the responses were immediately down-loaded to a research study database for analysis.

Prepaid household electricity customers in the Eskom database number approximately 550 000. A sample of 300 was deemed to be adequate. These 300 questionnaires were sent out with researchers into these areas and 220 were returned (response rate of 73.3%) with 15 rendered not usable due to earlier being administered in a door-to-door visit and left with respondents to complete. The final sample size to be used for this study is 220 as it comprises all questionnaires returned and it is from these that the conclusions for the study will be drawn.

The respondents in the sample are suitably homogeneous. The respondents share the same cultural artefacts, objects and symbols and the same language. The geographical spread of respondents from the West to the North-Eastern side of the Eastern Cape's former Transkei may change behaviour slightly as traditions, culture and level of poverty slightly change. The common denominator in almost all of these areas is the language.

The Western side is what one can call the Gcaleka tribal area and the North Eastern side is the Pondoland tribal area and the difference between the two are the tribal authority, Kings and Chiefs they fall under, which is a line that divide them in terms of tradition and culture.

(FIGURE 3.1) EASTERN CAPE DISTRICT NODES



The survey ensured that different weather conditions were accounted for with regard to quality of supply issues. It may for instance occur that due to differing weather conditions in the various sample areas and different types of feeder networks, that customers are impacted differently with regards to quality of supply and outage frequencies. Cofimvaba and Engcobo, areas in the Chris Hani District, have different lightning intensities compared with areas around Umtata in the OR Tambo District. They may thus experience higher or lower frequencies of electricity supply interruptions. These factors affect in some way the responses about quality of supply especially with regards to the regularity of interruptions and will differ from area to area. The respondents comprise the people living in these areas and being affected by the conditions mentioned and for this reason possess the ability to articulate what Eskom is currently doing and how well Eskom responds to the identified performance issues. Responses from these different areas to similar questions will ensure a cross-section of rural customers are well represented in the results of the survey. These results, however, relate to the areas studied but would in all probability be generalisable.

3.10 ETHICAL AND SUBJECTIVE CONSIDERATIONS

In conducting the study, care was exercised for the researcher not to be personally involved with surveys because during pre-electrification the researcher conducted meetings with communities informing them about future projects in their communities. On the other hand, post-electrification, the researcher also featured in discussions with local, district municipal and provincial authorities relating to the lessons and challenges of the programme of electrification. The level of involvement pre- and post-electrification may affect how one conducts the research and may pre-empt certain opinions and responses. When one is aware of these issues one is able to take them into account when one conducts such surveys to avoid bias. One is also made aware of ethical questions one needs to be aware of in order to conduct an objective and honest study.

In the focus group interviews, just as in the survey itself, care was taken to be aware of these subjective and ethical considerations. Assistance of a taped account of these focus group interviews was used to identify and track any unsolicited onset of bias or unethical behaviour. The taped account was compared with the flip-charts written during the discussions and that was the basis for compilation of Appendix B. It is basically a point by point account of the issues discussed in the pre-survey focus group interviews.

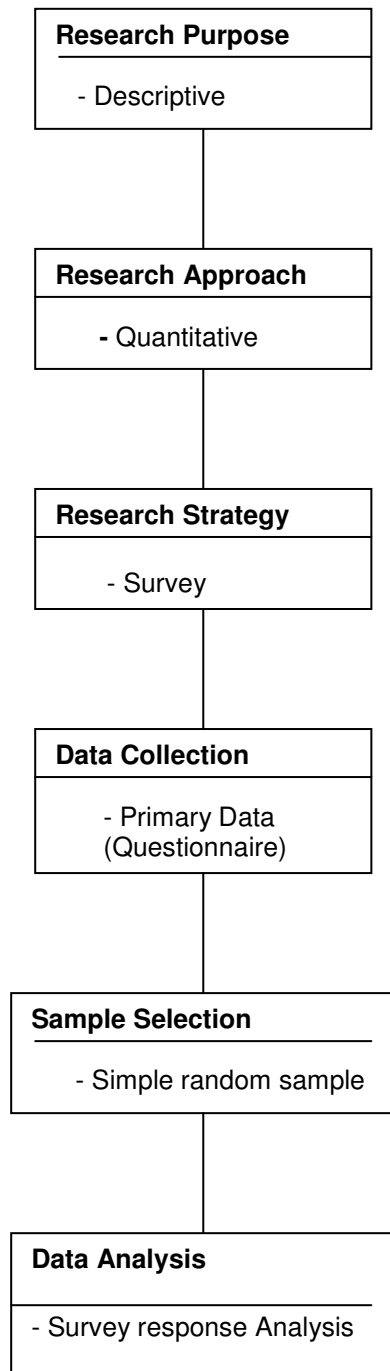


Figure 3.2 Schematic Representation of the Research Methodology

CHAPTER 4: ANALYSIS OF RESULTS

4. FINDINGS

This chapter presents the results of the study in line with the research objectives. These results will demonstrate how the modified SERVQUAL instrument used as a questionnaire in collecting data from the prepaid rural customers of Eskom has achieved its intended purpose and how that data measures what it is supposed to measure. These results will also be presented, analysed and discussed using data tables, charts, graphs and other illustrative forms. The survey outcome will be used mainly for answering the research question that seeks to assess satisfaction of rural prepaid, household electricity customers by using their perceptions and expectations of Eskom's service quality.

4.1 Demographic Profile of respondents (N= 220)

The population of interest for this study are all the prepayment customers of Eskom residing in the rural areas of the Eastern Cape within an area covered by the Distribution Network boundaries of the Southern Region of Eskom. Data for the study was collected from 12 villages chosen randomly from a customer database of those who have had and been using electricity for the last three years. Although gender was not specified in the survey, a large number of respondents were women who are co-heads of households and presumably middle-aged.

The bulk of the responses, 50% to be precise came from Chris Hani District Municipality node which is situated at the North Western side of the Province (See Figure 3.1). There were fewer responses, 18% from O R Tambo District Municipality which is situated on the North Eastern side of the Province. Amatola District Municipality on the South Eastern side of the Province accounted for 32% of the responses. An explanation of the skewness of the sample is ascribed to these areas having been electrified at different times. In grouping the areas for the purposes of sample selection, Chris Hani District had many areas fitting the criteria of areas that have been electrified in the last 3 years, hence more responses came from it.

4.2 Frequency of responses

Table 4-1 below shows frequencies of the five SERVQUAL dimensions for areas studied. The expectations statements in all five dimensions were rated by all respondents in the study. Notable in the data was the maximum of 7 response rate for the SERVQUAL expectation section in all five dimensions ("Strongly Disagree to "Strongly Agree" scale). The figures below reflect the number of responses per question per dimension for all villages for the "expectations" statements.

Table 4.1: Expectations Frequencies

STUDY AREA	EXPECTATIONS									Total
	Strongly disagree					Strongly agree				
			1	2	3	4	5	6	7	
Southern Region	DIMENSION	Tangibles	0	0	0	0	0	0	880	880
		Reliability	0	0	0	0	0	0	1100	1100
		Responsiveness	0	0	0	0	0	0	880	880
		Assurance	0	0	0	0	0	0	880	880
		Empathy	0	0	0	0	0	0	1100	1100
	Total		0	0	0	0	0	0	4840	4840

Table 4.2 below shows the perceptions frequencies of the five SERVQUAL dimensions for all villages included in the study. The perceptions statements in the tangibles dimension below were rated at 7 by all 220 respondents interviewed. A more varied response has been seen in other dimensions where frequencies per dimension statement differ from each other.

Table 4.2: Perceptions Frequencies

STUDY AREA	PERCEPTIONS									Total
	Strongly disagree					Strongly agree				
	1 2 3 4 5 6 7									
Southern Region	DIMENS ION	Tangibles	0	0	0	0	0	0	880	880
		Reliability	179	230	237	208	16	135	95	1100
		Responsiveness	29	74	143	259	205	167	3	880
		Assurance	0	0	74	89	169	381	167	880
		Empathy	0	5	226	389	170	214	96	1100
	Total		208	309	680	945	560	897	1241	4840

The following summarised table, Table 4.3, is derived from both expectations and perceptions tables above to simplify data and interpret ratings.

Table 4.3: Summarised expectations versus perceptions frequencies

MEASURE		RATING			Total
		Below 6	6	7	
Expectation	Southern Region	0	0	4840	4840
	Total	0	0	4840	4840
Perception	Southern Region	2702	897	1241	4840
	Total	2702	897	1241	4840

The above table shows that the majority of perceptions yielded a rating of below 6 whilst expectations ratings yielded precisely 7. This shows that expectations ratings in the sample are much higher than perceptions not withstanding variations in responses per village.

Further analysis of this data will be done to determine the significance of the perception responses falling below 6 and interpretation thereof. This will also demonstrate the differences between expectation ratings and perception ratings to conclude about their relationship and a derived meaning thereof.

4.3 Descriptive Statistics

Descriptive statistics are used to summarise quantitative data, enabling patterns and relationships to be explained which are not apparent in the raw data (Hussey and Hussey, 1997). Descriptive analysis of survey respondents was conducted to describe the measure of significance of survey respondents' expectations of various aspects of electricity service overall and also by village groups. The descriptive analysis of survey respondents was also conducted to describe the measure of significance of survey respondents' perceptions of various aspects of electricity service overall and by village groupings. In view of Table 3.4, it shall be noted that although it represents descriptive statistics for the total sample, all the expectation responses were 7 so there are no variances. The same applies to the Tangible perceptions responses for the total sample and also by the village groups. Only variances from question five down from the perceptions section will be evaluated. These will be statements in the Reliability, Responsiveness, Assurance and Empathy dimensions of the scale.

Table 4.4 below shows descriptive statistics on questionnaire responses for the total sample. The Q# denotes the question number in the survey. SERVQUAL derived statements are as they appear on the questionnaire but modified to be specific to prepaid electricity customers. P No denotes the number of each statement in the perception section of the questionnaire. The Min and Max are the lowest and highest scores received for a given statement by all respondents. Mean is the adjusted arithmetic average of all responses for that statement. Std. Dev is the Standard Deviation of all responses for that statement. N is the number of all valid responses to the statement.

A more detailed analysis of individual statements (Table 4.4) reveals that expectations scores were consistently high across all dimensions with a maximum score of 7. However, on the perceptions section besides tangibles score yielding a maximum of seven, depicting no variance, statements 5 to 22 will be relevant for comparative analysis with the corresponding

statements in the expectation section. This is due to their having variable responses that would demonstrate a gap with expectations scores.

Table 4.4: Descriptive Statistics of Respondents' answers (SERVQUAL)

NB: All the expectation responses were 7 so there are no variances. The same applies to the Tangible perceptions responses.

Q#	SERVQUAL Derived Statement	P No.	N	Min	Max	Mean	Std. Dev	Skewness		Kurtosis	
								Statistic	Std. Error	Statistic	Std. Error
RELIABILITY DIMENSION											
5	Prompt service related promises to customers honoured by ESKOM.	P5	220	1	5	2.81	1.045	.066	.164	-.382	.327
6	Genuine interest and commitment by ESKOM in solving customer problems.	P6	220	2	6	3.53	.808	.121	.164	1.102	.327
7	Customers' electricity related service done right the first time by ESKOM.	P7	220	1	2	1.35	.479	.612	.164	-1.640	.327
8	Electricity related service promises to customers kept at all times by ESKOM.	P8	220	1	6	2.86	.971	.467	.164	.494	.327
9	Error-free electricity related service to customers provided by ESKOM.	P9	220	6	7	6.43	.496	.277	.164	-1.941	.327
RESPONSIVENESS DIMENSION											
10	ESKOM employees knowledgeable about timing of service provided to customers.	P10	220	1	4	2.52	.857	-.181	.164	-.602	.327
11	Employees of ESKOM and its agencies give prompt service to customers.	P11	220	3	6	4.51	.808	.585	.164	-.509	.327
12	Willingness of ESKOM employees to help with customer related problems.	P12	220	2	6	4.64	1.039	-.221	.164	-.819	.327
13	ESKOM employees make time for customer related queries and requests for service.	P13	220	3	7	5.10	.873	-.436	.164	-.395	.327
ASSURANCE DIMENSION											
14	Behaviour and presence of ESKOM employees instil confidence to customers	P14	220	4	7	5.76	.821	-.036	.164	-.713	.327
15	Customers feel safe in their transactions with ESKOM employees and their agencies	P15	220	5	7	5.98	.585	.002	.164	-.040	.327
16	ESKOM employees are always courteous and show respect to customers	P16	220	3	7	4.06	.977	.672	.164	-.127	.327
17	ESKOM employees are always knowledgeable about specific customer related problems	P17	220	5	7	6.37	.520	.153	.164	-1.115	.327
EMPATHY DIMENSION											
18	ESKOM gives customers individual attention	P18	220	3	7	4.22	.871	.513	.164	.300	.327
19	ESKOM operates at times that are convenient to customers	P19	220	2	7	4.45	1.475	.353	.164	-1.274	.327
20	ESKOM employees provide personal attention to customers	P20	220	3	7	4.25	.891	.846	.164	.891	.327
21	ESKOM has customers' best interest at heart	P21	220	3	6	3.85	.676	.638	.164	.939	.327
22	ESKOM has employees that understand customers' specific needs	P22	220	3	7	6.16	.715	-1.459	.164	5.264	.327
* 1	Importance of physical appearance of an Electricity utility's premises and equipment to customers.	PAQ1	220	5	20	14.80	4.147	-.311	.164	-.669	.327
* 2	Importance attached by customers to the ability of an electricity utility to perform promised service dependably and accurately.	PAQ2	220	20	35	26.66	3.254	.344	.164	.141	.327
* 3	Importance attached by customers to the willingness of an electricity utility to help customers and provide prompt service	PAQ3	220	15	40	20.48	2.806	2.216	.164	13.353	.327
* 4	Importance attached by customers to the knowledge and courtesy of the electricity utility's employees and their ability to convey trust and confidence.	PAQ4	220	10	25	21.14	2.919	-.219	.164	.308	.327
* 5	Importance attached by customers to the caring and individualised attention provided by the electricity utility to its customers.	PAQ5	220	10	20	16.93	3.136	-.515	.164	-.631	.327
# 1	Perception Reliability Dimension	PREL D	220	13	22	16.99	2.469	.152	.164	-1.136	.327

# 2	Perception Responsiveness Dimension	PRES D	220	11	22	16.77	2.242	.062	.164	-.353	.327
# 3	Perception Assurance Dimension	PAD	220	18	27	22.17	1.754	.102	.164	-.339	.327
# 4	Perception Empathy Dimension	PED	220	19	30	22.94	2.250	.560	.164	.301	.327

4.3.1 Tangibles Dimension

Tangibles score yielded a maximum of seven for both perceptions and expectations thus reflecting no variance. This means that there is no perceived difference between expectations and perceptions on this dimension making it a dimension where no further analysis is needed. In terms of the importance of the dimension in service quality, it was scored low than other dimensions. This means that although as depicted in Table 4.6 “Tangibles” are in an ideal situation in as far as satisfaction of customers is concerned; it is not thought of as essential in the delivery of service to customers.

