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The attractiveness of transit-orientated developments

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The Attractiveness of Transit-Orientated Developments

Jeremy Louis Norsworthy

A research report submitted to the Faculty of Engineering and the Built Environment, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Masters in Science in Property Development and Management

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Table of Contents

Table of Contents i
Declaration v
Abstract vi
Acknowledgements vii
List of Figures viii
List of Tables ix
1 INTRODUCING THE STUDY 1
1.1 Introduction 1
1.2 Urban Sprawl and Smart Growth 2
1.3 Compact City 4
1.4 Sandton as a Node 6
1.5 Problem Statement 7
1.6 Importance of the Problem 7
1.7 Research Questions 7
1.8 Research Aim 8
1.9 Research Objectives 8
1.10 Research Methodology 8
1.11 Assumptions and Limitations 8
1.12 Chapter Outline 9
2 LITERATURE REVIEW 11
2.1 Purpose of Chapter 11
2.2 Influence of Smart Growth and Compact City principles on TOD policies 12
2.3 Transit Oriented Developments (TOD's) 13
2.3.1 Characteristics of a TOD 14
2.4 The Influence of Smart City and Compact City in the Sandton TOD 15
2.5 Theories of Central Place 17

2.6 Understanding the Market Dynamics of TOD 19
2.6.1 Positive and Negative Externalities created by TODs 20
2.7 TOD and Retail and Property Developments 22
2.8 Understanding Attractiveness 23
2.8.1 Attractiveness to the Consumer 23
2.8.2 Destination Shopping 26
2.8.3 Joint-Venture Development 27
2.9 Chapter Summary 28
3 RESEARCH METHODOLOGY 30
3.1 Introduction 30
3.2 Population and Sampling 31
3.2.1 The Consumers 31
3.2.2 The Developer 31
3.2.3 The Town Planners 32
3.2.4 Drawing a Representative Population 32
3.3 Timeframes of the Data Collection 33
3.4 Analysis Plan 34
3.5 Validity 35
3.6 Interviews 36
3.7 Reliability 36
3.8 Generalisability 37
3.9 Protocols 37
3.9.1 Interview Outlines and Questions 37
3.9.2 Ethics 38
3.9.3 Purpose of the interviews 38
3.10 Assumptions 39
3.11 Summary 39

4 ANALYSIS OF INTERVIEWS 41
4.1 Introduction 41
4.1.1 Town Planners 41
4.1.2 Consumers 41
4.1.3 Developers 42
4.2 Responses to the Research Questions 42
4.2.1 The impact TOD railway stations have had on the attractiveness of retail centres as shopping destinations 43
4.2.2 A better understanding of the rationale surrounding shopping-centre attractiveness 43
4.2.3 Most influential aspects of attractiveness to the developer and the consumer 44
4.2.4 Changes in the pedestrian flow through the centres 49
4.2.5 Effects of incentives created by of the TODs 49
4.2.6 Externalities from TOD development that have affected shopping centres 50
4.2.7 Attractiveness of TOD nodes compared to other nodes 52
4.2.8 The uniqueness of the Sandton node to retail developers 53
4.2.9 A better understanding of the dynamic within the Sandton Node 54
4.3 Chapter Summary 55
5 CONCLUSION AND RECOMMENDATIONS 56
5.1 Introduction 56
5.1.1 Secondary *research questions*: 57
5.2 A Snapshot of Attractiveness 57
5.3 The Impact of TOD on Developers and Consumers 58
5.3.1 TODs Impact on Retail Centres as Destinations 58
5.3.2 Understanding the Dynamics of Potential Investments as a Result of TOD 59

5.3.3 Understanding Attractiveness Better 59
5.3.4 Positive and Negative Externalities of the Study 59
5.4 Limitations of Research 60
5.5 Recommendations 60
5.6 Future Research 62
5.7 Conclusion 62
References 64
Annexures A 70
5.8 Questionnaire for Town Planner 70
5.9 Questionnaire for Developer 71
5.10 Questionnaire for the Consumer 74

Declaration

I declare that this thesis is my own unaided work. It is being submitted for the Degree of Master in Property Development and Management to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other university

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(Signature of Candidate)

..... day of.....year .....

Master of Science in Property Development and Management

Abstract

The nature of transport systems determines how people can travel from Johannesburg to Pretoria within the city. This research report seeks to demonstrate that transit-oriented development (TOD) as a concept has a strong sustainability agenda, and also has a strong developmental thrust. Concepts such as the “compact city” and the “smart city”, propagated for the sustainable use of the city and were used to influence the planning of TODs.

The research report will seek to gain an understanding of how transit-orientated developments work and also how different concepts have influenced the way they are planned. The report also uses theories such as compact city, sustainable city and other theories like Christaller’s (1933) central place theory to form an explanation as to why these TOD nodes could be seen as attractive.

