



UNIVERSITY OF KWAZULU-NATAL

**ASSESSING THE REDEVELOPMENT OF THE SOUTH AFRICAN PASSENGER
TRANSPORT SYSTEM – THE PROPOSED GAUTRAIN PROJECT**

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(ii)

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(iii)

DECLARATION

I í declare that

- (i) The research reported in this dissertation/thesis, except where otherwise indicated, is my original research.
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Abstract

The Gauteng Province is introducing another railway system in South Africa. It is an 80-kilometre Mass Rapid Transit railway system. It is hoped to offer commuters an alternative public transport in addition to the current.

The study uses a quantitative approach where a questionnaire was distributed. A snowball sample of 156 people around Gauteng was used to:

- recognize the importance or value of outlining the possible impact on traffic during the redevelopment of the passenger railway systems;
- examine the perception of the sample size with regard to the proposed Gautrain;
- investigate whether respondents will use the train to work or to the airport;
- find out what respondents' expectations are on using the Gautrain;
- whether respondents think there will be an economic benefit to them;
- what respondents think about the time that they will save using the train;
- what respondents think about their safety in and around the trains.

According to respondents it is important for passengers to have efficient and reliable public transport. Respondents have confidence in the proposed Gautrain project. Most respondents agree that the community will benefit economically from the project and are positive that the Gautrain will improve the quality of life for the people in Gauteng. The majority of the respondents also agree that Gautrain will be a safe mode of transport to use.

This study focuses on the mass redevelopment of the South African passenger transport system which seeks to improve the sector.

It is therefore recommended that South African Transport be redeveloped by introducing alternative modes of transport like the proposed Gautrain.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

International transport trends are influencing the way in which South Africa operates its transport sector. Hence, the transport sector needs to be shaped so that it can favourably meet international standards. The poor performance of the transport system is imposing significant costs on business activity. Government, therefore, considers it important for the railway systems to be dealt with urgently. This research study is based on the mass rapid redevelopment of the South African Passenger Transport System with regard to the Gautrain project.

1.2 MOTIVATION FOR THE STUDY

There are few scholars who specialize in the study of passenger transport. This is a serious omission, given the importance of passenger transport in today's competitive global environment. This research aims to motivate and encourage scholars to take the study of the South African Passenger Transport System further so that the challenges faced by both commuters and the government can be overcome. Furthermore, the introduction of the imminent Gautrain has raised the need for a close analysis of the passenger transport system. This study acknowledges the challenges faced by the transport sector and makes recommendations on how to improve the sector. It also outlines the need for the Gautrain project for the benefit of commuters and prospective users.

1.3 FOCUS OF THE STUDY

This study focuses on the mass redevelopment of the South African Passenger Transport System which seeks to improve the sector. It, focuses on the challenges faced by the

and the introduction of the proposed Gautrain project. The Gautrain will be largely acceptable to most citizens in Gauteng and, most importantly, whether it will benefit the community it serves by having a positive economic impact.

The study also examines whether the Gautrain has environmental advantages over other forms of transport; whether it will enhance economic development; and whether it will assist in alleviating the severe traffic congestion. It also considers that, amongst the various attractive attributes of using a public transportation system, is the commuters' perception of their safety, as well as their sense of security, while making use of particular transport.

1.4 RESEARCH PROBLEM

Gauteng has been experiencing traffic congestion on the N1 highway alone that is currently estimated to cost more than R300 million per year. This includes production time lost during travelling time, high transport costs and above average accident rates. The traffic congestion also has a negative effect on the quality of life of commuters. Emissions from vehicles, furthermore, add to increased levels of pollution. In an effort to alleviate the problems on the roads between Johannesburg and Tshwane, the Gauteng Province is introducing another railway system, the Gautrain, to offer commuters an alternative form of public transport.

The problem researched in this study is the assessment of the mass rapid redevelopment of the South African Passenger Transport System in Gauteng.

1.5 RESEARCH AIM AND OBJECTIVES

This study uses a snowball sample to:

- recognize the importance of outlining the possible impact on traffic during the

railway systems;

with regard to the proposed Gautrain;

- investigate whether people will use the train to commute to work or to travel to the airport;
- find out what expectations people have about using the Gautrain;
- assess whether potential commuters think the Gautrain will benefit them economically;
- determine what possible passengers consider will be the time that will be saved by using the Gautrain;
- understand what needs people have regarding their safety in and around the trains.

1.6 HYPOTHESES

The questions asked in the questionnaire were investigative in nature and designed to obtain direct answers relating to issues contained in the research objectives outlined in Section 1.5.

1.6.1 Sampling

Snowball sampling was used in this study. The population of the research was the people in Gauteng and 156 respondents from the region were used as a sample. When comparing the objectives of the study and the analysis of the data, it is clear that people welcome the Gautrain project as they agreed with all the questions related to its development. Gautrain should, therefore, take into account the points where disagreement was raised and seek to implement recommendations for the overall passenger transport system, thus improving the sector accordingly. The points of concern raised relate to regularity, safety and efficiency of the South African Passenger Transport System.

The questionnaires were distributed personally, via email and by handing them out in the trains around Gauteng. A questionnaire was fully answered by the respondents.

1.6.3 Data analysis

The responses to the questionnaire were captured and analysed on SPSS (Statistical Package for Social Sciences) version 13. A questionnaire with 25 questions on a Likert Scale and 7 questions for demographic aspects was submitted to 156 people across Gauteng.

1.7 CONCLUSION

This chapter presented an overview of the research study and introduced the basic concepts of statistics used, as well as presenting details that enabled the analysis of the data which facilitated the development of the perspective that allowed effective interpretation. It is, however, essential with any dissertation that one identifies where the work fits in with previously published work.

Knowledge of previous studies and research provide a researcher with a clear background. The following chapter reviews the literature in relation to public transport challenges in general and the rapid rail link in particular.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews the relevant published material relating to public transport challenges and developments. The literature review which follows provided assistance in the understanding of previous research. This in turn assisted the researcher to analyse the current situation and evaluate it within the theoretical framework.

2.2 THE OVERALL PROBLEMS ENCOUNTERED BY PUBLIC TRANSPORT USERS

People have different reasons for using public transport, not the least of which is financial. According to Scrafton (2006) only existing public transport users take any notice of advertisements pointing out the financial savings derived from using public transport. There are incidental benefits, too, derived from using public transport, such as not having to cope with the paperwork associated with insurance, registration and accident reporting, while washing a car is a chore that some are happy to avoid (Scrafton 2006).

Haskins (2007) states that the governments, transport authorities, health professionals, environmental advocates and national and international organizations, have over the years indicated the benefits of public transport to the community. Users of public transport are not happy about some of the issues of public transport and these issues in turn discourage potential users. Efforts have been made to improve the public transport system for the better. The owners of the public transport system such as operators and the government are striving to improve the system by investing in financial resources to attract potential patronage and sustain existing ones.

...ly implementing the AusLink program. The AusLink ... the land transport infrastructure. The technical and institutional improvements all help the performance, image and attractiveness of public transport, and, when combined with relatively inexpensive fares, can bring quality of service (Scafton 2006).

Scafton (2006) further points out that, to some extent, the improvements result in increased patronage, which is measured in terms of numbers of users. With the improvement of the public transport system people use it even though they can afford to buy cars, and enjoy the convenience of the private car. Public transport still finds it difficult to attract more patronage because despite its attractive features, public transport is sluggish when it comes to promoting its services. Obviously, there are different standards from city to city, between the same modes in different cities, and between the same modes in the same city, but there are some unfavourable characteristics that can be found in most public transport systems. However, it has to be recognized that to overcome some of these problems requires the cooperation of organizations and parties other than public transport authorities.

Hensher (2000) makes it clear that there are aspects of public transport scheduling that are annoying. Timetabling of trips is one of those aspects which are standardized. Busses drivers work according to certain times so as not to get ahead of schedule, while at other times they are caught in traffic and struggle to keep to their scheduled times. Similarly, trains running during peak times crawl from signal to signal, and can be delayed by right-turning cars ahead of them. While this is not a simple problem to solve, such situations are not inviting to passengers. Another problem for public transport is that during the day and weekends it is usually very quite and therefore business becomes slow.

The public transport authorities are working on changing the time schedules to be more flexible to attract travellers from their cars. There is an increase in daytime off-peak services which requires the availability of public transport. The reliability of public transport is also very crucial for passengers. It is important for the drivers to be on

g at a bus stop in the rain or heat, or their train at the
le the driver reads the paper or has a smoke. The lack
of respect from some of the drivers spoils the good service. The driver does need a break,
but sometimes they relax even when the scheduled time for departure has already passed
and the driver knows the timetable will allow him to make up time (Scrafton 2006).

Hensher (2000) points out further that public transport is considered not to be considerate
of the needs of its users when they are planning. Real-time information systems are
increasingly becoming commonly used, but the users complain that when they are most
needed, such as on occasions when schedules are disrupted or services rerouted, the
systems are turned off. Hensher (2000) further points out that the exact time information
is needed most when trains and busses are not running on their schedules, but when
services run efficiently, it is not that crucial. Such electronic systems in busses and trains
are sometimes understood by regular passengers and may be problematic for a first-time
user to understand the message. This is a problem as the first-time public transport users
need to relax and not panic when travelling. The new users will relax and enjoy the trip if
the transport is user-friendly.

2.3 PUBLIC TRANSPORT ENVIRONMENT

The Transportation Research Board of the National Academies (2007) argues that violent
confrontations and hostage situations are common on transit systems throughout the
world. These confrontations include assaults and robberies within transit vehicles or at
transit facilities, which may result in casualties, property loss and damage, and hostage
taking. Easy access, remoteness of the vehicle and available civilians make transit
vehicles especially vulnerable to hostage situations.

The Transportation Research Board of the National Academies (2007) further points out
that the unruly or disruptive behaviour in public transport is worrying. The challenge for
the staff is that they have an obligation to protect the passengers when the culprits attack

difficult for staff to protect passengers if it is not only an group of unruly individuals may not be easy to deal with. Although police patrol in trains and stations is important, it can also make potential users to think that trains are not safe. Public transport also creates its own environmental problems by overcrowding their train coaches, creating conditions that are unbearable and an environment in which petty crime such as pick-pocketing can occur (The Transportation Research Board of the National Academies 2007).

On a broad scale, all the problems outlined are minor compared to the cultural pressure to own and operate a car. The last group of problems facing public transport is reflected in the unwillingness of governments and their authorities to acknowledge that such discouragements to transit use actually exist. Politicians, usually comfortable in government cars, are constantly informing the population about how wonderful public transport is, when those who use it know the realities to be faced when riding on trains and buses. This, in turn, leads to a lack of credibility, any official pronouncement about the latest proposal or development of the system is greeted with a big dose of scepticism (Scrafton 2006).

2.4 QUALITY PERCEPTION

Haigh (2006) argues that any increase in the use of public transport will be based on passengers' perceptions of value for money. The perception of passengers is that overcrowding in the trains is not worth what they pay for and therefore it makes them not to be attracted to the trains. Despite the fact that there is overcrowding, some passengers still prefer to use the trains rather than using their private cars. They avoid the responsibility that goes along with using your car, like the traffic congestion during peak hours.

and grow by promoting travel during off peak time. The is to increase demand at peak time into the hours before and after by lowering fares during this time (Haigh, 2006).

Claesson, Dahl and Lindh (1989) argue that there will always be competition between trains, cars and flights; and it will be even be higher in the future. If passenger trains want to keep their share of the market, one of the most important aspects that is required by passengers is the quality of a journey by train must be better than or at least equal to those journeys by car and by flying. Many investigations have been started to define problems and search for their solutions. One basic problem of quality is the punctuality of passenger trains. The punctuality can also be described in terms of availability of different operations resources.