4.3.2 Reliability Dimension

“Reliability of service to customers” according to TCRP Report 47 (1999), reflects how consistent the delivery of service is to customers and also how dependable it is. This view presupposes that the perception of reliability of Eskom service is understood from a rural household prepayment customer’s viewpoint which is based on these customers’ knowledge and experience of the service. This presumption is critical in order for Eskom to influence the perception that these customers have about the quality of its service.

The evaluation of reliability experience (customer perceptions) of Eskom service compared to expectations regarding reliability (customer expectations) has a mean of 16.99 and a standard deviation of 2.469, thus creating a gap between the customer expectations and their perception of quality. The SERVQUAL model’s interest and that of this study are in the magnitude of the gap between the two or the degree to which performance falls short or meet those expectations. In this case how low the respondents score “the consistency and dependability” of Eskom service in relation to their expectations is evident and should be analysed further in order to suggest appropriate measures to close that gap.

The individual statements relating to “Reliability” are statement 5, 6, 7 8 and 9. These statements yielded average to below average mean scores and with the exception of statement 9, scores widely varied around the mean, indicating respondents inconsistent opinions towards “consistency” and “dependability” of Eskom service, that is, average to low reliability perception . Standard deviations for all reliability statements with again the exception of

statement 5, were less than 1 meaning that the difference between respondents opinions were small especially for statement 7 and 9.

It must be well noted though, that for two statements in the Reliability Dimension, the gap between the minimum and maximum scores or the range was less than 3 and that for the other three statements there was a larger range, that is, greater than 3. Although this measure is inferior to other measures like the mean and standard deviation it must be noted that the two statements with tight ranges are the ones yielding the two extremes in terms of mean scores. The two statements are statements 7 and 9 which yielded the two extremes in terms of the “Reliability Dimension”, that is, extremely low and high mean scores respectively.

In this dimension the largest service quality difference was statement 7, “Eskom performs all electricity related services right the first time”. It is an indication that these customers did not feel comfortable with Eskom’s response to requests made to Eskom either for a new application for electricity, reported supply problem queries and or installation of electricity. This creates a huge gap when comparing high expectations for this statement and the perceived consistent, low actual performance.

The Reliability dimension being rated low means that respondents’ perceptions regarding Eskom service are comparatively (compared to expectations about reliability) low on “its ability to deliver promised services dependably and accurately”. However, the last statement on the Reliability dimension, statement number 9, an “error-free administration of customer information to make it easy to purchase electricity” has the highest mean 6.43 of all other statements. This denotes high acknowledgement by customers of the accurate capturing of customer information by Eskom to enable customers to purchase electricity hassle-free. If this statement is factored out, the Reliability Dimension in general would be the lowest rated of all dimensions. The variability of data from the mean, using coefficient of variation is 14.9% and is highest among all other dimensions. This simply means that there is bigger variation in responses implying inconsistency of scoring in this dimension.

4.3.3 Responsiveness Dimension

This dimension examines a service enterprise’s willingness to help customers and provide prompt service (Zeithaml, V.A., Parasuraman, A. & Berry, L.L. (1988). In the case of Eskom, it is how customers perceive response times to service requests and problem inquiries against their expectations.

Evaluation of the Responsiveness Dimension reveals that its mean score is the lowest (16.77) of all other dimensions although when looking at individual statement responses this is not evident except with one of the four statements, statement 10 with a mean of 2.51. The other three statements have comparatively higher mean scores with statement 11, 12 and 13 yielding means of 4.51, 4.64 and 5.10 respectively. These statements yielded average to high mean responses and without exception all scores were very tight around the mean, indicating respondents sharing similar opinions towards “quick responses to queries” and “commitment and readiness to help customers” by Eskom staff and management. Standard deviations for all responsiveness statements with the exception of statement 12, were less than 1 meaning that the difference between respondents opinions were small.

It is noted that, that for two statements in the Responsiveness Dimension, the gap between the minimum and maximum scores or the range equalled 3 and that for the other two statements there was a larger range, that is, greater than 3. The indication of this larger variance means that responses were fairly distributed along the scale. How this distribution looks like though, will determine how the respondents scored the dimension.

Although perceptions by respondents on responsiveness are not rated higher in comparison with its expectations they are by no means rated lower. Further analysis of the gap thus created will determine what decisions are needed to close this gap. It should be noted though that the mean for this dimension is rated lower than any of the other four dimensions and this means respondents were not rating highly Eskom’s ability to “respond quickly to queries” and Eskom’s staff and management’s “commitment and readiness to help customers.”

Further analyses of the four statements making up this dimension reveal that only the first statement about “ability of Eskom employees to inform customers when service will be delivered” was rated lowest. This meant that customers were not very happy with being kept in the dark in as far as the precise time of the delivery of service to them. This is contrary to service level standards that Eskom specifies for dealing with each service query as reflected in their value chain key performance indicators discussed in the literature review. This implies a gap in what Eskom management say they provide as reflected in the value chain and the lack of decisiveness and confidence in fulfilling it. The other three statements about “Eskom’s commitment and willingness to help customers with their problems” were rated higher than average denoting some acknowledgement by respondents of some commitment by Eskom although not higher compared to their high expectations, to help with customer queries and problems.

4.3.4 Assurance Dimension

Assurance entails employees' knowledge and ability to engender trust and confidence to customers (Bitner and Zeithaml, 2003) and it implies Eskom's employees' ability to be knowledgeable about rural household prepayment customers' specific problems and issues, and their willingness and courtesy to deal with them.

The evaluation of the "Assurance" experience or perceived quality of how Eskom deals with rural household prepaid customer issues compared with customer expectations has a mean of 22.17 and a standard deviation of 1.754. This means that the respondents acknowledge Eskom's above average courtesy in dealing with customer problems and that its employees are highly knowledgeable about issues affecting this customer grouping. The variability of data from the mean, using coefficient of variation is 7.9% and is lowest among all other dimensions. This simply means that there is very little variation in the responses implying consistency.

The individual statements referred to in these analyses are statement 14, 15, 16, and 17. These statements yielded above average to high means with the exception of statement 16. Although the overall mean was higher than average, 33.1% of respondents rated it lower than average and 35, 5% slightly above average. This means that 31.4% of the respondents rated it above average. The majority of the respondents, however acknowledge that Eskom "employees show courtesy and respect towards them" but imply that this aspect could be improved.

The statement with the least service quality gap is statement 17, "Eskom employees are always knowledgeable about specific customer related problems". This means that there is minimal to no gap between what these respondents perceive as Eskom employees' knowledge of specific service related queries and their expectations of what these employees should know.

The "Assurance Dimension" in general is perceived by respondents as highly rated, meaning that customers acknowledge Eskom employees' knowledge of their specific issues and that they engender trust and confidence in customers as described by Bitner and Zeithaml (2003).

4.3.5 Empathy Dimension

Empathy entails a firm providing a caring and an individualised attention to the customer (Bitner and Zeithaml, 2003) and in this case it is Eskom's ability to understand its household prepayment rural customer base and its electricity needs and offer them a personalised, caring and individual service.

The evaluation of this dimension yielded an above average response from respondents on how Eskom is perceived with regard to understanding its customers and how Eskom gives them personalised, individual attention. In comparison with very high expectations this dimension yielded a mean of 22.94, the highest of all other dimension means. In terms of individual statements, statements 18, 19 and 20 which also describe the employees conduct towards customers had yielded high mean scores of 4.22, 4.45 and 4.25 respectively. Implications are that the individual and personal attention and convenience of Eskom's operating times are perceived by respondents "as a comparatively high regard for customers". It should be noted though, that statement 21 denoting Eskom having "customers at heart" yielded an average mean score (3.85) compared with other statements. This could mean that respondents were unsure or not totally convinced that this was the case, hence the rating. Compared with the high expectations for this statement this service quality perception score is low. Statement number 22, "Employees of Eskom understand customers' specific needs" has the mean of 6.18 denoting the customers' high satisfaction with Eskom employees' empathy with and understanding of their needs.

Table 4.4 also shows the relative importance attached to each of the dimensions by respondents, with Reliability and Responsiveness being given the highest weight (See the importance scores for each dimension at the bottom of table 4.4). These two dimensions are regarded by respondents as the most important of all other dimensions in so far as service quality is concerned. The "Reliability dimension" though, has the highest of all the weights in terms of relative importance rating followed by Responsiveness, Empathy and Tangibility dimensions. The "Assurance dimension" has medium importance of all dimensions and comes after Responsiveness in terms of weighted importance. The importance weight per dimension has an interesting bearing on how these respondents evaluated their perceptions versus expectations per dimension. For instance, the Reliability dimension which has been accorded the highest importance weight has been scored low by respondents and this has a huge bearing on the outcome of overall quality perceptions.

4.4 Gap Analysis

Table 4.5 shows the expected and perceived scores and the gap thus created for each item and per dimension. Table 4.5 also addresses the research question, "How do rural household prepayment electricity customers' perceptions of service compare with their expectations?" This question provides an answer to the research's fourth goal, that is, identification of gaps between expected service and perceived actual service within Eskom for the purpose of improving performance with regard to those aspects of service with quality gaps.

Table 4.5: Table of Mean and Gap scores		E	P	Gap
Q1	Possession and utilising of modern equipment	7	7	0
Q2	Physical facilities are visually appealing	7	7	0
Q3	Professional and neatly dressed staff	7	7	0
Q4	Documentation and material visually appealing	7	7	0
Q5	Promised time-frames for service adhered to	7	2.81	-4.19
Q6	Keen interest in solving customers' problems	7	3.53	-3.47
Q7	Service is performed right the first time	7	1.35	-5.65
Q8	Provide promised level of service consistently	7	2.86	-4.14
Q9	Accurate customer records kept	7	6.43	-0.57
Q10	Employees prescribe specific times for service	7	2.52	-4.48
Q11	Employees give prompt feedback to customers	7	4.51	-2.49
Q12	Employees always willing to help customers	7	4.64	-2.36
Q13	Employees never too busy to respond to customer queries	7	5.10	-1.9
Q14	Employee behaviour instil confidence in customers	7	5.76	-1.24
Q15	Customers feel safe in transacting with employees	7	5.98	-1.02
Q16	Employees polite and courteous to customers	7	4.06	-2.94
Q17	Staff have the knowledge to answer to customer queries	7	6.37	-0.63
Q18	Customers are given individual attention	7	4.22	-2.78
Q19	Operating hours are convenient to all customers	7	4.45	-2.55
Q20	Personal attention being given to customers	7	4.25	-2.75
Q21	Staff have customers' best interest at heart	7	3.85	-3.15
Q22	Employees understand customers' specific needs	7	6.16	-0.84

Table 4.4 gives an indication of the mean perceived and expected scores per item in each dimension. The difference in the mean scores provides the gap scores.

Table 4.6 Statements ranked according to the positive or negative gap scores

R	Q	Statement	Gap	SERVQUAL Dimension
1	Q1	Possession and utilising of modern equipment	0	Tangibles
2	Q2	Physical facilities are visually appealing	0	Tangibles
3	Q3	Professional and neatly dressed staff	0	Tangibles

4	Q4	Documentation and material visually appealing	0	Tangibles
5	Q9	Accurate customer records kept	-0.57	Reliability
6	Q17	Staff have the knowledge to answer to customer queries	-0.63	Assurance
7	Q22	Employees understand customers' specific needs	-0.84	Empathy
8	Q15	Customers feel safe in transacting with employees	-1.02	Assurance
9	Q14	Employee behaviour instil confidence in customers	-1.24	Assurance
10	Q13	Employees never too busy to respond to customer queries	-1.90	Responsiveness
11	Q12	Employees always willing to help customers	-2.36	Responsiveness
12	Q11	Employees give prompt feedback to customers	-2.49	Responsiveness
13	Q19	Operating hours are convenient to all customers	-2.55	Empathy
14	Q20	Personal attention being given to customers	-2.75	Empathy
15	Q18	Customers are given individual attention	-2.78	Empathy
16	Q16	Employees polite and courteous to customers	-2.94	Assurance
17	Q21	Staff have customers' best interest at heart	-3.15	Empathy
18	Q6	Keen interest in solving customers' problems	-3.47	Reliability
19	Q8	Provide promised level of service consistently	-4.14	Reliability
20	Q5	Promised time-frames for service adhered to	-4.19	Reliability
21	Q10	Employees prescribe specific times for service	-4.48	Responsiveness
22	Q7	Service is performed right the first time	-5.65	Reliability

(R= Ranking of the questions and Q= Question Number)

Table 4.7 Dimension Comparison (Average mean scores per dimension)

Dimension	Expected	Perceived	Gap
Tangibles	7	7	0
Reliability	7	3.396	-3.604
Responsiveness	7	4.1925	-2.8075
Assurance	7	5.5425	-1.4575
Empathy	7	4.586	-2.414
Overall	7	4.9434	-2.0566

4.5 Research Question and the Hypothesis

This section analyses the results of the various statistical techniques that were used in testing the hypothesis and identifying the relationships that were stated in Chapter 3.

4.5.1 ANOVA Analysis

A one-way ANOVA statistical procedure was conducted on independent samples at a significance level of 0.05 to test the null hypothesis. The results in Table 3.8 below show that significant differences exist among responses to certain dimensions but that in general there is no significant difference in how the respondents perceive Eskom service in relation to their expectations. Analysis of Variance (ANOVA) determines whether differences exist among two or more population's means (Keller and Warrack, 2000). In this section we explore ANOVA analysis to determine possible differences of customer perception on service quality of Eskom between different groups of villages in different geographical (District Municipalities) areas.

Test of homogeneity of variance has been conducted to ensure variance equality assumption has not been violated (Lamsali, Ismail, Razak, Lazim, Adnan and Arshad, 2004). The results show that the Levene's test for homogeneity of variance (Appendix D) is not significant ($p = 0.05$) and hence we can conclude that the population variances for each group are approximately equal. It must, however be clear that this test measures the assumption that the variance between the 12 village samples is equal. According to the table in Appendix E, the F values are not statistically significant except for statements 6 and 7 in the Reliability dimension, statement 11 in the Responsiveness dimension, statement 16 in the Assurance dimension and statements 19 and 20 in the Empathy dimension. The largely insignificant factor (66.67%) in the sample implies that the variances are not significantly different and that the assumption of equal variances is not violated. On the other hand all other variances (33.33%) were significantly different and equality of variances was violated. It is clear from this table that the 12 different village samples are not significantly different from each other on service quality dimensions measured. This implies that there are no major differences between the service quality dimensions responses of various geographic areas and perceptions responses by customers in the same areas. This has been proven by using the Levene's test of homogeneity of variance since the T-test statistic would not be able to be conclusive on multiple samples as it is only effective when comparing two samples.