Because the City of Johannesburg has promoted the use of TOD, property developers are indirectly encouraged to develop in these areas through various incentives that have been placed in the node. This study focuses on the Sandton area and specifically the area around the Gautrain station, and investigates how the concept of TOD has made the node more attractive for retail development and consumers. Apart from providing a basic understanding and overview of TOD, it explains the logic behind TOD and what makes it attractive to developers and consumers. The literature looks at theorists like Christaller (1933) to explain this phenomenon, while the epistemology of multiplicity is one which uses mixed methods to ensure that the questions posed in the research, along with the theories in the literature, are proved or disproved.

This research report concludes by reflecting on some of the key factors of TOD that affect attractiveness. The main reason for this report is that, by identifying what is attractive to the consumer and the developer, a better understanding of the logic that underpins the market will be developed. A clearer understanding of the logic that operates in this market could allow for a number of new insights both when planning TOD nodes combined with major infrastructure projects, and when looking to develop in these areas. Another of the important questions that were answered was whether or not shopping-centre attractiveness was enhanced by TOD policies.

Acknowledgements

Firstly I must thank my Lord and my God, Jesus Christ. I would also like to thank my wife Stacey and my parents. Special thanks must be made to Professor David Root who supervised the Research Report. Special thanks to the CSIR for the financial assistance and for allowing me the opportunity to study further.

List of Figures

Figure No	Figure title	Page No
Figure 1.1:	The Hoyt Model, demonstrating how urban morphology is shaped through spatial planning	3
Figure 1.2:	A diagram demonstrating all of the Gautrain TOD stops in the Gauteng Province (Davie, 2002)	5
Figure 1.3:	A picture of the Sandton TOD Node (Sandton UDF, 2008)	6
Figure 2.1	The Gautrain TOD concept (Parktown/Sunninghill Redevelopment Framework, 2007:98)	14
Figure 2.2	A 3D image showing the zoning and the height restrictions that have been lifted for the Sandton Node (Sandton Urban Development Framework, 2008:105)	15
Figure 2.3	A demonstration of demand areas according to Central Place Theory (Dennis, Marsland and Cockett, 2002:187)	19
Figure 2.4	Evaluation of retail attractiveness from the consumer's perspective (Teller, C and Reutterer, T, 2008:129)	25
Figure 4.1	The extent to which infrastructure investment influences other investment	46
Figure 4.2	Most influential factors for attractiveness	47
Figure 4.3	The punctuality of the train, according to the consumer	49
Figure 4.4	Time taken for a query to be responded to	50
Figure 4.5	Competition as a result of the connection of nodes	53
Figure 4.6	Crime as a spinoff	54
Figure 4.7	The number of retail developments that responded to the Gautrain	56

List of Tables

Table 1 A table demonstrating how Smart City and Compact City principles have been incorporated into TOD policies 17

Table 2 The fourteen elements that contribute to attractiveness and the theories with which they are associated 27

Table 3 People interviewed 40

1 INTRODUCING THE STUDY

1.1 Introduction

During 2000, the Gauteng Provincial Government declared that it would be investigating the implementation of both the Rea Vaya Bus Rapid Transport (BRT) system and the Gautrain (Gibbs, 2011) in the Gauteng Province. One of the main reasons for implementation of these rapid transit systems was to increase transport efficiency in the city (*ibid*.).

A transit-oriented development (TOD) is defined as “a compact, mixed-use community, centred around a transit station that, by design, invites residents, workers, and shoppers to drive their cars less and ride mass transit more. The transit village extends roughly a quarter mile from a transit station, a distance that can be covered in about five minutes by foot. The centrepiece of the transit village is the transit station and the civic and public spaces that surround it. The transit station is what connects village residents to the rest of the region. The surrounding public space serves the important function of being a community gathering spot, a site for special events, and a place for celebrations – a modern-day version of the Greek agora.” (Bernick and Cervero 1997:5)

The primary purpose of TOD is to better integrate transportation and development (Belzer and Autler, 2002). One of the main tools of TOD is the use of policy to reshape land-use patterns at the regional, local and neighbourhood scales through the integration of development with transportation. The promotion of such integration “is driving growing interest in transit-oriented development, which focuses on better connecting transit systems both physically and functionally with the surrounding development. Effective TOD can help foster more efficient land-use patterns and create a more balanced set of transportation choices in which automobiles coexist alongside other options” (*ibid*:51). This citation reflects the feeling prevalent not only in America in 2002, but in the minds of South African planners as well as they sought to address fragmented cities like Johannesburg (Harrison *et al*., 2004).

The concept of transit-oriented development is centred around two main paradigms of urban planning. The “smart city” concept, in short, looks to ensure that cities are

growing in a sustainable and efficient manner (O'Neil, 2000). The "compact city" also looks to ensure that growth is controlled and does this by ensuring that land is used in a strategic way by constricting the development around the edges of the city (Wilkinson, 2006). Many of the ideals mentioned regarding the compact city and the smart city lie in the philosophy that defines the TOD concept; yet it is clear that spatial development is also a major theme. Concepts such as the "compact city" and the "smart city" were thus originally propagated in relation to these transit-oriented development endeavours. This was particularly relevant to the Gauteng Province, where containing urban sprawl is such a high priority (Gauteng GDS, 2005).