2.5 SERVICE RELIABILITY

As Badcock (2006) reported, with the Netherlands Railways now expecting annual passenger growth of around 4%, the old timetable was at risk of being over-stretched by the demands being placed upon it. In rewriting the timetable, the railways concentrated on accommodating growth and improving train punctuality, in the hope that passengers will find the new schedules attractive as they offer frequent services, easy connections, attractive journey times and, above all, a reliable service.

Badcock (2006) further argued that although factors external to the rail industry, such as the level of economic activity and competition from other modes, are beyond its control, their fundamental importance to future revenue streams and strategic business planning has over many years yielded a large body of empirical evidence. This is no more evident than in Britain where there is a long tradition of research in this area.

Between the 1970 and 1990, the rail network in Britain has been roughly constant, because of the trends in rail demand due to external factors. However, the relationship

Domestic Product (GDP) growth has exceeded the
limited with limited growth in trunk road length and car
ownership and large increases in car costs, has caused very high levels of rail demand
growth (Wardman, 2004).

2.6 SERVICE LEVEL

Feilden, Wickens and Yates (1995) assessed the relationship between transport and the environment from the point of view of a challenge to arise. They did so particularly on the basis of their experience of land transport, where rail is often opposed to road. It is said that rail, unlike roads that create pollution and cause congestion, is cleaner, more efficient and safer. Apparently, people adapt more easily to the noise of a train than that of a lorry. Another common problem to the transport system is congestion, which you can not find in rail travel.

Feilden *et al* (1995) further pointed out that environmental concerns are becoming increasingly critical at many airports and the role of public transport is becoming more important. An effort should be made to bring about a strategy to win users of public transport to switch to trains and busses. According to them there are airports, like Switzerland, that has achieved rail links into the airport. In many airports this has been achieved by introducing rail links into the heart of the airport. Switzerland provides an outstanding example of fast and reliable rail links which are unaffected by road construction and traffic accidents. Furthermore, the price of rail travel is usually low when compared to taxi fares and long-term parking fees.

Feilden *et al.*, (1995: p.58) looked at some critically important criteria to be met if rail travel is to carry a significant number of airport users:

- There must be frequent services to and from city centres and other key hubs of activity.
- Fares must be competitive.

easy access to the air terminals from the airport rail

- There must be dedicated services between the airports and city centre stations.
- Baggage transfer services must be available, either from security controlled city centre check-in points, or by making provision for easy transfer of baggage between trains and airport check-in facilities.
- Ticketing agreements between airlines and rail operators should provide for a combination of rail and air tickets to ensure through-ticketing to ease the transfer between air and rail.

2.7 CUSTOMER SERVICE

Scott (2005) demonstrates that the more a train is modernized and refurbished to suit the needs of the customer as well as train operators, the more they will minimize risk, operational disruption, and costs associated. A better quality of life materially leads inevitably to higher aspirations among customers and greater discernment in the standards and comfort of the travelling environment. The automotive industry has already been upgrading existing popular models and launching new models designed to meet the latest customer needs and to be competitive.

Scots (2005) reiterates that the railway industry has always been slow in accepting this reality of modernization because its customer base is essentially loyal, compliant and accepting. It is well known that to most rail users when surveyed, will always point out punctuality as the key factor influencing satisfaction, and railway industry authorities are working on improving the service. However, when punctuality is achieved, passengers begin to focus on the travelling environment and amenities offered by the train itself. On services where punctuality is poor, an unattractive train will heighten the already low public perception of the service. This constant development in customer aspirations

for all industries, and some rail operators are now

Serio and Munafo (1989) pointed out that what is necessarily for comfortable travel, free from tiresome and unpleasant feelings are being able to sit without congestion, environmental quality, little or no stress at all, decent hygiene conditions and passenger care. Every rail traveller should have enough space to be able to be flexible according to environmental conditions. It is important for the individual to be comfortable while in transit.

Serio and Munafo (1989) stated that there are environmental factors in rail travel that can cause discomfort because of lack of proper amenities such as lack of light or an unbearable temperature, air flow and humidity. More disturbances come from the noise, vibrations, poor air quality, and uncomfortable seats. A proper working toilet in the train is one of the important aspects that a passenger can have. It can be one of the comforting elements in the train. In combining all the aspects that are of importance to the traveller can make rail travel to be a preferred commuter transport. That kind of environment can make them to be very comfortable and sometimes the traveller can sleep, read or write during the travel.

Serio and Munafo (1989) further pointed out that the risk of a railway accident is consequently much smaller than that of a car crash. There is a much higher risk of a fatal accident in a car crash on the road than on rails. Road vehicles take thousands of lives annually. Accidents are not popular in rail transport because of the way it was designed, making it to have technical rules which make it safer. The regular maintenance of the rolling stock and track equipment inspections and the continuous checks of efficiency contribute in making the railway safe. The block-section line system, allowing the passage of only one train each time, under signal protection, provides the highest margin of traffic safety.

ite to passenger hygiene just as the passengers expect. accumulation of bacteria and parasites that can harm travellers. The issues regarding safety, comfort and hygiene can, if properly presented under their organizational, environmental and prophylactic sides, contribute to customers remaining to use rail as a means of transport or prospective customers switching to rail. The environmental needs and the search for a better quality of life are increasingly pushing rail transport into a prominent role. Exploitation of these assets, when marketing the rail business, can represent an important promotional element in selling the train products (Serio and Munafo, 1989).

2.8 TECHNOLOGICAL CHANGES IN TRANSPORT MODES

Rietveld, Button and Nijkamp (2003) pointed out that transport demand has grown considerably during the past century. The evidence of the increase in demand is a consequence of factors such as the increase in population size and in income. On the supply side, the change in technology has led to the introduction of new transport modes and the development of existing modes. Serious problems can be experienced in urban transport. These problems led to the research of urban transport demand. The interest in urban transportation research has been the choice of transport mode and what determines the choice. Commuting has especially attracted much attention in research because of the problem of congestion.

Rietveld, Button and Nijkamp (2003) further pointed out that the way urban areas are densely populated there usually is a problem of shortage of space, therefore competing for space is very tough. When there is high demand the cost of infrastructure becomes high. Therefore, congestion has received much attention in the literature on urban transport. The efficiency and equity aspects of congestion pricing have formed a fascinating field of research during the former practice in this field. However, more recently, the number of real-world applications of congestion pricing is increasing, so that research in this field will be closer to political realities.

ities relates to air pollution, noise and safety. The past decades have shown that with consistent policies it is possible to arrive at substantial decreases of transport externalities. These improvements have mainly been achieved by improvements of infrastructure and vehicle technology, but the opportunities of improvement have not yet been fully exhausted (Rietveld *et al* 2003).

Prentice and Ojah (2001) focused on the Intelligent Transport Systems (ITS), which utilize diverse technologies to enhance the efficiency and safety of transportation activities, which are a key component of the technological revolution taking place in modern transportation. These technologies can reduce costs for governments and. The technologies can reduce the problems of congestion and improve traffic safety. These developments can improve the infrastructure, safe time and reduce environmental pollution.

Pedroncelli (2009) asserts that the Gautrain minimum repeated time between Johannesburg and Tshwane will initially be six trains per hour per direction and it will operate approximately 18 hours per day. This public transport service will have special bus services to transport passengers to and from stations.

2.9 CONGESTION PROBLEMS

Sampson *et al* (1990) pointed out that there are two broad sets of sociological problems that arise out of transportation. These are the multiple effects of congestion and the effects on the quality of life. The environment can affect people. It can affect the people with polluted related health problems. Passenger transportation with its variability factor, supremacy of air transportation, and reliance on the private automobile is a particular contributor to both of these problems.

Sampson *et al* (1990) listed three generally recognized types of congestion arising from passenger transportation; street, highway, and airway congestion. The existence of peak

ing to and from work is an example of what creates

Challenges of the Public Transport (2007) outlined the challenges faced by public transport such as the lack of capacity building. Public transport does not have enough resources to build capacity. Examples of such problems are financial resources, too many employees, inefficiency and the old management styles that they still use. The resistance of employees and managers to change exacerbate the problems already encountered. The rail travellers themselves perceive trains as uncomfortable, unreliable and unfriendly. The old rolling stock and dilapidated stations are easy to notice. Public transport systems are compelled to transform in order to avoid failure.

The report further stated that public transport needs a radical change of their ways, even if it means teaching the first about change management. They are now compelled to implement the cost strategy while quality of service should not be compromised. Transport authorities worry about innovation in the public transport system as it puts pressure on them to satisfy the customer according to technological advancement.

In Sustainable Transportation (1996) it is argued that the United State of America's motor vehicle highway system has problems which affect the communities. Efforts which were made to provide a solution to the sustainability of the system seem to be ineffective. Its aims included the promotion of social development, the cost of doing business, and sustainable economic growth. It nevertheless created the problems such as congestion, road fatalities and air pollution.

Hensher (2000) stated that while public transport is here to stay, what is uncertain is its future role and its ability to be more responsive to the needs of the markets of the future in contrast to the past. We might say that public transport has not done a very good job in securing its future and has relied too much on government support to get to where it is today. The winds of change centred on institutional reform and cost efficiency have revealed many of the weaknesses of the arrangements of the past and have resulted in some changes that show potential in the long run; patience is, however needed since the

There are opportunities that exist to position public in niche markets. This is where its future lies. A continuing challenge is to protect existing market share and grow new market share.

Public transport is regarded as a service sector. It is important to point out that users or passengers take part in the production process in the public transport system. (Costa 1997 as cited in Ongkittitil & Geerling 2006) concludes that this process consists of two main functions: the production of the service and its utilization. These functions are performed by different agents: the producers of the service are the operators and the users are a subset of potential passengers. Innovations have contributed to the growth in a number of service firms in the service sector and in the scale of their operations, which in turn has increased their economic benefits (AA & Elfring 2002 as cited in Ongkittitil & Geerling 2006). Innovations provide opportunities to increase the efficiency and quality of the service delivery process.

However, relatively few studies have focused on innovations in services. Innovative developments in service industries seem to be difficult to explain in terms of traditional innovation theories and typologies. The main emphasis of innovation research is on new products and production processes, especially in manufacturing. For example, the product and process innovations do not necessarily provide any deeper understanding of the factors responsible for the successful development of service innovations. Furthermore, although it is known that a service firm may innovate more or less in the same way as do industrial firms, (Sundbo *et al* 1998 as cited in Ongkittitil & Geerling 2006) emphasises that innovations seem to be much less technologically driven as most of them are organizational or social in nature.

Further research is needed to apply the theory of innovation to public transport sector in greater detail. Both technological and organizational innovations are important for public transport service development.

3); the Department of Transport has been highlighted transport systems which are already in place during the apartheid era. According to the article, it is estimated that as many as 13% of all South Africans do not have access to or cannot afford existing public transport services. Over the medium-term, the current practice of paying subsidies to buses and commuter rail services in exclusion of the transport industry will be redesigned towards a public transport subsidy scheme driven by socio-economic factors for targeted commuters. The article further pointed out that commuter rail tragedies in the past years have led the government to establish a Rail Safety Regulator in South Africa. A dedicated police unit has been established to deal with crime and ensure safety at railway stations, harbours, airports, and bus and taxi terminals.

Cambridge Systematics (2008) shows the link between transportation investment and economic growth. Transportation, just like land, labour, technology and capital, is a key component of production and economic activity. By investing in transportation, whether by way of increasing capacity or improving service, reduces travel time, lowers the cost of the trip and improves travel time reliability. These improvements turn into greater productivity and better access to labour and markets, making industries more competitive and enabling economic growth. Both individuals and businesses benefit from them.

