

**AN EVALUATION OF THE QUALITY OF CUSTOMER SERVICE DELIVERY
OFFERED BY THE EAST LONDON PUBLIC TRANSPORT COMMUTER RAIL
SERVICE PROVIDER (OPERATED BY METRORAIL)**

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ABSTRACT

The aim of this survey is to evaluate the quality of customer service delivery offered by the East London public transport commuter rail service provider Metrorail, a division of the state owned enterprise (SOE) PRASA.

The former tolerant rail commuter has become increasingly frustrated at the ever-decreasing quality of rail service delivery. This is evidenced by increasing incidents of commuter arson to failed rail assets and the practice is considered to be a strategy to enforce the replacement of unreliable infrastructure and ineffective/reactive management controls.

The objectives of the research are guided by three fundamental service quality indicators. In order to evaluate these indicators, the research focuses on whether the quality of customer services provided by Metrorail meets commuter expectations, whether commuters rank five dimensions of service quality differently and whether the level of service quality provided is perceived differently amongst the various demographic commuter segments.

Service organizations which are highly interactive, labour-intensive, reliant on a number of service providers, required to perform at various locations and have high intensity/volume operations, will be susceptible to failure; Metrorail services fall into this category. The legacy of the *apartheid* era regime and strategy resulted in poor rail planning and underfunding. Commuter rail operations in South Africa are fraught with a myriad of inadequacies of the past that only now manifest. As a consequence, their ability to operate effectively and efficiently is impaired. The situation is further exacerbated by the global economic crisis of 2008 and the impact of constricted budget allocations by the State to all SOE's which could further impede the interventions and innovation required to improve service quality.

The in-depth literature review provided sufficient information relating to a wide array of service organizations similar in nature to Metrorail. This information is translated into useable knowledge and recommendations from which Metrorail can benefit. The research methodology

is clearly articulated and the data analysis ensures distinct findings which are discussed in the final chapter.

The research undertaken identifies and prioritises the service quality attributes and dimensions that will require redress to improve overall service quality. The findings are clearly defined from which a set of recommendations are suggested.

DECLARATION

I declare that this research report is my own unaided work. It is being submitted in partial fulfillment of the requirements for the degree of Master of Business Administration of Rhodes Investec Business School – Rhodes University. It has not been submitted before for any other degree or examination in any other university.

Colin Andre BOSCH

This 18th day of December 2009.

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List of Acronyms

ANOVA	Analysis Of Variance
BCM	Buffalo City Municipal
CEO	Chief Executive Officer
CRS	Commuter Rail Service
KMO	Kaiser-Meyer Olkin
KPA	Key Performance Area
MREL	Metrorail East London
MSA	Moving South Africa strategy plan
MSI	Metrorail SERVQUAL Instrument
NDOT	National Department of Transport
PRASA	Passenger Rail Agency of South Africa
PTS	Public Transport System
SARCC	South African Rail Commuter Corporation
SATS	South African Transport Services
SOE	State Owned Enterprise
SQ	Service Quality
OSQ	Overall Service Quality
TFR	Transnet Freight Rail
TQM	Total Quality Management

AN EVALUATION OF THE QUALITY OF CUSTOMER SERVICE DELIVERY OFFERED BY THE EAST LONDON PUBLIC TRANSPORT COMMUTER RAIL SERVICE PROVIDER (OPERATED BY METRORAIL)

Chapter 1: Introduction

1.1 Introduction

Customer expectations for a particular service galvanize their assessment of the quality of service received. According to Berry, Parasuraman and Zeithaml (1988), when there is an inconsistency between customers' expectations and management's understanding of customers' expectations, customers' perceived service quality will deteriorate.

Increased competition resulted in organizations becoming more customer orientated (Naumann and Giel, 1995). Customer-driven quality requires that organizations focus on core competencies, the very areas where the firm has individual competence in creating customer value. Naumann and Giel declare that customer value is a direct driver of continuous improvement and process reengineering. They believe that firms achieving high levels of customer satisfaction are generally very customer- driven, and indeed view every customer as a cherished asset.

Berry (1995) attests to the fact that great service companies are achieving organizations that require high discretionary effort. Berry (1999) explains discretionary effort as the variation between the maximum amounts of energy an individual employee can bring to the service role and the minimum necessary to avoid discipline. The difference between maximum and minimum energy is discretionary.

They measure service performance and reward employees' excellence, which can inspire motivation amongst employees. Berry describes the need for service leadership to ensure the development of a service mentality in the organization. He claims that "service listening" reveals consumer needs and expectations, performance measurement and what needs to be done to improve it; these traits will provide service direction and strategy. He mentions reliability (accurate and dependable service), surprise ("wow, these folks are good"), recovery (regaining

lost confidence) and fairness (ethical arena) as the service quality principles that form the basis of a service strategy.

According to Pitt (1991), the model depicted in Figure 1.1 considers the variables involved in four categories of strategic issues for decision making in service organizations. It is self-evident that there will be extensive interaction between functional and strategic areas. There are relationships between operations and marketing where communication will play an important part; relationships between operations and human resources where the recruitment of effective and competent personnel is vital. The role that human resources fills is crucial to providing the requirements of the corporate strategy and finally, a clear and well defined strategy must be relayed to marketing. Based on this service organizational structure, one could conclude that to ensure service quality, the processes and controls within these functions would need to be effective.

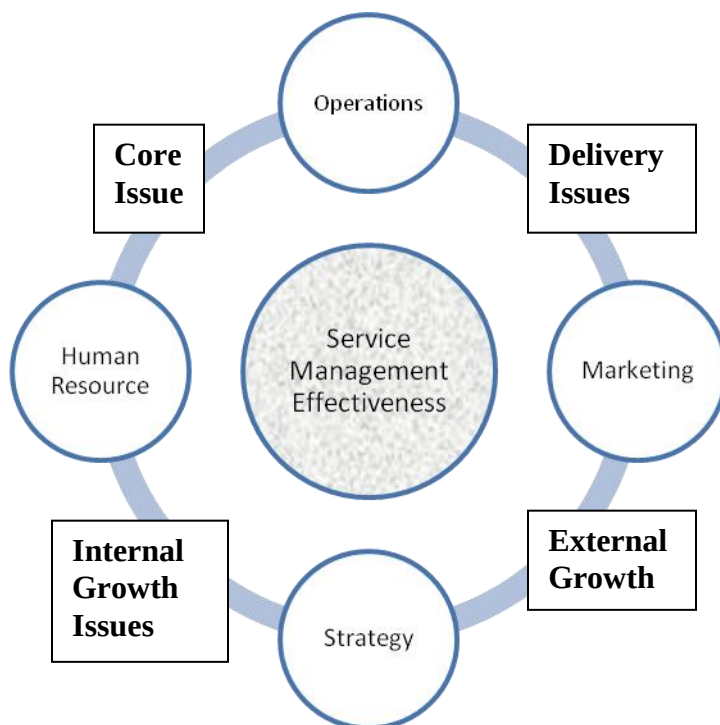


Figure 1.1: Types of strategic issues in services management (Riddle, 1990 in Pitt, 1991)

After extensive research on the subject matter, it is claimed by renowned services marketing pioneers Parasuraman, Zeithaml and Berry (1988) that marketers of services are faced with difficulty in understanding and controlling the quality. The ultimate cost and understanding of poor quality service delivery to an organization cannot be over-emphasized.

More appropriately aligned to the Metrorail scenario, the objective of this study will be to evaluate and determine, from the captured empirical data using the SERVQUAL tool (Parasuraman *et al.*, 1988), the standard of service quality delivered by the East London Public Transport Commuter Rail Service Provider (operated by Metrorail). “SERVQUAL is a concise multiple-item scale with good reliability and validity that companies can use to better understand the service expectations and perceptions of their customers” (Zeithaml, Parasuraman and Berry, 1990: 33). According to Olsen and Dover (1979 in Zeithaml, Berry and Parasuraman, 1993), customer expectations are pretrial beliefs of what to expect from a product or service and are used as a reference point to compare and evaluate the actual experience.

Metrorail was in essence established in 1990 and registered to take over the provision of passenger commuter rail services. They are mandated, amongst other things, to provide services at regulated rates in a high cost industry in order to ensure affordable prices to its disadvantaged target market (National Rail Plan Consolidated Report, 2006). By virtue of the nature of the suburban rail commuter industry, poor service delivery is often accepted as the norm. However, with the advent of increased public transport competition and human/consumer rights awareness amongst the general population, this ongoing poor quality service and unreliable train service delivery frequently results in frustrated and stranded commuters resorting to arson and destruction of the rail asset. These acts have been considered by ideologists to be a commuter strategy to enforce and ensure service improvement by the operator, regardless of the significant negative impact it has on the scarce rail infrastructure, the loyal taxpayer, and the economic well-being of the country as a whole. This aspect required distinctive intervention from Government level to arrest and close the ever-widening gap between expected service quality levels and what is being delivered, and the losses incurred place undue pressure on the limited national transport budget.

As an intervention, the South African Government's commitment to an improved public and rail transport system was reiterated in the following edited address by then Transport Minister Radebe (2009) at the launch of the Passenger Rail Agency of South Africa (PRASA):

No economy in the whole wide world can sustain growth without a credible and sound public transport system. Huge numbers of South Africans must be transported to work, schools, clinics and centres for services on a daily basis. It is against this background that the Cabinet approved the Public Transport Strategy and Action Plan 2007 to 2020 in March 2007. The implementation of this strategy is our measurement of how effectively we can address transport challenges amongst our people. Our efforts to propel growth and development would be identified by the success and efficiency of our transport system that should be geared towards economic growth. Among the key interventions adopted back in 2004 was the strategy to arrest the decline in commuter rail service, and although a degree of stabilization has been achieved, there are indeed still many challenges facing our people commuting on the rail system. It is our intention and commitment as the ANC Government to accelerate the process of change and ensure that we have a rail system that fulfils its role and responsibility as the backbone of our transport system.

This point was also reinforced by Deputy Transport Minister Cronin's (2009) funding motivation address to the budget committee where he postulated that despite the local authorities' inequitable spatial realities (urban community sprawl challenges to the public transport systems), he believes that good public transport can knit formerly divided communities together. It is his belief that this can be achieved by a shift from car-congested freeways to public transport routes shared by business, communities, facilities and mixed income settlements and has the potential to become a core component to nation building.

1.2 Background to the Research Problem

The Moving South Africa (1999) strategy plan (hereafter MSA) research document found many gaps which threatened the sustainability of public transport which was facing a downward spiral with most operators not willing to re-invest in their respective industries. The state-funded commuter rail service provider, Metrorail, was no exception and was essentially failing its loyal

commuter base. Most of their key service outputs were in a steady state of decline and delivery failure, and were not meeting industry standards. These standards include access time, journey time, reliability, punctuality, safety, security and basic customer care (responsiveness). Compounding this human resource shortcoming was the fact that the infrastructure network and rolling stock was obsolete, poorly maintained and/or insufficient to meet increased commuter demand. Early 2008 saw an abnormal demand in the rail commuter industry. This was result of a migration of the motorized taxi commuter to rail due to taxi fare increases.

According to PRASA Group CEO Tshepo Lucky Montana, failure to re-invest in the industry has led to its current state of deterioration. This infrastructure and equipment neglect situation developed as a result of 30 years of under re-investment and lack of new project investment, which had a significant negative impact on the operator's ability to deliver an acceptable level of service quality (Hutchison, 2008). It is also argued that a poor employee-job fit contributes towards and inhibits service performance ability.

Zeithaml *et al.* (1990) state that their research indicates that customer-contact jobs tend to be situated at the lower levels of organizational charts and are most likely filled by the least educated and lowest paid employees in the company. This unintended process in all probability contributes to the poor customer service quality currently observed. The rail commuter industry is plagued with a history of poor service delivery. Never before has the need to evaluate, identify and remedy the service quality shortfall been so great.

1.2.1 History, Background and Policy Mandate of the Commuter Rail Industry

According to Metrorail History (2009), the South African railway system dates back to the late 1850s when the concept of rail transport was proposed for the Cape and Natal colonies. The initial systems were first established by private companies with the building of a 92 kilometre line from Cape Town to Wellington and the Durban to Point line in Natal. Passenger commuter rail services were born soon thereafter in 1860 with the opening of a 3 kilometre section of railway line between Market Square and the Customs Point in Durban. The first Cape service commenced with the introduction of the Cape Town to Wellington service via Eersterivier in 1863. The first passenger commuter train to operate in the Gauteng area was only introduced

much later in 1890 with the introduction of a 20 km service between Braamfontein (Johannesburg) and Boksburg.

According to the South African Rail Commuter Corporation History (2009), until 1990 the public road and rail passenger services were provided for by the state-owned entity, the South African Transport Services (SATS). Thereafter, these services became the joint responsibility of Transnet and the South African Rail Commuter Corporation (SARCC), corporations created in terms of the Legal Succession to the South African Transport Services Act (Act 9 of 1989) to oversee long-distance and metropolitan commuter rail services respectively.

Metrorail became a business unit of Transnet during 1996 and under this arrangement; SARCC owned the commuter rail assets and retained responsibility for capital expenditure and asset maintenance. In 2006, Metrorail lost its independence when it was transferred into SARCC by the Minister of Transport through a consolidation process.

As a result of lack of clarity on roles, responsibilities and efficiencies amongst these public transport service providers, efforts in achieving the policy objectives set out by the National Department of Transport (NDOT) were thwarted. To address the under-performance of these passenger service entities, and the historical under-investment in this sector, the national Government established the Passenger Rail Agency of South Africa (PRASA) (The South African Rail Commuter Corporation Overview, 2009). This divided the operations, personnel and assets into the following four distinct businesses:

- Metrorail: Commuter rail services in urban metropolitan areas;
- Shosholoza Meyl: Regional and long-distance (inter-city) rail-based passenger transport services;
- Autopax: Road based regional bus services (inter-city);
- Intersite: Property management and portfolio development.

The national commuter rail service policy mandate currently resides under the responsibility and ownership of the Passenger Rail Agency of South Africa (PRASA), a State Owned Enterprise (SOE) within the National Department of Transport framework (Passenger Rail Agency of South

Africa Mandate & Vision, 2009). Policy and strategy execution is the responsibility of the PRASA Corporate head and the day-to-day suburban rail commuter operations and certain mandate objectives are the responsibility of the various regional Metrorail entities, all subsidiaries of PRASA.

With the recent formation of the PRASA entity, their legislative obligation and objective is expanded upon to include the generation of income by providing rail commuter and long haul bus services within South Africa in terms of the principles set out in section 4 of the National Land Transport Transition Act, 2000 (Passenger Rail Agency of South Africa Mandate & Vision, 2009). The new body aims to transform public transport in South Africa, and includes provincial and the local municipal districts, to provide an integrated and intermodal transport system that is both efficient and seamless. Figure 1.3 illustrates the typical integrated relationships required at the provincial and local authority level to support the national objectives. This will act as a gateway for many to access new socioeconomic opportunities.

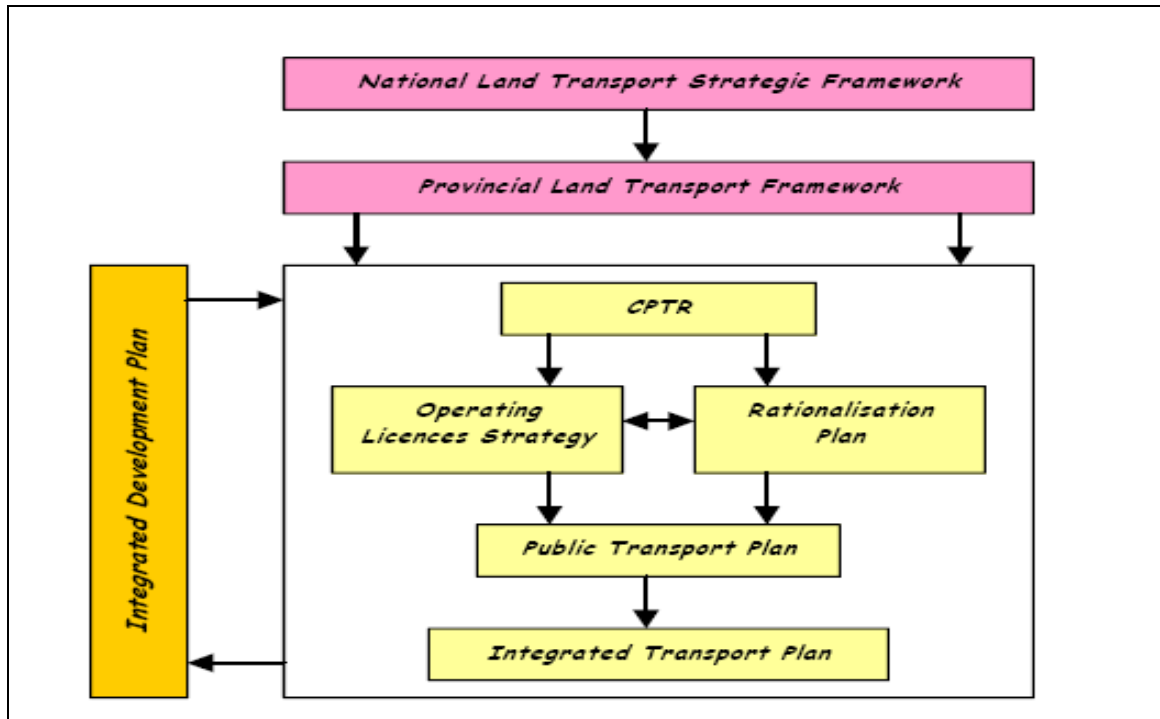


Figure 1.2: Framework of an integrated transport plan (from Buffalo City Municipality Public Transport Plan, 2003)

According to the National Rail Plan Consolidated Report (2006), the future of public transport strategy and planning for South Africa was cast in the 1996 National White Paper, which set out a number of strategic policy objectives for land passenger transport. Urban commuter rail features heavily and is to provide the backbone to the public transport industry. The Moving South Africa (1999) strategy document's vision for urban transport was designed to enact and execute the White Paper policy commitments and is mandated with the reshaping of the Public Transport System (PTS) in South Africa. The principal objective of the National Rail Plan is to secure the future of commuter rail in South Africa by applying the priority corridor strategy which focuses on densification of commuter rail corridors to the rail network in each of the regions (National Rail Plan Consolidated Report, 2006).

The mandate responsibility of PRASA and Metrorail includes the combination for the implementation of Cabinet's 2005 National Passenger Rail Plan and for the provision of its daily operations. The latter was in a state of extreme disrepair and in dire need of urgent intervention, more specifically, capital investment to stem the service quality decline (Hutchison, 2008).

Group Chief Executive Officer Tshepo Lucky Montana reported that new policy objectives were to focus on projects that would improve service quality delivery that had deteriorated as a result of the years of under-investment and failure to reinvest. To this intent and after vigorous campaigning by Montana, Government's commitment to revitalizing this industry in order for it to realize its objectives is demonstrated by its increased funding to the National Rail Plan which increased from R2.7 billion (operational and capital grant) in 2004 to R25 billion for the four year period between 2008 and ending 2012. The allocation would see R14.7 billion to finance the improvement of rolling stock (2 000 coaches also refurbished as part of the 2010 FIFA World Cup preparations), signalling projects and technology infrastructure, as well as 2010 FIFA World Cup station upgrades amongst other (South African Rail Commuter Corporation Press Release, 2009). This would certainly see an end of the historical underinvestment in this industry and facilitate the total transformation of passenger transport in the country.

1.2.2 Passenger Rail Agency of South Africa (PRASA) and Metrorail

In essence PRASA has custodianship of all commuter rail assets and is responsible for the upgrade, maintenance and management thereof, except for their Eastern Cape region where they are forced to outsource the Train Operations function (Interim National Passenger Rail Plan, 2005).

In the South African Rail Commuter Corporation Overview (2009), PRASA, through its operator Metrorail, indicate how they provide commuter rail services in four of the nine provinces of South Africa:

- Gauteng (linking the Johannesburg and Tshwane metropolitan/urban CBDs);
- Western Cape (Cape Town);
- KwaZulu Natal (Durban); and
- Eastern Cape (Port Elizabeth and East London).

The South African Rail Commuter Corporation Business Plan 2008/09 (2008), states that Metrorail's core business is moving people, and this is resonated by their theme "getting South Africa to work". They are responsible for transporting over 2.2 million passengers per day in the

operational areas mentioned. They provide rail services to meet the country's needs for affordable public transport.

The Eastern Cape region commuter rail service is significantly smaller than its larger regional counterparts with respect to commuter volumes. The 30 daily East London services contribute an average total of approximately 36 000 (1.64%) passenger trips to the national total of approximately 2.2 million commuters per day. This public transport service mode offered makes provision for a very safe rail and affordable transport option to the impoverished target market, albeit somewhat inconvenient and slow. It serves eighteen train stations along the service route between East London and Berlin, and will play a significant role in the Buffalo City Municipal (BCM) Integrated Transport Plan (South African Rail Commuter Corporation Annual Report, 2006). It is concluded that the MREL business plan strategy is one based on cost leadership and its main competition is in the form of its close substitutes in the bus and taxi industry (Buffalo City Municipality Integrated Transport Plan, 2006).

According to Metrorail CEO Sisa Mtwa, the organization's focus is now on increasing access to its services while improving service delivery, particularly in the areas of train service punctuality and reliability as well as safety and security (Oberholster, 2009). This Metrorail strategy appears well-conceived as it addresses the summary findings of the National Travel Survey (2003), which identified accessibility, crowding levels and security as the main reasons for dissatisfaction with the train service attributes (see Table 1.1). Fares, frequency of accidents and peak period frequency were considered satisfactory and are supported by the East London commuter rail safety data statistics.