In interpreting the ANOVA analysis the F-value, degree of freedom and $p < 0.05$ indicates that in general, customer perceptions on Eskom service quality is similar across groups but that there are differences per individual question in each dimension and per dimension.

Table 3.8 presents results of the ANOVA tests using village groups as independent variables and service quality dimensions as the dependent variable. It can be deduced from Table 3.8 that no statistical differences ($p > 0.05$) were identified between groups for the Reliability dimension, that is, their perception of how “consistent and dependable Eskom’s service quality is”. In this Dimension there was only one item with a statistically significant difference ($p < 0.05$) and it was perceptions responses to question 7, expectation versus perception between the groups of “how Eskom performs all electricity related services accurately the first time”. The “Reliability” dimension itself is not statistically significant because in only 39% of the cases respondents provided similar responses. In almost 61% is not significant and thus rejects the null hypothesis. Null hypotheses means that there is no mean difference across all groups. This means that the “Reliability dimension” perceptions will have equal means across every group.

In the Responsiveness dimension there was only one item with a statistically significant difference ($p = 0.01$) and it was perception responses to question 11, “Eskom employees provide prompt service to customers”. This means that in 99% of the cases the respondents provided similar responses to the particular question. However, if one looks at the total dimension itself there is no statistical significant difference as ANOVA only yielded $p = 0.212$. In other words the Responsibility dimension perception is not significant as only 21.2% of its perception responses were significant. This level of significance could mean that there were differences that could only be attributable to chance.

In the “Assurance Dimension”, there is no particular perception response that was significant and hence the whole dimension was statistically not significant.

In the “Empathy Dimension” two questions had responses which were significantly different and they are: question 19 “Eskom gives customers individual attention” $p = 0.04$ and question 20 “Eskom has convenient operating hours” $p = 0.00$. The “Empathy Dimension” itself is statistically significant at $p = 0.00$.

Table 4.8 Results of ANOVA Tests – Customer Perception Variables

ANOVA						
		Sum of Sq	df	Mean Square	F	Sig.
P5	Between Groups	4.132	11	.376	.332	.978
	Within Groups	235.227	208	1.131		
	Total	239.359	219			

P6	Between Groups	3.830	11	.348	.521	.888
	Within Groups	139.007	208	.668		
	Total	142.836	219			
P7	Between Groups	6.162	11	.560	2.637	.004
	Within Groups	44.183	208	.212		
	Total	50.345	219			
P8	Between Groups	9.632	11	.876	.925	.518
	Within Groups	197.000	208	.947		
	Total	206.632	219			
P9	Between Groups	.237	11	.022	.083	1.000
	Within Groups	53.740	208	.258		
	Total	53.977	219			
P10	Between Groups	1.263	11	.115	.150	.999
	Within Groups	159.623	208	.767		
	Total	160.886	219			
P11	Between Groups	15.452	11	1.405	2.292	.012
	Within Groups	127.507	208	.613		
	Total	142.959	219			
P12	Between Groups	11.825	11	1.075	.995	.452
	Within Groups	224.807	208	1.081		
	Total	236.632	219			
P13	Between Groups	5.335	11	.485	.624	.807
	Within Groups	161.660	208	.777		
	Total	166.995	219			
P14	Between Groups	5.419	11	.493	.720	.719
	Within Groups	142.290	208	.684		
	Total	147.709	219			
P15	Between Groups	2.726	11	.248	.714	.724
	Within Groups	72.160	208	.347		
	Total	74.886	219			
P16	Between Groups	13.609	11	1.237	1.316	.217
	Within Groups	195.500	208	.940		
	Total	209.109	219			
P17	Between Groups	4.537	11	.412	1.570	.109
	Within Groups	54.640	208	.263		
	Total	59.177	219			
P18	Between Groups	6.796	11	.618	.807	.633

	Within Groups	159.290	208	.766		
	Total	166.086	219			
P19	Between Groups	225.777	11	20.525	17.031	.000
	Within Groups	250.673	208	1.205		
	Total	476.450	219			
P20	Between Groups	21.039	11	1.913	2.605	.004
	Within Groups	152.707	208	.734		
	Total	173.745	219			
P21	Between Groups	3.660	11	.333	.718	.721
	Within Groups	96.390	208	.463		
	Total	100.050	219			
P22	Between Groups	6.202	11	.564	1.107	.357
	Within Groups	105.907	208	.509		
	Total	112.109	219			
PAQ1	Between Groups	173.545	11	15.777	.914	.528
	Within Groups	3592.250	208	17.270		
	Total	3765.795	219			
PAQ2	Between Groups	251.515	11	22.865	2.300	.011
	Within Groups	2067.917	208	9.942		
	Total	2319.432	219			
PAQ3	Between Groups	96.803	11	8.800	1.124	.344
	Within Groups	1628.083	208	7.827		
	Total	1724.886	219			
PAQ4	Between Groups	122.742	11	11.158	1.331	.209
	Within Groups	1743.167	208	8.381		
	Total	1865.909	219			
PAQ5	Between Groups	151.727	11	13.793	1.433	.160
	Within Groups	2002.250	208	9.626		
	Total	2153.977	219			
P_Reliability	Between Groups	56.209	11	5.110	.831	.609
	Within Groups	1278.750	208	6.148		
	Total	1334.959	219			
P_Responsiveness	Between Groups	72.080	11	6.553	1.325	.212
	Within Groups	1028.557	208	4.945		
	Total	1100.636	219			
P_Assurance	Between Groups	53.993	11	4.908	1.648	.087
	Within Groups	619.443	208	2.978		

	Total	673.436	219			
P_Empathy	Between Groups	324.758	11	29.523	7.838	.000
	Within Groups	783.473	208	3.767		
	Total	1108.232	219			

4.5.2 Testing for Normality

Most statistical analyses has thus far been dealing with comparing means in order to calculate some measure of variability and statistical significance on a given null hypothesis and confidence level. These tests have by definition been assuming that the data is normally distributed and that the mean is a measure of central tendency. It is however, a pointless exercise comparing means of data that are not normally distributed and hence data need to be normalised first.

In this study there was a sample of two hundred and twenty (N=220) respondents. In order to compare the data with another sample it is important that the data be tested for normality first. A Normality test is conducted by means of computing a descriptive analysis on the current data set and producing some graphics. Descriptive statistics for perceptions dataset on the overall data is:

Descriptive Statistics:

Variable	N	Mean	Standard Deviation	Median	Tr Mean	SE Mean	Min	Max
P	220	4.3818	2.577952	4	4.428977	0.180548	1	7

A Kruskal-Wallis test had to be conducted because of the nature of the data. Conditions for conducting Kruskal-Wallis have been met, that is, the data is quantitative and non-normal and samples are independent (Keller and Warrack, 2000). The Chi-Squared values for the rejection of the Null hypothesis are in different data responses. Data that has yielded big Chi-Squared values are those with which we can reject the Null hypothesis such as perceptions versus expectations to questions 7, 11, 19 and 20. Data other than these 4 questions is not statistically significant and hence yield non-normal distribution.

4.6 Reliability and Validity Assessment

The validity and reliability analyses of the modified SERVQUAL scale were conducted as part of the study to assess the extent of applicability of its dimensions to this study.

4.6.1 Validity Assessment

Face validity, a subjective criterion, is aimed to measure to what extent the scale dimensions and its individual items adequately measure what they are supposed to measure, has been explicitly expressed apriori in many studies (Babakus et al., 1992; Carman, 1990; Parasuraman et al., 1988). In this study too, extensive discussions were held with Eskom customer services middle management and staff that directly interfaces with customers including Call Centre staff, to assess the suitability of the modified SERVQUAL questionnaire. They unanimously confirmed its suitability for the study and hence one can say the instrument had face validity.

For construct validity, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (MSA) and Bartlett's test of Sphericity were used to determine whether applying factor analysis to the customers' perceived quality was appropriate (Foulger, 2008). The Kaiser-Meyer-Olkin measure of sample adequacy evaluates whether the partial correlations among variables are small whereas the Bartlett's Test evaluates whether the correlation matrix is an identity matrix, which would give an indication that the factor analysis is not appropriate (Foulger, 2008). This means that the Bartlett's Test is used to test the null hypothesis that the variables in the population correlation matrix are uncorrelated (Foulger, 2008). The KMO measures the sampling adequacy which should be greater than 0.5 for a legitimate factor analysis to proceed (Foulger, 2008). The value of the MSA was .545 and is considered satisfactory to proceed with factor analysis (Foulger et al., 2008). However, there seems to be disagreement about what threshold of MSA should be regarded adequate to proceed with factor analysis. Friel (2008) seems to differentiate between KMO values and categorise them as marvellous, meritorious, middling, mediocre or miserable. A KMO value of 0.50 to 0.59 is considered miserable according to this approach (Friel, 2008). Bartlett's test of sphericity value (χ^2) was 548.125, with overall significance of the correlation matrix ($p < 0.00$). This test showed that the data used in this study did not produce an identity matrix and were thus multivariate normal and acceptable for proceeding with factor analysis. These two tests combined are prerequisites for proceeding with factor analysis and they both proved conclusive as reflected in Table 4.9 below.

The validity of the classical five dimensions of the SERVQUAL scale remain in question though, as has been revealed in the literature study, however, SERVQUAL is still being used for studying quality in service businesses. Also the fact that customers are asked perceptions and expectations of service quality at the same time is said to be impacting on the instrument's validity and reliability (Khan, Dutt and Bansal, 2007).

Table 4.9 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.545
Bartlett's Test of Sphericity	Approx. Chi-Square	548.125
	df	153.000
	Sig.	.000

Table 4.10 Cronbach's Alpha Reliability Test

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
P5	76.06	21.298	.241	.452
P6	75.35	23.177	.114	.481
P7	77.52	23.091	.302	.460
P8	76.01	21.456	.257	.449
P9	72.44	24.047	.086	.484
P10	76.35	23.626	.042	.496
P11	74.36	22.469	.208	.463
P12	74.23	21.101	.265	.446
P13	73.78	21.781	.266	.449
P14	73.11	22.463	.203	.464
P15	72.90	23.455	.162	.474
P16	74.81	21.379	.263	.447
P17	72.50	24.114	.065	.487
P18	74.65	22.101	.227	.458
P19	74.42	21.250	.095	.505
P20	74.62	22.913	.118	.481
P21	75.02	24.159	.015	.496
P22	72.71	24.883	-.095	.515

4.6.2 Reliability Analysis

Reliability is defined as the ability of a particular technique or measurement instrument applied repeatedly to the same object to yield similar results each time (Babbie and Mouton, 2004).

To assess reliability, Cronbach's alpha was used. Cronbach's alpha is an average of all split-half coefficients that result from different ways of splitting the scale items (Khan, Dutt and Bansal, 2007). A Cronbach's Coefficient Alpha value of .488 (Table 4.11) cannot be regarded

as good as the most common rule of thumb is an alpha exceeding 0.80 but scale with lower reliabilities are often used in practice and productively so. The results are useful in that they are helpful in identifying items in the data that could be problematic. There are two ways of assessing this and they are: First, inquiring on how strong the correlation is between an item and a scale composed of all other items and a question on whether the scale's alpha reliability would be better if that item is deleted. If we take Table 4.10 where an item is deleted, and contrast it with the general Cronbach's alpha score in the reliability assessment Table 4.11, no improvement in the Cronbach's alpha is detected. This means that we lose more power by shortening our test than we would gain from a higher average correlation when we have not deleted any items. In trying to improve the measure we can neither add more items nor delete more than one item at a time as the former would not be practical due to the fact that the study has already been completed and the latter, due to the fact that this would be counter productive as the whole scale could be bad.

In view of the fact that Cronbach's alpha coefficient is low, then the reliability of the scale as used in this study has to be called into question. Although the SERVQUAL scale itself has been widely used and its reliability tested and proven, it has been found to be less reliable in this study.

Table 4.11 Reliability Tests

Using perception questions 5 to 22

Reliability Statistics	
Cronbach's Alpha	N of Items
.488	18

Very low Cronbach alpha value

Item Statistics			
	Mean	Std. Deviation	N
P5	2.81	1.045	220
P6	3.53	.808	220
P7	1.35	.479	220
P8	2.86	.971	220
P9	6.43	.496	220
P10	2.52	.857	220
P11	4.51	.808	220
P12	4.64	1.039	220
P13	5.10	.873	220

P14	5.76	.821	220
P15	5.98	.585	220
P16	4.06	.977	220
P17	6.37	.520	220
P18	4.22	.871	220
P19	4.45	1.475	220
P20	4.25	.891	220
P21	3.85	.676	220
P22	6.16	.715	220

4.6.3 Factor Analysis

Factor analysis is used to find underlying meaning of variables or factors among observed variables (Chiu, 2002). When data contains many variables for instance, factor analysis could be used to reduce the number of variables (Chiu, 2002). In this way it is capable of explaining observed variances in the larger number of variables.

4.6.3.1 Initial Solution

A variety of methods have been developed and used to extract factors from an intercorrelation matrix and very widely used and common among them is the Principal Component method (Friel, 2008). Each component or variable can account for one unit of variance but a useful factor should account for more than one unit of variance or have an eigenvalue greater than one otherwise the factor extracted explains no more variance than a single variable (Friel, 2008). Factor analysis therefore aims to explain multiple variables by a smaller number of factors (Friel, 2008). In terms of results of the initial solution, presented in Table 4.12 below, there are 18 factors (components) that were extracted, the same as the number of variables factored (Friel, 2008).

The first factor has an eigenvalue of 2.179 (Table 4.12) and since this value is greater than one, it explains more variance than a single variable, that is, it explains 2.179 times as much (Friel, 2008). This also translates to explaining a 12.105% of the variance, see variance percentage (Table 4.12). The second factor has an eigenvalue of 2.041 (Table 4.12) and since it is also greater than one it explains more variance than a single variable. It explains 11.337% of the variance. The third factor has an eigenvalue of 1.738 and similar to the other two factors explains more variance than a single variable. It explains 9.655% of the variance. The fourth factor's eigenvalue is 1.507 and is explaining more variance than a single variable. It explains 8.371% of the variance. The fifth factor's eigenvalue is 1.294 and as it also explains more

variance than a single variable, it explains 7.191% of the variance. The sixth factor has an eigenvalue of 1.151 and therefore explains more variance than a single variable. It explains 6.393% of the variance. The remaining factors from factor seven onwards have eigenvalues less than one which means that they explain less variance than a single variable (Friel, 2008).

What should be noted from this initial analysis is that, the sum of the eigenvalues associated with each factor (component) sums to 18; the cumulative percentage of variance from the first six factors is 55.051% (Friel, 2008). This means that 55.051% of the common variance shared by the 18 variables is explained by the 6 factors (Table 4.12). Proponents of categorising these KMO values mentioned previously would explain these results as mediocre since the Kaiser-Meyer-Olkin value was low (0.545) (Table 4.9). This means that the higher the KMO value the greater the percentage that can explain the variance of the 18 variables analysed.