Cambridge Systematics (2008) further comments that a strong transport network reduces costs of production and distribution. It does so by simplifying mobility; giving the manufacturing, retail and services sectors options as well as give specialized and productive sources of labour and ensuring a broad customer base. The benefits will be enjoyed both at home and globally.

“Offering Transport Choice in South Africa” (2007) stated that Gauteng is the main contributor to South Africa’s economy, accounting for 33% of South Africa’s Gross Domestic Product (GDP) and for about 10% of Africa’s GDP. It is the one of the largest economies in Africa. There are currently 6 million passenger trips per day in Gauteng. Out of the passenger trips, 80% are road-based and 20% is air-based.

A strong transport network gives households access to a broader range of higher-paying jobs, as well as a wider selection of health and humane services. Well-maintained roads can reduce personal vehicle repair costs, while efficient public transport networks reduce costs associated with driving and automobile ownership.

The benefits of investing in transportation are not limited to the microeconomic level, that is, the level of firms and households. Transportation spending, by energizing city centres, benefits local, regional and state economies as well. It breaks the isolation of rural areas and boosts employment.

The "Demographic Report for Egoli 2010 & Joburg 2030" (City of Joburg, 2000) outlined that Johannesburg, Ekurhuleni and Tshwane are seeing strong growth, at between 3.3% and 4.1% per annum. Other cities such as Durban and Cape Town are more stable. They are growing, but not much faster than the natural national population growth rate of about 2% per annum. Johannesburg, Ekurhuleni, Tshwane showed the fastest population growth and also the largest increase in employed people, between 1996 and 2001. Even though employment was at low wages, it grew as rapidly as the population.

DuToit and Craigie (2008) stated that the OR Tambo International Airport (ORTIA) in Johannesburg is recognised as the gateway into and out of South Africa. As the largest airport in the region, the ORTIA is able to handle significant daily volumes of passengers, luggage, cargo and mail (traffic) with approximately seven million passengers passing through the airport annually. The total volume of passenger luggage, cargo and mail entering and leaving the country through the airport is overwhelming, within the region of one hundred and fifty million items entering through the cargo section alone on an annual basis. In addition, ORTIA generates employment for over 50 000 people, while more than 100 companies operate from the airport. The airport precinct

stic travel malls, world-class conference venues and Bureau. All of this ensures that ORTIA plays a significant role in the regional economy (O.R. Tambo International Airport).

2.11 IMPROVEMENT PLANNING FOR PUBLIC TRANSPORT

The Urban Land Institute (2007) stated that the country's economic growth, productivity and the acceptable quality of life of the people can be achieved through the continuous development and management of infrastructure. Those infrastructural developments and improvements can create an informed workforce and assist in lowering the existing higher rate of crime, thereby benefiting the business community. It can create the smooth movement of people to and from their jobs, move deliveries on time without any delays that impact on business; and therefore impacting on the economy. The movement globally through ports and airports smoothly also contribute in increasing profits. On the other hand the problem of congestion poses a threat to the smooth flow of products that has to be attained.

The nation's infrastructure development plays a very important role in its economy. Vigorous commerce and the daily activities of the nation require reliable means of transport. Not only passengers require reliable transport to their destinations, but merchandise from producers to consumers need to be delivered as and when needed (Congressional Budget Office, 2007).

In the Massachusetts Institute for a New Commonwealth: Research, Journalism, Civil Life (2006) it is pointed out that the safety and efficiency of public transport has become one of the important aspects of economic growth in the urban areas because of the increase in congestion which impacts on traffic flow. The use of public transport by millions of people forces the authorities to advance the transport system. The challenge though is the budget constraints associated with the advancement as well as the regulatory compliance for increased safety measures and traditional IT networks that are outdated and therefore can not meet the modern world.

that it is of vital importance for transport authorities to efficiency by concentrating on issues of communication and safety in an around public transport, as well as to be revenue driven. The authorities have realised the importance of technology in improving security, maintenance and reliability of the transport system. This is essential to economic growth, environmental quality, and social development.

Enough has not been made to radically invest financially in the infrastructural turnaround strategies to build capacity. There is a need to transform the old program structures to the modernized ones to suit today's ever changing urban lifestyle (Kirby 2008).

Igoli 2010 (2004) argued that the lack of infrastructural developments to support transport, route organization as well as an increase in traffic congestion between 1996 and 1999 indicate the weaknesses of the current transport system which the 2010 strategy is to focus on. It was realised that the city of Johannesburg will continue to have problems in trying to build its way out of congestion. It was decided that, rather than using resources to add road space, the resources should be invested in a decent public transport system.

IGoli 2010 (2004) also refers to the need to consider establishing a transport authority as allowed for in legislation, which would enable Johannesburg to undertake the full integrated planning and management function of public transport in the city, including the management of procuring subsidized services currently funded and procured through national and provincial government. In the short term the city needs to get the basics right and build the ingredients for action into its new roles. In the medium to long term, the city can increasingly begin to be an catalyst for human development and economic growth, acting as an agent for redistribution and as a facilitator of growth, but at all times ensuring that it is focused on its core responsibility: to provide the infrastructure and services efficiently and effectively.

The Intelligent Transport Society (ITS) South Africa South Africa has changed over the past three years, there is a shift in the country from ignoring the problems to actively addressing them. For example, the Gautrain rapid-rail-link is more than a year into construction, and both Johannesburg and Tshwane are planning bus rapid-transit systems. Transport will be one of the key factors when judging the success of the 2010 FIFA World Cup and municipalities will play a leading role in delivering this requirement. It is further pointed out that, of all the challenges for the FIFA World Cup 2010, upgrading public transport is by far the biggest. Local and international cost of trade is relatively affected by the transport sector. An efficient, effective and low cost transport system will create increase trade competition and therefore improve the quality of life of South Africans.

Commuter rail is the essential mode of public transport for many South Africans. It mainly serves people at lower income levels because of its affordability. According to the SA Rail Commuter Corporation (SARCC) Annual report for 2003, over two million passengers use commuter rail services to from work daily. The aim of the government is to make commuter rail the preferred mode of public transport, through the provision of a pleasant rail-commuting environment. There are, however, a number of challenges faced by the sector.

These include;

- (i) The ageing rolling stock, which affects the reliability of the service.
 - (ii) Fare evasions and vandalism of rail assets, which increases management costs. For instance, over 30 coaches were burnt in various staging yards during 2002/2003 (SARCC Annual report of 2003). This puts strain on the availability of coaches and on insurance premiums
 - (iii) Safety and security, including accidents.
- (Transport Service Sector 2008)

g system or e-ticketing in the Gautrain project is an area of best practice used in the rail link project. The aim of the Gautrain rapid rail link is not to solve all the problems associated with the local transport industry, but the problem it has been tasked to solve is to be accomplished (Haskins 2007).

2.12 TRANSPORT ECONOMIC PERSPECTIVE

Pretoria News (05 Jun 2009, p.5) reports on the South African Roads Agency believes that from an economic perspective, the implementation of Gautrain will lead to lower transport costs in the corridor between Tshwane and Johannesburg, with considerable savings in the travel time of travellers in this corridor. The project will, in addition, bring the Gauteng province in line with other commercial, financial and hi-tech areas elsewhere in the world, in comparable countries, with which South Africa needs to compete internationally. It is considered as acceptable by most interested and affected parties and it also meets vital goals of the South African government. Indicators are thus positive that the applicable powers and institutional structures required are adequate.

2.13 BENEFITS TO CITIZENS

The Gauteng Provincial Government feasibility study indicates that approximately 20% of the relevant current private vehicle travellers could be attracted to use the Gautrain Rapid Rail Link. This will benefit the other vehicle travellers, as lower road congestion levels will exist as a result of Gautrain. This highly visible project will benefit citizens from all three metropolitan municipalities in Gauteng, namely, Johannesburg, Tshwane and Ekurhuleni. Benefits to citizens will include job creation, poverty alleviation and a better public transport system (Transport in South Africa, 2009).

Pringle (2009) addresses the key theme of the conference, noting that the lack of transport, as well as congestion on South Africa's roads, impacts on the environment and on society, thereby necessitates implementation of the improved public transport systems.

and 200 000 vehicles drive on the Gauteng freeway
growth is at between 5% and 6% each year.

The Gauteng Spatial Development Initiatives, including the Gautrain, are aimed at stimulating development in specific areas of the province with a high potential for economic growth, thereby creating employment opportunities (Bohlweki Environmental, 2007).

In the report 'Gautrain for the People on the Move' outlines stations for the Gautrain. The three anchor stations will be located at OR Tambo International Airport, Tshwane and Johannesburg. The seven other stations will be located at Rosebank, Sandton, Marlboro, Midrand, Centurion, Hatfield and Rhodesfield (Kempton Park).

2.14 GAUTRAIN SAFETY PLAN

Ndlovu (2009) said that commuters travelling on long-distance trains have been assured of safer journeys with the launch of mobile railway police stations and that the new integrated ticketing system on public transport will commence in 2010.

2.15 GAUTRAIN SECURITY PLAN

Security is an extremely important aspect of the project. The success of the project and set-up of the trains depends on the ability to create a safe and secure environment and prevent crime.

One of the most important initiatives in the process to ensure security of the Gautrain service is to deter crime. The following are some of the measures that Gautrain Rapid Link (2005, p.1) outlined what should be implemented:

will be used. This means that access can only be
as and trains with a valid ticket;

- The design of the stations will take security into account and all areas will be properly lighted. The design of the trains is such that there are no hiding places for criminals and passengers will have an open view of the whole inside of the train;
- The entire Gautrain rail reserve will be secured with appropriate fencing, with access only at predetermined places. Any unauthorised entry into the rail reserve will trigger alarms that will activate a security response service;
- Closed Circuit TV (CCTV) equipment, including many hundreds of CCTV cameras, will be utilised within the Gautrain Rail system to continuously monitor situations in order for security staff to be able to take immediate action when required. Images from the CCTV equipment will be recorded and stored. Knowledge that criminal activity is observed and recorded is a deterrent to criminals;
- Visible policing will be provided at all stations. Gautrain security guards will have a close working relation with the Metro Police and SAPS;
- Identification of problem areas. Spatial statistics about occurrence of crime within the Gautrain system and surrounding areas will be kept. Action will be taken to address the identified problem areas;
- A newsletter will be published by the rail operator which will report on activities regarding security, including stories of successes that were achieved in the deterring and preventing of any criminal activities, and in successful prosecutions.
- Monitoring of movement detection equipment will be effected. Movement within the corridor should always attract a response from the security response guards.
- Identification of suspicious activities. Regular patrols by the policing unit will identify suspicious activities and remove threatening activities before a crime is committed.

Gautrain provides several construction related learnership programs for women who have been previously unemployed. The first intake is currently completing their theoretical training in the classroom. By offering previously unemployed women the opportunity to complete learnership programs, Gautrain is meeting its Socio-Economic Development targets. Traditionally, not many women were employed in the Construction SETA and the Mining Qualifications Authority SETA.

2.17 CONCLUSION

This literature review highlights that the integration and efficiency of a rail transport system is the key to attaining comparative advantage over other transport systems. The components of the transport system in South Africa exist as individual entities that tend to function in isolation and are predominantly driven by single modal application. There is an absence of co-operation between the different modes of transport, such as an agency like a public-private partnership organisation responsible for integration. This can result in the rail industry benefiting from very limited infrastructure development.

Users of public transport are not happy about some of the issues of public transport and these issues in turn discourage potential users. Efforts have been made to improve the public transport system for the better. With the improvement of the public transport system people use it, even though they can afford to buy cars and enjoy the convenience of the private car. Any increase in the use of public transport will be based on passengers' perceptions of value for money. The perception of passengers is that overcrowding in the trains is not worth what they pay for, which in turn discourages them to be attracted to the trains. Despite the fact that there is overcrowding, some passengers still prefer to use the trains rather than using their private cars.

that are required by passengers is that the quality of a journey by rail should be as good as or at least equal to those journeys by car and by flight. Serious problems experienced in urban transport led to the research of urban transport demand. Commuting has especially attracted much attention in research because of the problem of congestion. Rail, unlike roads that create pollution and cause congestion, is cleaner, more efficient and safer. There is a much higher risk of a fatal accident in a car crash on the road than on rails.