1.2 Urban Sprawl and Smart Growth

Arguably, the urban sprawl that characterises many cities such as Johannesburg is owing to the property sector's desire for development. Growth in random directions has been termed 'urban sprawl' (Brueckner, 2000). Smart growth as a concept is a response to this urban sprawl and seeks to focus on the urban growth that is happening in cities around the world.

> *"At its core, smart growth is about ensuring that neighbourhoods, towns, and regions accommodate growth in ways that are economically sound, environmentally responsible, and supportive of community liveability - growth that enhances the quality of life. To achieve that objective, many smart growth strategies encourage development in areas with existing or planned infrastructure. Within those areas, they also encourage mixed-use, pedestrian- and transit-orientated development; establish incentives to enhance investment; lower regulatory barriers to development, and use both state and local funding to improve infrastructure"* (O'Neil, 2000:2).

Thus one can see from the quote above that TOD is described as a result of the smart growth philosophy. O'Neil's comment above also points out that the smart growth philosophy encourages effective spatial planning and development, which integrates the spheres of transportation, infrastructure and other services, all of which are mentioned in what the Gauteng province calls its urban structure approach (GSDF, 2011). The sector theory formulated by Homer Hoyt (1939) demonstrates

the basic understanding of how land-use planning, transport and planning policies are used to model the city.

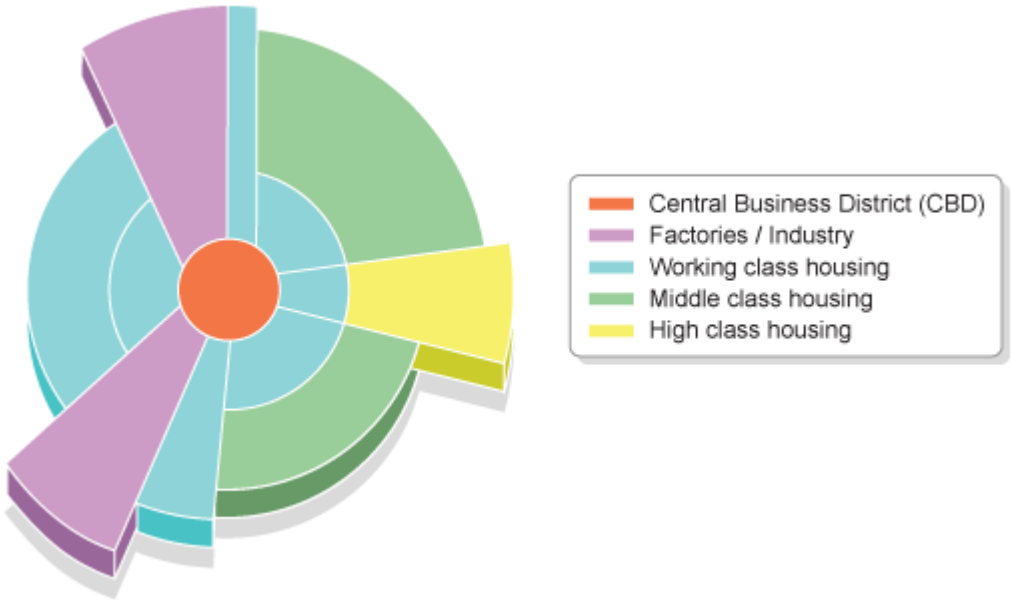

Figure 1.1: The Hoyt Model, demonstrating how urban morphology is shaped through spatial planning

The Hoyt model above demonstrates how different nodes and corridors, in conjunction with transportation, can be used to shape the city. The different transport corridors channel activity to the main node, which in Hoyts case is the CBD or city centre. This node should be represented by Sandton, which is receiving structured development by the use of buses, trains and other strategic activities like housing development. The smart growth concept ultimately looks to increase sustainability in the city (Pointner, 2011).

Providing communities with the option of transportation is one the tools used in the smart growth process (O'Neil, 2000). This has particular resonance in the South African urban context where mass transport was considered a low priority in apartheid times, particularly when the privileged minority were able to access private transport as an option (Harrison, Huchzermeyer and Mayekiso, 2004). It is for this reason that the GSDF 2011 connectivity model used SOWETO as an example of an area that has a large population but also previously had very little connectivity.

Connectivity is only one of the tools of smart growth. There are many other “tools” that communities can use to achieve smart growth (O’Neil, 2000:2).

1.3 Compact City

Another important concept that influenced the thinking around TOD is the concept of the compact city (Todes, 2003). The theory of the compact city was also influenced by ideas of sustainability. Like the concept of the “smart city”, many of the ideas of the “compact city” were incorporated into the TOD policies that are operating in Gauteng (Harrison, Huchzermeyer and Mayekiso, 2004).