Attributes of the train services	% of train users who are dissatisfied									
	Western Cape	Eastern Cape	Northern Cape	Free State	KwaZulu-Natal	North West	Gauteng	Mpumalanga	Limpopo	RSA
The distance between the train station and your home	57	60	47	39	66	60	61	75	61	60
The travel time by train	38	35	31	35	46	41	52	40	39	46
Security on the walk to/from the station	74	67	32	59	76	30	60	54	66	64
Security at the stations	58	32	10	23	51	30	39	29	50	44
Security on the train	81	32	22	10	62	43	59	42	48	63
The level of crowding on the train	84	43	40	73	51	62	72	60	23	71
Safety from accidents	31	3	14	18	31	11	24	17	38	25
The frequency of trains during peak period	33	24	24	45	37	30	47	10	39	40
The frequency of trains during off-peak period	39	60	25	36	46	61	61	15	55	52
The punctuality of trains	44	33	52	70	43	28	63	21	18	52
The train fares	33	10	9	3	27	15	20	9	27	23
The facilities at the station e.g. toilets, offices	64	34	30	34	37	37	53	24	35	53
The train service overall	49	14	20	31	27	34	45	14	31	42

Table 1.1: Dissatisfaction with attributes of the train service, by province (from National Travel Survey, 2003)

The total number of daily public transport commuters in the Eastern Cape is 281 000 and mode share allocation is depicted in Table 1.2 (National Travel Survey for Eastern Cape, 2007). The East London (Amatole District) area “public transport mode” to work is dominated by the taxi mode with some train use.

Metropolitan Area	Public Transport Mode (%)		
	Train	Bus	Taxi
Nelson Mandela Metro (Port Elizabeth)	2.9	30.4	66.7
Amatole (East London)	11.5	6.1	82.4
Eastern Cape	5.2	16.2	78.7

Table 1.2: Main mode to work by public transport (from National Travel Survey for the Eastern Cape, 2007)

According to Oberholster (2009), CEO Mtwa confirms that Metrorail has made good progress in this first phase of a three-phase turnaround strategy, which will focus on stabilizing the business through accelerated capital projects (infrastructure and rolling stock), changing management interventions, and implementation of quality/business management systems. One objective is to gain a larger portion of the public transport service provider's market share. The CEO confirms the immediate challenges facing Metrorail include the ageing infrastructure and rolling stock, as well as skills shortages, safety concerns and public perception.

PRASA's (and therefore Metrorail's) reviewed mission reflects four very noble intentions:

- Service excellence;
- Embracing the sustainability concept;
- Mobility solutions to improve business delivery;
- Integration to ensure a safe, seamless and dignified travel experience across all modes of public transport (Passenger Rail Agency of South Africa Mandate & Vision, 2009).

1.2.3 The Service Delivery Challenges

Metrorail East London is reliant on Transnet Freight Rail (TFR) for its train and network operational requirements and for which they have to pay a substantial cost. These costs impact directly on the ever-constricting operational expenditure budget which is under constant readjustment as a result of the effects of the economic climate and general national budget reductions. This out-sourced arrangement also hinders Metrorail's efforts to improve efficiencies and customer service levels because they do not have authority to make the crucial operating decisions that have an immediate influence on service performance and quality. Operational decisions are taken by TFR as the train operators and the outcomes thereof are not always in the best interest of Metrorail as a commuter rail service provider. This operational flaw is exacerbated by the fact that TFR's ultimate commitment and priorities are with freight transportation, as opposed to MREL's passenger transportation priority, and this hinders Metrorail's service improvement efforts.

Both these entities are saddled with poor practices and cumbersome bureaucracy, which further impede any efforts to improve on operating efficiencies. Plans at the turn of the century to

privatize the industry were shelved, probably as a result of the required pricing structure (Roux, 2005).

The Metrorail East London service data reveals that the main contributors to customer complaints are for service delays and subsequent poor customer care. Typically, both of these items result in serious inconvenience to the customer whereby they will arrive late at the destination station and then receive poor treatment. It is alleged that customer-contact personnel are unable or unwilling to apply the responsiveness and assurance level traits required for quality customer care. Compounding this human factor, it is on record that the vast infrastructure network and rolling stock fleet is old, obsolete, poorly maintained and subsequently unreliable and unable to respond effectively to demand or to keep pace with the growth and development that is taking place in the economy (Hutchison, 2008).

The new demand at Metrorail East London (increase estimated at 15% from the taxi market migration) has resulted in their current operations running at maximum available capacity, approximately 36 000 daily commuters, with very little or no spare resources to expand their operations. Current overcrowding, albeit within the prescribed safety limits, is common and naturally adds to reduced customer satisfaction levels. As a result, the service reliability factor also suffers and is evident in their punctuality performance indicator recording scores of below 95% in the recent past. According to Pycraft *et al.* (2007), providing the capability to satisfy current and future demand is a fundamental responsibility of operations management. A delicate balance between capacity and demand can generate high profits and satisfied customers, but if this balance is wrong it can potentially be disastrous. Clearly, additional train capacity will be required.

From the evidence mentioned thus far, it appears apparent that the Metrorail service quality failures are mainly associated with the following service quality dimensions:

- Tangibles: Insufficient rolling stock capacity which results in overcrowding;
- Reliability (service delays): Train service failure (punctuality and cancellation performance records), network infrastructure failure (train control signalling system), rolling stock failure;

- Responsiveness: failure to provide prompt customer care service, lack of willingness, urgency and proficiency.

These items will be the focal point of the research to be undertaken and will be discussed in Chapter 3.

1.3 Benefits of the Research to the Industry

Zeithaml, Bitner and Gremler (2006) recommend that services research must monitor and track service performance on an ongoing basis because it is subject to human variability and heterogeneity. Therefore, services research conducted on a snapshot type basis is inadequate and will prove insufficient. In addition, the customer gap between expectation and perception of services is equally important and it too requires constant monitoring due to its fluctuating nature.

The aim of this study is to evaluate the perception of service delivery within the rail commuter industry. It is possible that the industry is oblivious to the negative impact an incompetent front-line employee will have on service delivery as previously alluded to by Zeithaml *et al.*, (1990).

Remenyi (1996) elaborates on the importance of the primary objective of the research activity, which of creating and adding something of value to the body of accumulated knowledge. Given the ongoing Metrorail quality service delivery challenges, their management efforts would surely explore innovative interventions.

The SERVQUAL scale has the ability to identify and measure the service delivery gap between what the customer expects and what he/she actually experiences. One of the main Metrorail strategic and business plan objectives is to identify interventions that will improve service quality delivery (Hutchison, 2008). This survey and subsequent data analysis will allow for the generation of the knowledge that is required for informed decision making with respect to interventions and prioritizing of service attributes (Awad and Ghaziri, 2004). This in turn will positively contribute to higher levels of service quality, value creation and commuter assurance which support the Metrorail turn-around strategy.

Edwards (2004) claims that such research will increase awareness of service delivery and the gaps in understanding between managers and commuters. Also, the survey findings will inform the industry how service delivery and communication improvements can be made which will add to the industry's body of knowledge.

1.4 Structure of the Survey

The body of this survey is divided into five chapters. Chapter 1 provides the background to the research problem; a brief theoretical framework; the research aims, objectives and hypothesis; the methodology undertaken and mentions some of the benefits to be gained from the study for the industry.

Chapter 2 reviews the literature pertaining to the services marketing criteria, including the nature of services marketing, its characteristics, and the difference between quality and satisfaction. Next, the service quality constructs of poor service delivery, measurement, the different service quality measurement models available and the comparison between expectations and perceptions are reviewed. Finally, the SERVQUAL framework and its application in the South African context are reviewed.

Chapter 3 discusses the methodology, research design, sampling, the data, the hypotheses developed and the research questions. There is also a discussion on how the questionnaire was adapted to fit the commuter rail industry and how the research data was acquired.

Chapter 4 deals with the data analysis, how the SERVQUAL scores are presented and the subsequent results. The chapter is guided by the specific requirements of each of the research questions previously mentioned, and includes the tests conducted and their results.

In chapter 5, the findings and their relevance and impact with respect to the hypothesis testing are discussed. This section explains the results and provides knowledge for informed managerial interventions and decision making.

Chapter 2: Literature Review

"No enterprise can exist for itself alone. It ministers to some great need, it performs some great service, not for itself, but for others; or failing therein, it ceases to be profitable and ceases to exist." – Calvin Coolidge

2.1 Introduction

It was acknowledged in Chapter 1 that the research would focus on the evaluation of commuter perceptions and expectations of customer service delivery. The research objectives and questions are discussed in detail in Chapter 3. This literature review intends to interrogate the service quality evaluation research undertaken in similar studies in order to compile a theoretical base for the Metrorail survey to be undertaken. To achieve this objective, some key concepts are reviewed, as well as the characteristics and the service quality construct.

2.2 Key Concepts

From the onset of their crusade, one of Zeithaml *et al.*'s (1990) main research objectives has been influenced by three key questions:

- What is service quality?
- What causes service-quality problems?
- What can service organizations do to solve these problems and improve their service?

In an effort to assist conceptualization of the research to be undertaken, the following key concepts are defined.

2.2.1 Services

The word "service" is commonly used to represent an industrial sector that "does" things for you. The word also denotes organizations which meet the needs of society and are grouped in a category that includes health, civil and transport service, for example, and are designated "public services". Traditionally they are developed along bureaucratic lines and are distinct from the industrial service sector (Johns, 1999). Metrorail, a government entity, is one of several service providers to the public transport service.

Zeithaml *et al.* (2006) define services as deeds, processes and performances in the following categories: pure services, value-added services, customer service and derived service. By way of example, Metrorail provides transportation as a pure service and customer service in support of its core product. According to Chang, Chen and Hsu (2008), the concept of service comes from business literature, and many scholars have offered various definitions of service. The authors cite Ramaswamy (1996), who described service as “the business transactions that take place between a donor (service provider) and receiver (customer) in order to produce an outcome that satisfies the customer”. This description encapsulates and supports the notion that the customer, in one way or another and in most customer service related transactions, has an equally responsible role to play for the service output to be successful. Yong (2000: 3) observes that “a service, combined with goods products, is experienced and evaluated by customers who have particular goals and motivations for consumers for consuming the service.” In his explanation, Blem (1995) defines services as all those activities which create a bond between organizations and their customers. This is because all organizations have a service component.

2.2.2 Service Quality

Following extensive focus-group research on service quality, Zeithaml *et al.* (1990) concluded that a number of underlying patterns in the responses were extremely consistent in the focus-group interviews. From this, they were able to define good service quality as meeting or exceeding what customers expect from the service.

2.2.3 Customer Services

Customer service is the service provided in support of a company’s core products (service). It is not meant to be an additional cost to customers as it is usually produced and consumed during the provision of the company’s core product. It is often confused with and included with services as a product (Zeithaml *et al.*, 2006).

Walker (1994) cautions that organisations that adopt a customer first strategy must be designed and equipped with appropriate resources to support such a culture shift. This is because service quality cuts across the functional barriers of customer contact personnel. According to Gale (1994), high-quality customer service means profits; this claim is duly illustrated in his literature

and is based on his specific research on the topic. It shows that companies that achieve better quality customer service earn more than businesses that do not.

2.2.4 Service Delivery

Sasser, Olsen and Wyckoff (1978 in Parasuraman, Zeithaml and Berry, 1985) suggest that three distinct dimensions of service performance are relevant: levels of material, facilities and personnel. They reason that service quality involves more than just outcome, it also includes the manner in which the service is delivered. This notion is specifically relevant to the Metrorail application of their operations, where they provide a core product of rail commuter transport which is supported by a customer services care system. Gronroos (1982 in Parasuraman *et al.*, 1985) describes two types of service quality: technical quality, relating to what the customer is receiving from the service, and functional quality, relating to the manner in which the service is delivered.

2.3 Services Marketing

How does the marketing of services differ from that of manufactured goods? Services marketing concepts and strategies have developed in response to the significant growth of service industries and its contribution to economies (Zeithaml *et al.*, 2006). Common consensus amongst researchers is that the intangible nature of a service calls for marketing approach that is very different from that for a tangible product (Lamb *et al.*, 2004; Zeithaml *et al.*, 2006). In a study conducted by Saravanan and Rao (2007), services marketing is referred to as the marketing techniques employed and strategies implemented by a firm to attract customers and retain market share; which in essence, is not dissimilar to the marketing of manufactured goods.

2.3.1 The Specific Nature of Services Marketing

According to Javalgi, Martin and Young (2006), and as previously observed by others herein, services marketing is different from goods marketing. This is because when consumers purchase goods, the consumer is able to use many tangible cues to judge quality. Obviously, the same response cannot be applied when purchasing intangible services as fewer tangible labels exist to help consumers make decisions: the tangible evidence is limited to the service provider's physical facilities, equipment and personnel (Zeithaml, Berry and Parasuraman, 1983). The

authors claim that the four characteristics that are most commonly used by marketers to differentiate between goods and services are inseparability, intangibility, heterogeneity and perishability. Lovelock (2004 in Javagi *et al.*, 2006) discusses how services differ from packaged products and offers several key managerial implications of these differences. Clearly there are significant differences between consumer goods and services marketing. These differences highlight the critical importance of a market orientation, since so much of service delivery is represented by the employee/customer interaction.

2.3.2 The Unique Characteristics of Services

This concept is expanded on by Zeithaml *et al.* (2006) who discuss the characteristics of services that demand distinct interventions for managing service organizations. This is because services are intangible, heterogeneous, produced and consumed simultaneously, and are perishable. As a result, service management and consistent quality service delivery are challenging tasks. Each of these four service characteristics is now briefly discussed.

2.3.2.1. Intangibility

“The most basic distinguishing characteristic of services is intangibility” (Zeithaml *et al.* 2006: 206). Lamb, Hair, McDaniel, Boshoff, and Terblanche (2004) claim that because service is intangible and cannot be physically identified and compared – it cannot be touched, seen, tasted or heard – consumers find it hard to evaluate. Because the benefit to be achieved is intangible, it is difficult to differentiate between alternative service suppliers. The benefit is, of course, the quality of service provided.

2.3.2.2. Heterogeneity (Variability)

With respect to heterogeneity, Zeithaml *et al.* (2006) liken services to “performances” produced by people for which no two are the same. This is the product that the frequent customer will become familiar with each day and no two customers are alike from one scenario to the next. The authors explain that the heterogeneity connected with services deals with the interaction between customers and employees. What this means in essence is that every service is unique; it is one-time generated, rendered and consumed and can never be exactly repeated as the time, location,

circumstances, operational conditions and assigned resources will be different for each service delivery. Lamb *et al.* (2004) state that a service level can vary between individuals and that to overcome this inconsistency, firms try to employ better personnel. The objective of this is to recruit, train, remunerate and motivate staff to render a particular standard of service.

2.3.2.3. Inseparability

The concept of simultaneous production and consumption of services is best explained as when a service is first sold and only then produced and consumed at the same time. In contrast, Zeithaml *et al.* (2006) compares how goods are first produced, then sold and finally consumed.

2.3.2.4. Perishability

Perishability refers to the fact that services cannot be saved, stored, resold or returned. For example, an unused seat on train trip cannot be reclaimed or used at a later time, or where demand for services (overcrowded trains) is not uniformly distributed. The fact that services cannot typically be returned or resold implies a need for strong recovery strategies when things go wrong (Zeithaml and Bitner, 2003 in Luke, 2007). In contrast, a tangible product can be put into storage and used or sold at a later date.

2.4 Basis for the Service Quality Construct

Service quality has become the major strategic value-adding driver for the firm in achieving sustainable competitive advantage (Devlin, Gwynne and Ennew, 2002). As discussed above, it is generally accepted that service quality is more difficult for the customer to conceptualize for measurement and evaluation than goods quality. According to Boothe (1990 in Pitt, 1991), most researchers now concur that service quality involves a comparison by the customer of service expectations with actual performance perceptions, and that only the customer is able to make that specific service definition. It is thus deduced that service quality is a measure of how well the service level delivered matches customer expectations. *Expectation* has been defined as something one would expect to happen or get while *perception* has been defined as seeing or noticing what has happened. It is therefore deduced that the difference between the two forms the conceptual basis and definition for service quality.

Pitt (1991) further emphasizes the necessity for this service quality delivery to conform to expectations on a consistent basis. Parasuraman *et al.* (1985 in Asubonteng, McCleary and Swan, 1996) suggest that the three following themes are fundamentally associated with services:

- Service quality is more difficult for the consumer to evaluate than goods quality;
- Service quality perceptions result from a comparison of consumer expectations with actual service performance; and
- Quality evaluations are not made solely on the outcome of service, they also involve evaluations of the process of service delivery.

The latter observation is relevant with respect to the Metrorail study. For example, the total service required by a commuter rail customer not only involves the core service of transportation, the service encounter starts from the time the customer enters the railway station to purchase a ticket to the point where the customer exits the system at the final destination. This process includes secondary service encounters with several different customer contact employees. Satisfaction with these encounters will be measured and revealed by means of the disconfirmation methodology offered by the SERVQUAL study undertaken.

2.4.1 Customer Satisfaction and Service Quality

Oliver (1981 in Parasuraman *et al.*, 1988) describes satisfaction as a “psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer’s prior feelings about the consumption experience” and is generally transaction specific, whereas he summarizes attitude as a consumer’s orientation for a product, store or process. Based on these definitions, there is a distinction between service quality and satisfaction, where perceived service quality is construed as a global judgment/attitude and satisfaction is related to a specific transaction.

While Saravanan and Rao (2007) declare that researchers in general acknowledge that customer satisfaction is based on the level of service quality delivery, there is also disagreement, and three distinct camps, amongst researchers with respect to the suspected link between quality, satisfaction and the root cause thereof. Woodside, Frey and Daly (1989) suggest that quality leads to satisfaction, for example where a customer’s prior quality expectations for the service

encounter are met. Bitner (1990 in Asubonteng *et al.*, 1996) on the other hand supports the notion that satisfaction leads to quality, for example where an individual customer contact incident of satisfaction repeated over time will result in perceptions of the level of service quality. Bowers *et al.* (1994 in Asubonteng *et al.*, 1996) mentions the group of researchers that believe quality and satisfaction are determined by the same attributes.

According Zeithaml *et al.* (1996, in Molinari and Blaber, 2008), customer service can produce customer behaviours that can indicate whether a customer will remain with or defect from an organization. They also claim that replacing lost customers comes at an elevated cost, and recommend that customer defection should be a key performance gauge for senior management and a fundamental component of incentive programmes. Retention is important because it can cost five times more to obtain a new customer than to keep an existing one (Weinstein *et al.*, 1999b in Molinari and Blaber, 2008).

Asubonteng *et al.* (1996) conclude that while there is seemingly no agreement on the precise attributes, linkages and dimensions of quality and satisfaction, most researchers agree that service quality comprises attributes that are both measurable and variable.

2.4.2 Expectations Compared to Perceptions

According to the research of Parasuraman *et al.* (1988) and Sasser, Olsen and Wyckoff (1978), as well as extensive focus group interviews, clearly supports the conception that service quality, as perceived by consumers, stems from a comparison of what they feel service firms should offer with their perceptions of the actual performance of firms providing the service. Based on this notion, Parasuraman *et al.* (1988) claim that perceived service quality is the degree and direction of discrepancy between consumers' perceptions and expectations. The same authors caution about the varying interpretations of the definition of expectations as used by the service quality literature and the consumer satisfaction literature. Service quality expectations are based on the notion of what a consumer feels a service provider *should* offer (desires or wants) and can be construed as predictions rather than what they *would* offer (satisfaction association).

According to Van Pham and Simpson (2006), various factors are thought to influence consumer expectations. From their related studies, they claim that there are conflicting findings to determine the role that frequency of use plays in forming expectations but acknowledge that this aspect requires further investigation.

The commuter rail industry has a host of service delivery exchanges in their comprehensive operation. The nature of the core service of Metrorail does not result in a single service encounter or customer transaction episode with contact personnel but rather a series of transactions from the time a commuter enters the station precinct to purchase a ticket until the time they depart the environment at the destination station. Hart (1998) argues that customer expectations might not be fully established at the point of first contact with service personnel but rather that expectations become more prominent after a series of interactions during the service delivery. He cautions that attempting to capture the intricacies of such interactions by the use of a single snapshot type instrument (SERVQUAL) would be extremely hopeful. Zeithaml *et al.* (2006) concur, emphasizing that services research needs to continually monitor service performance because performance is subject to human variability and heterogeneity. In simple layman terms, this means that a single once-off assessment of services, as is possible for a physical product, would prove insufficient. There has been previous research regarding the impact of the relationship between customer contact employees and the customer (Johnson *et al.*, 1988 in Edwards, 2004) but unfortunately none that specifically deals with this aspect could be located in the rail commuter industry.

2.4.3 The Service Quality Model of choice

As a result of the prominence given to service quality evaluation, the leading models used are destined to come under close scrutiny with respect to applicability and service industry application. This is because no one model will be ideally suited to a particular application. Extensive research has been conducted to improve on the service quality measurement.

The problem of service quality evaluation is complicated for two reasons: human presence and service intangibility, and the dependence on the delivery process (Parasuraman *et al.*, 1996). Defining an evaluation standard independent of any specific service context has resulted in

several methodologies (Carman, 1990). According to Franceschini, Cignetti and Caldara (1998), a vast array of literature provides insight to the service quality evaluation methodologies typically used in practice. Several models have been developed, and it seems that no one model has been adjudged superior and applicability is determined after final data analysis. Of the models most recommended, a process of analyses and elimination was duly followed and resulted in a choice between the SERVQUAL (Parasuraman *et al.* 1988) and SERVPERF (Cronin and Taylor, 1992) models.

The SERVPERF methodology is based on Cronin and Taylor's (1992) model. This concept focuses on customer's perceptions only and excludes the dimension importance criteria. According to the developers this procedure gives better results than SERVQUAL and reduces the number of questions presented to respondents.