The developed economies in Europe utilise integrated multimodal solutions which results in major benefits in service improvement and cost reductions for the people. Efforts under the guidance of the South African Roads Agency have been made to provide an effective transport network. Many intelligent technological solutions that are being promoted will be implemented as part of Gautrain.

Chapter 3 relates to the research methodology used in the research study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This research study has, thus far, explained what is to be researched and indicated what is necessary to know about the topic. Mention has been made of the importance of Passenger Transport System research and the practical considerations which need to be borne in mind. In research, care also needs to be taken, not only in choosing a topic to study, but also in deciding how to study it. This chapter investigates the methodology and the choice of suitable techniques to be used.

3.2 RESEARCH APPROACH

When a researcher needs to decide on which type of research approach to use, the following should be taken into account:

- The type of research questions.
- The control of the researcher on behavioural events.
- The focus on a current as opposed to historical phenomenon.
- What information is needed.
- How this can be obtained.

Pervez & Kjell (2002) identified the following research designs that can be used, namely: exploratory, descriptive and causal research.

a Exploratory research

Exploratory research is normally applicable when a problem is badly understood or unstructured. Exploratory research seeks new insight meant to give the researcher a clearer understanding of why something happened. When conducting exploratory

ed to observe, gather information and construct an

Cox (2003) explains exploratory data analysis, implying that this group of techniques is concerned only with describing data, whereas it is also useful for summarising and presenting the data in tables, charts, graphs and other diagrammatic forms. This enables patterns and relationships which are not apparent in the raw data to be discerned. He further explains that in exploratory data analysis, techniques are applied to data as part of a preliminary analysis or even a full analysis, if great statistical rigour is not required or the data does not justify it. They present four main groups of techniques which can be used for:

- Presenting frequencies
 - Measuring location (central tendency)
 - Measuring dispersion (spread)
 - Measuring changeö (Cox, pp. 439-440).

b Descriptive research

Descriptive research is research which describes phenomena as they exist. It is used to identify and obtain information on the characteristics of a particular problem or issue. The data collected is often quantitative and statistical techniques are usually used to summarise the information. Descriptive research goes further in examining a problem than exploratory research, since it is undertaken to ascertain and describe the characteristics of the pertinent issues (Collis & Hussey, 2003).

c Causal research

In causal research, the problems under scrutiny are structured as well. However, in contrast to the case in descriptive research, the researcher is also confronted with cause(s)-and-effect problems. The main tasks in such research are to isolate causes and

tent -cause(s)ø result(s) in effect(s) (Pervez & Kjell,

The research problem and the objective of the research decide which research method will be used. Two research methodologies can generally be used namely, qualitative research or quantitative research. Miles (1979) (as cited by Ghauri & Gronhaug, 2002) argues that qualitative data are attractive for reasons such as they are rich, full, earthly, holistic, real; their face validity seems unimpeachable; they preserve chronological flow where that is important; they suffer minimally from retrospective distortion; and they offer a far more precise way to assess causality in organizational affairs than arcane efforts like cross-lagged correlations. In qualitative research, the researcher attempts to understand people in terms of their individual character.

Ghauri & Gronhaug (2002) point out that one argument for using quantitative data is that quite often researchers collect individual data and aggregate it to analyse organizations. To separate predetermined elements, predetermined instruments are used and the results are analysed quantitatively. In this manner, only a limited reality can be found because predetermined instruments may not suit the particular situation, and also because these methods cut reality into discrete pieces which are then combined into statistical clusters.

3.2.1 The Research Design

÷The research design is the overall plan for relating the conceptual research problem to relevant and practical empirical researchö (Pervez & Kjell, 2002, p. 47).

The research design addresses the research problem in the best possible way, effectively producing the information needed, even if there are constraints placed on the researcher.

public transport, it appears that there is a relationship between the new rapid railway system and other road users, that people are willing to use public transport for different reasons. The hypothesis has been developed that states that the proposed Gauteng project is more likely to be well received by most of the people, even the middle and upper class group. To test this hypothesis, a survey research will be employed. This deductive approach dictates that the researcher should be independent of what is being observed. This research, therefore, involves only the collection of absence data. Survey questionnaire were used for this research.

The target population for the research will be 156 people in Gauteng Province. The three metropolitans, Johannesburg, Tshwane and Ekurhuleni, were used in the study. The questionnaire was distributed randomly to people around Gauteng who use private cars as a means of transport, as well as to those who use public transport. Data were captured and analysed on an Excel spreadsheet. Since this is a pioneering mass transit project, South African research is hard to come by and this area of research was based mainly on experiences from the developed world.

There are different research strategies to be used. Some of these clearly belong to the deductive tradition, others to the inductive approach. However, allocating strategies to one tradition or the other is often unduly simplistic. What matters is not the label that is attached to a particular strategy, but whether it is appropriate for the particular research questions and objectives. It is also emphasised that these strategies should not be thought of as being mutually exclusive. The strategies (Saunders, Lewis & Thornhill, 2003, p. 91) that are considered are:

- Experiment,
- Survey,
- Case study,
- Grounded theory,
- Ethnography,
- Action research,

ordinal studies,
and explanatory studies.

3.2.2 The Survey Strategy

The survey strategy is usually associated with the deductive approach. It is a popular and common strategy in business and management research. Surveys are popular because they allow the collection of a large amount of data from a sizeable population in a highly economical way. Often obtained by using a questionnaire, these data are standardised, allowing easy comparison. In addition, the survey strategy is perceived as authoritative by people in general. This is because the survey strategy is easily understood. (Saunders *et al*, 2003). Using a survey strategy should give the researcher more control over the research process. However, the data collected by the survey strategy may not be as wide-ranging as those collected by other research strategies. There is a limit to the number of questions that any questionnaire can contain if the goodwill of the respondent is not to be presumed on too much.

Recent developments in interviewing methods, however, have now made conducting conjoint analyses feasible both through the mail (with both pencil-and-paper questionnaire and computer-based surveys) and by telephone (Hair, Anderson, Tatham and Black, 1998).

The study, therefore, was conducted in a quantitative paradigm. Data was obtained by means of a questionnaire. A questionnaire generates data in a very systematic and ordered fashion. The responses to the questions are quantified, categorized and subjected to statistical analysis.

Saunders *et al* (2003) explains the objective of the design methodology as to identify the data needed to be collected to test a hypothesis. They highlight the two methodologies that can be used research which are qualitative research and quantitative research. They describe quantitative research as an objective way of studying issues, unlike qualitative research which view research as subjective in nature. Qualitative research assumes that it is usually not easy for researchers to take part in the process and still be objective. This type of research is sometimes called relativist or phenomenalist.

Quantitative research is scientific in approach and is referred to positivist. It aims to be objective and collects and uses numerical data. If this research is used, the results are given numerical values and the researcher uses a mathematical and statistical treatment to help evaluate the results. This type of approach is often used by scientists in experiments use this approach. In surveys, questionnaires and interviews are used and responses are given numerical values, therefore would also be described as quantitative research (Saunders *et al*, 2003).

In a quantitative approach, data is collected and numerical data is used. Statistical tests are also applied in this approach. It is objective in nature and concentrates on measuring phenomena, therefore, making some researchers to prefer quantitative research, as opposed to qualitative research. However, there are researchers who are fans to qualitative research, which is subjective in nature and examines and reflect on the perceptions in order to understand social and human activities (Collis & Hussey, 2003).

In this study, a questionnaire was used to carry out the research and responses were given numerical values. The methodology that best suits this research is quantitative. The questionnaire used is found in Appendix one.

In a sample survey, the researcher decides on certain properties to measure and record unit coming from the sample. There are different types of sampling methods to use in a research. Methods recognised in (Sampling Methods, 2009, p.1) are:

- Random Sampling;
- Systematic Sampling;
- Stratified Sampling;
- Convenience Sampling;
- Judgment Sampling;
- Quota Sampling;
- Snowball Sampling.

Snowball sampling was used in this study. Sampling Methods (2009) refers to snowball sampling as special and often used when the sample needed for a research is not easy to locate. To locate prospective respondents in a particular research can be difficult and cumbersome, not forgetting the cost that is associated with the process. In snowball sampling, the researcher finds few respondents and then uses them to get more respondents. It is however important for the researcher to know that the technique can be bias.

The population of the research was the people in Gauteng and 156 respondents from the region were used as a sample.

3.3 Generalisability and Validity

Levine, Ramsey & Smidt (2001) pointed out the importance of being consistent and being able to predict in today's high technology world. In order to interact with people as well as objects, consistency and predictability is vital for the purposes of normality. Research has shown that consumers value consistency in products and services and associate dependability and reliability with quality.

The philosophy and work of W. Edwards Deming, one of the global quality movement are based on the principles that the global quality movement are aligned with reducing varying leads for quality, which in turn bring about increase in productivity.

Maxwell (1992) asserts that the degree to which an account is believed to be generalisable is a factor that clearly distinguishes qualitative and quantitative research approaches. Although a lot of qualitative researchers do not recognise the ability to generalise findings to wider groups and circumstances, it is one of the widely used tests of validity for quantitative research. Qualitative research almost exclusively limits itself to internal generalisation and external generalisation, if indeed it seeks to claim any form of generalisability at all. Quantitative research, on the other hand, attempts to deal with both internal and external generalisations, referring to these as 'internal validity' and 'external validity' respectively.

Hammersley (1987) talked about how the length of a large object can be measured in terms of metres, centimetres or millimetres. In that order, these scales represent an increasing degree of precision, but this is independent of the accuracy of the measurement. A score may be very precise but highly inaccurate. The precision of the measurement will depend on the purposes. In most times one is tempted to be more precise than the level of validity with which an object is being measured, when it is more difficult to achieve higher levels of validity.

3.4 CONCLUSION

It can be extremely difficult for the researcher to locate prospective respondents in a research. It can be also very costly and cumbersome. In this study, different types of research approaches were evaluated, taking into consideration the kind of research questions and the type of information needed. Snowball sampling was used in this study.



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er finds few respondents and then uses them to get
important for the researcher to know that the technique
can be bias. The importance of being consistent and being able to predict in today's high
technology world.

The research findings follow in Chapter 4. The chapter focuses on the analysis and
outcomes from the structured questionnaire in Appendix one.

CHAPTER 4

RESEARCH FINDINGS

4.1 INTRODUCTION

The purpose of the questionnaire was to obtain an understanding of the constraints encountered in the use of passenger transport in South Africa and its impact on the ability of Gauteng Province to render a cost effective and efficient service. The questions were designed in such a way that they would probe the respondents' opinions and evaluation of the stated problems experienced in the use of public transport. The responses from the questionnaire would provide adequate information to fulfil the objectives of the study: to provide information regarding the redevelopment of the South African Passenger Transport and to identify whether the people in Gauteng will support the Gautrain.

This chapter focuses on the analysis of and outcomes from the questionnaire. The analysis took the form of a summary that was prepared for each question. A table was prepared for each question reflecting the five categories on the Likert scale, the percentage obtained for each category and the average score for each question. The average score indicates the extent to which agreement, disagreement or neutrality prevailed for a particular question.

4.2 ANALYSIS OF FINDINGS

The questions were purposefully designed to provide a critical review of the services provided by the South African Passenger Transport System. The criticism levelled at rail transport service, with particular reference to identifying whether Gautrain will be supported by the people in Gauteng, was central to the study.