The objective of the compact city is to ensure that urban sprawl is curbed through the careful use of land (Beatley, 2000). Beatley goes on to say that densities expected within a typical compact city in the future are several times those of the United States and Canada in the year 2000. In such cities, owing to the increased densities, conspicuous consumption of space is rare and mixed use of space is encouraged (ibid.). With the increase in density of certain areas comes a higher demand for access to public transport.

The TOD policies in Gauteng have been set up to create a “compact city” and, with the help of an urban boundary the objective is to better manage the urban environment in a more sustainable manner (Cilliers, 2009). An urban boundary is a good example of a planning tool that is used to achieve the ideals of a compact city. The creating of corridors is another planning tool of development, and combining these corridors with TODs lies at the nucleus of Gauteng’s strategy to become more sustainable (GSDF, 2011).



Figure 1.2: A diagram demonstrating all of the Gautrain TOD stops in the Gauteng Province (Davie, 2002)

Figure 1.2 above illustrates that the whole of the province will be influenced by TOD policies. The Gautrain is the first and only rapid rail system that is operational (and not operational) in Africa (Thomas, 2013). The train is in the Gauteng Province and it runs from Park Station in Johannesburg and stops in Hatfield, Pretoria. The Gautrain is one of the TOD tools that the Gauteng Province is using to create and reinforce regional nodes and corridors in the province (GSDF, 2011). The GSDF goes on to state that through the use of rail the province seeks to create nodes that have mixed use and increased densities with other mechanisms like zoning. The station and the

zoning around it look to add to the attractiveness of the node and allow for interconnectivity throughout the whole province.

1.4 Sandton as a Node

Sandton as a business hub is located in Johannesburg in Gauteng. Sandton is often referred to as the 'richest square mile in Africa' (Murray, 2012). It is important to note that during the course of this report when the research talks about Sandton it is not talking about the Sandton municipality, but only the area that is demarcated as part of the TOD node. This area is demarcated in the Sandton UDF (2008).

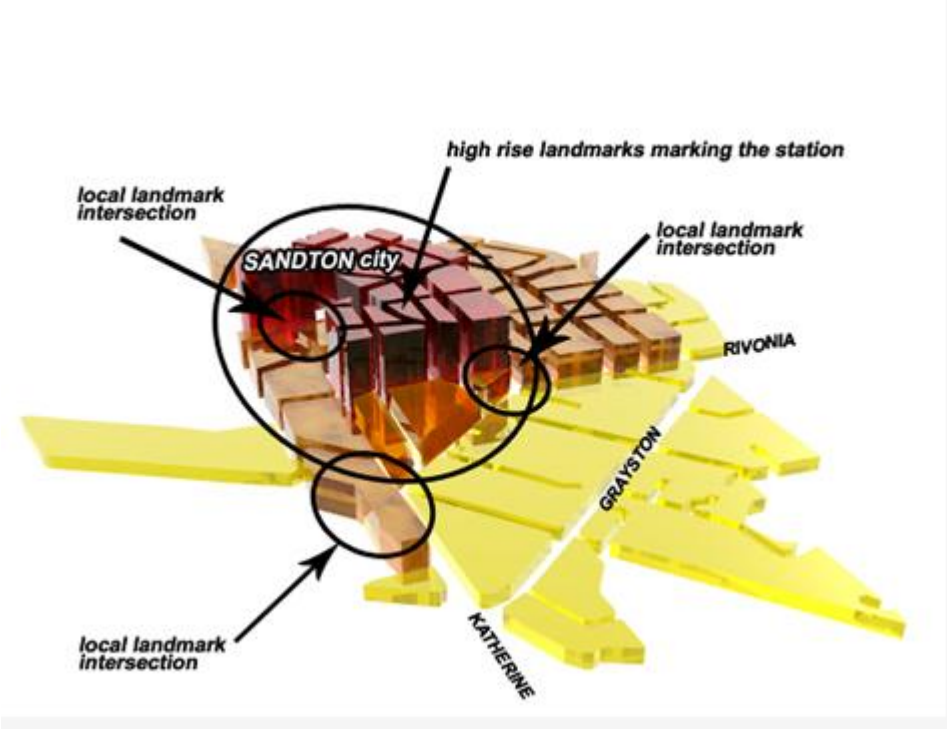

Figure 1.3: A picture demonstrating the Sandton TOD Node (Sandton UDF 2008)

The Sandton node was chosen because of its unique character. Sandton as a node is a compelling case as it is different from the many other nodes. One of the main differences between Sandton and Hatfield, for example, is that Sandton is already an established retail node (SAPOA, 2001). The impact of TOD on a node that is already thriving make the case of Sandton a compelling case study.

1.5 Problem Statement

The South African government has invested millions of rands into ensuring that certain nodes are developing faster than other nodes in the city. The huge amounts of investment from government do not mean that the market -- in the form of consumers and retailers -- has responded positively to the plan. This research sought to understand whether or not the government's investment, in terms of policies and infrastructure, has translated into the private market being attracted to invest in the area. The research also seeks to point out how retailers and developers are responding to the investments into a node that is already viable, such as Sandton. What consumers and developers feel the impact of TOD policies have been and how this has affected attractiveness to the node will also be investigated.