The results of the initial solution suggest that the final solution should extract not more than 6 factors (Friel, 2008).

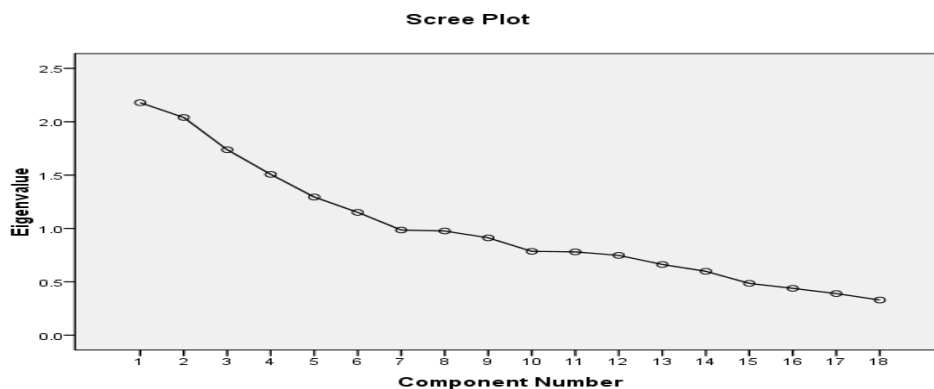
Table 4.12 Principal Component Method

Total Variance Explained						
Extraction Method: Principal Component Analysis.						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.179	12.105	12.105	2.179	12.105	12.105
2	2.041	11.337	23.442	2.041	11.337	23.442
3	1.738	9.655	33.097	1.738	9.655	33.097
4	1.507	8.371	41.468	1.507	8.371	41.468
5	1.294	7.191	48.658	1.294	7.191	48.658
6	1.151	6.393	55.051	1.151	6.393	55.051
7	.985	5.473	60.524			
8	.976	5.423	65.947			
9	.912	5.067	71.014			
10	.786	4.364	75.378			
11	.780	4.336	79.714			
12	.748	4.153	83.867			
13	.662	3.679	87.547			
14	.599	3.325	90.872			
15	.485	2.695	93.567			
16	.439	2.438	96.004			
17	.390	2.166	98.171			
18	.329	1.829	100.000			

Cattell's Scree Plot

Another method to determine the number of factors to extract in the final solution is Catell's scree plot (Friel, 2008). This a plot of all eigenvalues associated with each factor extracted against each variable (Friel, 2008). In as far as the data in the study is concerned, mirroring what has been described under the initial eigenvalues, the scree plot slope identifies the six factors that explain the variance and thereafter it reaches a point where the slope begins to level off. This is an indication that the additional factors explain less than a single variable, due to them being less than one (Figure, 4.1).

Figure 4.1 Cattell's Scree Plot



4.6.3.2 Factor Loadings

The component matrix reflects the correlation of each variable with each factor and is indicated by the Table 4.13 below (Friel, 2008).

The variable "honouring prompt service related promise", for instance correlates all six factors horizontally next to it. These values are .520, -.534, .032, .192, -.124, and .135 for factors 1 up to 6 respectively (Table 4.13). The total proportion of the variance in the variable, "honouring prompt service related promise", is explained by the six factors (components), which simply is the sum of the squared of these factor loadings (Friel, 2008). This is called the communality of the variable, "honouring prompt service related promise" (Friel, 2008). The initial communalities of the 18 variables are reflected in the table below (Table 4.14). Communalities reflect the amount of variance in each variable that is accounted for. Extraction communalities as reflected in Table 4.14 are estimates of the variance in each variable accounted for by factors in the factor solution and small values reflected indicate variables that do not fit well with the factor solution and should possibly be dropped from the analysis.

It is then clear from Table 4.13 that the proportion of variance in each variable that has been accounted for by all the 6 factors (or components) is different. It is evident in all eighteen

variables analysed below that a mixture of proportion of variance in all six factors are different from each other ranging from positive to negative variances (Table 4.13).

Table 4.13 Component Matrix

Extraction Method: Principal Component Analysis.

6 components extracted.

	Component					
	1	2	3	4	5	6
P5	.520	-.534	.032	.192	-.124	.135
P6	.270	-.338	.092	-.009	.509	.090
P7	.585	-.404	.161	-.126	-.044	-.062
P8	.526	-.535	.288	.011	-.123	.021
P9	.245	-.204	.150	-.039	-.491	-.033
P10	.112	-.096	-.213	.643	-.118	-.074
P11	.311	.194	-.181	-.101	.265	.647
P12	.460	.355	-.444	.217	-.171	.153
P13	.428	.441	-.394	.303	-.190	-.240
P14	.367	.166	-.084	.357	.456	-.212
P15	.208	.369	.535	.178	.023	-.471
P16	.430	.498	.328	-.169	-.067	.210
P17	.142	.426	.326	-.185	-.435	.228
P18	.312	.403	.309	-.117	.371	-.036
P19	.290	-.081	-.336	-.435	.217	-.263
P20	.262	.112	-.353	-.503	-.048	-.107
P21	.040	.039	.364	-.190	.029	-.259
P22	-.135	.073	.439	.419	.150	.320

The factor loading above (Table 4.13) determines what the six factors measure. For instance one looks at which variables load highest on which factors. Factor 1, for instance loads highest on variables under one specific dimension, the “Reliability Dimension”. Variables loading high on Factor 1 are; “adhering to promised times for service”, “perform service right the first time” and “consistent level of service provided”. These are all P5, P7 and P8 variables which fall under one dimension that yield .520, .585 and .526 respectively (Table 4.13). Factor 2, for instance, is very difficult to understand as it loads highest on one factor only; “employees courteous to customers”. This situation is the same for factors; 3, 4, 5 and 6. There is no clear interpretation of these variables as Friel (2008) suggests, as more variables are needed to load onto these factors to know what they actually mean.

Table 4.14 Communalities

Extraction Method: Principal

Component Analysis.

	Initial	Extraction
P5	1.000	.627
P6	1.000	.462
P7	1.000	.554
P8	1.000	.662
P9	1.000	.368
P10	1.000	.500
P11	1.000	.666
P12	1.000	.635
P13	1.000	.719
P14	1.000	.550
P15	1.000	.719
P16	1.000	.618
P17	1.000	.583
P18	1.000	.507
P19	1.000	.509
P20	1.000	.473
P21	1.000	.240
P22	1.000	.517

4.6.3.3 Factor Rotation

Rotation is a method that is used to simplify interpretation of a factor analysis. A criterion that has been used is the Varimax Rotation which simply is an attempt to achieve loadings of ones and zeros in the columns of the component matrix (Friel, 2008). Varimax which is part of orthogonal rotations has been used in this analysis due to the fact that underlying factors are expected to be independent of each other (Field, 2005). The rationale of rotation is aimed at checking whether there is any improvement in the factors between unrotated and rotated matrices. Rotation has improved loading on factor 1 in exactly those variables that were loading highest in the unrotated component matrix – see Table 4.15, the highlighted variables. Even in the rotated matrix, variables loading high on Factor 1 are; “adhering to promised times for service”, “perform service right the first time” and “consistent level of service provided” (Table 4.15). All these variables belong to the Reliability Dimension and Factor 1 can easily be named as “reliability of service provided to customers” as it explains how consistent Eskom is in providing consistent and acceptable level of service. Factor 2 that had no particular high loading except for “employees courteous to customers” on the component matrix, improved on loading on that factor and significantly on the “customers feel safe in their transactions with

employees”. Factor 2 then can easily be named as a factor that measures the behaviour of employees towards customers, put differently, “the ease with which customers feel in transacting and interacting with Eskom employees” (Table 4.15). Factor 3 which had no particular significant loading on any variable in the unrotated component matrix improved significantly on the rotated matrix. Particularly important are variables that had negative loadings that are now highly loaded, for example “employees knowledgeable about timing of service to customers”, “willingness of employees to help solve customer problems” and “employees accommodative towards customer queries and requests”. This easily categorises Factor 3 as a factor dealing with how customers are responded to by employees. All these variables however, are in the “Responsiveness Dimension” of the measurement scale used. Factor 4 for instance had negative loadings in most variables in the component matrix and here a significant improvement especially in variables “Eskom operates in convenient times for customers” and “personal attention being given to customers by the employees of Eskom”. It is thus fair to name Factor 4 as “empathy towards the customer” since these variables are in the “Empathy Dimension” of the measurement scale. In Table 4.5 it could be deduced that Factor 5 and 6 follow no particular pattern and hence very difficult to categorise.

Table 4.15 Rotated Component Matrix

Rotated Component Matrix^a Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 8 iterations.							
		Component					
Number	Variable	1	2	3	4	5	6
P5	Prompt service related promises to customers honoured by ESKOM.	.751	-.159	.136	-.066	.095	.076
P6	Genuine interest and commitment by ESKOM in solving customer problems.	.325	.093	-.178	.000	.514	.229
P7	Customers' electricity related service done right the first time by ESKOM.	.703	.137	-.023	.189	.062	.025
P8	Electricity related service promises to customers kept at all times by ESKOM.	.807	.058	-.075	-.024	.025	-.021
P9	Error-free electricity related service to customers provided by ESKOM.	.437	-.038	.047	.027	-.381	-.164
P10	ESKOM employees knowledgeable about timing of service provided to customers.	.133	-.224	.534	-.304	.161	-.171
P11	Employees of ESKOM and its agencies give prompt service to customers.	.014	-.009	.088	.032	.044	.809
P12	Willingness of ESKOM employees to help with customer related problems.	.022	-.027	.699	.151	-.129	.324
P13	ESKOM employees make time for customer related queries and requests for service.	-.056	.146	.807	.191	-.073	-.024
P14	Behaviour and presence of ESKOM employees instil confidence to customers	.029	.328	.416	-.036	.513	.066
P15	Customers feel safe in their transactions with ESKOM employees and their agencies	.016	.740	.147	-.177	-.043	-.342
P16	ESKOM employees are always courteous and show respect to customers	.070	.569	.109	.009	-.354	.390
P17	ESKOM employees are always knowledgeable	-.002	.313	.018	-.068	-.667	.187

	about specific customer related problems						
P18	ESKOM gives customers individual attention	-.055	.651	.003	.033	.121	.255
P19	ESKOM operates at times that are convenient to customers	.087	.058	-.002	.664	.237	.044
P20	ESKOM employees provide personal attention to customers	-.001	.025	.060	.662	-.103	.142
P21	ESKOM has customers' best interest at heart	.067	.373	-.223	.055	-.050	-.203
P22	ESKOM has employees that understand customers' specific needs	-.024	.145	-.077	-.681	.051	.154

4.6.3.4 Explanation of Total variance

The rotated component matrix above has compelled the use of factor analysis on perceived performance scores (P) and the difference between service quality perception and expectation scores (E) using principal component matrix with varimax rotation using four factors or components only (Table 4.16). In the rotated component matrix it has been clear that only four factors had improved their loadings when compared with the unrotated component matrix. The other two factors, factors 5 and 6 did not follow any pattern and did not have any significant loadings even in the rotated matrix and therefore could be eliminated in further factor analysis. The entire data therefore can be explained by the four factors that have shown significant loadings in the rotated matrix hence analysis in Table 4.16. This means that 41.468% of the common variance shared by the 18 variables is explained by the 4 factors only (Table 4.16).

Table 4.16 Factor Analysis

Using FOUR factors only

Total Variance Explained (Extraction Method: Principal Component Analysis)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumul %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.179	12.105	12.105	2.179	12.105	12.105	2.079	11.552	11.552
2	2.041	11.337	23.442	2.041	11.337	23.442	1.905	10.581	22.133
3	1.738	9.655	33.097	1.738	9.655	33.097	1.838	10.211	32.344
4	1.507	8.371	41.468	1.507	8.371	41.468	1.642	9.124	41.468
5	1.294	7.191	48.658						
6	1.151	6.393	55.051						
7	.985	5.473	60.524						
8	.976	5.423	65.947						
9	.912	5.067	71.014						
10	.786	4.364	75.378						
11	.780	4.336	79.714						
12	.748	4.153	83.867						
13	.662	3.679	87.547						

14	.599	3.325	90.872						
15	.485	2.695	93.567						
16	.439	2.438	96.004						
17	.390	2.166	98.171						
18	.329	1.829	100.000						

4.6.4 Hypothesis Testing

The objective of the study is to determine whether there is an empirically significant difference between perceived quality of service delivered by Eskom to its rural household prepayment electricity customers in the Eastern Cape's Southern Region of Eskom and their expectations. Various types of analyses were performed on the data to determine if there are any significant differences as per the hypotheses:

Null Hypothesis. $H_0: \mu_1 = \mu_2$

There is no significant statistical difference between the services of Eskom as perceived by its prepaid electricity rural household customers compared to their expectations of service. Put differently it means that Eskom current service performance as perceived by these customers meets their expectations.

Alternate Hypothesis. $H_1: \mu_1 \neq \mu_2$

There is a significant statistical difference between services of Eskom as perceived by its prepaid electricity rural household customers compared to their expectations of service. Put differently it means that Eskom current service as perceived by these customers does not meet their expectations.

Analyses of various dimensions of the SERVQUAL scale and individual statements of each dimension reveal that a statistically significant difference exists between expectations mean scores and perception mean scores with varying effects between dimensions. The data also revealed that significant differences exist between mean scores of important dimensions of service quality like "Reliability" and "Responsiveness".

It is thus clear from the above that our data rejects the null hypothesis and supports the alternate hypothesis. This means that current performance of Eskom in servicing rural prepaid household customers does not meet expectations as perceived by these customers. This is especially significant in what customers have described as most important attribute to their satisfaction,

the “Reliability Dimension”. This dimension has been scored low by most respondents and improvement in this dimension could significantly impact how Eskom is perceived by these customers.

4.7. Conclusion

Based on the study objectives the following observations were made:

- Data analyses revealed a clear difference between what the rural household electricity customers expected and what they actually receive. This is a significant consumer GAP 5 between expected and perceived services offered by Eskom. The questionnaire highlighted areas where customers expected high quality of service and those areas whose quality profile was not important in their eyes but still expected them to be of a higher standard. These areas as depicted in the SERVQUAL instrument used are, “Reliability” and “Tangibility” Dimensions respectively.
- The analyses also showed significant differences between the five SERVQUAL dimensions of service quality themselves as perceived by these rural household customers who receive Eskom services. It identified areas that are supposed to be high by power utility standards but which received below par service quality scores, such as reliability, assurance and responsiveness.
- Expectations were significantly high in all dimensions, customers registering maximum expectations in all dimensions despite having given them different rankings in terms of their importance in the service quality context.
- Demographic information was not emphasised in collecting data which might have biased the results towards one side compared to the other in terms of age, gender and educational qualifications.
- All these observations need to be addressed as input to management decision-making for appropriate action to close identified quality gaps.