A questionnaire of 25 questions on the Likert scale (Ordinal scale) and 7 questions for demographic aspects was submitted to 156 people across Gauteng province.

The data was analysed on SPSS (Statistical Package for

The objectives of this project are to:

- recognize the importance or value of identifying the possible impact of the quality of life of the people during the redevelopment of the passenger railway systems;
- examine the perceptions of people regarding the proposed Gautrain;
- investigate whether people will use the train to work or to the airport;
- find out what people's expectations are about using the Gautrain;
- investigate whether the people of Gauteng think they will benefit economically;
- investigate whether potential passengers think that they will save time by using the Gautrain;
- investigate what potential passengers think about their safety in and around the trains.

To uncover these objectives from the data, frequency tables and descriptive statistics of the questions are provided and some cross tabulations are given.

In addition, the data test whether age group, income and residential area affect the assessment of the respondents. This is done using Analysis of Variance (ANOVA).

First, the pie charts of the demographics of the respondents are presented so that the distribution of the respondents in each of their categories is clearly understood.

4.2.1. Demographic Aspects

In this section, we present the percentage distributions of all the demographic aspects of the respondents. Figure 1 shows the age groups; Figure 2, their genders; Figure 3, their marital status; Figure 4, their qualifications; Figure 5, their business status; Figure 6, their income categories and Figure 7, their areas of residence in Gauteng.