The service quality scale of choice for this survey is the SERVQUAL model which was developed by Parasuraman, Zeithaml and Berry (Parasuraman *et al.*, 1991; 1993; 1994). This model is preferred because commuter expectations of service and the importance of the service quality dimensions are crucial to the Metrorail study. The SERVPERF concept does not include these features.

SERVQUAL is a conceptual model that was originally developed in 1985. It is a concise multiple-item scale with good reliability and validity that firms can use to better understand the service expectations and perceptions of their customers (Campbell, 1960 and Peter, 1981 in Parasuraman, *et al.* 1988; Zeithaml *et al.*, 1990). Service quality is evaluated by calculating the gap difference between what the customer expects and what they really perceive. Following SERVQUAL refinement (Parasuraman *et al.*, 1991), an extra section that is designed to measure the importance of each service quality dimension was included. This refined model also saw the removal of the nine negatively worded (reverse scoring concept) statements in the responsiveness and empathy dimensions.

2.4.4 The SERVQUAL Scale Instrument, Dimensions and Measurement

According to Naumann and Giel (1995), creditable scale development is a time-consuming process that cannot afford to exclude any relevant attribute pertaining to the service under review; this is critical to attaining reliable and valid analysis. There are several possible ways to identify service attributes that are important to customers. Caution must be exercised when analyzing and using internal corporate information for risk of internal bias. Once a list of internal attributes has been compiled, in-depth interviews and focus groups can be used to address points requiring clarity and to add to the attribute list. Focus group input to such research is invaluable, often surpassing the contribution offered by management. The same focus group participation is recommended for the scale purification process, which more often than not results in attribute item reduction disagreement.

The scale purification verification can be conducted by the statistical technique of factor analysis (amongst others, for example multiple regression). Typically, a test study is conducted with a sample and the listed individual attributes will be grouped and loaded into a number of categories or factors which will later acquire appropriate labels relevant to that particular factor (dimension). The relative strength of the relationship between the single item attribute and the dependent variable can then be identified. The dependent variable is usually a customer satisfaction index. The individual attributes showing a weak relationship with overall customer satisfaction can then be removed from the list. The closer the relationship and distinctive factor grouping, the better the indication of validity (Naumann and Giel, 1995). Factor analysis is described (Asubonteng *et al.*, 1996) as a tool used to determine which of the individual item statements are measuring dimension number one, number two and so on, and which questions do not distinguish between dimensions or the number of dimensions in the data set. As mentioned previously, questions that were not clearly related to a dimension are deleted.

The development of the SERVQUAL instrument followed a similar process which resulted in a generic instrument with good reliability and validity and broad applicability. It was designed to serve as a diagnostic methodology to identify areas in an organization's service quality shortfalls and strengths (Parasuraman *et al.*, 1991). According to Parasuraman *et al.* (1988), the conceptual foundation for the SERVQUAL scale was created by a small group of researchers (Sasser, Olsen

and Wyckoff 1978). Thereafter, Parasuraman *et al.* (1985) undertook a vast qualitative study that enabled them to define service quality and develop the dimensions to facilitate consumer perception and evaluation measurement. They assert that service quality can be understood, measured, and positively changed.

In practice, the SERVQUAL instrument forms the service quality framework and when utilized, it should as far as possible be maintained in its entirety (Parasuraman *et al.*, 1991). The same authors further suggest that it may be appropriate to make minor changes to the original wording in order to align it to a specific application. They also state that during such a refinement process, specific content may need to be added to supplement the instrument. These new items would however need to be similar in form to the existing items. Parasuraman *et al.* (1988) advise that while items may be relevant to a specific application, the same may not be true for a different service provider's application which may require the rewording to some of the item statements. This adaptation comes under regular scrutiny and criticism, and is associated with the positive and negative wording dilemma of the original SERVQUAL 22-item pair statements.

The negative wording format is in accordance with the recommendations for scale development. This requires approximately half the 22-item statement pairs to be worded positively and the remainder negatively (Churchill, 1979). According to Babakus and Boller (1992: 256), "this procedure is assumed to reduce the potential 'yea' and 'nay' -saying from respondents". Babakus and Boller (1992) claim that this procedure could produce method factors that will ultimately lead to the two SERVQUAL dimensions of responsiveness and empathy being completely loaded with negatively worded items. They also claim that this aspect could compromise the factor structure and trait validity of the SERVQUAL instrument. In order to evaluate the effects of negative wording on factor structure, Babakus and Boller (1992) conducted factor analysis tests that produced evidence to illustrate distinctive loading patterns for the positively and negatively worded statements. From their findings, they suggest that the direction of wording can create data quality problems and the potential for respondent errors which could generate a method factor. Together with their own study results, and based on their observations on the factor structure of SERVQUAL as provided by Parasuraman *et al.* (1988), Babakus and Boller (1992) suggest that SERVQUAL may have a validity problem and that users must exercise

caution. According to their research on the measurement literature, they also suggest caution with respect to analysis of data obtained from mixed item wording (negative and positive) and the use of the difference scores approach (difference scores = perceptions – expectations). According to Brown, Churchill and Peter (1993), these differences are averaged to produce a total score for service quality. However, their research reveals that there are potential validity problems that can arise through the use of different scores, and they suggest that further research is required in this regard.

The negatively worded concept is explained as follows. A score of 7 (1-7 point Lickert scale) could be selected to quantify support for a fully supported statement in the positive mode; the converse is true for a negatively worded statement whereby the reciprocal equivalent (1) would signify maximum support. Thereafter, scale values are reversed for the negatively worded statements prior to data analysis (Parasuraman *et al.*, 1988). One can understand how this concept could create confusion for respondents and how construct reliability, validity and score measurement could be compromised.

Subsequent to their final 1988 SERVQUAL scale, Parasuraman *et al.* (1991) subjected the model to a follow-up study which included refinement and re-examination of its reliability and validity. Part of this process involved the pretesting of the refined 22-item SERVQUAL statements, 16 of which were worded in the positive mode and six were worded negatively. The pretest results indicated a significantly larger standard deviation difference for the negatively worded statements in comparison to the positively worded statements. The results of the impact of the *negatively* worded statements for the respective research studies and those of the Metrorail and Malayan rail service study are presented and discussed in Table 4.3.2 and Chapter 5 respectively.

According to Parasuraman *et al.* (1991), the higher mean standard deviation variation for the negatively worded items suggests that respondents may have misinterpreted those specific items; also, the peer review group in hindsight felt that the offending questions were awkward and not as meaningful as the positively worded items.

The last observation made with respect to the 1991 SERVQUAL refinement pretest results and the subsequent impact of the negatively worded statements was that the reliability coefficients

were consistently lower for the dimensions containing the negatively worded statements (responsiveness and empathy) than in the original SERVQUAL study (Parasuraman *et al.*, 1988). As a result, the negatively worded items were all changed to a positive format in the final questionnaire (Parasuraman *et al.*, 1991). According to the comparative reliability coefficient (Alpha) results of the two SERVQUAL studies under review (1988 Original and 1991 Refinement), the Metrorail SERVQUAL survey and the Malaysian Rail Services SERVQUAL survey (Kiew and Chee, 1997), there is no apparent trend presented in this comparison to support the notion that negatively worded items reduced the reliability co-efficiencies of the respective dimensions. This observation is discussed and concluded with in section 5.2 in Chapter 5.

Following their extensive research, Parasuraman *et al.* (1988) state that in the absence of objective measures, a fitting approach for assessing the quality of a firm's service is to measure consumers' perceptions of quality by utilizing their SERVQUAL method, a model they developed to measure service quality through a series of steps. The authors claim that the construct of service quality as conceptualised in the literature and as measured by SERVQUAL can be determined by measuring and evaluating the difference between a subject's perceptions for a service received from that which the subject would expect from the service rendered.

Chou, Chen, Woodard and Yen (2007) concur that the SERVQUAL framework was designed to evaluate service quality in a variety of business models. A standard questionnaire firstly measures the respondent's expectation of a service and then the actual perception of the service delivered by the organisation using 22 parallel questions measuring the final five weighted dimensions as follows:

- Tangibles: the physical facilities, equipment, and appearance of personnel;
- Reliability: reliability to perform a promised service dependently and accurately;
- Responsiveness: willingness to help customers and to provide support services;
- Assurance: employees' knowledge, courtesy and ability to inspire trust and confidence;
- Empathy: the caring, individualised attention a firm provides its customers.

The main objective of this Metrorail survey is to evaluate commuter perceptions and expectations of quality by quantifying their disconfirmation through the SERVQUAL scale

questionnaire which comprises the five dimensions, the 22-item questions and the 7-point scale for the rail commuter service operated by Metrorail in East London. The SERVQUAL format makes use of a simple 7-point quality disconfirmation scale which evaluates perceptions on the basis where 1 equals Strongly Disagree and 7 equals Strongly Agree. Oliver (1977, in Chou *et al.*, 2007) describes the concept of disconfirmation as perceptions of the service compared to the service expectations. To achieve this objective, the process includes the adaptation and application of the original 1988 SERVQUAL scale.

2.4.5 SERVQUAL Gap Analysis

Zeithaml *et al.* (1990) defined perceived service quality as the difference between consumer expectations and their perceptions resulting from the degree and direction of four gaps occurring in the internal process of service delivery. Zeithaml *et al.* (2006) later expanded on this notion by referring to them as the *provider gaps*, and emphasized the need to close these four gaps as a prerequisite to closing the all important customer gap.

- Gap 1: Difference between consumer expectations and management's perceptions of these expectations;
- Gap 2: Difference between management perceptions of customer expectations and the service quality specifications;
- Gap 3: Difference between service specifications and actual service delivery;
- Gap 4: Difference between the service delivery and what is communicated about the service to consumers;
- Gap 5: The Customer gap occurs at the consumer level: this gap suggests that the difference between expected and perceived levels of service form consumers' overall perception of service quality, the customer gap. It is this gap that is the central focus of the gaps model and which the SERVQUAL instrument measures.

The raw data collected from a survey is used to compute coefficient alpha and are referred to as the "difference scores" process, required to compute and determine gap scores values. Specifically, for each of the 22 items, a difference score Q represents perceived quality which is defined as $Q = P - E$, where P and E are the ratings on the corresponding perception and expectation statements (Parasuraman *et al.*, 1988).

Based on the disconfirmation model, these models view service quality as the gap between the expected level of service and the customer's perceptions of the actual service received. The gaps model proposes that consumers' overall service quality perceptions are a result of comparisons between expectations and perceptions. In this way the gaps model sees service quality as a disconfirmation between expectations and perceptions. The gaps model is illustrated in Figure 2.1 and serves as a useful diagnostic tool for evaluating why service quality is failing. It comprises the two primary sections.

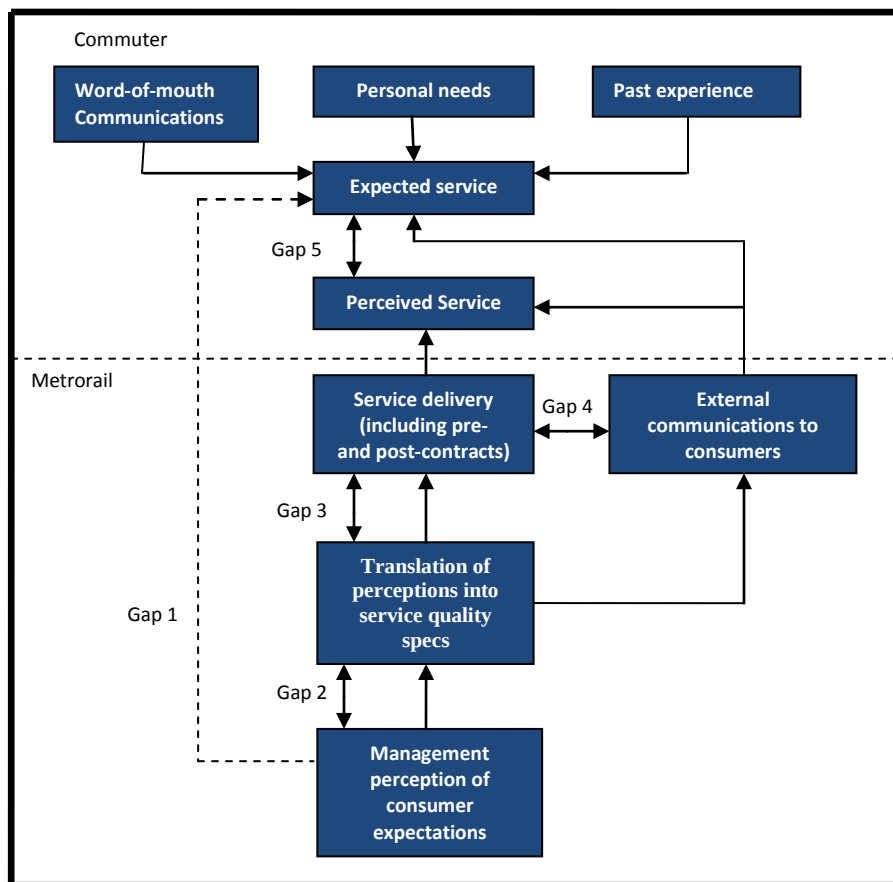


Figure 2.1: Adapted conceptual model of service quality or GAPS model (Zeithaml, Parasuraman and Berry, 1990)

2.4.6 SERVQUAL Validity and Reliability

According to Pitt (1991), validity and reliability verification of a SERVQUAL type instrument (Parasuraman *et al.*, 1985; 1988) requires the use of several statistical techniques. Pitt (1991)

advocates the use of computer generated calculations of coefficient Alpha (Cronbach 1951) as well as multiple regression and factor analysis to achieve the standards required to verify reliability and validity respectively. The SERVQUAL instrument under review has been the subject of study since its inception during the 1980s and has received accolades for its high reliability and consistent factor structures which support its trait validity (Campbell, 1960 and Peter, 1981 in Parasuraman *et al.*, 1988).

The SERVQUAL second stage scale purification tests (Parasuraman *et al.*, 1988) show consistently high reliability and factor loading on the appropriate dimensions. Although there were few exceptions, the distinctiveness of SERVQUAL's five dimensions was also supported by the low inter-correlations amongst the five factors. These good reliability and factor structure results were further verified when the first-stage 34-item format was further reduced to the final stage 22-item SERVQUAL scale and reanalyzed. The results reconfirmed the high reliability and dimensional distinctiveness of the scale.

Naumann and Giel (1995) agree that reliability is about the extent to which research results would be stable if the same technique were to be replicated. They offer a number of issues that can affect the consistency and reliability of a survey. These include sampling, questionnaire design, question wording, interviewer behaviour, scaling and measurement techniques; all of which have the potential to compromise the quality of the data and ultimately the reliability of the results. The authors (Naumann and Giel, 1995) describe research validity as the assurance that the research procedure really measures what it is supposed to measure.

Brown *et al.* (1993) investigated the impact of using the "difference score" medium to conceptualize service quality. They found that difference score measures often presented poor reliability; a direct result of the effect that a positive correlation between components scores has on the resultant difference score which compromises the reliability. Parasuraman *et al.* (1991) had already concluded that the usefulness of the expectations scores and the appropriateness of analyzing gap scores remained unresolved.

Churchill (1979) emphasized the need for developing a sound conceptual specification of the construct to enable reliable and valid service quality measurement.

Parasuraman *et al.* (1991) conclude that the collective findings from the host of replications in general provide convincing support for the reliability, face validity and predictive/concurrent validity for the SERVQUAL scores on the five dimensions. The authors acknowledge that in some studies, factor-loading patterns and the number of factors retained were inconsistent.

2.4.7 Application and Applicability of the SERVQUAL Model in the South African Context

According to the developers (Parasuraman *et al.*, 1991), SERVQUAL can be used as a diagnostic measure to identify all areas of a company's service quality strengths and weaknesses. The intent of Parasuraman *et al.* (1988) during scale purification of the original SERVQUAL instrument was to produce a scale that would have general applicability across a broad spectrum of service organizations. Apart from its many potential applications, Parasuraman *et al.* (1988) suggest that SERVQUAL can be used periodically to track service quality trends which in turn will supplement other forms of service quality measurement.

This aspect will be invaluable to a large multi-service orientated organization like Metrorail. The ability to better understand service expectations and perceptions of consumers, and the resultant gap will give the organization the direct control and ability to improve service delivery. The process can also identify measure and classify the relative importance of the various service dimensions and commuter segments. This knowledge will have vast application potential and benefits, one of which will minimize the risk of service recovery efforts focusing on the irrelevant areas and/or commuter segments. The service quality evaluation process could also be used as a bench-marking standard within branches of the corporation. The tool kit can also be used as a creditable service quality measuring medium for performance management systems. This issue is often the subject of debate within the Metrorail structure when management performance appraisals are undertaken, as current customer satisfaction index measurements used for this purpose are more often than not inconsistent, outdated and/or arbitrary. The corporation is under an obligation to uphold and comply with the corporate policy requirements

of good corporate governance. The SERVQUAL medium offers a sound and reliable service quality measurement that will give credibility to the performance appraisal process and at the same time satisfy any audit.

Zeithaml (2000) confirms that research across a broad sample of firms into the relationship between service quality and profitability was not encouraging. This research was the result of firms seeking evidence that their investments into service quality and Total Quality Management (TQM) in general were paying off. According to Matthews and Katel (1992), nearly two-thirds of quality programs examined had either stalled or fallen short of delivering real improvements. However, more meticulous studies soon followed and revealed that these prior negative claims were not focused solely on service quality but examined TQM in general (Zeithaml, 2000).

It could be argued how appropriate or relevant a costly high service quality commuter rail public transport service would be in a developing economy. In the South African context, an affordable commuter rail service is the only available transport option to a significant proportion of the population, apart from walking. Given the current national fiscal constraints being placed on state-owned parastatals, would the cost of an enhanced value proposition not be a futile and wasteful expenditure if there were little or no risk of current loyal commuters defecting to the more expensive competition as a result of poor service delivery? This dilemma is supported by a South African travel survey which identifies and classifies some market segments as the “stranded and survivors” who can only afford commuter rail service rates (MSA, 1999).

Angur (1997) conducted a study to assess the generalizability and applicability of the SERVQUAL concept as a measure of service quality in a developing economy. The survey concludes that the confirmatory factor analysis revealed a relatively poor fit of the five-factor structure. The overall results of factor analysis suggest that service quality is a multidimensional rather than a unidimensional construct and that the various dimensions appear to be of differing importance. In addition, the SERVQUAL gap measure function was able to provide greater diagnostic information than the performance only measure of SERVPERV, which makes it an ideal tool in the context of a developing economy.

The available research undertaken on passenger rail service quality also supports and acknowledges the reliability and usefulness of the SERVQUAL scale as a measurement tool (Kiew and Chee, 1997; Cavana, Corbett and Lo, 2007). The results of both (Kiew and Chee, and Cavana *et al.*) rail service quality studies undertaken indicate that the scale could make a valuable contribution to the body of knowledge in the field of service quality evaluation in the rail service industry. It also served to identify symptoms and the underlying problems that inhibited effective quality service delivery. The results of their findings indicate satisfactory reliability and validity factors overall.

In summary, “The SERVQUAL instrument is a useful starting point, not the final answer, for assessing and improving service quality” (Parasuraman *et al.*, 1991).

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology process followed and includes a discussion of the research aims, the objectives of the survey, a problem statement, and the four hypotheses developed to address the problem statement and questions number one and three. Questions two will be answered outside the realm of inferential hypothesis testing and will be addressed by means of descriptive statements and illustrations.

The process then discusses the development of the Metrorail SERVQUAL scale, its design and the rationale for the modifications made to the original SERVQUAL scale (Parasuraman *et al.*, 1988). Thereafter, the data analysis procedure is briefly explained.

3.2 Research Aims, Objectives, Problem Statement and Hypotheses

The aim of the research is to explore and evaluate the quality of customer service delivery of the East London metropolitan rail commuter service operated by Metrorail. The objectives of the research will be guided by the following questions:

1. Is there a difference between commuter expectations and perceptions for each of the 22-item service attributes delivered by the East London Metrorail rail commuter service?
2. Is the importance of each of the five SERVQUAL dimensions ranked differently by commuters and if so, what is their rank order of importance?
3. Is service quality perceived differently amongst the various customer segment classes?

These questions have been developed in order to better understand the research problem as experienced by the commuter and directly addresses Metrorail CEO Mtwá's concerns about "jaded public (customer) perceptions" (Oberholster, 2009). The process is intended to instil a better understanding of the service quality concept for the reader and will also form the basis for the analysis and discussion that follow in Chapters 4 and 5 respectively.

In order to address the objectives of research question one and three, the following hypotheses will be considered:

- $H_{(1)}$ = There is a significant difference between the quality of service delivered by Metrorail as perceived relative to their expectations (this means the services of Metrorail as perceived by commuters do not meet their expectations);
- $H_{(2)}$ = Not all of the sample means for *type of ticket groups effect* on perceived service quality are equal;
- $H_{(3)}$ = Not all of the sample means for *age group effect* on perceived service quality are equal;
- $H_{(4)}$ = Not all of the sample means for *social status groups effect* on perceived service quality are equal;

3.3 Research Questions

According to the objectives of the research to be undertaken, the following research questions are intended to test the research hypotheses. According to Zeithaml *et al.* (2006), the SERVQUAL scale will determine the mean perceived level of service quality, commuter service level expectations, and the subsequent gap score for each service attribute and dimension. Question two is a direct measure approach to determine commuter's perception of the relative importance of each service quality dimension. Question three will determine whether service quality is rated differently by the various commuter segments.