CHAPTER 5: DISCUSSION AND INTERPRETATION OF RESULTS

5. Discussion and interpretation of results

This chapter overviews the findings of this research study and their concomitant implications for service quality of rural household prepayment electricity customers of Eskom. This study premised that there is a significant difference or gap between Eskom service offering as perceived by its household rural prepaid electricity customers compared to expectations of these customers. The research measured the gap between perceived service quality and expectations according to the formula developed by Parasuraman et al. (1985), and it is stated as follows:

$$Q (\text{Quality}) = P (\text{Perceptions}) - E (\text{Expectations})$$

The gap between Perceptions and Expectations provides a measure of service quality and by implication determines the level of satisfaction. The research also measured perceptions versus expectations along the five SERVQUAL dimensions, namely: tangibles, reliability, responsiveness, assurance and empathy as stated in Parasuraman et al. (1991). One of the aims of this study is also to identify the most important service quality dimension in an electricity distribution context from the rural household prepaid customers' viewpoint.

This chapter also projects identified areas of interest that could be explored for future research.

5.1 Most important dimension of service quality

Amongst the most important aspects of this study is how important customers rate each SERVQUAL dimension when they evaluate a power utility's quality of electricity services (Parasuraman et al, 1991). Eskom as a power utility has been rated by rural prepaid household customers on the most salient features these customers deem important for quality of service.

Table 5.1 below summarises the importance rating of the 5 dimensions as perceived by the 220 respondents in ascending order.

Table 5.1 Most important Service Quality Dimension in order of importance. N=220

Service Quality Feature (Dimension)	Desired Sum (No. of responses on how important each dimension is rated)	Desired Mean (Mean importance of each dimension)
The ability of a power utility to perform	5866	26.66

promised services dependably and accurately (Reliability Dimension)		
The knowledge and courtesy of a power utility's employees and their ability to convey trust and confidence (Assurance Dimension)	4650	21.14
The willingness of a power utility to help customers and provide prompt service (Responsiveness Dimension)	4505	20.48
The caring, individualized attention the power utility provides to its customers (Empathy Dimension)	3725	16.93
The appearance of a power utility's facilities, equipment, personnel and communications material (Tangibility Dimension)	3255	14.80

According to Table 5.1 the customers' most important service quality feature is the "ability of a service provider to deliver promised service dependably and accurately" and the average value (Mean 26.66) is the highest value among all five dimensions. The least important attribute is "the appearance of a power utility's buildings, equipment, how professional its staff dresses and the appearance of its communication material" (Mean 14.80). Although Berry and Parasuraman (1991) recognised that the "Tangibility dimension" when compared with other dimensions, other authors seem to support its relevance as an important feature of service quality. The argument that could be accorded to tangibility's importance would be related to differences of service enterprises. For example, this dimension might be one of the most important in a restaurant setting.

Table 5.1 also indicates that "knowledge and courtesy of employees and their ability to convey trust and confidence" – "assurance" is the second most important service quality dimension (Mean 21.14). Although this might be the case the difference between responsiveness (Mean 20.48) and assurance is negligible at 0.66. This means that these two dimensions are equal in importance in the respondents' eyes. In the rural customers' eyes "knowledge and courtesy of employees and their ability to convey trust and confidence" should be important in the context of restoration of power where there was a power outage in remote areas. Equally, responsiveness of the utility to these rural customer problems is critical as it would affect the length of time of power outages and restoration times.

5.1 Frequency of responses

Expectations frequency: As shown in Table 3.1, expectations across all five dimensions yielded a rating of 7 which is a maximum score of the measurement instrument. This implies that rural prepaid household customers are expecting Eskom to deliver services of the highest quality. Scores were also uniform across all villages included in the study.

Frequencies of perceptions: As shown in Table 3.2, perception scores are variable in total and across all dimensions. In total 74.3% of responses are below 6 reflecting variability of perception responses against the unusually high expectation. Expectations were all scored on the maximum, a rating of 7 on the Likert scale. Frequencies for the Reliability dimension are on the low side that is, 58.7%, are below average. This means that reliability of service is on the poor side, meaning that quality of actual service is far below what respondents expect. This is a dimension that respondents rated as important in determining quality of service. Frequencies of responses in the Responsiveness dimension were heavily skewed at 57.4% between low and average, rated 4 and below. This meant that the majority of respondents were unsure about the decisiveness of Eskom employees in responding to their queries for service. Eskom service in this interpretation is neither excellent nor bad and requires some performance quality improvements. In the Assurance and Empathy dimensions frequencies were high above average rated 6 and 7, and average to high 5, 6, and 7 respectively. This meant that Eskom employees could be trusted when transacting with them and also are very understanding of customers' specific issues and show passion when dealing with customers-specific problems and queries.

5.3 Customer satisfaction with Eskom service quality (Research Question 1)

The study has confirmed that aspects of service quality that lead to the greatest satisfaction are those identified by customers through satisfaction surveys and customer forums. Eskom's rural prepaid household customers' responses to service quality have confirmed what the literature review has reiterated about satisfaction; that customers evaluate service and formulate a perception based on a number of experiences, Bitner and Hubert; Oliver; in (Schinjs, 2003). It is reiterated that the constant measurement of satisfaction efforts are beneficial both to the organization and to the customers as it improves the relationships and also enhances performance in the critical areas thus identified.

Service quality and customer satisfaction are used interchangeably and hence sometimes difficulty in separating them. Other authors believe service quality is one component of a broader customer satisfaction element and that it narrowly describes customer satisfaction (Crosby and Stephens, 1987), (Fornel et al., 1996) and (Zeithaml, 1988) in Kenelly and Hellier

(2001). However, in the context of this study customer satisfaction has been evaluated on the basis of service quality to customers. Zeithaml and Bitner (2003) argued that a measurement program that only captures perceptions of service is missing the point and a critical one in the service quality equation as customers compare what they perceive they get in a service encounter with their expectations of that encounter. The surveys and customer forums, measure what Zeithaml and Bitner (2003) termed the ideal (expectations) versus the current reality (perceptions). Customer satisfaction of Eskom's rural prepaid household customers has been modelled in this study along determining the ideal versus current reality of servicing them. The unusually high expectations of the study respondents may have been triggered by previous service encounters that were beneficial to them in the past or simply the reputation and image that Eskom has. When one looks at Eskom service quality in particular, one recognises that perceived performance (the customer's recognition of performance) measurement is critical if one is interested in knowing whether or not they deliver value to the end user (Vavra, 1997). This value delivery is critical to whether a customer is satisfied or dissatisfied with Eskom service quality.

Critical in delivering service to customers is the role played by the company's employees as a vehicle to create value to electricity end users. In all five SERVQUAL dimensions used to collect and evaluate data, a human element in delivering quality cannot be over emphasised. In the literature review where actual case studies of customer satisfaction were conducted and put on video, one saw how destruction of value or creating such value is dependent on a human intervention. This means that employees who interface with customers require management empowerment due to the fact that they are the company's face to its external customers. Besides management having to establish and nurture its employees to have similar goals with the company, it becomes important to assess education and training of these employees. Building capacity and establishing aptitude to service customers becomes the most critical factor in development of front line staff.

5.4 Customers' perception of service (current reality) and customers' expectations of service (the ideal) (Research Question 2 and 3)

It is clear from the data collected that there is a variance in satisfaction from electricity services currently rendered by Eskom. The theory from the literature study seems to support the fact that this information should be gathered from the customers themselves. What was alluded to earlier that an organization should not leave its customers with questions otherwise the competitor will answer them, rings true. Eskom would not know that its customers have questions until it makes an effort to find out from them. Although Eskom is in a unique position from a strategic

and legislative perspective, that is, being a monopoly in the electricity industry, it is important that it assesses what customers perceive about the quality of its service. This helps to ascertain whether there are any service issues that management either need to take immediate action or defer.

Expectations of customers when doing surveys is always on the high side and most authors cited in the literature review seem to concur with this fact. It is always perceived that customers will have such high expectations when considering what they have to pay for a service or commodity. There is also the fact that consumers may be expecting high performance from modern firms due to innovation and technology that increases efficiency. This efficiency may be construed as a way of servicing customers better and hence the high expectation of improved service quality from these firms.

Existence of a gap when assessing the two; perceptions and expectations through the SERVQUAL scale has yielded maximum expectations for the study. The gap thus created between expectations and perceptions supports the study hypothesis that there is a quality difference between what is ideal and the actual reality. Table 3.4 illustrates the gap in scores for individual items of the measurement scale from the data that was collected. This gap is the difference between perception scores and expectations scores. The largest gap (-5.65) is in item 7, “Service performed right the first time”, means that this was the lowest scored question against a very high expectation. Customers unanimously rated service quality along this question and dimension as very poor service from Eskom. It must be noted that lower ratings are attributable to the Reliability Dimension” (Table 3.5) “Statements ranked according to the positive or negative gap scores” and Table 3.6 “Dimension Comparison (Average Mean scores per dimension)”. The dimension being rated the most important for service quality by respondents has the largest gap (-3.604) and this means that “Reliability” of promised service consistently and dependably is adversely affected.

The “Responsiveness dimension” follows after the “Reliability dimension” in yielding low rated scores and “thus Eskom employees’ willingness to help customers and provide prompt service” is called into question. As per the literature study, two areas in how Eskom is structured are where these issues have a bearing, that is, the “Walk-in-centre” and the “Contact centre”. These are two areas where a volume of customer traffic requiring service is directed and where unhappiness could be coming from. Question 10 is rated behind question 7 on the magnitude of the gap according to Table 4.4 – Table of Mean and gap scores. The question “Eskom employees can prescribe specific times for service” has been scored low by respondents, meaning that certainty about informing customers when they will be serviced is

perceived as a problem. This problem may be twofold; ineffective communication between “back office” and “front office” and also reluctance from staff to communicate bad news to customers regarding when they will be serviced. Other gaps in the Responsiveness dimension are not significant and Question 10 seems to have affected the overall rating for this dimension. Table 4.6 illustrates that this dimension has the second largest gap behind the Reliability dimension (-2.8075).

The other two dimensions; Assurance and Empathy dimensions although yielding insignificant gaps compared to the other two dimensions discussed are by no means in an ideal situation. The “Empathy dimension” returns lower rated scores than the “Assurance dimension” and hence has a wider gap between expectations and perceptions than the “Assurance dimension”. In as far as the “Empathy dimension” is concerned, rural household electricity customers although crediting Eskom employees in providing a caring and an individualised attention to them according to Zeithaml and Bitner, (2003) it is by no means a strong affirmation. These customers’ acknowledgement of Eskom’s ability to understand its household prepayment rural customer base and its needs and offering them a personalised, caring and individual service requires improvement.

The “Assurance dimension”, has the best ratings by far compared to other dimensions and this means that rural customers perceive “Eskom’s employees’ ability to be knowledgeable about rural household prepayment customers’ specific problems and issues, and their willingness and courtesy to deal with them”, as reasonably satisfactory. All statements under this dimension yielded approximately 5 and above except one statement that yielded a comparatively lower score. This statement, “Eskom employees are courteous and polite to customers” although having been scored low by respondents thus creating a gap implies there is room for improvement on this score. The gap in this dimension (-1.4575) as reflected in Table 4.6 Dimension Comparison (Average mean scores per dimension), is comparatively lower than all other dimensions and reflects customers’ feelings about quality of service in this regard.

In conclusion, different dimensions appear to yield variable service quality gap when compared to each other and this phenomenon has to be expected. It must however, be noted that each dimension’s gap when contextualised may require different decisions to improve or be eliminated. It should however, be repeated that it is a widely accepted fact that it is neither technically nor economically feasible for a power system to guarantee continuous supply of electricity whenever demanded (CEER, 2003). Emphasis is put more on the basic supply of a power function meaning supply of power to satisfy system load and energy requirements

economically at acceptable levels of continuity and quality (CEER, 2003). This fact as it partly applies to the “Reliability dimension” of this study implies that power users should understand this fact and also factor it in their expectations. Acceptable levels of continuity and supply alluded to here are the subject of regulation of power producers by the National Electricity Regulator of South Africa (NERSA) as discussed in the literature study. It should also be noted that the preceding discussion covers Gap 5: Expected service – perceived service gap which entails how customers perceive the actual service performance in comparison with what they expected (TCRP Report 47, 1999).

5.5 Recommendations to close the gaps (Goal No 4)

The preceding discussion has revealed that all expectations are high, at a maximum of 7 in the seven point Likert scale used for gathering data for the study. It has also been clear that in terms of perceptions of the current service received some variations do exist. Variations in the 12 villages chosen for the study based on the Mean scores per dimension are however very comparable, meaning that individual village mean scores are very closer to each other. The Mean ranges for the 12 villages are between 4.15 and 4.52. This may imply that there are no significant differences between the 12 villages and appropriate action to address the gaps may not necessarily be differentiated on a geographic location basis.

The unanimously high expectation rating by all respondents may inexplicably be linked to Eskom’s ability as a large company to deal with all electricity related issues. These high expectations are however, in variance with what was revealed in the focus group discussion about experiences of rural customers on electricity. It is inexplicable as well due to the nature of the rural areas in aspects such as terrain, remoteness and lack of infrastructure which are susceptible to low levels of service due to changes in weather. One would expect such high expectations from urban customers who in comparison are not exposed to such conditions.

The low perceptions on reliability and responsiveness dimensions created a large service quality gap and a challenge for management to take appropriate remedial action. It may be imperative for Eskom management to consider an in-depth analysis of the reliable power supply to these customers. This analysis has to determine whether equipment failure on the field or turn-around time to rectify faults is the main cause of unhappy customers when it comes to their expectations of reliable, consistent and dependable power supply. On the responsiveness side on the other hand although responses were fairly average, Eskom management should be monitoring the response times to queries and also commitment and readiness of employees to help these customers. The response delivery chain should thus be

monitored from the point of entry when a customer registers a query either with the “Call Centre” or with the “Walk-in Centre” up until the problem has been solved and courtesy call made to the customer. The works order thus created should be checked for accuracy and time it took to answer the call, the recording on the system on how the front-line employees display readiness to help and the closing of the works order when the problem has been solved. If these two contentious items are addressed by management through a carefully structured strategy that realises that these two go hand in hand, performance will improve and these gaps minimised for the satisfaction of these customers.

On the assurance and empathy side incremental approach is needed to close the minimal gaps that exist. The above average courtesy in dealing with customer problems by Eskom staff and the trust that customers have about the knowledge of these employees means that no particularly great energy need to be extended here. A mechanism is only needed to check that this does not deteriorate and go down and become a negative gap. The empathy, where customers are afforded a personalised and individual attention by Eskom although rated as above average by these customers it should also be monitored for sustainability. No significant effort has to be expended by Eskom in this aspect.