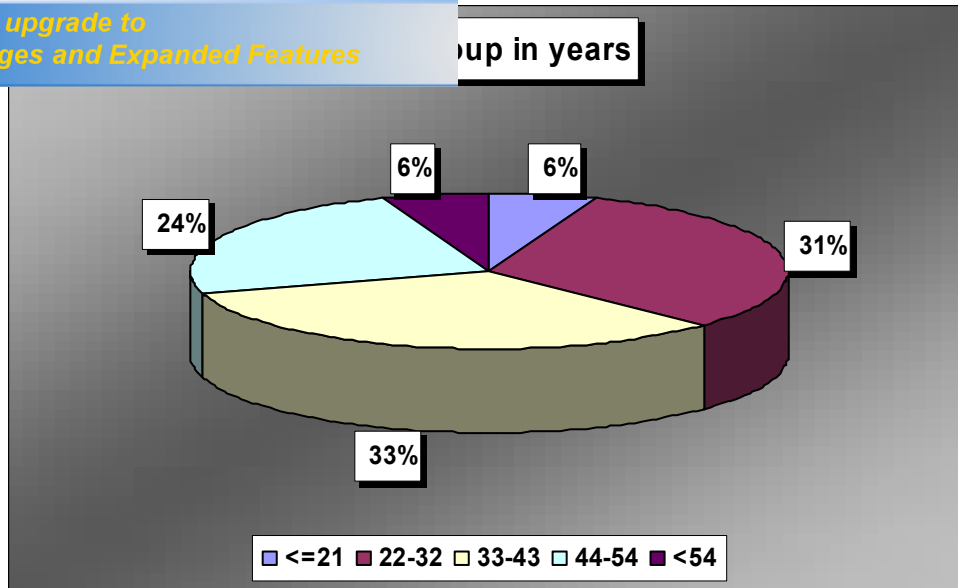


Figure 1: Distribution of Age Groups of the Respondents

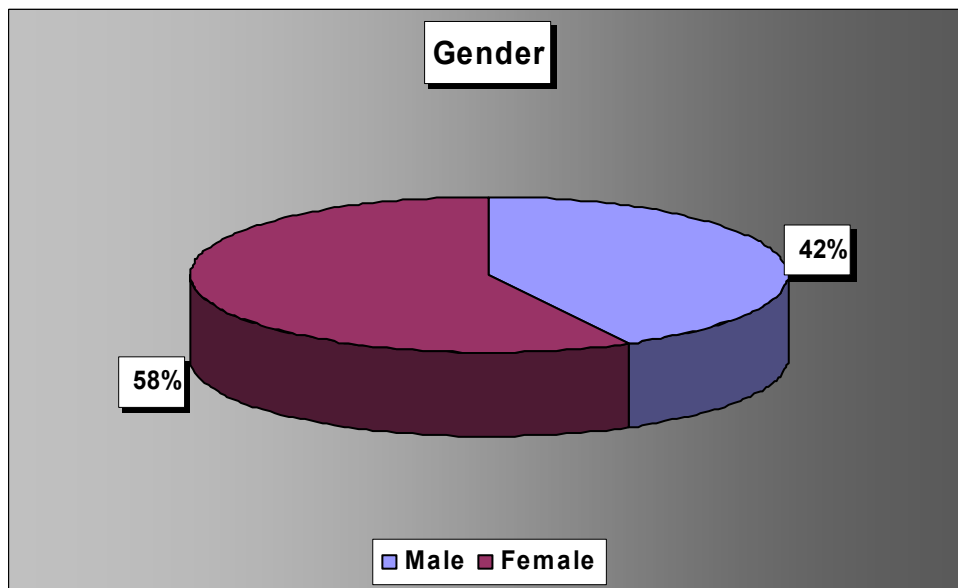


Figure 2: Distribution of Gender of the Respondents

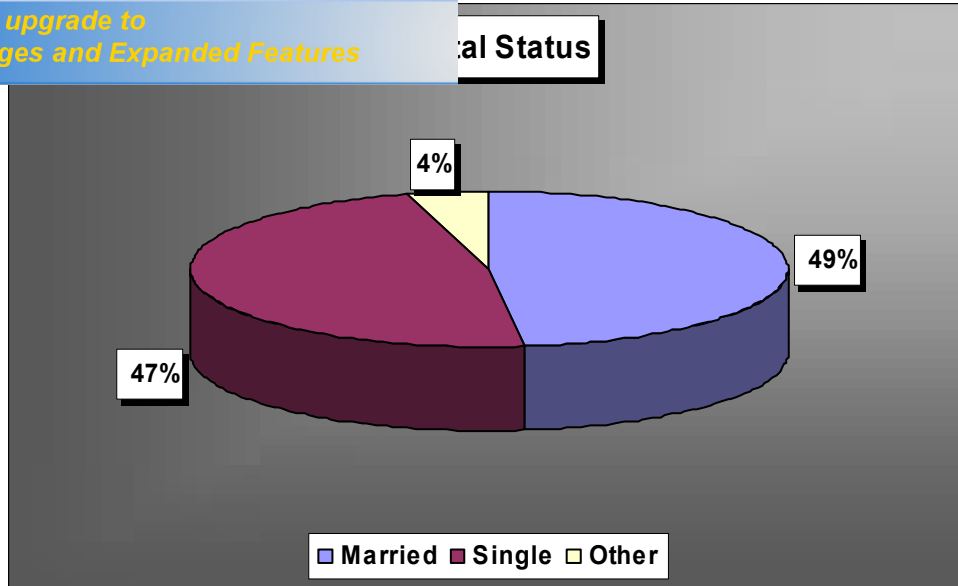


Figure 3: Distribution of Marital Status of the Respondents

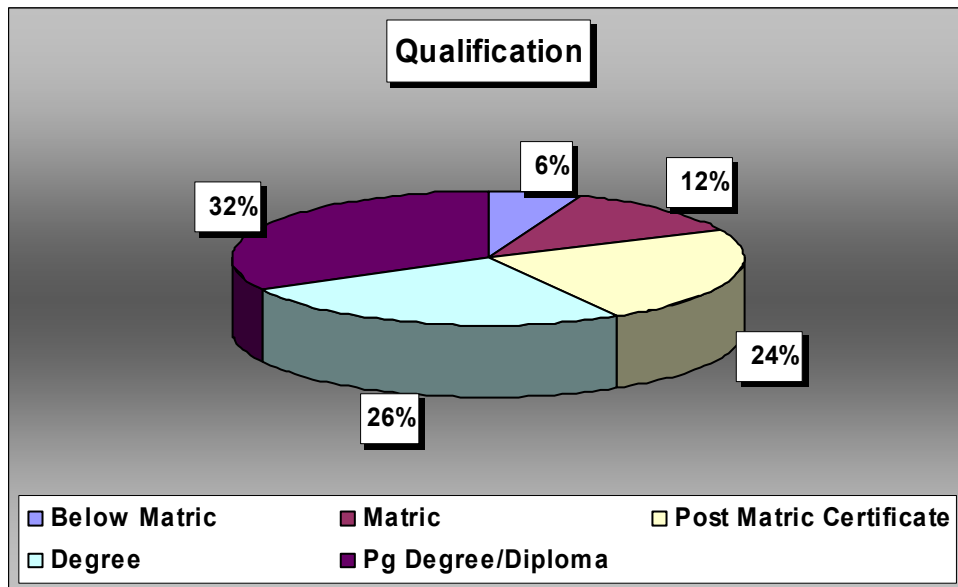


Figure 4: Distribution of Qualification of the Respondents

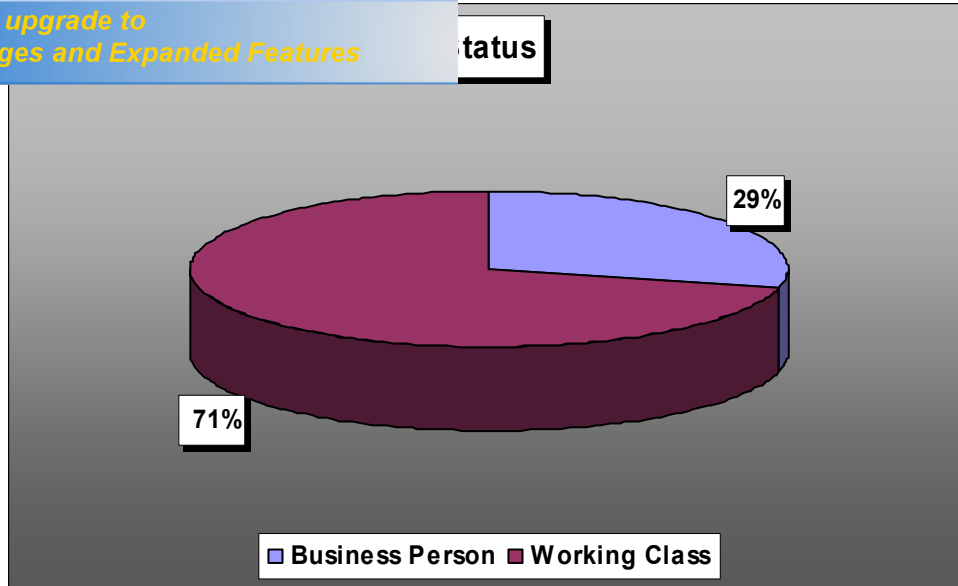


Figure 5: Distribution of the Business Status of the Respondents

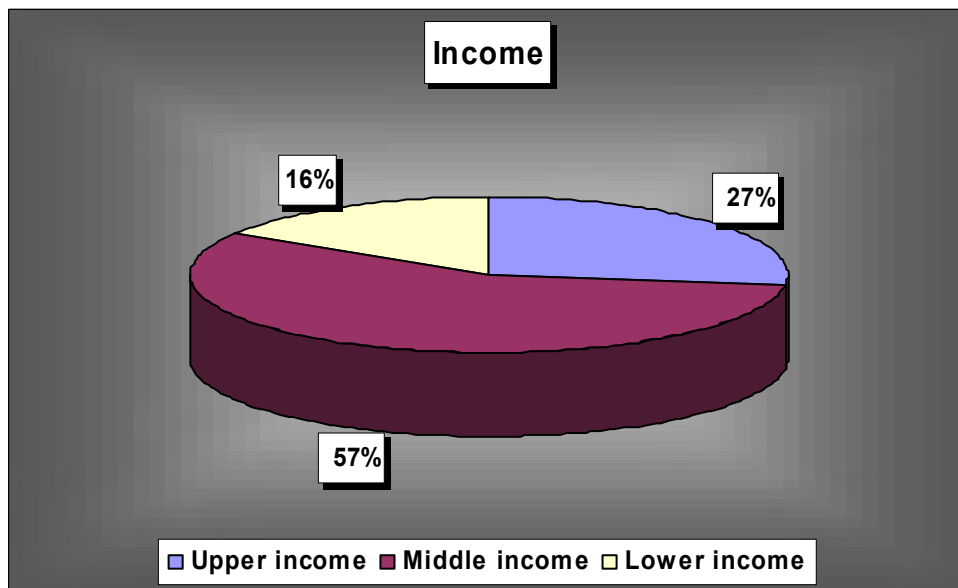


Figure 6: Distribution of the Income Levels of the Respondents

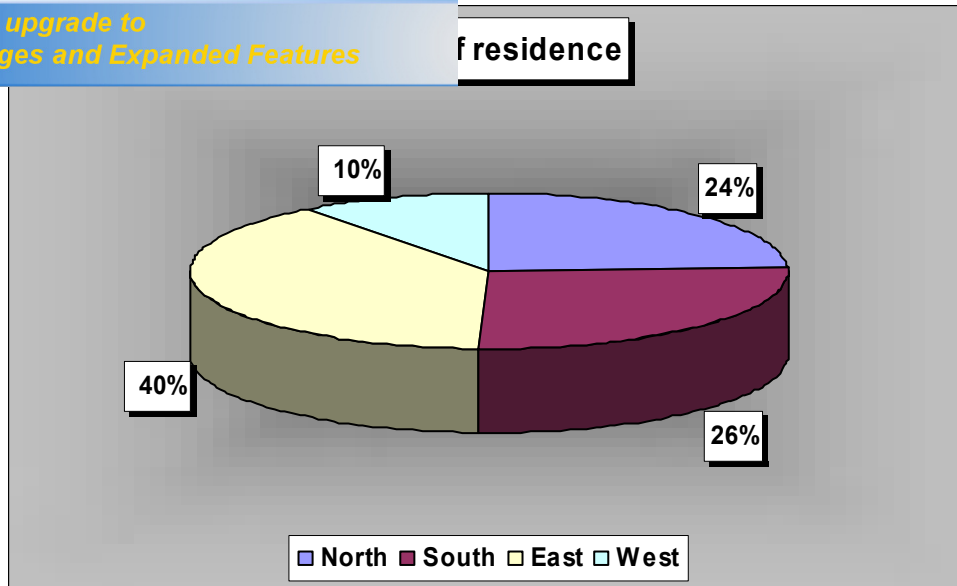


Figure 7: Distribution of Residential Area of the Respondents within Gauteng

Figures 1 to 7 show the percentage distribution of the respondents in each category of the questions which provided demographic information.

Most of the respondents were aged between 22 and 54 years old: a total 88% of the sample (Figure 1). A large portion (147) has attained a Matric certificate: Figure 4 indicates this as 94% of the sample group. This provides confidence that the respondents would have had a good understanding of the questionnaire.

With regard to income, see Figure 6 shows that 57% of the respondents earn at least a middle level income, which is a true reflection of the people of Gauteng, as most of the large companies operate in Gauteng.

With regard to the area of residence, it is noted that the distribution is almost equitable, Figure 7, with 23 respondents from the North, which is about 16%; 26% come from the South ; 40% of the respondents live in the East; the final 10% residing in the West.

the Questionnaire

The purpose of reliability analysis is to determine how consistently a group of variables measure a given construct. That is, it determines the internal consistency among variables comprising the group. Reliability measures agreement in a questionnaire. It is based on the correlations between items (questions).

The common measure of internal consistency of a questionnaire is Cronbach's alpha or alpha coefficient. The range of the alpha coefficient is from 0 to 1. As a general guide, the alpha of a scale equals 0.70 or greater is acceptable for items to be valid.

Reliability Statistics	
Cronbach's Alpha	N of Items
.877	25

Table 1: Reliability analysis of the 25 questions assessing the redevelopment of the rail service in Gauteng

Table 1 above indicates the reliability analysis of all the redevelopment questions. It can be seen that all these questions were found to be reliable with Cronbach's alpha of 0.877, or almost 88%. It was further established that the omission of any of the individual questions did not significantly decrease or increase Cronbach's alpha (Appendix 3). Therefore, none of the questions was omitted from the analysis.

The frequency distributions showing the number of observations falling into each of several ranges of values follow below. Frequency distributions in the study are portrayed as frequency tables. They show the percentage of observations.

the redevelopment variables

This section of the study presents the percentage in the different levels of agreement or disagreement of the variables assessing the redevelopment of the rail service in Gauteng.

Table 2 below shows variables focussing on the preference for and use of public transport. The table displays the frequency distributions of the answers to question 8 to question 9 which focussed on the preference for and use of public transport.

ions of the answers to question 8 to question 9.

Variables	Categories	Count	Percentage
Question 8 Public transport service easily accessible in your area	Strongly Disagree	13	8.3%
	Disagree	14	9.0%
	Neutral	25	16.0%
	Agree	68	43.6%
	Strongly Agree	36	23.1%
	Total	156	100.0%
Question 9 Do not utilize public transport to the airport	Strongly Disagree	25	16.0%
	Disagree	12	7.7%
	Neutral	17	10.9%
	Agree	32	20.5%
	Strongly Agree	70	44.9%
	Total	156	100.0%
Question 10 Regularly use public transport to work	Strongly Disagree	66	42.3%
	Disagree	14	9.0%
	Neutral	20	12.8%
	Agree	32	20.5%
	Strongly Agree	24	15.4%
	Total	156	100.0%
Question 11 Quality is important to the mode of transport	Strongly Disagree	3	1.9%
	Disagree	3	1.9%
	Neutral	14	9.0%
	Agree	25	16.0%
	Strongly Agree	111	71.2%
	Total	156	100.0%
Question 12 Cost is important to the mode of transport	Strongly Disagree	1	.6%
	Disagree	9	5.8%
	Neutral	21	13.5%
	Agree	44	28.2%
	Strongly Agree	81	51.9%
	Total	156	100.0%

...sing on the importance of efficiency and reliability of

Table 3: Frequency distributions of the answers to question 13 to question 17.

Variables	Categories	Count	Percentage
Question 13 Efficiency is important to the mode of transport	Strongly Disagree	1	.6%
	Disagree	3	1.9%
	Neutral	10	6.4%
	Agree	29	18.6%
	Strongly Agree	113	72.4%
	Total	156	100.0%
Question 14 Reliability is important to the mode of transport	Strongly Disagree	1	.6%
	Disagree	3	1.9%
	Neutral	6	3.8%
	Agree	23	14.7%
	Strongly Agree	123	78.8%
	Total	156	100.0%
Question 15 Knowledge about the Gautrain project	Strongly Disagree	3	1.9%
	Disagree	2	1.3%
	Neutral	18	11.5%
	Agree	26	16.7%
	Strongly Agree	107	68.6%
	Total	156	100.0%
Question 16 Community will benefit from Gautrain project	Strongly Disagree	6	3.8%
	Disagree	7	4.5%
	Neutral	36	23.1%
	Agree	46	29.5%
	Strongly Agree	61	39.1%
	Total	156	100.0%
Question 17 Gautrain will improve the quality of life for the people of Gauteng	Strongly Disagree	5	3.2%
	Disagree	7	4.5%
	Neutral	34	21.8%
	Agree	51	32.7%
	Strongly Agree	59	37.8%
	Total	156	100.0%

istributions of the answers to question 13 to question 17 which focussed on the importance of efficiency and reliability of the mode of transport used. These variables also considered whether respondents believed they could recommend Gautrain to others, and if they felt that they would benefit economically from it.

Table 4 presents variables focussing on the importance of safety in the mode of transport used.

Table 4: Frequency distributions of the answers to question 18 to question 22.

Variables	Categories	Count	Percentage
Question 18 Have used a train to work	Strongly Disagree	44	28.2%
	Disagree	6	3.8%
	Neutral	14	9.0%
	Agree	39	25.0%
	Strongly Agree	53	34.0%
	Total	156	100.0%
Question 19 Usually feel safe in the public transport environment	Strongly Disagree	33	21.2%
	Disagree	16	10.3%
	Neutral	48	30.8%
	Agree	45	28.8%
	Strongly Agree	14	9.0%
	Total	156	100.0%
Question 20 It will be safe to use Gautrain	Strongly Disagree	5	3.2%
	Disagree	5	3.2%
	Neutral	11	7.1%
	Agree	54	34.6%
	Strongly Agree	81	51.9%
	Total	156	100.0%
Question 21 It is important for Gautrain to be fast and time-saving	Strongly Disagree	3	1.9%
	Disagree	2	1.3%
	Neutral	8	5.1%
	Agree	27	17.3%
	Strongly Agree	116	74.4%
	Total	156	100.0%

Question 22 Will use Gautrain as preferred mode of transport to work	Strongly Disagree	18	11.5%
	Disagree	9	5.8%
	Neutral	22	14.1%
	Agree	40	25.6%
	Strongly Agree	67	42.9%
	Total	156	100.0%

Table 4 displays the frequency distributions of the answers to question 18 to question 22 which focussed on the importance of safety in the mode of transport used.

Table 5, on the importance of safety and the overall efficiency of the Gautrain

Table 5: Frequency distributions of the answers to question 18 to question 22.

Variables	Categories	Count	Percentage
Question 23 Will use Gautrain as preferred mode of transport to the airport	Strongly Disagree	8	5.1%
	Disagree	2	1.3%
	Neutral	20	12.8%
	Agree	46	29.5%
	Strongly Agree	80	51.3%
	Total	156	100.0%
Question 24 Could recommend Gautrain to my colleagues or friends	Strongly Disagree	3	1.9%
	Disagree	1	.6%
	Neutral	18	11.5%
	Agree	54	34.6%
	Strongly Agree	80	51.3%
	Total	156	100.0%
Question 25 Gautrain will not be overcrowded	Strongly Disagree	5	3.2%
	Disagree	4	2.6%
	Neutral	11	7.1%
	Agree	56	35.9%
	Strongly Agree	80	51.3%
	Total	156	100.0%
Question 26 Gautrain will be comfortable	Strongly Disagree	3	1.9%
	Disagree	0	.0%
	Neutral	19	12.2%
	Agree	48	30.8%

Question 27 Gautrain will be reliable and regular	Strongly Agree	86	55.1%
	Total	156	100.0%
	Strongly Disagree	1	.6%
	Disagree	4	2.6%
	Neutral	17	10.9%
	Agree	55	35.3%
	Strongly Agree	79	50.6%
	Total	156	100.0%

Table 5 displays the frequency distributions of the answers to question 18 to question 22 which focussed on the importance of safety and the overall efficiency of the Gautrain.

Table 6 presents the variables focussing on the importance of comfort of the Gautrain and considered the Gautrain as an investment for South Africa.

Table 6: Frequency distributions of the answers to question 28 to question 32.