3.3.1 Difference between commuter expectations and perceptions

The current general public perception of Metrorail's service ability is unsatisfactory. As mentioned in Chapter 1, because of the challenging nature of providing suburban rail commuter services, the Metrorail service is one of poor service delivery. However, with the advent of increased public transport competition and human and consumer rights awareness amongst commuters, this ongoing poor quality service and unreliable train service delivery frequently results in the frustrated commuter resorting to arson and destruction of the rail asset. Singh (1990) describes four category groups for people based on how they respond to service failure: *passives*, *voicers*, *irates* and *activists*. With some imagination, these are self-explanatory and

suffice it to say that each category will defect to the competition, although the activist may burn the train-set before departure! The need for evaluation of commuter levels of service expectations and perceptions has never been greater.

Zeithaml *et al.* (2006) mention that the main reason for firms not meeting customer's expectations is the lack of management's accurate understanding of exactly what those expectations are. Four "provider/company gaps" are the major contributors to the service-quality gap (i.e. the discrepancy between expectations and perceptions) that customers may perceive (Zeithaml *et al.*, 1990). These four provider gaps are part of the "gaps model" and are described below. These ultimately need to be closed in order to satisfy final gap 5, the customer gap.

3.3.1.1 Gap 1: Not knowing what customers expect

Knowing what customers expect is the first – and possibly the most important – step to delivering quality service. This simply means that providing services that customers perceive as excellent requires that a firm know what customers expect. If the firm gets this wrong it can mean losing a customer and expending money, time and other resources on things that do not matter to customers. Getting it wrong could even jeopardize the firm's sustainability. This gap deals with the discrepancy between what customers expect and what management perceives that they expect. The causes could include insufficient market research, inadequate use of market research findings, lack of interaction between management and customers, communication breakdown between contact employees and managers, and too many managerial levels between these contact personnel and top management.

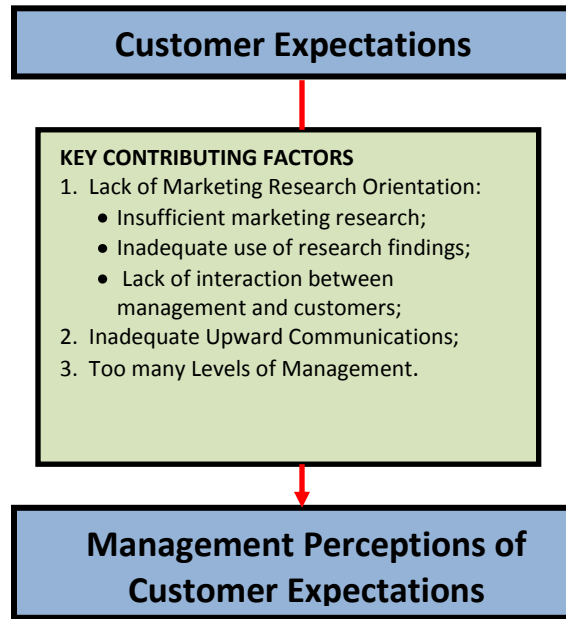


Figure 3.1: Key Contributing Factors to Gap 1 (Zeithaml *et al.*, 1990)

3.3.1.2 Gap 2: The wrong service quality standards

A common industry error is when firms use design and standards aimed at lean operations as a priority rather than at customer expectations and priorities (Zeithaml and Parasuraman, 2004 in Luke, 2007). Once managers accurately understand what customers expect, they face a second critical challenge: to utilize this knowledge. The four main factors contributing to the gaps in this section include inadequate commitment to service quality, lack of perception of feasibility, inadequate task standardization and absence of goal setting.

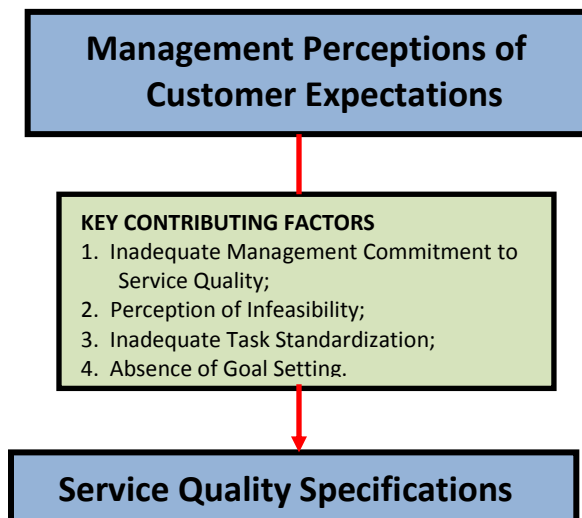


Figure 3.2: Key factors contributing to Gap 2 (Zeithaml *et al.*, 1990)

3.3.1.3 Gap 3: Not delivering to service designs and standards

The service performance gap basically deals with the difference between service specifications and actual service delivery (Zeithaml *et al.* 1990). This is the most common gap in the service industry, and the main reason for underperformance. Organizations that have high intensity operations, are highly interactive, are labour-intensive and perform in multiple locations are susceptible to failure in this domain. The authors explain that risk for mistakes and misunderstandings are high when service providers and customers interact and employees are unable or unwilling to perform the service at the level desired by management. Unwillingness to perform involves a reduction in employees' discretionary effort, stemming from too many long lines, too many unreasonable customers, too many rules and regulations, and no recognition.

Other factors that contribute to service-performance gaps include role ambiguity, role conflict, poor employee-job fit, poor technology-job fit, and inappropriate supervisory control systems that lead to inappropriate evaluation/reward systems, lack of perceived control on the part of employees, and lastly lack of team work (Zeithaml *et al.* 1990). Maintaining service quality is dependent on understanding customer's needs and setting appropriate standards with adequate resource allocation to address those needs. Those resources will include a work force able and willing to perform at the required level.

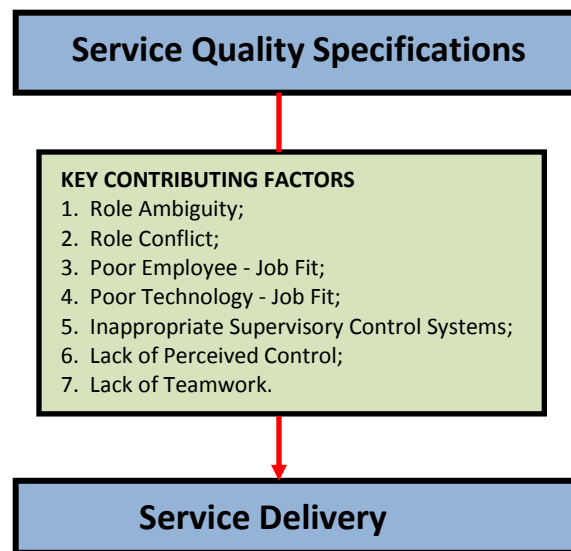


Figure 3.3: Key factors contributing to Gap 3 (Zeithaml *et al.*, 1990)

3.3.1.4 Gap 4: When promises do not match delivery

This gap deals with the discrepancies between service delivery and external communications, which have a strong impact on commuter's perceptions of service quality and the gap between promises and delivery. The factors influencing this gap include inadequate horizontal communication between operations, marketing and human resources and between branches of the company. Another factor includes the inclination to over-promise in external communications. Therefore, appropriate and accurate communication about services is the responsibility of both marketing and operations (for Metrorail services this will include Customer Services): marketing must accurately reflect what actually happens in the service delivery encounter and operations must deliver what is promised by marketing (Zeithaml *et al.* 1990).

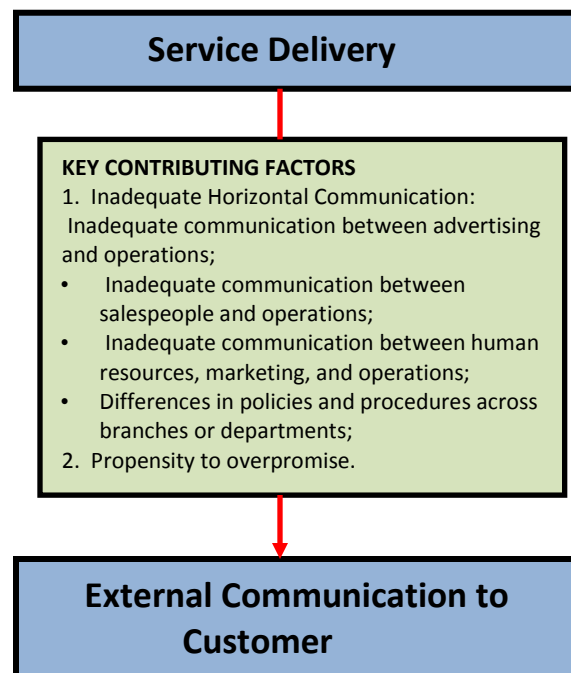


Figure 3.4: Key factors contributing to Gap 4 (Zeithaml *et al.*, 1990)

3.3.1.5 Gap 5: The customer gap

The customer gap is the difference between customer expectations and perceptions. Expectations are reference points that customers bring into the service experience, whereas perceptions are subjective assessments of actual service experiences. Customer expectations

often consist of what a customer believes should or will happen. This customer gap constitutes the purpose of this study (Zeithaml *et al.*, 2006).

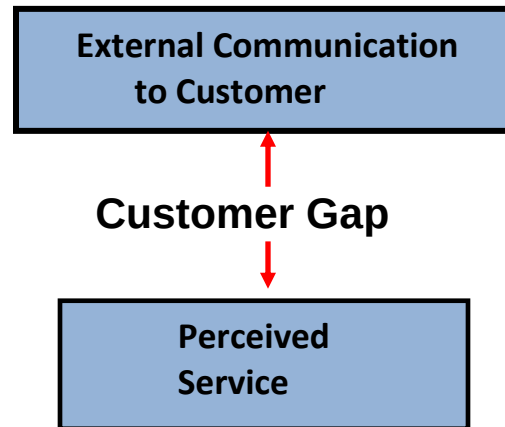


Figure 3.5: Key factors contributing to Gap 5 (Zeithaml *et al.*, 2006)

Research suggests that customers do not perceive quality in a one-dimensional way, but that they rather judge quality on multiple factors relevant to the context in which they are experiencing the service (Zeithaml *et al.*, 2006). The five SERVQUAL dimensions of tangibles, reliability, responsiveness, assurance and empathy will compare commuter interactions, the physical environment, and the service outcomes of the rail service journey as perceived by commuters.

3.3.2 Order of importance of the five service quality dimensions

Customers have many service requirements but not all are equally important. A common error is trying to improve service by spending resources on the wrong initiatives. Measuring the relative importance of service dimensions can help managers to channel resources effectively. This question will identify and prioritize customer expectations. One method of prioritizing is the direct importance measure, where the customer is asked to prioritize the dimensions of service by allocating a total of 100 points across the various service dimensions. The other method used for measuring relative importance is the indirect importance measure, which estimates importance by using correlation and regression analysis of the tabulated service quality score (Zeithaml *et al.*, 2006). The methodology facilitates the rank order calculation for each of the five dimensions.

3.3.3 Is service quality perceived differently amongst the various commuter segment classes?

Culture represents the common values, norms and behaviors of a particular ethnic or national group (Zeithaml *et al.* 2006). It is accepted that once learnt, shared and handed down through time, culture is embedded and sustained from one generation to the next. Zeithaml *et al.* (2006) confirms that research provides evidence that there are differences in how consumers perceive services across cultures. They further caution how human nature dictates that people tend to view other cultures through the often cluttered lens of their own. The Metrorail service is predominantly patronized by one type of culture whose service expectations and perceptions can be assumed to fit into one category of market segment. The research will explore if three of the demographic commuter segments perceive service quality differently. The SERVQUAL scale gap analysis makes provision to analyse and determine this likelihood.

3.4 SERVQUAL Scale Review, Design and Adaptation

Following extensive literature and comparative study review, it was decided that the Metrorail survey scale purification process would be limited to a process of review, refinement and modification of the original 22-item scale SERVQUAL format (Parasuraman *et al.*, 1988). This decision was motivated by the intent of the SERVQUAL developers, who stated that its purpose was to produce a scale that would have general applicability. The final 22-item scale's general versatility is further reinforced by the results of the SERVQUAL Second Stage Scale Purification testing (Parasuraman *et al.*, 1988) which indicated that the reliability and factor structures have sound and stable psychometric properties. The same authors further claim that since their iterative procedure ensured retention of the common and relative items to all four of the service organizations in their study, it could be used in its current form to assess and compare service quality across a wide range of firms. However, in cases where a single service entity is to be evaluated, item adaptation under the various dimensions may be required (Parasuraman *et al.*, 1988).

With this in mind, the Metrorail SERVQUAL scale development process proceeded as follows. The SERVQUAL instrument was used to provide the foundation and framework. The process involved the adoption of the SERVQUAL concept (Parasuraman *et al.*, 1988) that service quality is the discrepancy between consumer's perceptions of services offered and their expectations of

services about these services. This concept is also stated as “difference score” or “perceived quality” $Q = P - E$, where P and E are the ratings on the perception and expectation scale respectively. According to Campbell and Peter (1960 and 1981 in Parasuraman *et al.*, 1988), SERVQUAL’s high reliability and consistent factor structures across several independent samples provide support for its trait validity.

The research design undertakes to measure the perceived and expected service quality levels of the Metrorail commuter service across the five service dimensions of tangibles, reliability, responsiveness, assurance and empathy (generic SERVQUAL scale factors).

The draft Metrorail SERVQUAL scale attribute list was compiled and subjected to extensive review and evaluation by the respective operational managers, customer-contact personnel and supervisors at Metrorail. The ensuing process included extensive group discussion and debate until consensus was reached and the final 22-item scale modifications were approved and adopted for application. The final scale for the survey retained the majority of the generic attributes and, in addition, several rail service specific attributes were included (see Appendices 1 & 2).

The final format resulted in a total of seven tangible statements, four reliability statements, four responsiveness statements, four assurance statements and three empathy statements for a final configuration of 22 statements. This revised version includes three negatively worded statements compared to the nine used in the original SERVQUAL scale (Parasuraman *et al.*, 1988). Thereafter, the parties were in agreement that the specific attributes and revisions made were appropriate and applicable to the East London Metrorail service.

The Metrorail questionnaire design incorporates four sections:

1. Demographic categories for respondent profiles;
2. The SERVQUAL instrument questionnaire containing the 22-item statements which ask the commuter to rate (1–7 point Lickert scale, where 1 signifies “strongly disagree” and 7 signifies “strongly agree”) their EXPECTATIONS for a quality service;

3. The 22-item PERCEPTION questionnaire designed and aligned (paired) to the 22-item expectation questionnaire. The commuter is asked to rate (1–7 Lickert scale) their perceptions of the quality for the service received;
4. The final section explores respondents' rank order of importance for each of the service quality dimensions.

3.5 The Sampling Method, Data Collection and Potential Limitations

Tull and Hawkins (1990 in Edwards, 2004) define survey research as the systematic gathering of information from respondents in order to understand and predict some aspect of behaviour of the population of interest, generally in the form of a questionnaire.

A team of ten student interviewers were trained on the SERVQUAL concept prior to operationalisation. The sample selection (and interview) process was conducted during normal commuter operations whereby the regular day-to-day commuters were conveniently selected and interviewed (those that were readably accessible and willing, with safety concerns getting preference). This process took place either on the station premises and/or while en-route the train service and constituted the study site.

Convenience sampling from the 36 000 daily population was conducted across the combined 30 morning and evening peak services (that is between the hour's of 05:00 and 07:30, and 16:30 and 19:00 respectively). A total of 350 interviews were conducted and the total number of useable responses resulting from this process was 333 (95%).

Notwithstanding that this selection method was of a non-probability convenience (grab) sampling approach, I argue that given the characteristics of the target market, the operational/service environment consistency over the three day survey period and the data reliability, that the results can be generalized to represent the entire population. I determine that this sampling approach would not have resulted in any significant variation were it conducted in line with a probability sampling approach for example, and deem the outcome as limitless. The study is anchored in the positivistic and empirical research paradigm that addresses the assumption that human behaviour is determined by external stimuli.

3.6 The Data Analysis Procedure

The data gathered was of a quantitative nature. Quantitative data is defined as data values that are numeric (Jaisingh, 2006). After the raw data was gathered it was captured into the popular SPSS statistical software programme for processing and generation of the various reports.

The research objective guides the data analysis process which will focus on addressing the Metrorail research questions. In summary, the process will firstly address the reliability and validity verification process; it will then describe the population sample and tabulate the mean scores extracted from the Metrorail SERVQUAL scale for both expectations and perceptions for each of the 22-item service attributes delivered by the East London Metrorail Commuter Service. Once this calculation has been made, it will be used to compute service quality gap scores (recall that “difference scores” or “service quality” is the result of the deduction Perceptions – Expectations) at different levels of detail for each statement pair, for each dimension or combined across all dimensions. These overall measures are an *unweighted* SERVQUAL score because they do not take into account the relative importance that commuters attached to the various dimensions (Zeithaml *et al.*, 1990). The importance weight is simply the total sample average of the points each commuter allocated to each of the dimensions (Appendix 2, Section D). This dimension-specific weighting factor then becomes the multiplier to compute a more reflective attribute score and to identify the rank order of importance for each of the five dimensions.

The demographic profiles for commuter segments will then be analysed for significant trends with respect to service performance. The mean scores for each of the 22 parallel statements for expectations and perceptions will be analysed, and Kaiser-Meyer-Olkin (KMO) sampling will be conducted to verify compliance.

3.7 Validity and Reliability of the Metrorail SERVQUAL Scale

3.7.1 Validity

Factor analysis is a statistical technique that examines the relationships between a single dependent variable and multiple independent variables, and therefore falls into the group of

multivariate statistics (Naumann and Giel, 1995). Naumann and Giel explain how the process has the ability to reduce an abundance of service quality attributes by simultaneously screening all variables and then identifying common factors; i.e. a total list of 40 to 50 attributes could be reduced to, say, five factors with a sub-group cluster of three to seven attributes each. Individual attributes that present a weak statistical relation could be deleted from the list. Factor analysis is not a stand-alone technique; principal component (factor) analysis is most commonly used for reducing an attribute list and determining the underlying constructs and relationships in the factors. With this process, factors are extracted from the data until successive factors can no longer add explanatory power. The strongest factor is extracted first and in descending order thereafter, this allows for the evaluation of each subsequent factor's iteration contribution thereafter. When a factor is deleted, so are the attributes that compose that factor. Principal component factor analysis is usually used as a screening filter to reduce an attribute list and form groupings. The more distinctive the grouping of the factors, the better the indication of good validity. The reduced list is then subjected to the aforementioned regression analysis for comparison for similarities (Naumann and Giel, 1995).

Exploratory factor analysis is a standard method for exploring the dimensions of a construct in the marketing discipline. Correlations give information on validity of the constructs and the relationships between them (Edwards, 2004).

Naumann and Giel (1995) explain that multiple regression is a procedure that analyzes the relationship between a single dependent variable and multiple independent variables. As with factor analysis, if the dependent variable is assigned, for example, a service quality index value, and the service quality attributes are categorically scaled, then multiple regression is more appropriate than factor analysis. Although multiple regression does not identify common underlying trends for factor loading, it does allow for closer examination of the relationship between each independent variable (attribute) and the dependent variable. This in turn allows for the strength of the relationship between each attribute and the dependent service quality index to be easily identified.

As mentioned, the key factors of concern with respect to regression analysis are to determine the effect of variation in one or more independent variables (the predictors) on the dependent variable. A stepwise regression technique is used to manipulate the predictor variable in the typical multiple regression function to a point at which they contribute to the significance of the equation. These regression methods can be used in such a SERVQUAL study to determine the relative importance of the dimensions of service quality (Pitt, 1991).

This technique can also be used to assess aspects of validity of the questionnaire by comparing the manufactured multiple regression results derived from the service quality score with respondents' scores to an actual question that address the same item measurement (Zeithaml *et al.* 1990).

3.7.2 Reliability

According to Pitt (1991), it is typical practice for a measurement scale replicating a survey to be subjected to the same verification techniques employed in its original development. It is generally concluded from the literature that the 22-item SERVQUAL instrument is suitable for measuring the construct of service quality (Pitt, 1991). According to Pitt (1991), replications of original studies are acceptable vehicles for the establishment of reliability and validity of instruments. The three main methods used to verify reliability and validity of a scale construct are Cronbach's alpha reliability coefficients, multiple regression and various forms of factor analysis, and these are introduced in this section.

Reliability needs to be verified to in order to give credibility to a specific survey. The reliability test verifies the accuracy of the scores if they were to be reproduced with repeated measurement. It is therefore of utmost importance that the reliability of such measurement instruments be assessed to determine the degree of variation that can be expected, or accepted.

According to Pitt (1991), the reliability verification process would need to evaluate the degree of association between scores obtained from two scales, where one is a replicated version of the other. If the association scores between the scales under test are high, then this result indicates reliability in the scales by virtue of their ability to consistently produce the same results. Coefficient alpha (α) (Cronbach, 1951 in Pitt, 1991) is a statistic commonly used as a measure of

the internal consistency reliability of a psychometric instrument. It measures how well a set of variables or items measure a single, unidimensional latent construct. It is the most commonly used test for assessing the internal consistency of a multi-item measurement scale. The process effectively measures the internal consistency between, or correlation among, the set of questions making up the five dimensions (Parasuraman *et al.*, 1988 in Asubonteng *et al.*, 1996).

3.8 Summary

The methodology used in this survey is deeply entrenched in the research of Parasuraman *et al.*'s (1988) SERVQUAL instrument. As stated in sub-section 2.3, unlike product quality, service quality is an abstract concept and requires a construct for its measurement. The SERVQUAL instrument facilitates ease of use and its reliability and validity is demonstrated in the services industry in general and in many creditable studies.