1.6 Importance of the Problem

The inevitable trend towards more compact cities and smart cities in design means that TODs are going to assume increasing importance. To gain the most value out of the developments, there is a need to understand what makes such developments attractive to consumers and hence ultimately attractive as an investment to developers and property owners. By identifying what is attractive to the consumer a better understanding of the logic that underpins the retail market will be unbundled. And by understanding what is attractive to the developer, government will know what makes a node attractive to property investors. This is very important, as it could allow for better planning decisions to be made in the city.

The research results are relevant to both the property development profession and the town planning profession. Understanding the consumer's attraction to the node is of paramount importance when the developer seeks to invest, and an understanding of the major factors that attract developers could also prove very valuable to town planners.

1.7 Research Questions

Primary Research Question:

- *The study investigates how the Sandton node is responding and adapting to TOD.*

The Secondary Research question is:

- *What is the impact of TOD policies?*
- *Have TOD policies resulted in an increase in the Sandton node's attractiveness to the developer and consumers?*

1.8 Research Aim

The aim of this research report is to establish whether or not TOD makes regional nodes more attractive for retail consumers and retail developers by focusing on Sandton as a case study.

1.9 Research Objectives

To achieve the aim, the following objectives will be addressed:

- *Define very clearly what TOD is and how it is being practically implemented,*
- *Establish if TOD stations in close proximity to retail centres make these centres more attractive to retail customers*

1.10 Research Methodology

The methodology of this research is positivistic in nature. I used a case study which is pragmatic (Johnson and Onwuegnuzie, 2004), comprising qualitative methods. Qualitative methods will be used to understand how both developers and consumers feel about TOD nodes. A survey of consumers was carried out based on their use on the TOD node at Sandton, one of the Gauteng stations, to assess what consumers considered attractive for retail in the TOD station. Interviews were also conducted with the developers and owners of the Gautrain station to see how they interpreted the station's impact.

1.11 Assumptions and Limitations

The research seeks to investigate whether an increase in attractiveness of the Sandton node has been created by the TOD policies. The research report, like many others, has assumptions and limitations that underpin the study.

The first assumption is that the reader has some understanding of sustainability as a concept (Parkin, Sommer and Uren, 2003). This report will not go into detail about sustainability as a theory. The reason for this is that an in-depth look into sustainability as a theory will not advance the cause of this research report.

The second body of knowledge that will not be looked into is that of BRT. This limitation in the study is based on the reasoning that the Gautrain is more permanent than the Bus Rapid Transit systems, because of its permanence and durability; not to mention the monetary investment. Also “commercial developers it is believed are attracted by its permanence” (Niles and Nelson, 1999:4). The permanence of a train station also means that there will be a constant flow of customers to retail centres located nearby. Thus train stations have a big impact owing to the scale of investment; they allow for investor confidence as train stations signify government’s commitment to long-term investment in the node. In contrast, BRT systems, whilst still requiring extensive investment, have relatively lower initial capital commitments and, whilst still likely to have an impact, the perceived lower permanence and scale of investment would likely result in a lower impact than rail.

1.12 Chapter Outline

Chapter 1: Provides an introduction to the dissertation’s aims and objectives. It introduced the concepts of TOD, smart city and compact city – concepts that will anchor discussions relating to the attractiveness of TOD nodes in terms of retail development and consumer activity. The introduction also describes the research methodologies that were employed to respond to the research questions with a view to ensuring that these aims and objectives are achieved.

Chapter 2: The purpose of Chapter 2 is to begin to explain the major theories that are relevant to answering the research question and all of the sub-questions. The literature review will not only give an understanding as to what literature is present nationally and internationally, but will also begin to further explain some of the concepts that are pivotal to understanding attractiveness and the dynamics of a TOD node.

Chapter 3: The aim of this research methodology chapter is to provide an explanation of the methodology followed to gather information from the relevant

parties. It seeks to answer the research question posed in Chapter 1 through the qualitative method. Chapter 3 demonstrates how information was gathered from the parties relevant to the Sandton TOD station, as this was the case study.

Chapter 4: The aim of this chapter is to analyse the interviews that took place during the course of the study. The chapter will provide the results of the study and unpack how developers and consumers felt about the TOD nodes and the Gautrain.

Chapter 5: Throughout the study various concepts, theories and questions were posed. The chapter seeks to give a summary of the discussions that ensued and also to provide answers to the research questions posed throughout the research report. The chapter also gives recommendations as to what the implications of TOD could mean for the Sandton node.

2 LITERATURE REVIEW

2.1 Purpose of Chapter

In Chapter 1 a very broad definition of the concepts that formed the foundation of TOD was provided; namely the smart city and the compact city. These concepts explain why TOD came into existence. The first objective of this literature review is to show how smart growth and the compact city principles have influenced TOD policies. The second objective would be to define very clearly what TOD is and how it is being practically implemented, since TOD forms the basis of understanding the major question posed in the study; understanding if and why TOD attracts development and consumer activity.