Variables	Categories	Count	Percentage
Question 28 Using Gautrain will be more economical	Strongly Disagree	6	3.8%
	Disagree	7	4.5%
	Neutral	18	11.5%
	Agree	30	19.2%
	Strongly Agree	95	60.9%
	Total	156	100.0%
Question 29 Gautrain will be a good South African investment	Strongly Disagree	6	3.8%
	Disagree	0	.0%
	Neutral	19	12.2%
	Agree	39	25.0%
	Strongly Agree	92	59.0%
	Total	156	100.0%
Question 30 Need of mass rapid development of mass transit transport in SA	Strongly Disagree	1	.6%
	Disagree	0	.0%
	Neutral	14	9.0%
	Agree	26	16.7%
	Strongly Agree	115	73.7%
	Total	156	100.0%

Question 31 Efficiency of public transport system in Gauteng is not too bad	Strongly Disagree	36	23.1%
	Disagree	33	21.2%
	Neutral	21	13.5%
	Agree	45	28.8%
	Strongly Agree	21	13.5%
	Total	156	100.0%
Question 32 With Gautrain, South Africa will be internationally competitive	Strongly Disagree	5	3.2%
	Disagree	4	2.6%
	Neutral	19	12.2%
	Agree	51	32.7%
	Strongly Agree	77	49.4%
	Total	156	100.0%

Table 6 displays the frequency distributions of the answers to question 28 to question 32 which focussed on the importance of comfort of the Gautrain and considered the Gautrain as an investment for South Africa.

4.2.4 Descriptive statistics

We present, in this section, measure of central tendency (the mean), to locate the average of scale of values and measure of dispersion (the standard deviation), to indicate the variability around the mean. These two parameters serve to summarise all the 25 redevelopment variables.

Table 7: Descriptive statistics of the answers to 25 questions.

Variables	N	Mean	Std. Deviation
Public transport service easily accessible in your area	156	3.64	1.175
Do not utilize public transport to the airport	156	3.71	1.495
Regularly use public transport to work	156	2.58	1.562
Quality is important to the mode of transport	156	4.53	.883
Cost is important to the mode of transport	156	4.25	.941
Efficiency is important to the mode of transport	156	4.60	.751
Reliability is important to the mode of transport	156	4.69	.697

...	156	4.49	.891
...in project	156	3.96	1.074
Gautrain will improve the quality of life for the people of Gauteng	156	3.97	1.035
Have used a train to work	156	3.33	1.639
Usually feel safe in the public transport environment	156	2.94	1.266
It will be safe to use Gautrain	156	4.29	.964
It is important for Gautrain to be fast and time-saving	156	4.61	.808
Will use Gautrain as preferred mode of transport to work	156	3.83	1.350
Will use Gautrain as preferred mode of transport to the airport	156	4.21	1.058
Could recommend Gautrain to my colleagues or friends	156	4.33	.851
Gautrain will not be overcrowded	156	4.29	.945
Gautrain will be comfortable	156	4.37	.844
Gautrain will be reliable and regular	156	4.33	.820
Using Gautrain will be more economical	156	4.29	1.084
Gautrain will be a good investment for South Africa	156	4.35	.969
Need for mass rapid development of mass transit transport in SA	156	4.63	.702
Efficiency of public transport system in Gauteng is not too bad	156	2.88	1.400
With Gautrain South Africa will be internationally competitive	156	4.22	.981

Table 7 above shows the means and standard deviation of all the 25 assessment questions on the descriptive statistics. It can be seen that 21 means out of the 25 means are at least close to 4 (3.64 is close to 4 than to 3, for example), which confirms what has been observed in the frequency distributions. Considering the standard deviations, it is noted that most of them are close to 1 (1.175 is closer to 1 than 2, as is 0.883, for example). This suggests that respondents did not deviate much, on average, in their responses; that is, their answers agreed closely with one another.

Tables 1 to 6 above indicate the distributions of the different levels of agreement or disagreement on the 25 questions assessing the redevelopment of the South African passenger transport system. The result indicates that people agreed on most of the questions as the total of Agree and Strongly Agree in most of the questions is above 50%. The questions which showed an exception to this correlation are those relating to regularity in using public transport to work (51.3% Disagreement, 35.9% Agreement and

safe in the public transport environment (31.5% and 30.8% Neutral, Table 4); and the availability of an efficient public transport system in Gauteng is not too bad (44.3% Disagreement, 42.3% Agreement and 13.5% Neutral, Table 6).

4.2.5 Analysis of Variance (ANOVA)

Analysis of variance (ANOVA) is used to uncover the effect of categorical independent variables (called "factors") on an interval (continuous) dependent variable. Ordinal variable can be considered as interval variable in order to test whether the responses to the 25 questions differ across the different levels of age group, income and area of residence. That is, we would like to know whether people of different ages, incomes and areas of Gauteng think differently about the Gautrain project. The results of these analyses are shown in Tables 8, 9 and 10 below.

The ANOVA tables that are represented are only those where there are significant differences; that is, where the Sig. Value is less than 0.05 as we are testing at 95% confidence level. We reject the Null hypothesis of non difference across the different levels of the categorical variable if the p-value (Sig.) is less than 0.05.

Table 8 indicates that 12 of the 25 assessment questions are statistically significant at 95% confidence. That is, we can be 95% confident that age group affects the answers of people in those 12 questions. The same is true for Tables 9 and 10, whereas only questions 4 and 8 of the 25 questions are statistically significant at 95% across Income Levels and Area of Residence, respectively.

Table 8: Assessment variables with significant difference across the Age Groups.

ANOVA across Age	
	Sig.
Do not utilize public transport to the airport	.001
Regularly use public transport to work	.026
Quality is important to the mode of transport	.002
Efficiency is important to the mode of transport	.000
Reliability is important to the mode of transport	.001
Knowledge about the Gautrain project	.001
Gautrain will improve the quality of life for the people of Gauteng	.048
Have used a train to work	.015
Gautrain will be comfortable	.009
Gautrain will be a good investment for South Africa	.000
Need for mass rapid development of mass transit transport in SA	.000
With Gautrain South Africa will be internationally competitive	.027

4.2.5.2 Across Income

Table 9: Assessment variables with significant difference across the different levels of income

ANOVA across Income	
	Sig.
Public transport service easily accessible in your area	.030
Do not utilize public transport to the airport	.000
Regularly use public transport to work	.000
Cost is important to the mode of transport	.012

4.2.5.3 Across Area of Residence

Table 10: Assessment variables with significant difference across the four different residential areas of Gauteng.

ANOVA across Area of residence	
	Sig.
Public transport service easily accessible in your area	.041
Do not utilize public transport to the airport	.022
Regularly use public transport to work	.000
Quality is important to the mode of transport	.016
Cost is important to the mode of transport	.001
Usually feel safe in the public transport environment	.002
Gautrain will be comfortable	.014
Efficiency of public transport system in Gauteng is not too bad	.020

4.5 CONCLUSION

The conclusion of this statistical analysis of the data and in relation to the objectives of the study indicate that respondents welcome the Gautrain project as they agreed with all the questions related to its development. The major concerns that emerged from the research findings are summarised below:

- Concern about the safety of public transport;
- The importance of reliability in the mode of transport used;
- Efficiency of public transport.

Chapter 5 discusses the analysis performed and offers recommendations.

CHAPTER 5

DISCUSSION OF FINDING

5.1 INTRODUCTION

This chapter discusses the findings of the analysis of the South African Passenger Transport System for the proposed Gautrain project.

5.2 DISCUSSIONS FROM THE ANALYSIS

The major findings from the analysis are presented below.

Question 8 focussed on the accessibility of public transport at different areas in Gauteng. From the 4 areas in Gauteng which are North, South, East and West, 43% of the respondents agree that public transport service is easily accessible, while a further 23% of the respondents strongly agree that public transport is indeed easily accessible in their areas. It is, therefore, concluded that most areas in Gauteng do have public transport accessibility, although there is still a gap for those who do not have ready access to public transport.

Questions 9 focussed on the use of public transport. From the respondents, 45% strongly agree that they do not use public transport to get to the airport. Other countries such as Switzerland, have succeeded in creating rail links into the airports. In many airports this has been achieved by introducing rail links into the heart of the airport. South Africa does not have the links into the heart of the airport.

Question 10 was about the regular use of public transport to work. 42% of the respondents strongly disagree that they use public transport to work. Public transport is still struggling to attract more patronage as it is weak on promoting its services, even though it has attractive features.

Quality is important to the mode of transport used by respondents. 71% of the respondents are of the opinion that quality is important in the mode of transport they use. One of the most important aspects that are required by passengers around the world, is that the quality of a journey by train must be better than or at least equal to those journeys by car and by flight.

Question 12 was about whether cost is important to the mode of transport used by respondents. 51% of the respondents indicated that the cost of transport is also very important to them when choosing the mode of transport available. 50% of the respondents indicated that although the cost is important to the transport mode they use, there are still some who do not regard cost as crucial, unlike their regard for quality. A less costly and efficient transport system can also increase opportunities for trade internationally and therefore improve the welfare of South Africans.

Question 13 focussed on whether efficiency is important to the mode of transport used. 72% of the respondents agree that efficiency is important to the mode of transport they use. Service inefficiency of public transport is one of the problems encountered around the world. Transport authorities have a problem about innovation in the public transport system as it puts pressure on them to satisfy the customer according to technological advancement.

Question 14 focussed on the importance of the reliability of the mode of transport used. 79% of the respondents seem to agree strongly that a reliable mode of transport is important to them. History has shown that with consistent policies it is possible to arrive at substantial decreases of transport problems. These improvements have mainly been achieved by improvements of infrastructure and technology. However, the opportunities of improvement have not yet been fully exhausted.

Some respondents know about the Gautrain project. 69% of the respondents know about the Gautrain project. The Gautrain has been rigorously promoted to South Africans.

Question 16 focussed on whether the respondents think the community will benefit from the Gautrain project. 39% strongly agree that the community will benefit and 29% agree that the community will benefit. Transportation is one of the key components of production and economic activity. An investment in transportation, whether to increase capacity or to improve service, reduces travel time, lowers trip cost and improves travel-time reliability. These improvements benefit both individuals, as well as businesses, to change into greater productivity and better access to labour and markets, making industries more competitive and enabling economic growth.

Question 17 focussed on whether the Gautrain will improve the quality of life for the people of Gauteng. 39% strongly agree and 32% agree that the Gautrain will improve the quality of life for Gauteng people. As in question 16 above, new developments and improvements benefit both individuals and businesses as they enable economic growth.

Question 18 focussed on whether the respondents have used a train to work. 34% of the respondents strongly agree to have used a train and 25% agree to have used a train. Although such a question is expected to have a yes or no answer, this research used a likert scale for questions, but the researcher had to find out whether a particular respondent has used a train to work.

Question 19 focussed on whether respondents usually feel safe in the public transport environment. The public transport environment is the surroundings of the public transport in which it operates. For example, the rail transport environment includes the stations. 21% of the respondents strongly disagree about the safety in the public environment. 29% agree that they feel safe in the public transport environment. The respondents, to a lesser extent, do agree that they feel safe in the public transport environment. Police patrol in trains and stations can also make potential users think that trains are not safe.

ate conditions that are unbearable and an environment
rocketing can occur. Congestion is increasing on urban
roadways, which impacts on traffic; therefore one of the priorities of transport authorities
is safety. The inability of public transport to attract more users and the inability to
increase revenue have forced transport authorities to look for ways to secure and enhance
operations. A number of commuter rail tragedies in the past years have led the
government to complete draft legislation to establish a Rail Safety Regulator in South
Africa.

Question 20 focussed on whether it will be safe to use Gautrain. 51% strongly agree that
it will be safe to use Gautrain. 34% agree that it will be safe to use Gautrain. In question
19, the respondents agree but to a lesser extent about the safety of public transport. The
respondents seem to be more confident about the Gautrain, unlike they are with regard to
other modes of public transport. The promotion of Gautrain by its authorities includes the
fact that a substantial amount of police will be deployed in the trains and stations. The
way the Gautrain will be built, will make it difficult for criminals to carry on with their
work.

Question 21 focussed on the importance of Gautrain to be fast and time-saving. 74% of
the respondents strongly agree that it is important for the Gautrain to be fast and time-
saving. Intelligent technological solutions are being promoted and will be implemented as
part of Gautrain. Overseas transport authorities first implemented the Intelligent
Transport Systems (ITS), which utilize diverse technologies to enhance the efficiency and
safety of transportation activities, which are a key component of the technological
revolution taking place in modern transportation.