Its successful application and adequacy in the rail commuter industry has been previously reported on in this survey (Kiew and Chee, 1997; Cavana, Corbett and Lo, 2007). As a result, a similar 22-item scale was refined and adapted for the Metrorail survey. The minor adaptations made to the SERVQUAL questionnaire do not significantly change its original content but merely customize its use for the rail environment (see Appendix 1 and 2). The basis for this survey has been described and now allows for the next step of analyzing and verifying the reliability and validity of the Metrorail SERVQUAL scale as applied.

CHAPTER 4: DATA ANALYSIS

4.1 Introduction

This chapter describes the data analysis undertaken and gives a summary of the relevant results. Analysis of a SERVQUAL type instrument data goes beyond the simple calculation of means and gap scores. The analysis starts with the verification of the reliability and validity of the instrument concerned, in this case, the adapted Metrorail SERVQUAL scale. This process requires a measure of verification that can only be acquired by the academically recognized and inferential statistical means of Cronbach's alpha reliability coefficients, multiple regression and various forms of factor analysis.

Technological advancement in general in the last century saw the greatest development in the computer industry. Today, many statistical computer software packages are available for the analysis mentioned and required. The Metrorail data was processed in conjunction with, and the assistance and guidance of, an accredited statistical supervisor. The software used was SPSS, which produced the appropriate testing material for the verification objectives mentioned.

The Metrorail SERVQUAL scale reliability and validity analysis and verification process focuses mostly on the *expectations* data set. This decision is aligned to the view of Asubonteng *et al.* (1996: 64) who declared that "the level of performance that a high quality service should provide was termed consumer expectations" and "customer's expectations serve as the foundation on which service quality will be evaluated by customers" (Oliver, 1980 in Asubonteng *et al.*, 1996: 64).

The analysis process to be followed will be a concise and logical presentation of the results and explanation where relevant of the following items: validity, reliability, description of the sample, overall SERVQUAL scores, relative importance of the service quality dimensions, attribute correlations and the demographic detail. The findings to address the formulated hypotheses and research questions will be discussed in Chapter 5.

4.2 Validity: Metrorail East London Survey

Validity of the data provides the assurance that the instrument measures exactly what it is intended to measure. As a result of the abstract nature of the service quality concept, various forms of validity need to be satisfied. This section analyses and presents the criteria required to demonstrate an adequate measure of construct, content and discriminant validity.

Discriminant validity is a measure of the distinctiveness of one item compared to another. In this instance, it is the ability of each of the 22 *expectation* questions to measure something distinct from, and in comparison to, the other 21 questions. The *expectation* data was subjected to factor analysis to confirm the dimensions of respondents of the Metrorail service quality evaluation survey.

The Kaiser-Meyer Olkin (KMO) measure of sampling adequacy for the *expectations* sample is 69.6% compared to 84.1% for the *perceptions* data sample: 75% and above is considered good. According to Luke (2007), this allows for grouping of variables into smaller sets of underlying factors.

Table 4.2.1 provides a summary of a selection of both descriptive statistics and variances explained and are of relevance to the validity assessment. Component items E1 to E22 account for the *expectation* data scores of the Metrorail SERVQUAL survey conducted. The means and standard deviation for the *expectations* sample (N = 332) is 6.32 and 0.59 respectively. Compared to the *perceptions* sample set (N = 333), the same criteria measured 2.75 and 1.16 (not illustrated in Table 4.2.1) and reveal significant variation in terms of the standard deviation and first indications of the poor *perceived service quality* evaluation of -3.56 (Service Quality = Perceptions – Expectations).

Principal Component (Factor) Analysis was conducted and resulted in the extraction of seven factors which had initial eigenvalues greater than the threshold value of one. The strongest value was naturally component one with an eigenvalue of 4.875 and accounted for 22.16% of the variance. The total cumulative variance for the seven factors extracted is 65.636%. A summary of this selection of statistics is illustrated in Table 4.2.1.

Expectations E1 to E22	Descriptive Statistics		Communalities Extraction	Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Mean	Std. Deviation			Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
E1	6.63	1.011	.631	1	4.875	22.160	22.160	4.875	22.160	22.160	2.645	12.024	12.024
E2	6.57	1.251	.693	2	2.465	11.203	33.364	2.465	11.203	33.364	2.591	11.777	23.802
E3	6.71	.946	.678	3	2.008	9.125	42.489	2.008	9.125	42.489	2.561	11.643	35.445
E4	6.59	1.199	.705	4	1.703	7.741	50.230	1.703	7.741	50.230	2.367	10.760	46.205
E5	6.57	1.091	.689	5	1.215	5.522	55.752	1.215	5.522	55.752	1.944	8.838	55.043
E6	6.72	.804	.392	6	1.129	5.133	60.885	1.129	5.133	60.885	1.181	5.368	60.411
E7	6.67	.905	.395	7	1.045	4.751	65.636	1.045	4.751	65.636	1.150	5.225	65.636
E8	6.75	.844	.620		.962	4.371	70.007						
E9	6.68	.986	.619		.915	4.158	74.165						
E10	6.47	1.293	.635		.822	3.735	77.900						
E11	6.71	.970	.527		.698	3.173	81.073						
E12	6.65	1.033	.745		.617	2.806	83.879						
E13	6.72	.895	.790		.566	2.575	86.454						
E14	6.64	1.028	.493		.504	2.290	88.744						
E15	5.27	2.488	.449		.467	2.125	90.869						
E16	6.73	.853	.767		.435	1.977	92.846						
E17	6.66	1.076	.790		.415	1.886	94.732						
E18	6.62	1.030	.634		.362	1.643	96.375						
E19	6.69	.876	.704		.276	1.255	97.630						
E20	4.96	2.241	.844		.203	.924	98.554						
E21	5.18	2.250	.843		.174	.792	99.346						
E22	6.06	1.534	.798		.144	.654	100.000						

Table 4.2.1: Descriptive statistics and total variance explained (extraction method: Principal Component Analysis)

The initial *unrotated* factor loading process did not reveal any structured factor loading into the relevant designated dimensions. The process was then repeated using *orthogonal rotation*, a method that maximizes the sum of the variance of the squared loadings and allows for better

description of each individual item. According to Abdi (2009), varimax, which was developed by Kaiser in 1958, is the most popular rotation method. There are several other methods for orthogonal rotation, such as the quartimax Kaiser Normalization rotation which performed better than the varimax in this instance and was the preferred choice for use in this survey. Its principle operation minimizes the number of factors needed to explain each variable. This simplifies the interpretation because, after a rotation, each original variable tends to be associated with one (or a small number) of factors, and each factor represents only a small number of variables. Orthogonal rotation is used in surveys to see how groupings of items measure the same concept. This method allowed for many of the items to load correctly into different factors from the priori dimensions proposed by Parasuraman *et al.* (1988 in Luke, 2007).

The general pattern of the loadings following quartimax rotations is summarized in Table 4.2.2. Individual items with a threshold value of around 0.5 and higher grouped well into distinct factors and are shaded in yellow for easy identification in Table 4.2.2. Unfortunately, quartimax rotation converged in seven iterations despite the Metrorail SERVQUAL scale having being meticulously redesigned on the original SERVQUAL framework and recommendations which necessitated appropriate adaptation in the form of reworded and additional item statements (Parasuraman *et al.*, 1988). The scale redesign process saw the Metrorail scale items per dimension content configuration differing with that of the original SERVQUAL scale (see comparison Table 4.2.3) and is illustrated in Table 4.2.2 by means of the five bold column boxes. It is clearly evident that the Metrorail scale dimensions, which are based on the original SERVQUAL framework dimensions (in the sequential order of tangibles, reliability, responsiveness, assurance and empathy), are mostly factoring into components 1 through to 5 in the quartimax matrix. The cumulative item total variance explained in these five factors is 55%. The formation of the two yet unidentified components 6 and 7 explain an additional 5% of variance each.

Variables	Component						
	1	2	3	4	5	6	7
E1	.777	.113	-.027	.106	-.005	-.013	-.053
E2	.779	-.024	.177	.054	.064	.079	-.202
E3	.705	.133	-.008	.033	.008	-.010	.403
E4	.809	.113	-.032	-.097	.034	.070	.148
E5	.326	.393	-.005	.198	.077	-.030	.618
E6	.276	.409	.042	.211	-.191	-.164	-.197
E7	.092	.526	.297	.041	.078	-.107	.044
E8	.108	.770	.029	-.008	.000	.103	.058
E9	-.023	.717	.276	.140	.018	.093	.016
E10	-.023	.144	.562	.232	.015	.211	.447
E11	.041	.603	.326	.115	.062	-.100	.169
E12	.031	.229	.814	.130	-.058	-.096	.005
E13	.039	.213	.849	.120	.007	-.065	-.064
E14	.013	.284	.570	-.095	.172	.216	-.035
E15	-.084	-.131	.215	-.070	.460	-.385	.117
E16	.049	.016	.107	.850	-.028	.032	.170
E17	-.034	.150	.086	.857	.027	.006	.151
E18	.123	.222	.383	.576	.049	-.007	-.296
E19	.139	.420	-.067	.571	.004	.267	-.327
E20	-.022	.085	-.051	.038	.907	.095	-.011
E21	.156	.060	.077	.017	.898	.053	-.002
E22	.082	-.033	.085	.091	.092	.874	.044

Table 4.2.2: Principal component analysis (factor loading matrix following Quartimax with Kaiser Normalization rotation)

It is evident that 16 out of the 22 items on the Metrorail SERVQUAL scale loaded correctly on the dimensions extracted in the original SERVQUAL study (Parasuraman *et al.* 1988). The average loading spread over the five intended dimensions amounts to 73% and is illustrated in

Table 4.2.2. It is interesting to note that item E15 settled in the empathy dimension to cluster with the only other two items in that dimension. It will be recalled that these three items (15, 20 and 21) are the negatively worded items discussed in Chapter 2, and have the potential to compromise factor loading and trait validity (Babakus and Boller, 1992). Since items E20 and E21 in this instance displayed normal factoring, this provides additional support that the validity of the scale can be deemed satisfactory.

Items under Dimensions			
Dimension	Original SERVQUAL	Modified Metrorail Scale	Component extraction and factor/item loading (>0.5) following quartimax rotation
Tangibles	4	7	4
Reliability	5	4	5
Responsiveness	4	4	4
Assurance	4	4	4
Empathy	5	3	3
Component 6	-	-	1
Component 7	-	-	1

Table 4.2.3: Items under dimensions: original study and Metrorail survey

Following analysis of these results overall, and notwithstanding the mean and standard deviation measures observed for the negatively worded statements, there was consensus and agreement that the Metrorail SERVQUAL scores displayed adequate indications of alignment, association and expectations to satisfy both construct and content validity. Consequently, it was decided to adopt the factor and item loading pattern unchanged and to analyse the resultant Metrorail SERVQUAL data accordingly.

4.3 Reliability of Data: Metrorail East London Survey

Reliability of the data indicates the stability and consistency of the instrument across repeated and identical measures. With respect to the reliability of the scale, the pretest results (Parasuraman *et al.*, 1991) indicated that the standard deviations for six negatively worded expectation statements were consistently higher (mean standard deviation of 2.07) than the

positively worded expectation items (mean standard deviation of 0.77). In comparison, the Metrorail East London SERVQUAL study revealed a similar trend for its 19 positively worded and three negatively worded expectation statements (1.03 and 2.33 respectively) and is illustrated in Table 4.3.1 below.

Variable	Mean Std. Deviation: Refinement of SERVQUAL (1991): Pretest results	Mean Std. Deviation: METRORAIL EAST LONDON SERVQUAL SURVEY (2009)
Negatively Worded (Expectation Item)	2.07	2.33
Positively Worded (Expectation Item)	0.77	1.03

Table 4.3.1: Comparative Mean Standard Deviation for positively and negatively worded Expectation SERVQUAL items (from Parasuraman *et al.* (1991) and METRORAIL Survey (2009))

In addition, the SERVQUAL refinement pretest results also presented lower reliability coefficients for the dimensions with the negatively worded statements (Parasuraman *et al.* 1991). As a result, the *negative* statements were all changed to the positive format and the resultant trend is illustrated in Table 4.3.2 below. As can be seen in this same table when compared to the two rail service studies Alphas however, there is no distinct correlation that the reliability coefficient values are inversely proportional to the total number of negatively worded statements.

If one considers that the 1991 pretest questionnaire contained a total of six negatively worded items compared to the nine used in the original 1988 version, then by deduction the evidence does not support the decision to discard the *negatively* worded statement concept. Despite this observation, the Metrorail SERVQUAL results did also display higher standard deviations for the three negatively worded statements but, these did not have a significant impact on the final *expectation* or *perception* set of reliability coefficient Alpha values, or the overall service quality difference scores.

Reliability Coefficients (Alphas)						
Dimensions	SERVQUAL Study (1988): Second Stage 34-item Scale (average of the four samples).	SERVQUAL Study (1988): 22-item reanalysis of First Stage data (minus the 12 items from Second Stage).	SERVQUAL Refinement Study (1991): Pretest Results.	SERVQUAL Survey (2009): Metrorail East London.	SERVQUAL Survey (2008): Malaysian Rail Service.	SERVQUAL Refinement Study (1991): Final Study Results (average of the five samples).
Tangibles	0.61	0.72	0.60	0.82	0.75	0.84
Reliability	0.79	0.83	0.85	0.82	0.79	0.90
Responsiveness	0.72	0.82	0.61	0.82	0.78	0.91
Assurance	0.84	0.81	0.81	0.82	0.68	0.89
Empathy	0.75	0.86	0.66	0.83	0.74	0.86
Combined total of negatively worded statements in Responsiveness and Empathy dimensions.	9	9	6	3	0	0

Table 4.3.2: Comparative Reliability Coefficients (Alphas) for the SERVQUAL studies and rail service surveys (from Parasuraman *et al.* (1988; 1991), METRORAIL Survey (2009) and Kiew and Chee (1997))

The Corrected Items – Total Correlations, Squared Multiple Correlations and Cronbach’s (1951) Alpha coefficient for each of the 22-item *expectations* statements in the Metrorail SERVQUAL instrument are summarized in Table 4.3.3. Recall that statements 15, 20 and 21 are worded in the negative format and neither of the three indicates a significant impact on the overall coefficient alpha score of 0.752 if either were to be deleted. The coefficient alpha score comparison for the 22-item *perceptions* statements are an impressive 0.889. The Cronbach’s Alpha Based on Standardized Items score is 0.813.

Independent Variable	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
E1	.304	.445	.744
E2	.323	.457	.742
E3	.338	.498	.742
E4	.285	.518	.744
E5	.414	.381	.737
E6	.234	.227	.748
E7	.375	.338	.741
E8	.366	.515	.742
E9	.440	.442	.736
E10	.409	.381	.736
E11	.443	.461	.736
E12	.411	.694	.737
E13	.454	.711	.737
E14	.391	.291	.739
<u>E15</u>	<u>.062</u>	<u>.180</u>	<u>.784</u>
E16	.308	.606	.744
E17	.352	.635	.741
E18	.420	.535	.737
E19	.361	.509	.742
<u>E20</u>	<u>.298</u>	<u>.649</u>	<u>.750</u>
<u>E21</u>	<u>.403</u>	<u>.669</u>	<u>.737</u>
E22	.148	.172	.756

Table 4.3.3: Reliability data – Coefficient alphas of the *expectations* data for the Metrorail East London survey

It is evident from the results illustrated in Table 4.3.3 that the adapted Metrorail SERVQUAL instrument displays acceptable levels that exceed the threshold recommended by Nunnally and Peterson (1978 and 1994 respectively in Luke, 2007).

4.4 Description of Sample: Metrorail East London Survey

By definition, descriptive statistics includes the collection, organizing, summarizing and the presentation of data. In order to obtain information, data are collected from variables used to describe such an event (Jaisingh, 2006). The demographic data for the Metrorail survey was acquired during the rail commuter interview process discussed in Chapter 3. Section 1 of the four part Metrorail SERVQUAL survey questionnaire contained the demographic section (see Appendix 1) which interrogated five discrete random qualitative categories of rail commuters. Each category is further subdivided into their relevant classes. The five categories of gender, type of rail ticket holder, age, social standing and preferred transport mode for work, the subdivided class for each category, their frequencies and valid percentages are explained in Table 4.4.1.

By coincidence, the proportion for gender participation was remarkably close (47%:53% between male and female). The type of ticket holder proportions fit a distinctive pattern where demand and patronage is highest for the monthly ticket where demand/patronage is incrementally reduced at each subsequent type of ticket in the descending order list of tickets. This is probably based on the “value for money” cost per train service trip that a monthly ticket offers commuters in comparison to other types of tickets. The age group category is subdivided into five age classes as illustrated in Table 4.4.1. It is observed that the two classes that represent the ages between 26 to 45 years old account for 63% of the total sample (N = 296). The age distribution pattern for this sample appears aligned and normal with the target market. The social standing category is dominated (59%) by the class that earns a regular monthly income of up to R2 000. The two classes on either side (no source of regular income and a monthly income of between R2 001 and R10 000) each explain an additional 15%. Only 3 of the 290 sample (1%) earn in excess of R10 000. The preferred mode of transport to work category revealed an unlikely preference (91%) for the Metrorail service as the *preferred* mode to commute, followed by taxi (4.3%) and bus (1.2%) with respect to public transport. This result clearly needs to be treated with caution since the total survey sample comprised primarily Metrorail commuters, and their objectivity and bias would surely have been compromised. This is also in stark contrast to the findings of the National Travel Survey for Eastern Cape (2007) where it was seen in Table

1.2.2 in Chapter 1 that the household survey revealed taxi (82%), rail (12%) and bus (6%) to illustrate the main mode of transport.

DEMOGRAPHICS	FREQUENCY	VALID PERCENTAGE
GENDER (N = 326):		
Male	153	46.9
Female	173	53.1
TYPE OF TICKET (N = 287):		
Single trip	20	7
Return trip	23	8
Weekly	87	30.3
Monthly	157	54.7
AGE (N = 296):		
16 - 25	46	15.5
26 - 35	95	32.1
36 - 45	91	30.7
46 - 55	50	16.9
Older than 56	14	4.7
SOCIAL STANDING (N = 290):		
Full time scholar/student	29	10
No source of income	43	14.8
Earns up to R2000	170	58.6
Earn between R2,001 & R10,000	45	15.5
Earns more than R10,001	3	1
PREFERRED MODE FOR WORK (N = 325):		
Metrorail	294	90.5
Bus	4	1.2
Taxi	14	4.3
Own motor car	13	4

Table 4.4.1: Descriptive statistics of the demographic discrete variables

The descriptive presentation for the respective Expectations and Perceptions 22-item statements is illustrated in Table 4.4.2. It is again evident, specifically for the expectation data, that the means and standard deviation for the negatively worded statements E15, E20 and E21 demonstrated lower means and higher deviation when compared to the full set of 22-items. As discussed in Chapter 2 (Parasuraman *et al.*, 1991), this suggests that the negatively worded

statements could cause confusion and consequently compromise a respondent's ability to interpret and answer confounding questions reliably. For this survey, the level of deviation for expectations did not occur for the perception items.

Item Statistics: Expectations (N=306)			Item Statistics: Perceptions (N=278)			Item Statistics: Gap (E-P) (N=327)		
Variables E1 to E22	Mean	Standard Deviation	Variables P1 to P22	Mean	Standard Deviation	Variables 1 to 22	Mean	Standard Deviation
E1	6.63	1.011	P1	3.34	2.555	1	3.21	2.73
E2	6.57	1.251	P2	3.21	2.453	2	3.28	2.86
E3	6.71	.946	P3	2.17	1.896	3	4.47	2.18
E4	6.59	1.199	P4	2.03	1.780	4	4.50	2.38
E5	6.57	1.091	P5	2.35	1.900	5	4.12	2.32
E6	6.72	.804	P6	2.19	1.826	6	4.43	2.14
E7	6.67	.905	P7	4.88	2.539	7	1.79	2.54
E8	6.75	.844	P8	2.16	1.824	8	4.56	2.13
E9	6.68	.986	P9	2.19	1.780	9	4.48	2.10
E10	6.47	1.293	P10	1.76	1.408	10	4.73	1.99
E11	6.71	.970	P11	1.93	1.602	11	4.68	2.03
E12	6.65	1.033	P12	2.15	1.884	12	4.49	2.20
E13	6.72	.895	P13	2.17	1.852	13	4.51	2.10
E14	6.64	1.028	P14	2.81	2.148	14	3.77	2.38
E15	5.27	2.488	P15	2.37	1.874	15	2.82	3.19
E16	6.73	.853	P16	1.85	1.512	16	4.89	1.80
E17	6.66	1.076	P17	3.38	2.345	17	3.38	2.43
E18	6.62	1.030	P18	3.73	2.417	18	2.95	2.62
E19	6.69	.876	P19	2.60	2.033	19	4.03	2.35
E20	4.96	2.241	P20	3.41	2.291	20	1.52	3.29
E21	5.18	2.250	P21	3.71	2.248	21	1.47	3.16
E22	6.06	1.534	P22	3.45	2.372	22	2.58	2.93

Table 4.4.2: Descriptive statistics for expectations, perceptions and overall service quality

4.5 Service Quality Measurement: Metrorail East London Survey

SERVQUAL is a 22-item instrument, developed by Parasuraman, Zeithaml and Berry (Parasuraman *et al.*, 1988) for assessing customer perceptions of service quality in service and retailing organizations.

4.5.1 Computing the SERVQUAL Scores

The Metrorail SERVQUAL instrument (MSI) is an adaptation based on the original SERVQUAL 22-item scale. As was previously mentioned, the modifications made to the MSI were marginal and within the recommendations of the developers. As with the original version, the MSI also consists of five dimensions and a total range of 22-item statements in the following configuration:

1. Tangibles: Statements 1 to 7 (7);
2. Reliability: Statements 8 to 11 (4);
3. Responsiveness: Statements 12 to 15 (4);
4. Assurance: Statements 16 to 19 (4);
5. Empathy: Statements 20 to 22 (3).