The third component of the literature review seeks to understand the point of view of the developer of TODs and how this may be linked to potential increases in property values and state-driven initiatives related to the TOD.

The fourth area the literature involves theories that relate to “central place”. Central place theory explains many of the reasons why a node as a phenomenon can work. The theory also begins to unpack which TOD node dynamics are attractive to both consumer and developer. Regarding the theory of central place, Christaller (1933) describes what is happening in a node and how access could influence the way in which the consumer shops.

The fifth and final component of the literature review explains theoretically why TOD nodes should be even more attractive to the consumer than they used to be.

The literature review seeks to explain the meaning of TODs and why TOD nodes are seen as attractive to both developers and consumers. It is only once the reader has a good understanding of TOD that the attractiveness of the nodes can be fully understood. Many of the investment decisions that are made by property developers are driven by the demands of the consumer. Understanding what makes the node attractive to consumers is essential in understanding how TOD could increase consumers’ desire to shop within the nodes.

In order to understand the relationship between TOD, the nodes and the property market, it is imperative to clarify what is meant by “attractive”. Attractions, according to Tam (2012) are key motivations for visiting a destination; these motivations are what pull tourists to one destination or another.

2.2 Influence of Smart Growth and Compact City principles on TOD policies

As discussed in Chapter 1, the “smart growth” movement philosophy has contributed much to TODs. In this chapter a quick reference to more specific tools that are incorporated in the philosophy of smart growth are made. This is important as many of the tools below have been incorporated into the philosophy of TODs.

O’Neil’s Smart Growth tools are listed as (O’Neil, 2000:2):

- Collaborating on Solutions;
- Mixed Land Uses;
- Encouraging Infill Development and Redevelopment;
- Building Master-Planned Communities;
- Conserving Open Space;
- Providing Transportation Choices;
- Providing Housing Opportunities;
- Lowering Barriers to and Providing Incentives for Smart Development, and;
- Using High-Quality Design Techniques

The compact city as a concept was a reaction to urban sprawl (Breheny, 1993). As stated in Chapter 1, the need for compactness is accompanied by the need for sustainability. In the previous Chapter it was also pointed out that many of the ideas from compact and smart city philosophy were used to influence TOD policies (Harrison, Huchzermeyer and Mayekiso, 2004). Below is a list of these characteristics that are associated with the compact city as described by Neuman (2005:14):

1. High residential and employment densities
2. Mixture of land uses

3. Fine grain of land uses (proximity of varied uses and small relative size of land parcels)
4. Increased social and economic interactions
5. Contiguous development (some parcels or structures may be vacant or abandoned or surface parking)
6. Contained urban development, demarcated by legible limits
7. Urban infrastructure, especially sewerage and water mains
8. Multimodal transportation
9. High degrees of accessibility: local/regional
10. High degrees of street connectivity (internal/external), including sidewalks and bicycle lanes
11. High degree of impervious surface coverage
12. Low open-space ratio
13. Unitary control of planning of land development, or closely coordinated control
14. Sufficient government fiscal capacity to finance urban facilities and infrastructure."

Many of the characteristics could be used to describe and design any city. Some of the characteristics mentioned by Neuman (2005) above are very similar to the tools used by the smart city. Yet, in order to demonstrate that TOD policies have been influenced by these characteristics, a direct comparison needs to be made. It is for this reason that a deeper understanding of TOD needs to take place.

2.3 Transit-orientated Developments (TOD's)

Transit-orientated Developments is a worldwide phenomenon linking transport infrastructure to property development in a sustainable way. TOD encourages the ideas of compactness to ensure that mixed use high density communities which are not dependant on driving are created (Still, 2002). TOD's look to maximise the development that is taking place at a node by taking advantage of the market and the locational benefits provided by the adding of public transit services (Keefer, 1984).

2.3.1 Characteristics of a TOD

TOD is the use of transportation to help development in the city focus on certain areas (Still, 2002). The concentration of people in these corridors of development looks to allow for sustainability in the urban form as many of the activities are taking place in a compact manner (California Department of Transportation, 2001). Typical examples of TODs in other countries include those in London, Singapore, Copenhagen and Curitiba (Cervero, 1998)

In order to gain an understanding of how transit-orientated development works, it is important to unpack some of the concepts upon which it is built. These theories will anchor the discussion as to why TOD nodes are considered attractive for retail development and consumer activity later on in the research report.