The Analysis of Variance (ANOVA) and Post-Hoc tests performed on the differences between expectations and perceptions on dimensions and different villages show that the mean differences for reliability and responsiveness are high amongst certain villages and not the others. This is as far as 4 statements that have been seen to yield significant differences, that is, statements 7, 11, 20 and 21. The implication of the significant differences or gaps on especially the reliability dimension means that interventions require management action. This action should be taken within the framework of specific policies and procedures of Eskom and regulatory practices of the National Electricity Regulator of South Africa (NERSA) for improvement of quality delivered to these customers. Further improvements need to occur on other aspects within dimensions that have shown low mean and significant differences like responsiveness, empathy and assurance. These could take the form of processes and systems to serve customers, employee training and attitude, facilities and capability of Eskom to satisfy these needs as revealed in the literature study on case studies by Isabel Jones.

5.6 Limitations

5.6.1 Limitations: Literature Review

In terms of the literature study, the researcher experienced some difficulty in accessing similar type of research being conducted in similar settings, that is, rural household poor on perceptions

and expectations of service in South Africa. Studies conducted were of larger power users or at best generally looking at the customer base regardless of customer category. This led to a pre-study focus group discussion that unlocked rural household prepaid customers' opinions about the electricity service they are receiving from Eskom.

5.6.2 Limitations: Empirical Study

The findings of this research study should be viewed within the context of limitations emanating from the way in which it was conducted. The first limitation was the way the questionnaires for the study were administered; that is, all respondents assembled in one venue and asked to individually answer the questions. Influential individuals may have affected how some respondents answer by openly voicing their opinion.

Another limitation was the reliability of the modified SERVQUAL instrument. The results yielded very low cronbach alpha scores, thereby calling to question whether replication of the study would yield similar results. This could be ascribed to respondents not understanding a particular question(s) the same way and thereby affecting how they would answer those questions. This is despite the fact that each and every question was explained in detail before commencement of the survey.

Lastly, the absence of demographic information of respondents that was not allowed in the questionnaire design may have skewed the study with regard to gender and age influences. In this particular study for instance, it was revealed that mostly middle-aged women participated in these surveys and very few males. A balance in the make up of the respondents may have changed the data somewhat as certain households are headed by men who could have a different opinion on issues.

This study, because of these limitations, can thus not be generalisable to other electricity utilities or to other Eskom Regions. Generalisability could only occur when similar research is conducted in other Eskom regions with a gender, age and other status balance and a more individualistic response that is not affected by opinion leaders in any particular community.

CHAPTER 6: CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

6.1 Synopsis

It can be deduced from the analysis of data and based on the research objectives for this study that the Null Hypothesis (H_0) is rejected and that there is a statistical difference or gap between the services provided by Eskom (perceptions) to its prepaid rural household customers' perceptions and their expectations. The results support the research's Alternate Hypothesis H_1 : $\mu_1 \neq \mu_2$, that the services of Eskom as perceived by its rural household prepaid electricity customers do not meet these customers' expectations. It must be noted though that, although this is the case as deduced from the study, this does not mean Eskom is generally providing services of lower quality. The research is based on those aspects of service valued by these customers which from their perspective is not being satisfactorily delivered. It is clear from this study that the literature review confirms the importance of evaluating the satisfaction of customers with the quality of service that Eskom or any other electricity utility provides with a view to improving or closing the service quality gap.

6.2 Implications for Business

The study highlights the need for Eskom management to take into cognisance expectations of their customers before embarking on programs to address customer satisfaction. Management's current barometer for assessing satisfaction of customers in Eskom, for example, is "Enhanced Maxicare" scores, a reactive approach to addressing customer satisfaction, instead of establishing expectations and addressing perceptions of service quality by meeting those expectations. Managers need to know how their customer base defines satisfaction and then interpret satisfaction measurement scales to accurately target and respond to satisfaction levels (Giese and Cote, 2002). The emphasis is also put on the importance of the size of the gap between expectations and perceptions and how appropriately this gap could be closed. Level of importance ratings per service dimension is also critical when one looks at the service quality gap so that the managerial level of intervention can be appropriately determined to improve performance.

The SERVQUAL methodology as an invaluable analytical approach for assessing the difference between customers' expectations and perceptions of service quality helps organizations in their quest for step changes to improve performance in those areas where there are service issues. SERVQUAL's purpose is to serve as a diagnostic approach for uncovering

broad areas of a company's service quality shortfalls and strengths (Parasuraman et al., 1991). It is for this reason that organizations need to continually assess their customers' perceptions of service against expectations so that up to date information drives the decisions that need to be made to improve performance. SERVQUAL, a multiple-item scale for measuring service quality, has through critique and refinements improved its validity and reliability and hence is useful in uncovering service issues and problems in order to help improve service performance. This research shows that the instrument has been found to be applicable and adaptable for use in assessing service quality within the electricity distribution sector. SERVQUAL, through its gaps model can help management rectify those areas of company performance with the largest service quality gaps identified by its customers and reinforce those areas of strength uncovered in the same manner.

6.3 Recommendations for future research

It is advisable that due to the fact this was a quantitative study, certain qualitative information supplied by respondents both in the focus group interviews and views expressed as comments in the surveys themselves are analysed and used. This factual information could be used during questionnaire design or for modifying whatever measurement scale is adopted or a qualitative study conducted parallel to the quantitative surveys.

Surveys of customer satisfaction should be conducted on a continuous basis in order to design programs to address performance issues impacting on service quality. This is confirmed by the statement that; SERVQUAL, when used on a periodic basis helps track service quality trends (Parasuramana et al., 1991). Eskom should be conducting these surveys on all its customer categories and based on availability of resources decide on the regularity of these surveys and also measure the impact that these surveys will have.

An attempt should also be made to conduct periodic telephonic surveys that could serve as a precursor to a full face-to-face survey of customers in the rural household prepaid electricity market. These customers due to the nature of their networks, terrain and access are susceptible to major weather mishaps and as a result get adversely affected by delays in restoring service. These customers are comparatively more sensitive especially when weather conditions persist and accessibility deteriorates. These conditions make these customers somewhat unique and hence appropriate ways of dealing with their assessment need to be devised. Education on the type of environment they are in and what to expect from the utility in restoring their services should be well communicated to influence their perceptions and expectations.

It is recommended that future research also concentrate on comparative analysis between service quality requirements in a predominantly rural household electricity market and an urban one. This is due to the fact that some of the telephonic surveys for “Enhanced Maxicare”, assessment of customer satisfaction currently being used in Eskom as a measure of satisfaction, may be skewed towards the prepaid urban than a rural prepaid customer.

6.4 Conclusion

The main aim of the study was to measure perceptions of the current performance of Eskom in providing service to its prepaid rural household customers and then comparing those perceptions with the level of service that those customers expect. This was done in order to identify gaps in the delivery of electricity services to this category of customers in order for management to make informed decisions in closing those gaps. This study found out that there are gaps in the services provided by Eskom in those areas considered essential by the customers. The magnitude of those gaps will determine what decision the company needs to make to address them.

REFERENCES

1. Babbie, E. & Mouton, J. 2004. The practice of social research. Oxford University Press Southern Africa, Cape Town.
2. Baidoun, S. 2003. Empirical study of critical factors of TQM in Palestinian Organizations: **Logistics Information Management**, Volume 16 No. 2, pp. 156-171.
3. Berry, L. 1999. Discovering the soul of service. The Free Press, New York.
4. Bluestein, A.I., Moriarty, M. & Sanderson, R.J. 2000. The Customer Satisfaction Audit. Cambridge Strategy Publications Ltd., London.
5. Buttle, F., 1996. "SERVQUAL: review, critique, research agenda". **European Journal of Marketing**. Vol. 30 No. 1, pp. 8 – 32.
6. Carrillat, F.A., Jaramillo, F. and Mulki, J.P. 2007. "The validity of the SERVQUAL and SERVPERF scales: A meta-analytic view of 17 years of research across five continents", **International Journal of Service Industry Management**. Vol. 18 No. 5, pp. 472 – 490.
6. Chiu, K. Y. 2002. "Relationship among student demographic characteristics, student academic achievement, student satisfaction, and online business". Columbia, University of Missouri, Doctoral Dissertation.
7. Council of European Energy Regulators. (Working Group on Quality of Electricity Supply), September 2003. Second Benchmarking Report on Quality of Electricity Supply.
8. Cowan, B. 2003. An introduction to energy issues in rural areas of South Africa. Energy and Development Research Centre, University of Cape Town, Cape Town, South Africa.
9. Cronin, J. and Taylor, S. 1992. Measuring Service Quality: A re-examination and extension. **Journal of Marketing**, Vol. 56, No. 3, pp. 55 – 68.
10. Crosby, L. A. and Stephens, N. 1987, "Effects of Relationship Marketing on Satisfaction, Retention and Prices in the Life Insurance Industry", **Journal of Marketing Research**, Vol. 24, No. 4, November, pp. 404-11.
11. Deng, X, Doll, W. J., Al-Gahtani, S. S., Larsen, T. J., Pearson, J. M. and Raghunathan, T. S. "A Cross-cultural Analysis of the End-user Computing Instrument: A Multi-group Invariance Analysis," **Journal of Management and Information Systems**, (vol. 21:No. 1), June 2003, pp. 227-262.
12. Denzin, N.K. and Lincoln, Y.S. 1994. Handbook of Qualitative Research. **Thousand Oaks, Latif: Sage Publications**.
13. DME (Department of Minerals and Energy) 2001. **National Electrification Programme (NEP) Vol. 1, 1994-1999**. Summary Evaluation Report. November. Pretoria.
14. Development Bank of Southern Africa Operations and Evaluation Unit. 2005. A Desktop Study for the evaluation of the Eastern Cape Electrification Programme.

15. Elliot, K.M. 1994, SERVPERF versus SERVQUAL: A Marketing Management Dilemma when assessing service quality, *Journal of Marketing Management*, Vol. 4, Issue 2, pp.56 – 61.
16. Eskom 1999. Optimise Customer Interaction: Process Overview. Sandton.
17. Eskom 2000. Annual Report 2000. Sandton.
18. Eskom 2002. Annual Report 2002. Sandton.
19. Eskom 2003. Annual Report 2003. Sandton.
20. Ferrell, O.C. and Pride, W.M. 2000. *Marketing: Concepts and Strategies*. Houghton Mifflin Company. Boston, New York, USA.
21. Field, A. 2005. *Research Method II: Factor Analysis on SPSS*
22. Financial Mail, October, 27 2000.
23. Fogarty, G., Catts, R. and Forlin, C. 2000. Measuring Service Quality with SERVPERF. **Journal of Outcome Measurement**, 4(1), 425 – 447.
24. Fornell, C., Johnson, M.D., Anderson, E.W., Cha, J., and Bryant, B.E. 1996, “The American Customer Satisfaction Index: Nature, Purpose and Findings,” **Journal of Marketing**, 60 (4), 7-18.
25. Foulger, D. 2008. Statistical Methods [On Line] Available: <http://evolutionarymedia.com/wiki.html>[accessed 19/12/2008]
26. Friel, M. 2008. Notes on Factor Analysis. Criminal Justice Center, Sam Houston State University, Houston, Texas.
27. Giese, J. L. and Cote, J. A. 2002. Define Consumer Satisfaction. *Academy of Marketing Science Review*, Vol. 2000, No 1, Available: <http://www.amsreview.org/articles/giese01-2000.pdf>
28. Groonroos, C. 2000. *Service Management and Marketing: A Customer Relationship Management Approach*. Second Edition. John Wiley and Sons, Inc., New York, USA.
29. Hall, A. 1998. Process Mapping of functions to serve the end user. Eskom. Sandton.
30. Hanke, J. E. and Wichern, D.W. 2005. *Business Forecasting*. Eighth Edition. Pearson Education Inc., New Jersey. USA.
31. Helfert, G., Ritter, T., and Walter, A. 2002. Redefining market orientation from a relationship perspective: Theoretical considerations and empirical results. **European Journal of Marketing**, Vol. 28, No. 5, pp. 553-564.
32. Hussey, J. and Hussey, R. 1997. **Business Research: A practical guide for undergraduate and postgraduate students**. London: Macmillan Press Ltd.
33. Jain, S.K. and Gupta, G. 2004. Measuring Service Quality: SERVQUAL vs SERVPERF Scales. *Vikalpa: The Journal for Decision Makers*. Vol. 29, No. 2.
34. Jones, I. 2003. “Each Step, Your Mark, Make it Count” Viva Customer Series. Eskom Distribution. Paul Zwick Productions. Johannesburg, Republic of South Africa.

35. Kanji, G.K. (Ed.) 1995. Total Quality Management: Proceedings of the First World Congress. Chapman and Hall, 2-6 Boundary Row, London SE1 8HN, United Kingdom.
36. Keller, G. and Warrack, B. 2000. Statistics for Management and Economics. Fifth Edition. Duxbury, Thomson Learning, Pacific Grove, California, USA.
37. Kenely, M. and Hellier, P. 2001. A Market Oriented Framework to Teaching Undergraduate Economics: Justification and Explanation. Working Paper No. 2103. School of Economics, Deakin University, Melbourne Campus, Victoria, Australia.
38. Khan, M. N., Dutt, V. R. and Bansal, S.C. 2007, Customer perceptions and expectations of service quality: A case study of domestic airline industry in India. Proceedings of the conference on Marketing. Indian Institute of Management, Ahmedabad. Jan 4-5.
39. Koskela. H. 2002, Customer Satisfaction and Loyalty in After Sales Service: Modes of Care in Telecommunications Systems Delivery. **HUT Industrial Management and Work and Organizational Psychology**, Report No. 21. Helsinki University of Technology. Finland.
40. Lamsali, H., Ismail, H. A., Razak, R. C., Lazim, H. M., Adnana, K. A. and Arshad, D. A., 2004. **Customer Satisfaction towards Islam Banking in Malaysia: A Study using Carter Model**. Universiti Utara, Malaysia.
41. Laws, E. 2002. Tourism Marketing: Quality and Service Management. British Library Cataloguing in Publication Data, London, England.
42. Lele, M.M. and Sheth, J.N. 1991. The Customer is key: gaining an unbeatable advantage through customer satisfaction. John Wiley and Sons, Inc., New York, USA.
43. Lipsey, R. G. and Courrant, P. N. 1999. Economics. 12th Edition. Addison-Wesley, Boston, USA.
44. Malthouse, E.C., Oakley, J.L., Calder, B.J. and Iacobucci, D. 2003. Customer Satisfaction Across Organizational Units, **Integrated Marketing Communications**, North-western University, Illinois, USA.
45. Mququ, M. H. 2006. A survey of customer satisfaction, expectations and perceptions as a measure of service quality in SANBS. Grahamstown. Rhodes University. Masters Thesis.
46. NER (National Electricity Regulator) 1996. Lighting up South Africa 1996: Progress Report on electrification. Sandton, NER.
47. NER (2000). Lighting up South Africa. National Electricity Regulator. Johannesburg.
48. National Electricity Regulator, April 2002. "NER Power Quality Directive", Directive of the South African Electricity Regulator, Revision 1.5.
49. Oliva, T.A., Oliver, R.L., and Bearden, W.A. 1995, 'The relationship among consumer satisfaction, involvement, and product performance', **Behavioural Science**, vol.40, no.4, pp.104-132.