Three of the statements – 15, 20 and 21 – are worded “negatively”; according to Babakus and Boller (1992: 257), “this procedure is assumed to reduce the potential ‘yea’ and ‘nay’ -saying from respondents”. Apart from the specific statistical tests, Microsoft Excel was used for the processing of the overall Metrorail service quality calculations which included the demographic profiles, the SERVQUAL 22-item parallel statements and the rank order of importance for each of the five SERVQUAL dimensions. A sample of the 22-item scale and the “1 to 7” point Likert scoring scale is illustrated in Table 4.5.1.

Lickert Scale: One equals "strongly disagree" and 7 equals "strongly agree"		1	2	3	4	5	6	7
Commuter Rail Services: CRS								
Tangibles Statement								
1	All CRS physical assets should always look good.							
2	Legal entry to all CRS stations / trains should be easy.							
3	CRS should always have enough toilets.							
4	CRS trains should always have enough seating for all.							
5	CRS operational equipment should be of new and modern.							
6	CRS should make provision for handicapped commuters.							
7	CRS employees should always be well dressed.							
Reliability Statement								
8	CRS trains should be on time every time.							
9	CRS should provide their services as advertised.							
10	CRS should provide alternative transport if their train service fails.							
11	When CRS promise to do something by a certain time, they should do so.							
Responsiveness Statement								
12	CRS staff should be expected to inform exactly when services will be done.							
13	CRS staff should be expected to provide prompt service when needed.							
14	CRS staff must always be willing to help commuters.							
15	It is okay if CRS staff are too busy to respond to commuter needs promptly.							
Assurance Statement								
16	CRS should provide immediate information when services are delayed.							
17	CRS staff should be polite.							
18	CRS staff should be proficient (well trained).							
19	CRS services should have a good Customer Complaints handling system.							
Empathy Statement								
20	CRS firms should not be expected to give commuters individual attention.							
21	CRS employees cannot be expected to give commuters personal attention.							
22	CRS staff should be expected to care about the needs of their commuters.							

Table 4.5.1: Overall expectations, perceptions, gap scores and sample Likert scale scoring by 22-items, Metrorail East London survey

In summary, the principle of operation of the SERVQUAL instrument is to capture the data obtained from the variables (questionnaire survey). The 22-item statement numerical data for both Expectations and Perceptions is then summed per statement and dimension and then averaged for the total sample. Based on the Perceived Service Quality (or Difference Score) construct that $SQ = \text{Perceptions} - \text{Expectations}$, an overall perceived service quality index can be assigned to a service rendered. If a positive SQ is achieved, this indicates that respondents' perceptions of the service received met their expectations. Naturally, the opposite is true for a negative outcome which implies that expectations have not been met. It is possible to achieve both positive and negative outcomes for individual dimensions within the same construct i.e. some dimensions meeting/surpassing expectations (an overall Service Quality Difference Score of ≥ 0) and some not. Table 4.5.2 illustrates the actual overall resultant mean score for each of the 22-items which are then sub-totaled for each of the five dimensions. The total mean score for

both expectations and perceptions are then verified and the difference score (perception – expectation) is calculated to determine the total OSQ “Gap” score for Metrorail.

Item Statements Commuter Rail Service is abbreviated CRS		Expectations Mean (N=306)	Perceptions Mean (N=278)	Difference Scores (Perceived Service Quality)
Tangibles Statement				
1	All CRS physical assets should always look good.	6.63	3.34	-3.29
2	Legal entry to all CRS stations / trains should be easy.	6.57	3.21	-3.36
3	CRS should always have enough toilets.	6.71	2.17	-4.54
4	CRS trains should always have enough seating for all.	6.59	2.03	-4.56
5	CRS operational equipment should be new and modern.	6.57	2.35	-4.22
6	CRS should make provision for handicapped commuters.	6.72	2.19	-4.53
7	CRS employees should always be well dressed.	6.67	4.88	-1.79
TANGIBLE DIMENSION SCORE		6.63	2.92	-3.71
Reliability Statement				
8	CRS trains should be on time every time.	6.75	2.16	-4.59
9	CRS should provide their services as advertised.	6.68	2.19	-4.49
10	CRS should provide alternative transport if their train service fails.	6.47	1.76	-4.71
11	When CRS promise to do something by a certain time, they should do so.	6.71	1.93	-4.78
RELIABILITY DIMENSION SCORE		6.65	2.04	-4.61
Responsiveness Statement				
12	CRS staff should be expected to tell commuters exactly when services will be done.	6.65	2.15	-4.50
13	CRS staff should be expected to provide prompt service when needed.	6.72	2.17	-4.55
14	CRS staff must always be willing to help commuters.	6.64	2.81	-3.83
15	It is okay if CRS staff is too busy to respond to commuter needs promptly.	5.27	2.37	-2.90
RESPONSIVENESS DIMENSION SCORE		6.29	2.41	-3.88
Assurance Statement				
16	CRS should provide immediate train service information when services are delayed.	6.73	1.85	-4.88
17	CRS staff should be polite	6.66	3.38	-3.28
18	CRS staff should be proficient (well trained).	6.62	3.73	-2.89
19	CRS services should have a good Customer Complaints handling system.	6.69	2.6	-4.09
ASSURANCE DIMENSION SCORE		6.65	2.84	-3.81
Empathy Statement				
20	CRS firms should not be expected to give commuters individual attention.	4.96	3.41	-1.55
21	CRS employees cannot be expected to give commuters personal attention.	5.18	3.71	-1.47
22	CRS staff should be expected to care about the needs of their commuters.	6.06	3.45	-2.61
EMPATHY DIMENSION SCORE		5.38	3.54	-1.82
METRORAIL EAST LONDON OVERALL SERVICE QUALITY		6.32	2.75	-3.57

Table 4.5.2: Overall expectations, perceptions and difference scores, by 22-item, Metrorail East London service quality measurements

From Table 4.5.2, the numeric mean value for each Expectation, Perception and the resultant Difference Scores (SQ) is clearly presented while Figure 4.5.1 too presents the same discouraging negative difference score detail by means of graphic illustration. This data is important because it shows that commuters are expecting more from the overall Metrorail service than what they perceive to be receiving.



Figure 4.5.1: Expected, perceived and resultant difference scores or gap scores

From these results, Table 4.5.3 illustrates a summary of the five highest/largest and lowest/smallest means and gap scores respectively.

Measurement of the Five Highest and Lowest Scores					
Measure	Item Statement Ref and (mean measure)				
Highest Expectation	E8 (6.75)	E16 (6.73)	E6 (6.72)	E13 (6.72)	E3 (6.71)
Highest Perception	P7 (4.88)	P18 (3.73)	P21 (3.71)	P22 (3.45)	P20 (3.41)
Largest Difference Score	SQ16 (-4.88)	SQ11 (-4.78)	SQ10 (-4.71)	SQ8 (-4.59)	SQ4 (-4.56)
Lowest Expectation	E20 (4.96)	E21 (5.18)	E15 (5.27)	E22 (6.06)	E10 (6.47)
Lowest Perception	P10 (1.76)	P16 (1.85)	P11 (1.93)	P4 (2.03)	P12 (2.15)
Smallest Difference Score	SQ21 (-1.47)	SQ20 (-1.55)	SQ7 (-1.79)	SQ22 (-2.61)	SQ18 (-2.89)

Table 4.5.3: The respective top five measurements

4.5.2 The direct measure of the relative importance of the service dimensions

The SERVQUAL scores have been calculated with and without the weighting factors. The weighting factor is derived by determining the relative importance of each of the service quality dimensions. Another useful feature that can be incorporated into the SERVQUAL instrument is the measure of importance calculation. The *direct measure* asks customers to prioritize items or dimensions of service by asking respondents to allocate a total of ten points across the various service dimensions (see column two, Table 4.5.4). The *indirect importance measures* are estimated through the statistical process of correlation and regression analysis which calculates the relative contribution of questionnaire items to overall service quality (Zeithaml *et al.*, 2006). From this, the rank order of importance for each dimension can be determined by computing the points allocated and expressing them as a percentage. The spread for the Metrorail survey is illustrated in Figure 4.5.2.

Total points allocated, resultant rank order of dimension importance, un-weighted gap score, importance gap score and resultant weighted gap score					
Dimension	Total Points Allocated out of 10 (N = 295)	Importance Weight Factor (derived at from number of points allocated out of 10 (%))	Un-weighted Mean Gap Score	Resultant Importance Gap Score (from column 2 Importance Weight Factor)	Subsequent Weighted Mean Gap Score
Tangibles	773	26.2	-3.71	-0.972	-4.68
Reliability	625	21.2	-4.61	-0.977	-5.59
Responsiveness	620	21.0	-3.88	-0.815	-4.70
Assurance	525	17.8	-3.81	-0.678	-4.49
Empathy	411	13.9	-1.82	-0.253	-2.07
Overall Service Quality Score	-	20 (average)	-3.57	-0.714	-4.28

Table 4.5.4: Total points allocated, resultant rank order of dimension importance, unweighted gap score, importance gap score and resultant weighted gap score

As can be seen from Table 4.5.4, the unweighted SERVQUAL scores for each of the five dimensions of service quality reveal *reliability* as having the largest gap score, followed by *responsiveness*, *assurance*, *tangibles* and *empathy*. However, to present these scores in a more realistic perspective, the unweighted dimension scores are recalculated using the dimension order of importance factor (%). From that, the weighted score column in Table 4.5.4 reveals the resultant marginal variation to each dimension score, the variation of which is naturally

dependent on the allocated factor of importance assigned to that dimension and is also illustrated in the same table. From this data, the severe gaps in *reliability*, *tangibles* and *responsiveness* are revealed, in order of importance, and will provide knowledge to management for informed decision making with respect to scarce resource allocation and/or investing in only the appropriate initiatives. This will avert wasteful and fruitless expenditure, a common trend and risk in government parastatals.

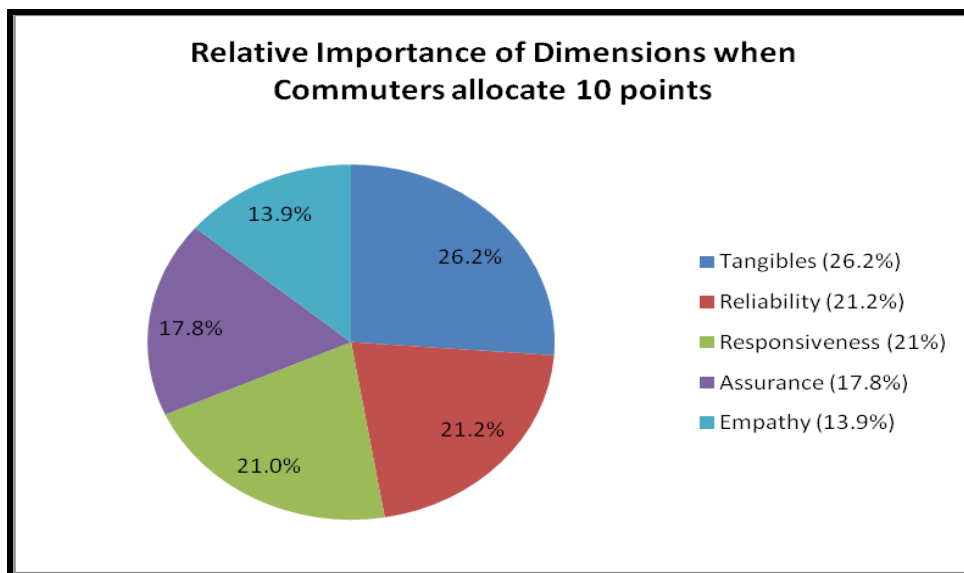


Figure 4.5.2: Relative importance of dimensions

Figure 4.5.3 graphically illustrates the magnitude and the impact that the measure of importance will have on an unweighted measure. As is illustrated in this Metrorail example, the comparative gap score variation between unweighted and weighted scores results in a change in dimension order as a result (assurance for unweighted gives way to tangibles when weighting applied). This feature is of critical importance to assist management to prioritize action plans. The feature can also be used to prioritize each of the 22-item variables.

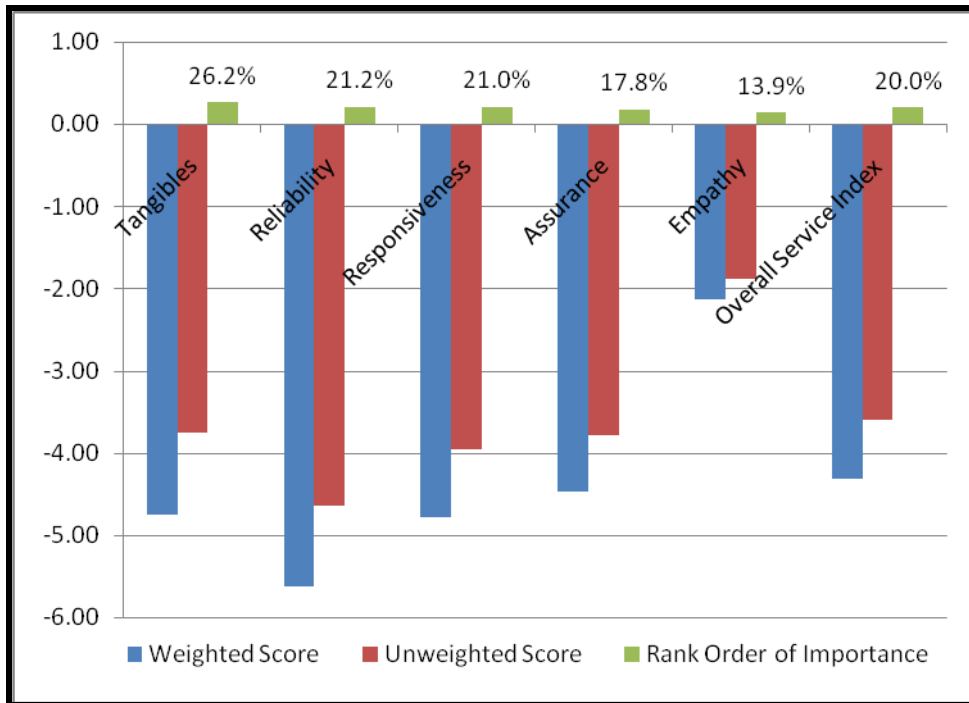


Figure 4.5.3: Weighted, unweighted and relative importance by dimensions and overall Service Quality Index

The performance/importance matrix is another useful feature that combines information about commuter perceptions (item performance rating) and importance ratings. The resultant outcomes of these two measures are plotted and categorized in a matrix (see Figure 4.5.4) for action, monitoring and control. Each matrix quadrant is assigned a distinctive label for action.

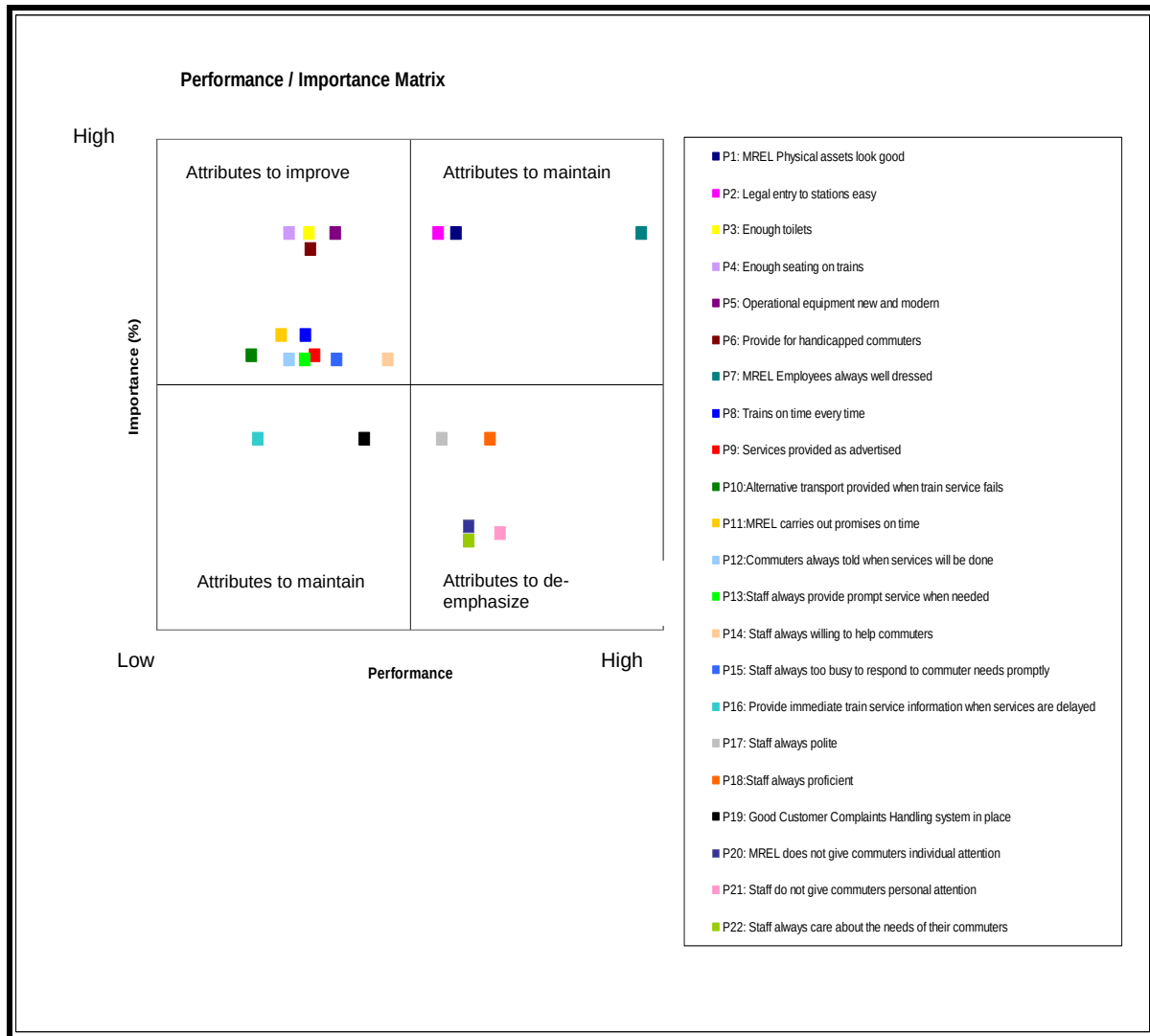


Figure 4.5.4: The Performance/Importance matrix

4.5.3 Paired-sample T-tests

According to Luke (2007), paired-sampling t-tests and correlation statistical analysis can be used to determine and compare the mean difference between the expectation and perception statements which will facilitate the hypothesis analysis to confirm H_1 and reject H_0 . The paired-sample t-test will include the 22 statements and the 5 dimensions. This result will need to show a significant difference between the expectation and the perception of Metrorail commuters. A summary of the paired statistical means, correlations and T-tests are illustrated in Tables 4.5.5 (a), (b) and (c).

		Mean	N	Std. Deviation
Pair 1	E_Tangibles	6.601	332	.7098
	P_Tangibles	2.923	332	1.4415
Pair 2	E_Reliability	6.645	331	.7189
	P_Reliability	2.037	331	1.2573
Pair 3	E_Responsiveness	6.290	331	.9472
	P_Responsiveness	2.408	331	1.5041
Pair 4	E_Assurance	6.650	329	.7663
	P_Assurance	2.843	329	1.5752
Pair 5	E_Empathy	5.382	329	1.5444
	P_Empathy	3.537	329	1.9175
Pair 6	Expectations	6.316	332	.5873
	Perceptions	2.752	332	1.1559

Table 4.5.5(a): Paired sample dimension statistics

		N	Correlation	Sig.
Pair 1	E_Tangibles & P_Tangibles	332	-.045	.414
Pair 2	E_Reliability & P_Reliability	331	-.256	.000
Pair 3	E_Responsiveness & P_Responsiveness	331	-.116	.035
Pair 4	E_Assurance & P_Assurance	329	.053	.336
Pair 5	E_Empathy & P_Empathy	329	.050	.368
Pair 6	Expectations & Perceptions	332	-.025	.650

Table 4.5.5(b): Paired sample correlations for dimensions and overall service quality

		Mean	Std. Deviation	t	Df	Sig. (2-tailed)
Pair 1	E_Tangibles	3.6773	1.6352	40.976	331	.000
	P_Tangibles					
Pair 2	E_Reliability	4.6085	1.6002	52.398	330	.000
	P_Reliability					
Pair 3	E_Responsiveness	3.8819	1.8679	37.810	330	.000
	P_Responsiveness					
Pair 4	E_Assurance	3.8070	1.7146	40.273	328	.000
	P_Assurance					
Pair 5	E_Empathy	1.8450	2.4014	13.935	328	.000
	P_Empathy					
Pair 6	Expectations	3.5635	1.3096	49.581	331	.000
	Perceptions					

Table 4.5.5(c): Paired sample T-test (dimensions and overall service quality)

The T-test results illustrated in Table 4.5.5 (c) verify that the significant difference between the respective mean set of scores was unlikely to occur by chance. As can be seen from the results, there are significant differences between expectations and perceptions for all five dimensions and the subsequent perceived service quality. Therefore from the data analysis, the computed SERVQUAL scores and the paired t-tests, we can conclude that there is a statistically significant difference between the total perceptions mean score of ($M = 2.76$, $SD = 1.16$) and the total expectations mean score of ($M = 6.32$, $SD = 0.59$), $t(331) = 49.6$, $p < 0.0001$ (two-tailed).