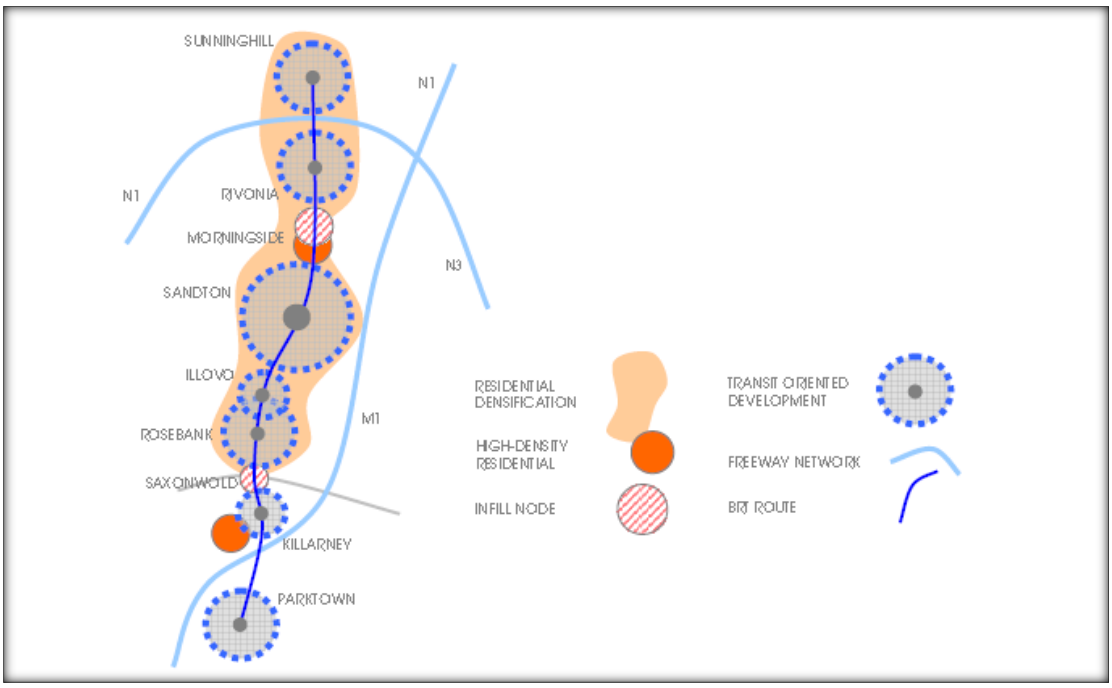

Figure 2.1: The Gautrain TOD concept (Parktown Sunninghill Redevelopment Framework, 2007, p.98)

There are very particular TOD plans that have been set out for the Sandton node. Figure 1.3 illustrates that the TOD is part of a larger network of nodes; this later on in the study will produce interesting consumer dynamics.

Because the City of Johannesburg has promoted the use of TOD, developers are encouraged to develop in these areas (GSDF, 2011). Sandton, because of the TOD policies as seen in Figure 2.2, has had to make changes to the way it is currently operating to accommodate the TOD stations. The changes that are as a result of TOD policies have been set into motion to attract developers and consumers to the area (Sandton UDF, 2008).