Question 22 focussed on whether the respondents will use Gautrain as a preferred mode
of transport to work. 42% strongly agree and 26% agree to use Gautrain as a preferred
mode of transport to work. Special bus service will be available transport passengers to
and from stations.

the respondents will use Gautrain as a preferred mode of transport. 51% of the respondents strongly agree and 30% agree to use Gautrain to the airport. Governments overseas are continuously working on improving their transport system, like Australia, which introduced the AusLink program to improve the land transport infrastructure. The 51% and 30% positive response of the respondents gives an indication that South Africans are looking for a more improved public transport system.

Question 24 focussed on whether the respondents could recommend Gautrain to colleagues and friends. 51% of the respondents strongly agree and 34% of the respondents agree that they could recommend Gautrain. The promotion and the proposed features of the Gautrain can give a good impression to the potential user. Recommending the use of the Gautrain will be solely because of the way it is promoted, although it is not working yet, hence the question was asked in this research to find out whether the respondents are aware of the project.

Question 25 focussed on whether the respondents think that the Gautrain will not be overcrowded. 51% of the respondents strongly agree and 36% of the respondents agree that the Gautrain will not be overcrowded. This question is based on the perception of the respondents rather than the experience about the Gautrain. Again the way the Gautrain has been promoted makes it easier for the potential user to already have some perceptions with regard to the train. It has been promoted that the minimum amount of occurrences of the Gautrain between Johannesburg and Tshwane will initially be six trains per hour per direction and it will operate approximately 18 hours per day. This then will create space for commuters as, unlike the normal trains with awkward timetables which make commuters to travel at the same time in large numbers to be on time at their destinations; there will be enough trains per hour. The Netherlands Railways also had a problem with the old timetable that was awkward for the commuter, and therefore was strained by the demands placed upon it; and are now expecting annual passenger growth of around 4%.

Question 26 focussed on whether the respondents think that the Gautrain will be comfortable. 55% of the respondents strongly agree and 36% of the respondents agree

ole. Again the question of comfort was posed to find out if they perceive the Gautrain as an alternative to public transport as comfort is one of the issues in public transport. Train authorities overseas are striving to create what is necessarily comfortable travel that is free from tiresome and unpleasant feelings; and are being able to sit without congestion, environmental quality, little or no stress at all, decent hygiene conditions and passenger care. All passengers should have enough space to be able to be flexible according to environmental conditions.

Question 27 focussed on whether the respondents think that the Gautrain will be reliable and regular. 50% of the respondents strongly agree and 35% agree that Gautrain will be reliable. Again the promotion of the Gautrain already attracts potential users to the train before it is even up and running. This confirms the power of advertising and promoting in products and services. Public transport has in the past not promoted itself enough to sustain users and attract private car users to switch to public transport.

Question 28 focussed on whether the respondents think that using the Gautrain will be more economical. 60% of the respondents strongly agree and 19% agree that using the Gautrain will be more economical. The desire to attract people to switch to public transport will be based on passengers' perceptions of value for money. The perception of passengers is that overcrowding in the trains is not worth what they pay for and therefore discourages them from being attracted to trains.

Question 29 focussed on whether the respondents think that Gautrain will be a good South African investment. 59% of the respondents strongly agree and 25% agree that Gautrain will be a good South African investment. There is a relationship between transportation investment and economic growth. Transportation is one of the key elements of production and economic activity. An increase in capacity or an improved service is an investment in transportation; as the results are reducing the time travelled, lowering the cost of the trip and an improved travel time reliability which the customer needs. The commuters overseas view the improvements as important as the respondents

stant. The investment will therefore benefit individuals

Question 30 focussed on whether the respondents think that there is a need for mass transit transport in South Africa. 73% strongly agree and 17% agree that there is a need for mass transit transport in SA. The current users of public transport are not happy about some of the issues in public transport, such as the issue of old infrastructure. These issues, which are continuously dealt with overseas, decrease the current users of public transport and discourage the potential users.

Question 31 focussed on whether the respondents think that the efficiency of public transport system in Gauteng is not unpleasant. Only 13% strongly agree and 29% agree that the efficiency of public transport in Gauteng is not unpleasant. However, 23% strongly disagree and 21% disagree that efficiency of public transport system in Gauteng is not unpleasant.

Question 32 focussed on whether the respondents think that with Gautrain, South Africa will be internationally competitive. The question referred to Gautrain as being able to meet the standards of the trains overseas, especially those that are advanced with regard to their transport system. 49% strongly agree and 32% agree that with Gautrain, South Africa will be internationally competitive.

5.3 CONCLUSION

Governments, transport authorities, health professionals, environmental advocates and national and international organizations, have over the years indicated the benefits of public transport to the community. Although millions of people in South Africa use public transport, they are not happy about some of the issues of public transport and these issues in turn discourage potential users. An increase in the use of public transport will depend on passengers' perceptions of value for money. The perception of passengers is that overcrowding in the trains is not worth what they pay for and therefore it makes them

There are some passengers who still prefer to use the cars, despite the fact that there is overcrowding. This is because there are incidental benefits too, derived from using public transport. Unlike roads that create pollution and cause congestion, the rail is cleaner and safer in terms of not having fatal accidents. There is a much higher risk of a fatal accident in a car crash on the road than on rail.

Investing in transportation has a positive effect on economic growth. By investing in transportation, whether by way of increasing capacity or improving service, reduces travel time, lowers the cost of the trip and improves travel time reliability. South African public transport does not have enough resources to build capacity. There are problems such as lack of enough financial resources, too many employees, inefficiency and the old management styles that they still use. In addition, public transport still finds it difficult to attract more patronage because despite having its loyal customers, public transport is sluggish when it comes to promoting its services.

One of the most important aspects required by passengers is the safety in and around public transport. Violent confrontations and hostage situations are common on transit systems throughout the world. Another important aspect required by passengers is that the quality of a journey by train must be better than or at least equal to those journeys by car and by flight. The issues regarding safety, comfort and hygiene can, if properly addressed, contribute to customers continuing to use rail as a means of transport and prospective customers switching to rail.

Efforts under the guidance of the South African Roads Agency have been made to provide an effective transport network. The introduction of the Gautrain project gave some of the South Africans hope in the development of mass transit transport system for South Africa.

CHAPTER 6

RECOMMENDATIONS AND CONCLUSION

6.1 INTRODUCTION

The discussion on the findings of the analysis calls for recommendations for the train authorities and for future research. Through assessing the discussion, it is realised that the Gautrain project might be supported by the Gauteng people.

6.2 DISCUSSION ON THE ANALYSIS

Rail is a major player in any transportation system because of its carrying capacity and the relatively low cost of rail transport. Road transport is not a cost effective alternative to rail transport because of the severe congestion it causes on the roads. Gauteng Rapid Link (2009) estimated that approximately one-fifth of Tshwane-Johannesburg commuters will make a switch from travelling by road to travelling by rail.

The study uses snowball sampling to:

- recognize the importance or value of outlining the possible impact on traffic for the Gauteng people during the redevelopment of the passenger railway systems;
- examine the perception of the sample size with regard to the proposed Gautrain;
- investigate whether respondents will use the train to work or to the airport;
- find out what respondent's expectations are on using the Gautrain;
- whether respondents think there will be an economic benefit to them;
- what respondents think about the time that they will save using the Gautrain;
- what respondents think about their safety in and around the trains.

Outlining the possible impact on traffic during the redevelopment of the passenger railway systems objective was achieved as about 70% of the respondents agree that Gautrain will improve the lives of the people of Gauteng.

The perception of about 84% of the respondents is that Gautrain will be a good investment for South Africa. About 81% of the respondents agree that they will use the Gautrain to the airport and about 67% agree that they will use Gautrain to work.

The expectations of on using the Gautrain is that about 81% of the respondents think that Gautrain can compete internationally. Again about 85% of the respondents agree that the Gautrain will be comfortable. About 85% of the respondents agree that the Gautrain will be regular and reliable. About 87% of the respondents agree that the Gautrain will not be overcrowded. About 79% of the respondents agree that there will be an economic benefit to them in using the Gautrain. About 91% of the respondents agree on the importance of saving time by using the Gautrain. About 38% of the respondents agree that they feel safe in and around public transport.

6.3 RECOMMENDATIONS FROM THE ANALYSIS

From the conclusions drawn, it is clear that there is a need to address the problems currently being experienced in the Passenger Transport Sector by means of mass rapid redevelopment of the rail systems. The following recommendations are made in line with the discussion presented under Section 5.2.

In response to the discussion focusing on the preference and use of public transport, it is recommended that a range of new equipment should be introduced for trains by the Department of Transport. The implementation of new technological programs should be introduced in the South African Passenger Transport System for improved processes. The improvements would raise the attractiveness of public transport and will result in increased patronage. This relates to the redevelopment of the South African mass transit transport.

6.3.2 Recommendation 2

It is recommended to the Public Sector in response to the importance of quality, cost, efficiency and reliability that passengers must believe that fares are value for money. One crucial factor of quality is punctuality; passenger trains must strive to be punctual. The quality of a journey by train must be better than or at least on a par with journeys by car and by air. Train timetables must be changed to accommodate growth and to improve punctuality, thereby satisfying passengers by offering frequent services. Above all, there should be a reliable service.

There should be greater competition between different transport systems and between private and public transport. This will make it possible to achieve the efficiency which is demanded by prospective passengers.

6.3.3 Recommendation 3

In relation to safety the overall efficiency of public transport in Gauteng and the need for mass rapid development of transport, it is recommended that preventative safety processes should be applied to stations and parking areas as well as on the trains. A workable arrangement should be agreed upon within the Transport Sector to deal with

should also be a healthy working relationship between the Gautrain and the Service (SAPS) in terms of safety and security. Gautrain should take into account the areas of disagreement and seek to improve these.

6.4 LIMITATION OF THE STUDY

In reviewing literature in this study, it was found that there is a serious shortage of academic interest in writing about the passenger public transport, especially in South Africa. The snowball sampling technique; because of the chance of the sample not being able to represent a satisfying section from the population; is bias in nature.

Question 18 focussed on whether the respondents have used a train to work. This question is expected to have a yes or no answer, but in this research a lickert scale was used for questions which were not perfect for the kind of question; but the researcher had to find out whether respondents have used a train to work.

Question 19 was about whether respondents usually feel safe in the public transport environment. The inclusion of the word "environment" in this question may seem not to be clear. The public transport environment is the surroundings of the public transport in which it operates. For example, the rail transport environment includes the stations. For busses there are bus stops.

Question 24 focussed on whether the respondents could recommend Gautrain to colleagues and friends. The fact that the Gautrain is not operational yet and the respondents are asked about them recommending it may be confusing. The promotion of the proposed features of the Gautrain can give a good impression to the potential user. Recommending the use of the Gautrain will be solely because of the way it is promoted, although it is not working yet, hence the question was asked in this research to find out whether the respondents are aware of the project.

ent in South Africa. The question of who will benefit may arise. Both individuals and businesses will benefit as it will increase the economy.

Question 32 was about whether the respondents think that with Gautrain, South Africa will be internationally competitive. The word "competitive" may not be clear. The question referred to Gautrain as being able to meet the standards of the trains overseas, especially those that are advanced with regard to their transport system.

6.5 RECOMMENDATION FOR FUTURE RESEARCH

There are few scholars who specialize in the study of Passenger Transport. However, future studies could consider the problems and challenges that are faced in the Passenger Transport Sector and mass rapid redevelopment needs that arise from this study. The study could also add clarity to the few scholars who recognize the importance or value of outlining the possible impact on traffic during the redevelopment of the passenger railway systems.

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