In a similar vein and as illustrated in Table 4.5.5(c), statistical significant differences between expectations and perceptions are evident in each of the five dimensions. This fact is also graphically displayed in Figure 4.5.1. The statistical detail for each of the dimensions is displayed as follows:

- Tangibles: Perceptions mean score of ($M = 2.92$, $SD = 1.14$) and the total expectations mean score of ($M = 6.60$, $SD = 0.71$), $t(331) = 41.0$, $p < 0.0001$ (two-tailed);
- Reliability: Perceptions mean score of ($M = 2.04$, $SD = 1.26$) and the total expectations mean score of ($M = 6.65$, $SD = 0.72$), $t(330) = 52.4$, $p < 0.0001$ (two-tailed);
- Responsiveness: Perceptions mean score of ($M = 2.41$, $SD = 1.50$) and the total expectations mean score of ($M = 6.30$, $SD = 0.95$), $t(330) = 37.8$, $p < 0.0001$ (two-tailed);
- Assurance: Perceptions mean score of ($M = 2.84$, $SD = 1.58$) and the total expectations mean score of ($M = 6.66$, $SD = 0.77$), $t(328) = 40.3$, $p < 0.0001$ (two-tailed);
- Empathy: Perceptions mean score of ($M = 3.54$, $SD = 1.92$) and the total expectations mean score of ($M = 5.38$, $SD = 1.54$), $t(328) = 14.0$, $p < 0.0001$ (two-tailed).

Table 4.5.6 illustrates a summary of the T-test results for the 22 paired items. The results are the same as for the dimension t-test conclusion, which show that a significant difference between the measured variables is true and unlikely to occur by chance. As can be seen from the results, there are significant differences between expectations and perceptions for all 22 item statements. The significant difference between each of these 22 individual paired variables forms the basis of the five dimensions and ultimately the overall perceived service quality. Again it is noted that the statistical standard deviation for the negatively worded pairs 15, 20 and 21 display an unusually higher deviation than the rest of the paired items.

Variable		Mean	Std. Deviation	t	df	Sig. (2-tailed)
Pair 1	E1 - P1	3.213	2.730	21.318	327	.000
Pair 2	E2 - P2	3.277	2.859	20.758	327	.000
Pair 3	E3 - P3	4.466	2.180	37.111	327	.000
Pair 4	E4 - P4	4.492	2.383	33.991	324	.000
Pair 5	E5 - P5	4.124	2.320	31.906	321	.000
Pair 6	E6 - P6	4.426	2.140	36.946	318	.000
Pair 7	E7 - P7	1.786	2.544	12.594	321	.000
Pair 8	E8 - P8	4.562	2.127	39.014	330	.000
Pair 9	E9 - P9	4.483	2.104	38.648	328	.000
Pair 10	E10 - P10	4.726	1.992	43.040	328	.000
Pair 11	E11 - P11	4.679	2.027	41.744	326	.000
Pair 12	E12 - P12	4.494	2.195	37.073	327	.000
Pair 13	E13 - P13	4.514	2.101	38.841	326	.000
Pair 14	E14 - P14	3.771	2.381	28.686	327	.000
Pair 15	E15 - P15	2.818	3.186	15.949	324	.000
Pair 16	E16 - P16	4.887	1.799	49.127	326	.000
Pair 17	E17 - P17	3.378	2.433	25.030	324	.000
Pair 18	E18 - P18	2.950	2.617	20.226	321	.000
Pair 19	E19 - P19	4.034	2.346	31.045	325	.000
Pair 20	E20 - P20	1.518	3.289	8.360	327	.000
Pair 21	E21 - P21	1.469	3.162	8.390	325	.000
Pair 22	E22 - P22	2.584	2.928	15.958	326	.000

Table 4.5.6: Paired sample T-tests for 22-items

4.6 Demographic Detail

Demographic profiles of the sample were described in section 4.4. In this section, the survey determines whether any of the individual class variables for the three items selected differ significantly (at the $p < 0.05$ level) in the way that those specific class independent variables rate perceived service quality. The three item groups analysed are type of ticket holders, age and social status.

The procedure followed to achieve this objective is the statistical technique form of *analysis of variance* (ANOVA), for which the one-way ANOVA model is used as there are more than two independent groups in each of the items being analysed. This process is used to determine whether or not there is a significant difference amongst the total range of the independent variable sample means for each of the three items under analysis. Thereafter, those items and class samples displaying a significant difference will be tested to quantify and classify the “effect size” to determine if that independent variable influences how service quality is rated by that specific commuter segment. This knowledge would prove invaluable to management.

In order to quantify and determine the relevance of the effective size for those significant differences identified from the mean score ANOVA tests, the (partial) Eta squared methodology is used. This Eta squared determination is required because T-Test results that are classified significant do not quantify the magnitude or degree that two variables are associated with one another. Typically, it is possible that a small difference between groups can be statistically significant but this difference cannot be interpreted as having any practical or theoretical significance. In order to evaluate the importance of the findings, the “effect size” must be calculated (Tabachnick and Fidell, 2007 in Luke, 2007). Effect sizes are categorized for determining relevance. In summary, and according to Cohn (1988 in Luke, 2007), the generally-accepted regression benchmark for effect size is *small* if less than 0.06 (medium up to 0.14 and large if greater).

4.6.1 Type of ticket holder effect on how perceived service quality is rated

As previously explained, the first step is where the one-way ANOVA process compares the means for expectations and perceptions of the four classes’ variables in this category which are illustrated in Figure 4.6.1. This is done to test the hypothesis to confirm H_1 (not all the sample means are equal) and reject H_0 ($\mu_1 = \mu_2 = \mu_3 = \mu_4$) by showing a significant difference between the way the different type of ticket holders rate the service. Tables 4.6.1 (a) and (b) summarize the descriptive statistics and ANOVA results respectively. The tables only contain those elements that presented a significant variation.

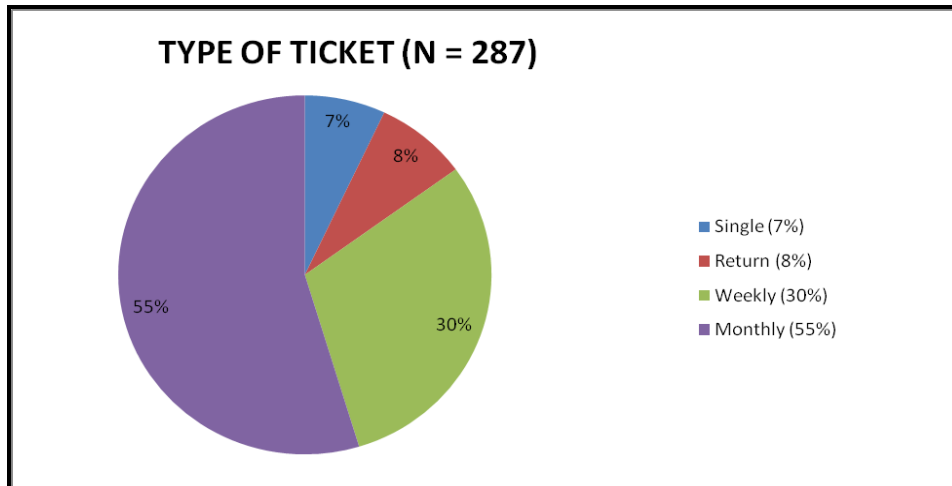


Figure 4.6.1: Types of ticket holders and allocation

	Class	N	Mean	Std. Deviation	Minimum	Maximum
Perception & Empathy	Single	20	3.233	1.9258	1.0	7.0
	Return	23	3.957	1.7931	1.0	7.0
	Weekly	86	2.915	1.7721	1.0	7.0
	Monthly	157	3.815	1.9761	1.0	7.0
	Total	286	3.515	1.9363	1.0	7.0

Table 4.6.1(a): Descriptive statistics of mean scores for Type of Ticket (perceptions and empathy dimension)

		Sum of Squares	df	Mean Square	F	Sig.
Perception & Empathy:	Between Groups	51.215	3	17.072	4.732	.003
	Within Groups	1017.330	282	3.608		
	Total	1068.545	285			

Table 4.6.1(b): ANOVA for Type of Ticket mean scores (perceptions and empathy dimension only)

The category classes were split into four groups, namely *single*, *return*, *weekly* and *monthly*. Each of these classes was then grouped with the SERVQUAL mean scores for expectations and perceptions. This revealed a statistical significant difference at the $p < 0.05$ level in the *perception and empathy* scores for the four Type of Tickets class where: $F(3, 282) = 4.73$, $p = 0.003$. The Eta squared was calculated using the formula:

Eta squared = Sum of squares between groups / Total sum of squares

Eta squared = 51.215 / 1068.545

= 0.048

Therefore, a measure of 0.048 would be considered a small effect size and it is claimed that despite a measure of statistical significance, the actual difference in the *Perception/Empathy* mean scores between *single* ($M = 3.23$, $SD = 1.93$), *return* ($M = 3.96$, $SD = 1.79$), *weekly* ($M = 2.92$, $SD = 1.77$) and *monthly* ($M = 3.82$, $SD = 1.98$) was small and that no one class in this group (type of ticket holder) rated service quality different from the others in the same group.

4.6.2 Age effect on how perceived service quality is rated

The one-way ANOVA process compares the means for expectations and perceptions of the five classes of variables in this category which are illustrated in Figure 4.6.2. This is done to test the hypothesis to confirm H_1 (not all the sample means are equal) and reject H_0 ($\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5$) by showing a significant difference between the way the different age group categories rate the service quality.

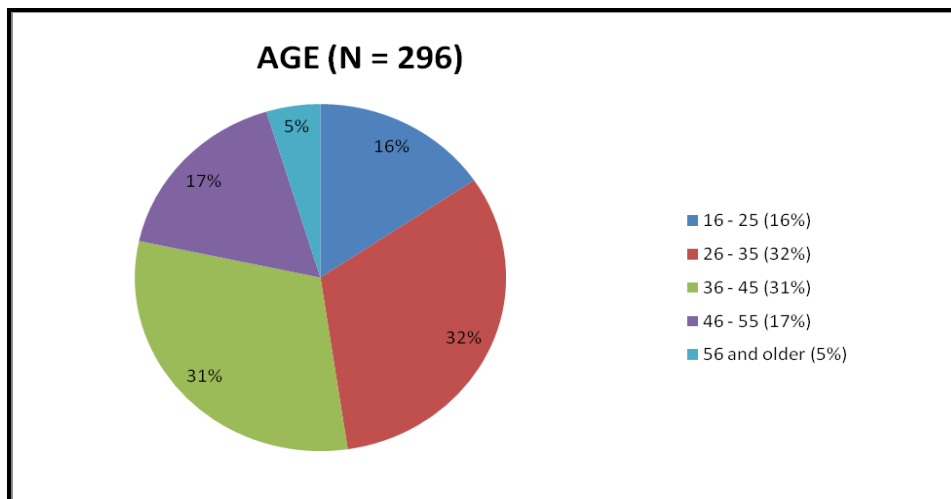


Figure 4.6.2: Age group classes and proportions

Table 4.6.2 summarizes the descriptive statistics for expectations and perceptions for each of the five age group classes. The ANOVA t-test results did not reveal any significant differences between these groups at the $p < 0.05$ level and H_0 therefore cannot be rejected. The results are accordingly not presented.

Dependent	Age Class	N	Mean	Std. Deviation	Minimum	Maximum
Expectations	16 - 25	46	6.229	.6630	3.8	7.0
	26 - 35	95	6.318	.5854	4.0	7.0
	36 - 45	90	6.416	.4666	5.1	7.0
	46 - 55	50	6.350	.5043	4.5	7.0
	56 and older	14	6.172	.9449	3.9	7.0
	Total	295	6.333	.5743	3.8	7.0
Perceptions	16 - 25	46	2.767	1.0974	1.2	6.2
	26 - 35	95	2.829	1.1880	1.0	6.6
	36 - 45	91	2.791	1.1478	1.1	6.1
	46 - 55	50	2.647	.9628	1.2	5.1
	56 and older	14	3.025	1.1212	1.9	6.2
	Total	296	2.786	1.1186	1.0	6.6

Table 4.6.2: Descriptive statistics for mean and standard deviation scores for age limit classes (Expectations and Perceptions)

Therefore, it is claimed that the magnitude of the mean score differences within the age groups illustrated in Table 4.6.2 were of such insignificance that they have no bearing on the way any of those individual age groups rated service quality differently from others in the same group.

4.6.3 Social standing effect on how perceived service quality is rated

The one-way ANOVA process compares the means for expectations and perceptions of the five classes of variables in this category which are illustrated in Figure 4.6.3. This is done to test the hypothesis to confirm H_1 (not all the sample means are equal) and reject H_0 ($\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5$) by showing a significant difference between the way the different social status groups rate the commuter rail service quality. Tables 4.6.3 (a) and (b) summarize the descriptive statistics and ANOVA results respectively. The tables only contain those elements that presented a significant variation.

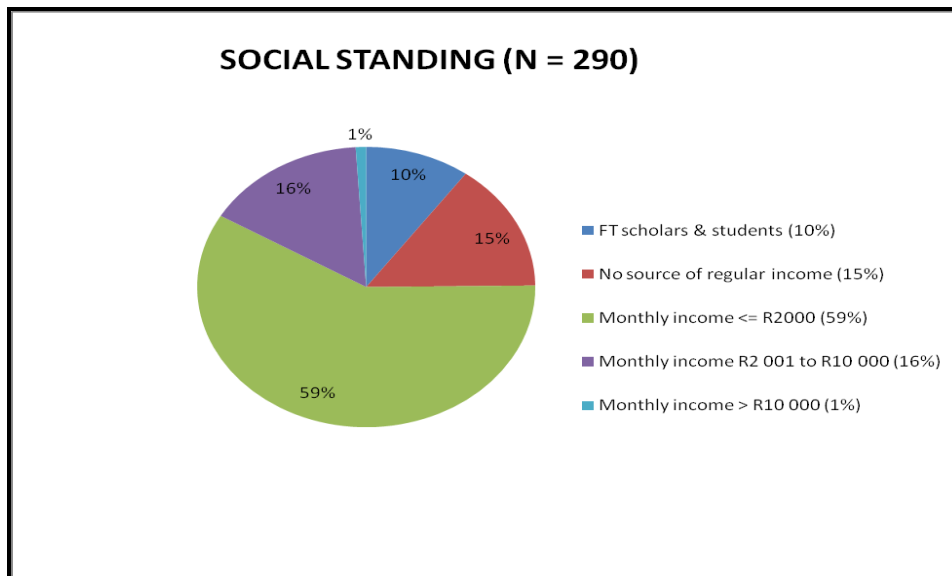


Figure 4.6.3: Social standing classes and proportions

Dependent	Social Classes	N	Mean	Std. Deviation	Minimum	Maximum
Expectation	FT scholars & students	29	6.810	.5926	4.0	7.0
Reliability	No source of regular income	43	6.424	.8193	4.0	7.0
	Monthly income <= R2000	168	6.610	.7080	2.5	7.0
	Monthly income R2 001 to R10 000	45	6.806	.4488	5.5	7.0
	Monthly income > R10 000	3	7.000	.0000	7.0	7.0
	Total	288	6.637	.6864	2.5	7.0

Table 4.6.3(a): Descriptive statistics of mean scores for Social Standing (Expectations and Reliability)

ANOVA ($p < 0.05$)

		Sum of Squares	df	Mean Square	F	Sig.
Expectations & Reliability	Between Groups	4.610	4	1.152	2.497	.043
	Within Groups	130.598	283	.461		
	Total	135.207	287			

Table 4.6.3(b): ANOVA for Social Standing groups mean scores (Expectations and Reliability)

The category classes were split into five groups, namely *full time scholars/students*, *no source of regular income*, *a regular monthly income of up to R2 000*, *a regular monthly income of between*

R2 000 and R10 000, and a regular income of more than R10 000. Each of these classes was then grouped with the SERVQUAL mean scores for expectations and perceptions. This revealed a statistical significant difference at the $p < 0.05$ level in the *Expectation and Reliability* scores for the five Social Status class where: $F(4, 283) = 2.5, p = 0.043$ and rejection of the null hypothesis. This conclusion necessitates the need to establish the effect size through the partial Eta squared calculation and determination. Eta squared was calculated using the formula:

$$\text{Eta squared} = \text{Sum of squares between groups} / \text{Total sum of squares}$$

$$\text{Eta squared} = 4.61/135.21$$

$$= 0.034$$

Therefore, a measure of 0.034 would be considered a small effect size and it is claimed that despite a measure of statistical significance, the actual difference in the *Expectations/Reliability* mean scores between *full time scholars* ($M = 6.81, SD = 0.60$), *the unemployed* ($M = 6.42, SD = 0.82$), *earning a monthly income of less than R2000* ($M = 6.61, SD = 0.71$), *earning a monthly income of between R2000 and R10000* ($M = 6.81, SD = 0.45$) and *earning more than R10000 per month* ($M = 7.00, SD = 0.00$) was small and that no one class in this *Social Status* group rated service quality different from any of the others in the same group.

4.7 Hypotheses outcomes

The data analysis informs the Metrorail survey hypotheses as follows:

- $H_{(1)}$ = There is a significant difference between the quality of service delivered by Metrorail as perceived relative to their expectations (this means the services of Metrorail as perceived by commuters do not meet their expectations): = **SUPPORTED**;
- $H_{(2)}$ = Not all of the sample means for *type of ticket groups effect* on perceived service quality are equal: = **UNSUPPORTED**;
- $H_{(3)}$ = Not all of the sample means for *age group effect* on perceived service quality are equal: = **UNSUPPORTED**;
- $H_{(4)}$ = Not all of the sample means for *social status groups effect* on perceived service quality are equal: = **UNSUPPORTED**.

4.8 Conclusion

Chapter 4 analysed and presented the returned and relevant Metrorail SERVQUAL survey data pertaining to the research problem and questions posed.

The data revealed significant differences between commuter's perceived and expected service quality levels. The analysis further verified the reliability and validity of the Metrorail SERVQUAL scale, the SERVQUAL scores across the 22 item statements, dimensions and overall service quality. The correlations between the 22-item attributes expectations and perceptions and between the five dimensions and expectations and perceptions were also revealed. The relative importance of each of the SERVQUAL dimensions was determined and the influence this had on the monitoring and controlling of management processes is illustrated. Finally, it was established whether service quality is perceived differently by the various commuter segments analysed. These results will be discussed in Chapter 5.

CHAPTER 5: DISCUSSION AND CONCLUSIONS

5.1 Introduction

Service quality is described as a form of attitude, related but not equivalent to satisfaction, and results from a comparison of a customer's expectations with their perceptions of the performance of the firm providing the service. The SERVQUAL instrument is a concise multiple-item scale designed and developed to measure respondent's expectations and perceptions for a particular service encounter. The resultant service quality gap analysis can then be used as a tool to quantify and diagnose for service quality strengths and weaknesses for improvement.

The original SERVQUAL 22-item/five dimension instrument concept was refined and adapted for the Metrorail East London survey. The survey data was duly analysed in Chapter 4 and the SERVQUAL and associated test results inform the research questions posed and verify the validity and reliability of the scale, the latter of which will be discussed in this section. This final section of the chapter will discuss the research findings.

5.2 Validity and Reliability of the Construct Confirmed

As previously stated in chapter 4, the initial validity testing included the *un-rotated* factor loading process which did not reveal any structured factor loading into the relevant designated dimensions. The process was then repeated using quartimax Kaiser Normalization *orthogonal rotation* and resulted in adequate component factor loading to satisfy the priori dimensions proposed by Parasuraman *et al.* (1988 in Luke, 2007).

Following analysis of the validity and reliability testing overall, and notwithstanding the mean and standard deviation variances (increases) observed for the negatively worded statements, the overall reliability coefficient Alphas remained stable for both the *expectation* and *perception* sets of data. Associated to that verification, the Metrorail SERVQUAL scale displayed sound scores with indications of alignment, association and expectations to satisfy both construct and content validity. Since the minimum verification levels required and reported on were met, the

factor/item loading patterns and the respective mean standard deviation variances observed were deemed acceptable and the resultant Metrorail SERVQUAL data was analysed accordingly.

5.3 Conclusions about the research questions

From the three research questions posed, the four associated hypotheses that were formulated from questions one and three are first discussed followed by questions one, two and three.

With respect to $H_{(1)}$, the results emphatically indicate significant differences between expectations and perceptions for all 22-item attributes and the consequent five dimensions of tangibles, reliability, responsiveness, assurance and empathy. The respective (negative) unweighted mean score differences between these dimensions is 3.71, 4.61, 3.88, 3.81 and 1.82. This results in an unweighted overall service quality gap score of -3.57. It is clearly evident from the prime focus of the research that there is a significant negative difference between commuters' perceptions of service quality received compared to their expectations. This saw to the rejection of the null hypothesis that perceptions met expectations.

With respect to $H_{(2)}$, $H_{(3)}$ and $H_{(4)}$, three demographic profiles and their respective independent variable groups were tested for significant differences between their respective groups and how they rated service quality. The *type of ticket holder* and *social status* groups returned t-test at the $p < 0.05$ level that were significant. However, the partial Eta squared evaluation categorized the actual effect sizes as small and irrelevant and resulted in the subsequent rejection of the alternate hypothesis despite the t-test significance. The *age* group did not reveal any significant differences and thus supports the null hypothesis.

5.4 Is there a difference between commuter expectations and perceptions for each service attribute delivered by the East London Metrorail Commuter Service?

As previously mentioned, question one is fundamental to the research problem. Table 4.5.2 shows the “difference scores” between expectations and perceptions for the 22-item attributes, the five service quality dimensions and overall service quality as perceived by rail commuters of the service. The unweighted average of the Metrorail SERVQUAL score has a mean of -3.57 compared to the -1.56 that was achieved by the Malayan rail service survey (Kiew and Chee,

1997). The largest service quality gap was for the *reliability* dimension which has a mean score of -4.61 while the smallest gap was for the *empathy* dimension with a mean score of -1.82. By comparison, the same Malayan survey revealed more impressive performance gap scores of -2.33 and -0.92 for the same dimensions respectively.