50. Oliver, R.L. (1980), "A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions," **Journal of Marketing Research**, vol.17 (November), pp. 460-469.
51. Oliver, R.L. 1997, Satisfaction: A behavioural perspective on the consumer, First edition, Mc-Graw-Hill Co. Inc., New York.
52. Parasuraman, A., Zeithaml, V.A., Berry, L.L. (1985), "A Conceptual Model of Service Quality and its implications for Future Research," **Journal of Marketing**, vol.49 (Autumn), pp. 41-50.
53. Parasuraman, A., Zeithaml, V.A., Berry, L.L. (1988), "A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality," **Journal of Retailing**, vol. 64 (Spring), pp.12-40.
54. Zeithaml, V.A., Parasuraman, A. & Berry, L.L. (1988). **Comparing service quality performance with customer service quality needs** [On-line]. Available: http://www.12manage.com/methods_zeithmal_servqual.html. [accessed 25/06/2006].
55. Parasuraman, A., Zeithaml, V.A., Berry, L.L. (1991), "Refinement and Reassessment of the SERVQUAL Scale," **Journal of Retailing**, 67: vol. 4, pp.420-450.
56. Potgieter, B.C., Botha, J.H. and Lew, C. 2005. Evidence that use of ITL Framework is effective. 18th Annual Conference of the National Advisory Committee on Computing Qualifications. Tauranga, New Zealand.
57. Qin, H. 2008. Service Quality Perceptions in Fast-food restaurants in China. **University of North Texas**, Denton, USA.
58. Rekettye, G. and Hetesi, E. 2003. Analysis of Customer Loyalty to the Electricity Distributors – The case of the Hungarian Electricity Distribution being under liberalization, **17th International Conference on Electricity Distribution**, Barcelona, Spain, 12-15 May 2003.
59. Remenyi, D. 1996. "So you want to be an academic researcher in business and management studies! Where do you start and what are the key philosophical issues to think about?" **South African Journal of Business Management**, 27 (1/2)22-33.
60. Salvatore, D. 2004. Managerial Economics in a Global Economy. Fifth Edition. Thomson, South-Western, Ohio, USA.
61. Schinjs, J. M. C. 2003. Loyalty and Satisfaction in Physical and Remote Service Encounters. **Faculty of Management Sciences**, DL Heerlen, The Netherlands.
62. Singh, R. and Khanduja, D. 2010. SERVQUAL and Model of Service Quality GAPS: A Framework for Determining and Prioritizing Critical Factors from Faculty Perspective in Higher Education, *International Journal of Engineering Science and Technology*, Vol. 2 (7), pp3297 – 3304.
63. Spreng, R.A., Mackenzie, S.B., and Olshavsky, R.W. (1996), "A Re-examination of the Determinants of Customer Satisfaction," **Journal of Marketing**, vol. 60 (July), pp.15-32.

64. Stewart, S. I. 2001. Customer Satisfaction in the Metropolitan Ambulance. **Victoria University of Technology**. Victoria. Degree of Master of Business.
65. South Africa. Department of Minerals and Energy. 2004. The New National Electrification Planning and Implementation Workshop – **Feedback Documentation**, June 2004.
66. Transit Cooperative Research Program Report 47, 1999. A Handbook for Measuring Customer Satisfaction and Service Quality, **National Academy Press**, Washington.
67. Vavra, T.G. 1997. Improving your measurement of customer satisfaction: A guide to creating, conducting, analysing and reporting customer satisfaction measurement programs. ASQ Quality Press, Milwaukee, Wisconsin.
68. Walter, A., Mueller, A. T. and Helfert, G. The Impact of Satisfaction, Trust and Relationship Value on Commitment: Theoretical Considerations and Empirical Results, **working paper**. University of Karlsruhe. Germany.
69. Yanelisa. 2005. Feedback on Regional Customer Satisfaction Project. **Eskom Southern Region's Workgroup**. East London.
70. Yi, Y. J. and La, S.N. (2004). What Influences the Relationship Between Customer Satisfaction and Repurchase Intentions? Investigating the Effect of Adjusted Expectations and Customer Loyalty. **Journal of Psychology and Marketing**. Vol. 25: No. 5. pp 351-373.
71. Zeithaml, V.A. and Bitner, M.J. 1992. Services marketing. Third Edition. Mc-Graw-Hill, New York.
72. Zeithaml, V.A. and Bitner, M.J. 1995. Services marketing. Third Edition. Mc-Graw-Hill, New York.
73. Zeithaml, V.A. and Bitner, M.J. 2003. Services marketing. Third Edition. Mc-Graw-Hill, New York.
74. Zeithaml, V. A., Parasuraman, A. and Berry, L. L. 1985. "Problems and Strategies in Services Marketing". **Journal of Marketing**, vol. 49 (Spring 1985), pp.33-46.

APPENDICES

Appendix A. SERVQUAL Questionnaire

QUESTIONNAIRE TO DETERMINE PERCEPTIONS OF PREPAYMENT RURAL HOUSEHOLD CUSTOMERS OF THE ELECTRICITY UTILITY, ESKOM.

EXPECTATIONS SECTION

Based on your experiences as a customer of an electricity supplier, please think about the kind of electricity supplier that would deliver excellent quality of electrical service, that you would be pleased to do business with. Please show the extent to which you think such an electricity supplier would possess the feature described by each statement. If you feel a feature is not all essential for an excellent electricity supplier such as the one you have in mind, circle the number “1”. If you feel a feature is absolutely essential for excellent electricity supplier, circle “7”. If your feelings are less strong, circle one of the numbers in the middle. There are no right or wrong answers – all we are interested in is a number that truly reflects your feelings regarding electricity suppliers that would deliver excellent quality of service. Note: For each of the statements below circle the number that indicates how an electricity company’s performance compares with the level you expect. The numbers are on a scale ranging from 1 (for strongly disagree) to 7 (for strongly agree).

STATEMENTS IN THE TANGIBLES DIMENSION

Electricity Power Utilities should have:

Strongly disagree Strongly agree

1. Modern equipment and technology
2. Attractive, neat & accessible facilities
3. Professionally & neatly dressed staff
4. Documentation visually appealing

1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7

STATEMENTS IN THE RELIABILITY DIMENSION

Electricity Power Utilities should have:

Strongly disagree Strongly agree

1. Adhere to promised times for service
2. Keen interest in solving problems
3. Perform services right the first time
4. Provide promised level of service all the time.
5. Accurate keeping of customer records

1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7

STATEMENTS IN THE RESPONSIVENESS DIMENSION

Electricity Power Utilities should:

Strongly disagree Strongly agree

1. Prescribe specific times for service provision.
2. Provide prompt service to customers.
3. Always be willing to help customers.
4. Never be too busy to respond customers.

1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7

STATEMENTS IN THE ASSURANCE DIMENSION

Electricity Power Utilities should:

Strongly disagree Strongly agree

1. Have accurate and consistent responses
2. Ensure security in transacting with their customers.
3. Have courteous employees.
4. Have knowledgeable employees

1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7

STATEMENTS IN THE EMPATHY DIMENSION

Electricity Power Utilities should:

Strongly disagree Strongly agree

1. Give customers individual attention
2. Have convenient operating hours
3. Give customers personal attention
4. Have customers' interests at heart
5. Understand customers' specific needs

1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7

PERCEPTIONS SECTION

The following set of statements relate to your feelings about performance of ESKOM's electricity service. For each statement, please show the extent to which you believe ESKOM has the feature described by the statement. Once again, circling a "1" means that you strongly disagree that ESKOM has that feature, and circling a "7" means that you strongly agree. You may circle any of the numbers in the middle that show how strong your feelings are. There are no right or wrong answers; all we're interested in is a number that best shows your perceptions about ESKOM service regarding each statement.

STATEMENTS IN THE TANGIBLES DIMENSION

ESKOM has:

Strongly disagree Strongly agree

1. Modern equipment and technology

1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7

2. Attractive, neat & accessible facilities

3. Professionally & neatly dressed staff

4. Documentation that is visually appealing

STATEMENTS IN THE RELIABILITY DIMENSION

ESKOM:

Strongly disagree Strongly agree

1. Sticks to promised times for service

2. Has keen interest in solving customer problems

3. Performs services right the first time

4. Provides same level of service to customers
all the time.

5. Makes no errors in customer records

1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7

STATEMENTS IN THE RESPONSIVENESS DIMENSION

ESKOM:

Strongly disagree Strongly agree

1. Prescribes specific times for service
provision and stick to them.

2. Provides prompt service to customers.

3. is always willing to help customers.

4. is never too busy to respond to customers.

1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7

STATEMENTS IN THE ASSURANCE DIMENSION

ESKOM:

Strongly disagree Strongly agree

1. Always has accurate and consistent responses
2. Ensures security in transacting with their customers.
3. Has courteous and polite employees.
4. Has knowledgeable employees

1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7

STATEMENTS IN THE EMPATHY DIMENSION

ESKOM:

Strongly disagree Strongly agree

1. Gives customers individual attention
2. Has convenient operating hours
3. Gives customers personal attention
4. Has customers' interests at heart
5. Understands customers' specific needs

1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7
1	2	3	4	5	6	7

1. The appearance of the electricity utility/company's physical facilities, equipment, personnel and communications material. ----- points
2. The ability of the electricity utility/company to perform the promised service dependably and accurately. ----- points
3. The willingness of the electricity utility/company to help customers and provide prompt service. ----- points
4. The knowledge and courtesy of the electricity utility/company's employees and their ability to convey trust and confidence. ----- points
5. The caring, individualized attention the electricity utility/company provides its customers. ----- points

Appendix B: COVERING LETTER



ELECTRIFICATION DEPARTMENT

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Eskom Holdings Limited Reg No 2002/015527/06

24 March 2006

Dear Participant in the Research Study

This questionnaire is designed to assess the current quality of the service being offered by the power utility, Eskom in relation to its expectations. The information you provide will help us to understand the level of quality of service that you are experiencing against what you expect that level to be.

In an attempt to gather information that will help us understand the extent of the service offered to you as one of Eskom customers residing in rural Eastern Cape and in South Africa you have been selected to participate in this research study.

The intention of this study is to examine the attributes of service that have been pre-selected to affect electricity service quality offered. These attributes have been selected from a customer viewpoint and to a large extent reflect the service quality being investigated. It is important that you provide honest feedback of your experiences for each of the service delivery statements you are asked to respond to.

Your responses will be kept strictly confidential. Only members of the research team will have access to the information you give. It is not important to furnish your name as this study focuses at service delivery trends at a village level and when concluded will represent an opinion for your village. It is important then to understand that you have been chosen to represent your village and whatever responses you give will be taken as views and experiences from your village in how electricity service is delivered.

Participation in this research is entirely voluntary and you have the right not to participate or you can withdraw from it at any point in time. I urge you to answer all questions and not leave any unanswered.

Thank you very much for your time and cooperation. Your observations and reflections will greatly enhance the value of this research endeavour.

Yours faithfully

Eric Myoli

Appendix C: Group of twenty people pre-selected for focus group discussion

Focus group Pre-survey of rural electricity prepaid customers (Magwala Village – Cofimvaba)

The area was electrified in 2001 and switched on in 2002 for customers to use and buy electricity for the first time. Prepaid meters were installed with load limiting 2.5 amps per customer. 2.5 amp is upgradeable to a 20 amp supply on payment of R165.00 upgrade fee or connection fee for a new 20 amp customer. In 2006 when this interview was done these customers had at least 3 full years of experience in electricity. The focus was to evaluate their level of satisfaction with the electricity service they are receiving from ESKOM. The following are the 6 most important issues identified in their order of importance:

- “weak electricity” that goes off at the slightest wind or rain and sometimes on a very clear day. These power outages are perceived by locals to be rooted in the type and quality of installation done during electrification of their area.
- Vendor selling electricity prepaid tokens too far from the village and also tokens availability not guaranteed and could be depleted whilst standing in the queue waiting for your turn to buy. These vendors are agents Eskom uses to sell electricity and are always in close proximity to these areas.
- The time it takes to upgrade the meter once people pay takes longer thus causing people who want to upgrade to resort to unsavoury tampering due to inability to use their appliances from a limited 2.5 amp supply.
- Electricity access cards reported lost take longer once ordered. People require a quick turnaround time from ESKOM in processing these replacement cards since it leads to difficulties in purchasing electricity tokens from vendors.
- New extensions or new households within reticulated areas have difficulty accessing electricity as nobody knows what process to follow for a new prepaid supply application. Ongoing education is needed on this process.
- Positioning of prepaid meter inside the house at the time of electrification was never cleared with customers i.e. customers were never consulted and there’s much unhappiness as short-cuts were taken by contractors ESKOM employed as they opted for easy solutions to save their costs for cable.
- Lack of funds to pay for the upgrade from 2.5 amp to 20 amps supplies due to poverty and unemployment.

On a scale of 1 to 7, 1 being poor and 7 excellent the collective agreement was the current service quality of ESKOM is rated as 4. It was felt that if the above issues could be addressed the rating could improve tremendously especially the quality of supply which takes priority and heavily weighted compared to all other performance issues.