Using t-test analysis, we illustrated in Tables 4.5.8 (c) and 4.5.9 that there is statistically a significant difference at the $p < 0.05$ level between perception and expectation scores for the service dimensions and the 22-item service attributes respectively. From a pragmatic approach, we discuss the five highest and the five lowest expectations and perceptions and the largest and smallest service quality gap scores which are displayed in Table 4.5.3.

5.4.1 What the highest expectations reveal

- The descending order is E8, E16, E6, E13 and E3 which revealed mean scores of between 6.75 and 6.71;
- Not surprisingly, the highest expectation is in the reliability dimension, where commuters express the need for trains to be on time every time;
- The second highest expectation is in the assurance dimension, where commuters express their expectation for immediate information when train services are delayed;
- The third and fifth highest is in the tangible dimension where commuters expect provision to be made for easy access to the service for handicapped commuters and sufficient toilets at all times respectively;
- The fourth highest expectation is for prompt service when needed.

5.4.2 What the highest perceptions reveal

- The overall mean difference scores between expectations and perceptions were large. The mean scores for the five highest perception variables are between 4.88 and 3.41;
- The highest perception statement was P7 in the tangibles dimension, which is a credit to Metrorail for service personnel always being well-dressed;
- The second highest perception was the need for staff to be proficient at their work; a sure sign of needing assurance (dimension);

- The last three highest perceptions were E21, E22 and E20 in the empathy dimension. Recall that E20 and E21 are negatively worded statements and it is suspected that this resulted in confusion amongst respondents and subsequent unrealistic perception scores.

5.4.3 What the largest difference score revealed

- The largest gap scores were for SQ16, SQ11, SQ10, SQ8 and SQ4 where the mean differences ranged from between -4.88 to -4.56. These are significant and, in terms of the measurement, indicate poorly performing attributes;
- The largest gap score was for SQ16 which is a repeat and highlights the need for immediate train service information when the train service is delayed;
- The next three largest difference scores were in the reliability statement, where commuters expressed the need to have promises fulfilled on time, prompt provision of alternative transport when the train service fails, and again for the train service to be on time every time. It is clearly evident that train service punctuality is an important dimension;
- The fifth highest gap score revealed the need for sufficient train service seating for all.

5.4.4 What the lowest expectations revealed

- The lowest expectations were for E20, E21, E15, E22 and E10 where the mean scores ranged between 4.96 and 6.47;
- Again the three lowest are the negatively worded statements and are to be treated with caution as it is probable that respondents misinterpreted the three confusing questions;
- The fourth lowest expectation was in the empathy dimension, where commuters did not place high expectations for staff to care about their needs;
- The fifth lowest expectation was in the reliability dimension and the need for alternative transportation when the train service fails. This result is not to be construed as irrelevant as it is also one of the largest gap scoring attributes.

5.4.5 What the lowest perceptions revealed

- The lowest perceptions were for P10, P16, P11, P4 and P12 where the mean scores varied between 1.76 and 2.15;

- The first and third lowest were in the reliability dimension and highlighted the shortcomings for providing alternative transport for when the service failed and for the failure of management to do something by a certain time as promised;
- The second lowest perception was in the assurance dimension, for management failing to provide immediate train service information when services failed;
- The fourth lowest perception was in the tangible dimension, where it is evident that there is not enough seating for all;
- The fifth lowest perception deals with responsiveness and the need for personnel to tell commuters exactly when services will resume.

5.4.6 What the smallest difference scores reveal

- Providing expectations are high, as they are, a small gap score will signify a well-performing attribute. The smallest gap scores were for SQ21, SQ20, SQ7, SQ22 and SQ18. The mean scores varied between -1.47 and -2.89;
- SQ20 and SQ21 were for the negatively worded statements and are treated with caution as their scores are perceived to be out of context;
- The fourth smallest difference score is for staff being expected to take care about the needs of the commuters in the empathy dimension;
- The fifth smallest difference gap score is for proficient staff; this is a good indication for Metrorail.

5.5 Is the importance of each of the five SERVQUAL dimensions ranked differently by commuters, and if so, what is their rank order of importance?

Recall from the data analysis section that the relative importance of each service dimension can be of crucial importance to management. For this survey, it was calculated by asking commuters to prioritize the dimensions of service by asking them to allocate a total of ten points across the various service dimensions (see column two, Table 4.5.5). From the table, it is evident that the commuters rate the importance of each dimension differently. The rank order of importance for each dimension was determined by computing the points allocated out of a total for all of the dimensions and expressing them as a percentage. The rank order of importance for the Metrorail

service quality dimensions are tangibles, reliability, responsiveness, assurance and empathy; the proportion of the importance for each dimension, expressed as a percentage, is 26.2, 21.2, 21.0, 17.8 and 13.9 respectively. Compared to the Malayan rail service (Kiew and Chee, 1997) rank order of dimension importance, their order showed a lot of similarities except for one pair of dimensions that differed (assurance and responsiveness). Their order of importance was tangibles, reliability, assurance, responsiveness and empathy with scores of 26, 22, 19, 17 and 16 respectively.

As can be seen from Table 4.5.5, the unweighted SERVQUAL gap scores for each of the five dimensions of service quality can/will change the dimension score, and possibly its order of performance once its applicable weighting or importance factor has been applied. The weighted dimension score presents a more realistic perspective for management to correctly prioritize objectives. From this data, the severe gaps in *reliability*, *tangibles* and *responsiveness* are revealed, in order of importance, and will provide knowledge to management for informed decision making with respect to scarce resource allocation and/or investing in only the appropriate initiatives. This will avert wasteful and fruitless expenditure, a common trend and risk in government parastatals. Figure 4.5.3 graphically illustrates the magnitude and the impact that the measure of importance will have on an unweighted dimension score. As is illustrated in this Metrorail example, the comparative gap score variation between unweighted and weighted scores results in a change in dimension order as a result (assurance unweighted gives way to tangibles when weighting factor is applied).

Coupled to this SERVQUAL importance feature is the performance/importance matrix, another useful feature that combines information about commuter perceptions (attribute performance rating) and the importance ratings. The resultant outcomes of these two measures are plotted and categorized in a matrix for intervention; monitoring and control (see Figure 4.5.4). Each matrix quadrant is assigned a distinctive label for action and is a valuable recovery plan tool as it identifies the poorly performing and important attributes. When the performance/importance prioritizing matrix was used to analyse the Metrorail survey data, it presented the following options for consideration:

- Attributes to improve: 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14 and 15;

- Attributes to de-emphasize: 17, 18, 20, 21 and 22;
- Attributes to maintain: 1, 2, 7, 16 and 19.

5.6 Is service quality perceived differently amongst the various customer segment classes?

The gender proportion ratio for the sample was very similar at 47:53 for male and females. The majority of respondents (63%) were between the *ages* of 26 and 45 years old. More than half of the respondents traveled on a monthly *type of ticket*, and more than 30% used a weekly ticket. The *social standing* element revealed that almost 60% of respondents earned a regular monthly income of up to R2 000 and only 1% earned more than R10 000. Ten percent of respondents were full time scholars and 15% were unemployed.

As previously reported with respect to $H_{(2)}$, $H_{(3)}$ and $H_{(4)}$, three demographic profiles and their respective independent variable groups were tested for significant differences between their respective groups and how they rated service quality. The *type of ticket holder* and *social status* groups returned t-test at the $p < 0.05$ level that were significant. However, partial Eta squared evaluation categorized the actual effect sizes as small and irrelevant and resulted in the subsequent rejection of the alternate hypothesis despite the t-test significance. The *age* group did not reveal any significant differences and thus supports the null hypothesis. This item can be very useful to management and needs to be maintained and alternative survey data explored for research purposes.

5.7 Conclusions about the research problem

The objectives of this research survey were: To evaluate the quality of customer service delivery of the East London metropolitan rail commuter service operated by Metrorail.

The service dimension analysis that follows will incorporate the fundamental elements of the provider gap model requirements as we attempt to identify and link the shortcomings to satisfy the requirements of the customer gap.

5.7.1 Tangible dimension

The tangible dimension is ranked the most important. This is probably due to the fact that the commuter rail industry's core service is extensively reliant on tangible infrastructure, station facilities and, most important, well maintained train-sets. The current Metrorail rolling stock fleet is more than 40 years old; making it obsolete, unreliable and costly to maintain. There is also an extreme shortfall in available capacity to provide a quality service given the daily commuter volumes. Capital expenditure will be required to address investment in new efficient technology for the long-term. With respect to commuter service quality shortfalls in this dimension, the need for sufficient toilets and onboard train service seating, the provision for handicapped commuters and new operational equipment scored negatively.

5.7.2 Reliability dimension

The reliability dimension displayed the largest proportion of attributes with large gaps i.e. poor performance. It is one of two dimensions (assurance) which have the highest level of commuter expectations and which are dominated by the need for: trains to be on time every time, the provision of alternative transport when the train service fails, promises to be fulfilled on time, and for providing services as advertised. The latter four service quality gaps identified fall within the compliance prerequisites of *provider gaps* three and four (Zeithaml *et al.*, 2006). Reliability ranked the second most important dimension but once calculated to its weighted score, is by far the most imperative with respect to rescue plan prioritisation. It is also the most poorly performing dimension.

5.7.3 Responsiveness dimension

The responsiveness dimension is the third most important and second worst performer for both unweighted and weighted scoring formats. The results were dominated by respondents' expectations for prompt and detailed response from personnel. This is an area where highly skilled and motivated service contact personnel are required to ensure and maintain high levels of discretionary effort. As with most public service organizations, the majority of these positions are low skilled job-fit posts. An intervention in this respect will require significant role-player grade upliftment and development and funding.

5.7.4 Assurance dimension

The assurance dimension revealed serious shortfalls with providing commuter assurance. This dimension shares joint highest score (reliability) with respect to commuter expectations. When a train service fails, the stranded commuter urgently requires information pertaining to the next available service and/or the estimated time duration of the delay. This information will give the commuter the option to make his own informed decision with respect to alternative transport arrangements. Failure to communicate or poorly trained personnel can lead to extreme dissatisfaction and consequent arson by frustrated commuters. The survey data also suggests that a good customer complaint handling system falls short of expectations (-4.09).

5.7.5 Empathy dimension

The empathy dimension scored the lowest level for commuter expectations and best difference gap score. The negatively worded statements in this dimension must be treated with caution as all indications are that the confusing questions led to misinterpretation and confusion. Analysis of the dimension was not conclusive. The dimension was rated fifth most important.

5.8 Recommendations

It is without doubt that the SERVQUAL concept as a diagnostic tool-kit for the Metrorail survey application was aligned, value-adding and beneficial to the body of knowledge in this industry. Although the validity of this survey is deemed adequate, the following recommendations are suggested if the SERVQUAL construct is to be replicated in commuter rail surveys under similar conditions:

- Where a language or literacy barrier with respondents is likely, ensure adequate resource measures (interviewers, focus group members, supervisors) and time for the collection of quality data;
- The use of negatively worded questions in the 22-item paired attribute statements are to be avoided. Evidence from this survey suggests that the confounding questions will result in misinterpretation of question requirements amongst respondents;

- SERVQUAL scale refinement and adaptation must not deviate far from the original concept construct. This refers specifically to the number of items per dimension and specific item content, if they are to be customised at all;
- Inclusion of the *direct measure* of importance questions in the SERVQUAL framework questionnaire proved very beneficial to the knowledge management process.

The overall Metrorail SERVQUAL analysis and weighted gap results imply that the service quality dimensions of *reliability*, *responsiveness*, *tangibles* and *assurance* are important predictors of overall service quality. The SQ gap and order of importance separating the latter three is very small while the *reliability* dimension dominates commuter's expectations. A summary of the significant findings are discussed by individual item and dimension in section 5.6.

The following recommendations are based on the *provider gap* requirements (1 to 4) and will provide a basis for a practical and implementable management service quality rescue plan (Zeithaml *et al.*, 2006).

5.8.1 Gap 1: Not knowing what commuters expect

- Knowing what customers expect is the most important step to delivering quality service. Is the amount and type of Metrorail market research sufficient to understand commuter expectations? The vast amount of Metrorail survey data at hand needs to be critically analysed, interpreted and effectively utilised;
- Is there effective upward communication to ensure commuter expectations are transferred? The Rail Focus Group forums need assessment and revitalisation to ensure interaction between managers and commuters that will also promote relationship building. The communication channel between Metrorail contact personnel and management must be embedded. This will ensure that management is kept abreast of commuter expectations;
- How effective are the organisations service recovery efforts? Are there well-rehearsed plans in place to effectively and speedily restore service delivery when the train service fails? Sufficient resources must be acquired that will allow mechanisms to adequately address the

contingencies required for prompt service rescue/restoration. This item is one of the most important amongst commuter expectations.

5.8.2 *Gap 2: Wrong service quality standards*

- How logical is the Metrorail service design and how well is it defined for commuters and employees? Service design needs constant review and assessment to ensure efficiency. Vague and undefined service design will fail to link to strategic service positioning;
- How effective are Metrorail's service standards? The service standards need to be redefined to address those of commuter expectations;
- How effective is the monitoring of service quality performance/goal setting? As discussed in Chapter 2, the versatility of the SERVQUAL instrument can be used for periodic evaluations and quantification. It will therefore also provide an excellent medium to measure the abstract nature of service quality for the corporate performance management system's KPA targets and scorecards;
- The organisations physical facilities, equipment, train-sets and other tangibles are mostly inappropriate, unattractive, ineffective and obsolete. Significant capital funding must be acquired to procure reliable and efficient new technology that will ensure the sustainability of the service into the future.

5.8.3 *Gap 3: Not delivering to service designs and standards*

- The recruitment, training, compensation and empowerment process of commuter contact employees is deemed suspect. Service quality delivery between employees and branches is inconsistent and questions the effectiveness of the Human Resource policies and practices;
- The commuter has an obligation to fulfil in their role as a customer; they need to understand their role and responsibility during the service encounter. Metrorail must ensure processes for commuters to be educated to understand the "conditions of rail service and *carriage*". This is especially applicable to those with potential antisocial and substandard commuter behaviour tendencies;
- The alignment with service intermediaries, specifically Transnet Freight Rail, needs urgent review and rectification. Misalignment over objectives, performance and costs will forever hamper quality service delivery in the crucial Train Operations function;

- The data analysis identified several indicators that reveal Metrorail is not providing supply capacity to cope with demand fluctuations. Aside from impeding service quality efforts, this mismatch increases the operational risk factor to the organisation and needs urgent address.

5.8.4 *Gap 4: When promises do not match delivery*

- The integrated services marketing communication of Metrorail needs to deliver the same consistent message of service level delivery to employees and commuters alike;
- Effective measures to manage commuter expectations must be implemented to ensure that commuters are kept informed about what will be provided to them;
- Metrorail must ensure accurate service delivery advertising so as to avoid overpromising;
- Metrorail processes must ensure adequate horizontal communications within marketing, customer services, corporate security and operations so that service quality equals what is promised.

5.9 Limitations

The challenges facing the industry were further set back with the recently enforced strategy for SOEs to radically conserve operational expenditure budgets. This will certainly hamper any meaningful rescue plan interventions to improve service quality levels. It is claimed that the skill required in such customer contact positions of responsibility are grossly underpaid, hence the shortage in such civil service organizations.

5.10 Overall conclusion

Evidence suggests that the organisation has not adequately evolved from the cumbersome and inherent railway culture of the past. The assurance of their annual operating subsidy supplied by the state probably stifles innovation, competitiveness and service quality urgency. While there are many “positive” service quality indications, the overall standard and delivery of service quality does not meet commuter expectations.

The difference score gaps in the five quality dimensions have been identified, quantified and prioritized. These collective findings create the opportunity for Metrorail to improve their quality of service as perceived by commuters. To close these SERVQUAL *provider gaps*, Metrorail

would need to analyse both their current internal short-comings and the causes thereof, and align these shortcomings to the requirements of the four provider gap models discussed. Effective visionary and strategic leadership, adequate funding and discretionary effort will be the immediate prerequisites to resurrect the collective inputs required to improve the current level of service quality on the journey to meet commuter service quality expectations.

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APPENDICES

APPENDIX 1: Survey Questionnaire, page 1 of 2

METRORAIL EAST LONDON (MREL) TRAIN QUALITY SURVEY

Dear Loyal Metrorail Commuter, we hope you enjoyed your trip with us! To help us serve you better, please respond to the interviewers' questions. If you lose contact with your interviewer, please complete the questionnaire and return it to the 24 hour Security Control Room situated on Platform 1 at East London Station. Contact person and survey coordinator: Colin Bosch at 0832865386. Thank you.

SECTION 1: Demographic and Profile Information

1. Gender	Male	Female						
2. Type of MREL ticket holder	Single trip		Return		Weekly		Monthly	
3. Age	16 – 25	26 – 35	36 – 45	46 – 55	Older 56			
4. Social standing status	Full time scholars & students	No source of regular income (includes able and unemployed, retired).		Earns a regular average monthly income of up to R2,000.		Earns an average monthly income of between R2,001 and R10,000.		Earns an average monthly income of more than R10,001.
5. Preferred transport mode for work	Walk	Bicycle	Metrorail	Bus	Taxi	Own motor bike	Own motor car	

SECTION 2: Expected Service Quality

This survey deals with your opinions of overall COMMUTER RAIL SERVICES (CRS). Below is a list of statements describing EXPECTED services. On a scale of 1 to 7, with "1" being Strongly Disagree, and "7" being Strongly Agree, show the extent to which you think COMMUTER RAIL SERVICES should possess the attributes described by each statement.

Tangibles Statement		Strongly Disagree		Neutral			Strongly Agree	
		1	2	3	4	5	6	7
E1	All CRS physical assets should always look good.							
E2	Legal entry to all CRS stations / trains should be easy.							
E3	CRS should always have enough toilets.							
E4	CRS trains should always have enough seating for all.							
E5	CRS operational equipment should be of new and modern.							
E6	CRS should make provision for handicapped commuters.							
E7	CRS employees should always be well dressed.							
Reliability Statement								
E8	CRS trains should be on time every time.							
E9	CRS should provide their services as advertised.							
E10	CRS should provide alternative transport if their train service fails.							
E11	When CRS promise to do something by a certain time, they should do so.							
Responsiveness Statement								
E12	CRS staff should be expected to tell commuters exactly when services will be done.							
E13	CRS staff should be expected to provide prompt service when needed.							
E14	CRS staff must always be willing to help commuters.							
E15	It is okay if CRS staff are too busy to respond to commuter needs promptly.							
Assurance Statement								
E16	CRS should provide immediate train service information when services are delayed.							
E17	CRS staff should be polite.							
E18	CRS staff should be proficient (well trained).							
E19	CRS services should have a good Customer Complaints handling system.							
Empathy Statement								
E20	CRS firms should not be expected to give commuters individual attention.							
E21	CRS employees cannot be expected to give commuters personal attention.							
E22	CRS staff should be expected to care about the needs of their commuters.							

APPENDIX 2: Survey Questionnaire, page 2 of 2

SECTION 3: Perceived Service Quality

Below is a list of statements describing **PERCEPTIONS** of METRORAIL EAST LONDON (MREL) commuter rail services. On a scale of 1 to 7, with "1" being Strongly Disagree, and "7" being Strongly Agree, please show the extent to which you believe **METRORAIL EAST LONDON** has the feature described by the statement.

Tangibles Statement		Strongly Disagree		Neutral			Strongly Agree	
		1	2	3	4	5	6	7
P1	All MREL physical assets always look good.							
P2	Legal entry to all MREL stations / trains is easy.							
P3	MREL always have enough toilets.							
P4	MREL trains always have enough seating for all.							
P5	MREL operational equipment is new and modern.							
P6	MREL makes provision for handicapped commuters.							
P7	MREL employees are always well dressed.							
Reliability Statement								
P8	MREL trains are on time every time.							
P9	MREL provides their services as advertised.							
P10	MREL always provides alternative transport when their train service fails.							
P11	When MREL promise to do something by a certain time, they do so.							
Responsiveness Statement								
P12	MREL staff always tell commuters exactly when services will be done.							
P13	MREL staff always provide prompt service when needed.							
P14	MREL staff are always willing to help commuters.							
P15	MREL staff are always too busy to respond to commuter needs promptly.							
Assurance Statement								
P16	MREL always provide immediate train service information when services are delayed.							
P17	MREL staff are always polite.							
P18	MREL staff are always proficient (well trained).							
P19	MREL services have a good Customer Complaints handling system.							
Empathy Statement								
P20	MREL does not give commuters individual attention.							
P21	MREL staff do not give commuters personal attention.							
P22	MREL staff always care about the needs of their commuters.							

SECTION 4: Rank-order importance of each Service Quality dimension (commuter priorities).

For each of the five dimensions of Service Quality, indicate its level of importance to you by allocating a number value to it on a scale of 1 to 10. Please note that the combined sum total for the five dimensions must total 10 points. The concept is illustrated in the two examples shown in the table below.

Dimension	Example 1	Eq 2	Commuter
Tangibles: Physical facilities, equipment and appearance of personnel.	2	1.5	
Reliability: Involves the ability to perform the promised service dependably and accurately.	1	2	
Responsiveness: Willingness of staff to help commuters and provide prompt service.	4	1	
Assurance: Staff knowledge and courtesy, and their ability to inspire trust and confidence.	2	1.5	
Empathy: Involves caring and individualized attention the firm provides to commuters.	1	4	
Total	10	10	10

Other Comments:

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THANK YOU FOR YOUR PARTICIPATION IN THIS MREL TRAIN SERVICES SURVEY.