Appendix D: Test of Homogeneity of Variance

Test of Homogeneity of Variances				
	Levene Statistic	df1	df2	Sig.
P5	1.110	11	208	.355
P6	1.843	11	208	.049
P7	29.024	11	208	.000
P8	1.678	11	208	.080
P9	.255	11	208	.993
P10	.402	11	208	.954
P11	3.770	11	208	.000
P12	1.056	11	208	.399
P13	.661	11	208	.774
P14	1.093	11	208	.368
P15	.130	11	208	1.000
P16	2.537	11	208	.005
P17	1.577	11	208	.107
P18	1.441	11	208	.157
P19	8.371	11	208	.000
P20	3.058	11	208	.001
P21	1.095	11	208	.367
P22	.643	11	208	.790
PAQ1	.602	11	208	.826
PAQ2	2.530	11	208	.005
PAQ3	3.257	11	208	.000
PAQ4	2.070	11	208	.024
PAQ5	1.358	11	208	.195
P_Reliability	1.516	11	208	.127
P_Responsiveness	.966	11	208	.479
P_Assurance	1.980	11	208	.032
P_Empathy	2.487	11	208	.006

CHART I

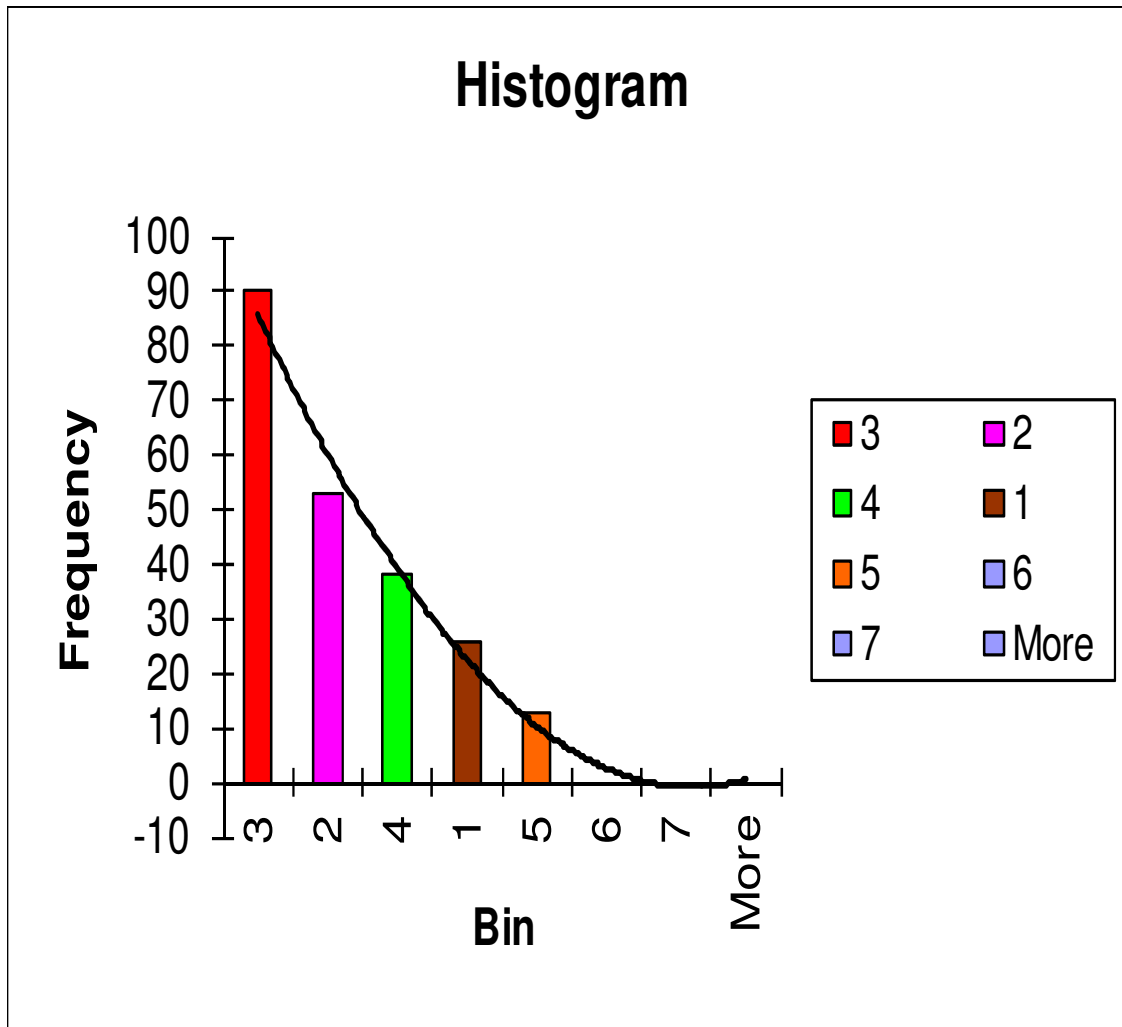


CHART II

Reliability Dimension scores

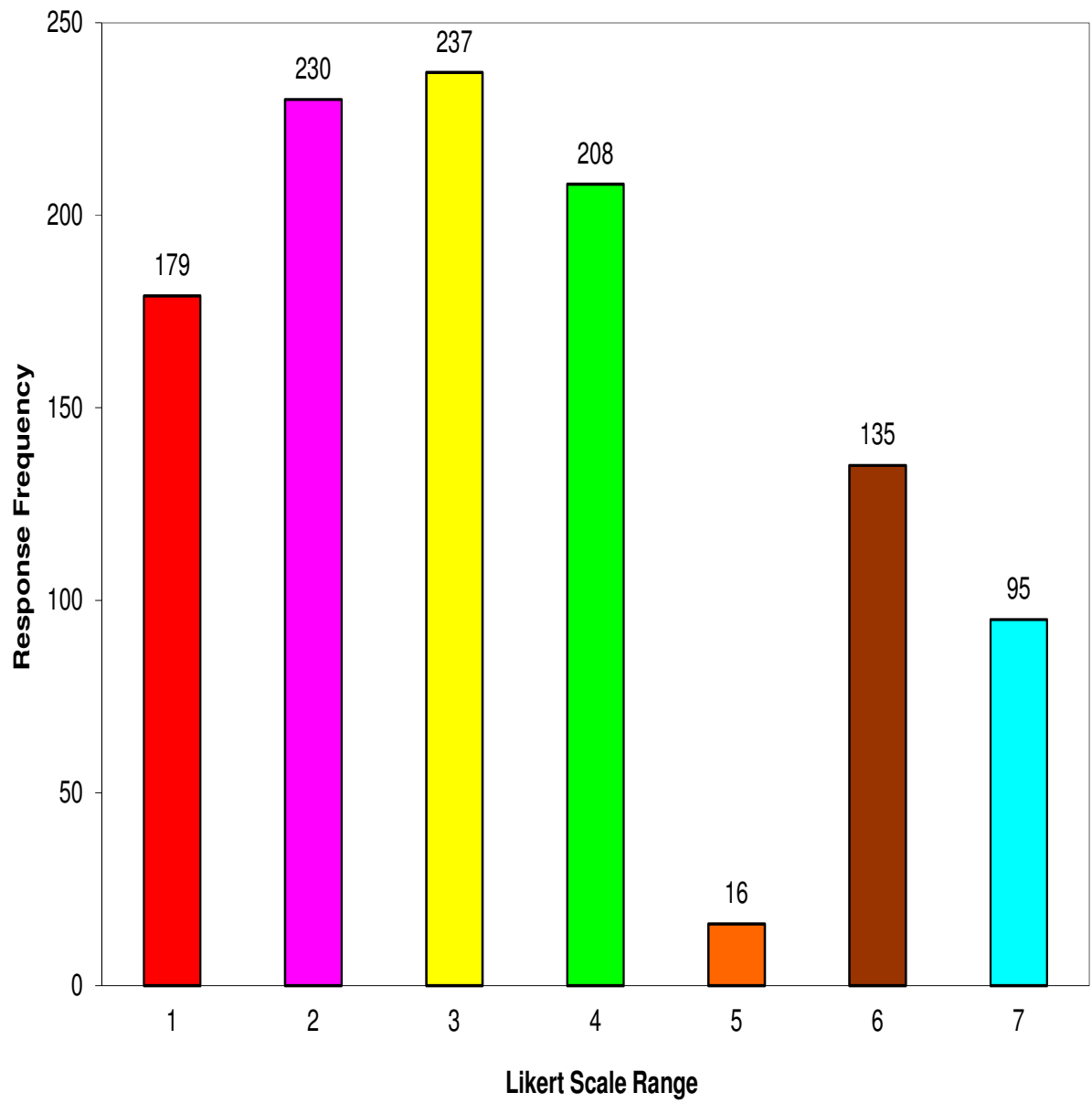


CHART III

Responsiveness scores

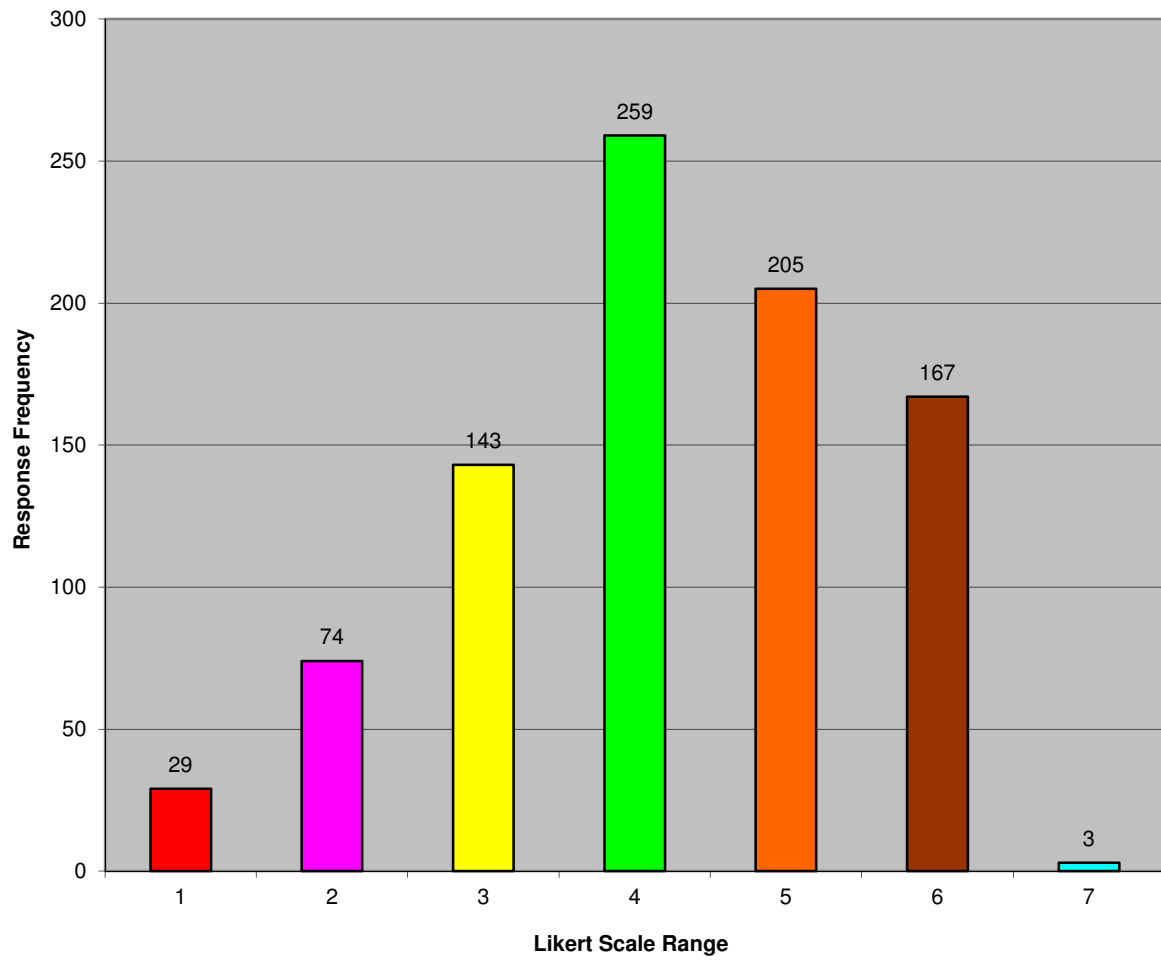


CHART IV

ASSURANCE DIMENSION

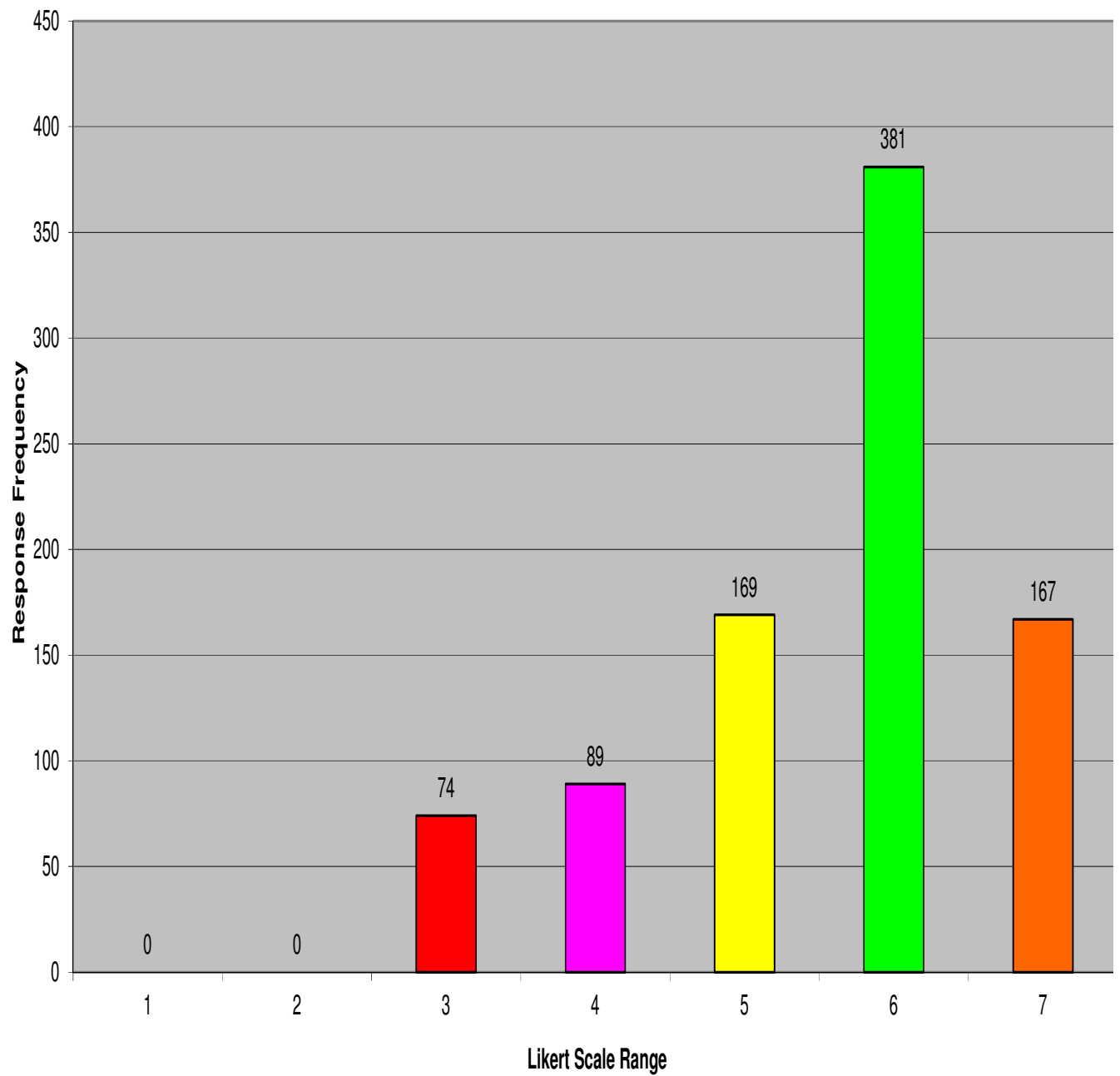


CHART V

EMPATHY DIMENSION SCORES