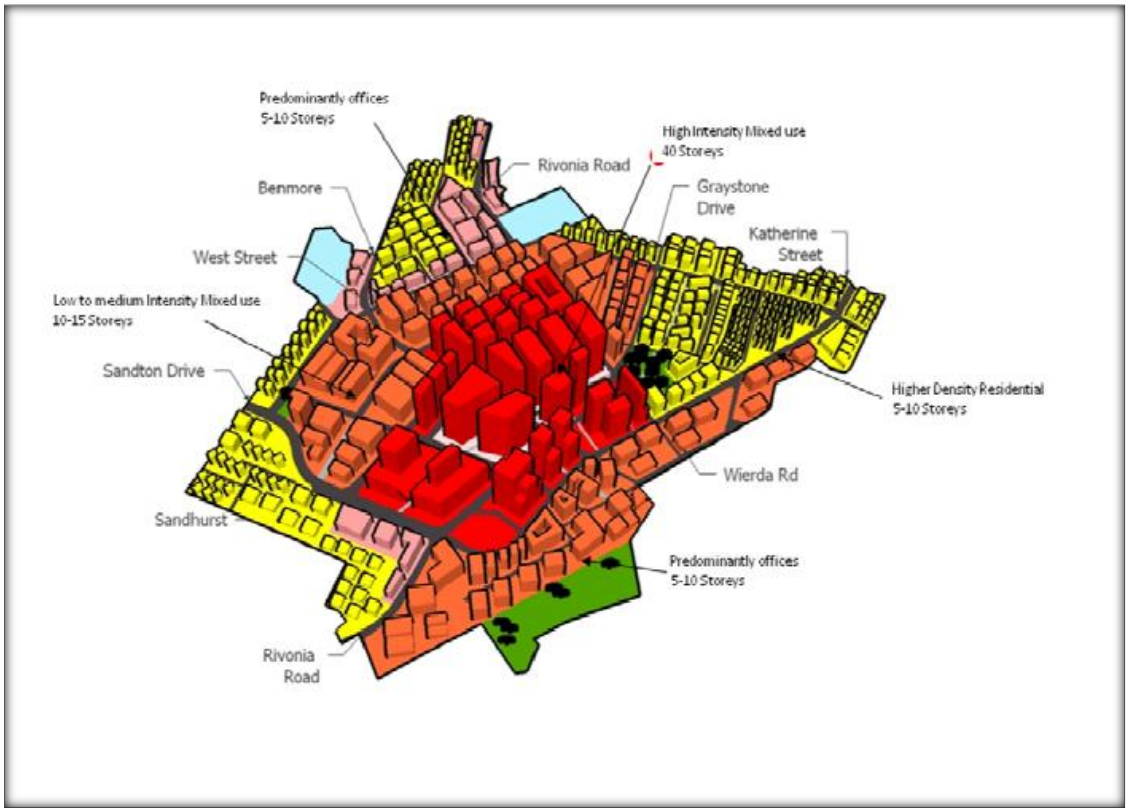

Figure 2.2: A 3D image showing the zoning and the height restrictions that have been lifted for the Sandton Node (Sandton Urban Development Framework, 2008, p.105)

2.4 The Influence of Smart City and Compact City in the Sandton TOD

Sandton is one of the nodes that have been identified and developed. By using the Gautrain and the Rea Vaya Bus Rapid Transit system, the city will be able to channel people into the node, thereby increasing people traffic in the node, which often results in increased demand for goods and services in the node. All of this is being done to reduce the dependency on cars and decrease the amount of carbon emissions from the city (Acioly, 2004).

Along with Sandton being identified as a node, TOD policies were also developed for the node. These policies seek to ensure that the following principles are achieved in the node (Sandton UDF, 2008, p.86):

- "*Compact, pedestrian-friendly neighbourhoods*. Routes should be convenient, comfortable, direct and safe, both to and from all transit stations to promote the use of transit and encourage walking and bicycling.
- *Distinctive and attractive communities built around the location of the station with required facilities including open space*. The stations give rise to unique environments, which provide a community portal to vibrant mixed use areas and activities. Use existing features in the area, such as vegetation, to maintain character.
- *Transit supportive land uses*. Locate uses close to the node to support socio-economic growth.
- *Mixed-use activities, both vertically and horizontally within a city-wide transport network, emphasising local pedestrian movement*. This area should deliver increased services and employment opportunities and offer more choices for housing within walking distance of each other. Retail activities placed alongside these areas promote further ground-floor activity and enhance the image of the neighbourhood.
- *Increased densification and a range of housing options*. This will increase transit patronage within walking distance of the station and cater for people of different income levels at different life stages while maintaining a high quality of design.
- *Reduce dependency on private cars and manage parking*. Provide a variety of well-managed, integrated transport choices: parking, bus, taxi, car, rail, bicycles and pedestrian facilities.
- Adequate service provision and management.
  Engagement and communication."

The city of Johannesburg, in keeping with all of the above principles, has allowed for the development by lifting the regulation that would normally hinder developers from developing. According to the Sandton UDF (2008, p.102) an average height of 40 storeys for buildings has been proposed to ensure that development in the centre of

Sandton is not hindered. Yet many of these opportunities are still to be taken up by the retail centre developers.

TOD developments, because of the policies, are reinforcing and creating hierarchies of space. The theory of central place is pivotal to beginning to understand the relationship between the market and TOD nodes.

Table 1: A table demonstrating how Smart City and Compact City principles have been incorporated into TOD policies

Smart City	Compact City	Sandton TOD
• Mixed land uses	Mixture of land uses	Mixed-use activities.
• Providing transportation choices	Multimodal transportation High degrees of accessibility: local/regional	Gautrain and BRT; Reduce dependency on private cars and manage parking.
• Lowering barriers to and providing incentives for smart development	Sufficient government fiscal capacity to finance urban facilities and infrastructure	
• Providing housing opportunities	High residential and employment densities	Increased densification and a range of housing options

From the table above the similarities between smart city tools, compact city characteristics and TOD policies are clear. Although this is not a comprehensive comparison, the idea is very clear from just taking a snapshot of the three philosophies. These three ideas have been influenced by concepts like central place (Christaller, 1933), which begin to explain the rationale as to why these TOD policies in theory should increase the attractiveness of a node like Sandton.

2.5 Theories of Central Place

Theories of “central place” are descriptive theories that try to interpret the patterns of the retail market in terms of geographical location. The father of central place theory was Christaller (1933), who sought to depict the macroeconomics present in urban landform by using a hexagonal structure. This structure uses a few more themes like hierarchy and gravity which, through a working model which seeks to explain the reason behind the attractiveness of certain nodes (Hall and Hite 1970). The other themes which are used to govern the model are market area, city hierarchy, hexagonal structure, spatial general equilibrium theory, transport cost and return to

scale. For the purpose of this dissertation a basic understanding of Christaller's theory will be looked into as it provides an understanding as to why TOD nodes would be seen as attractive. Central place theory has also resulted in many other theories on what occurs in these TOD nodes. Some of these theories will also be explored to gain a better understanding of what TOD nodes mean for both developer and consumer.

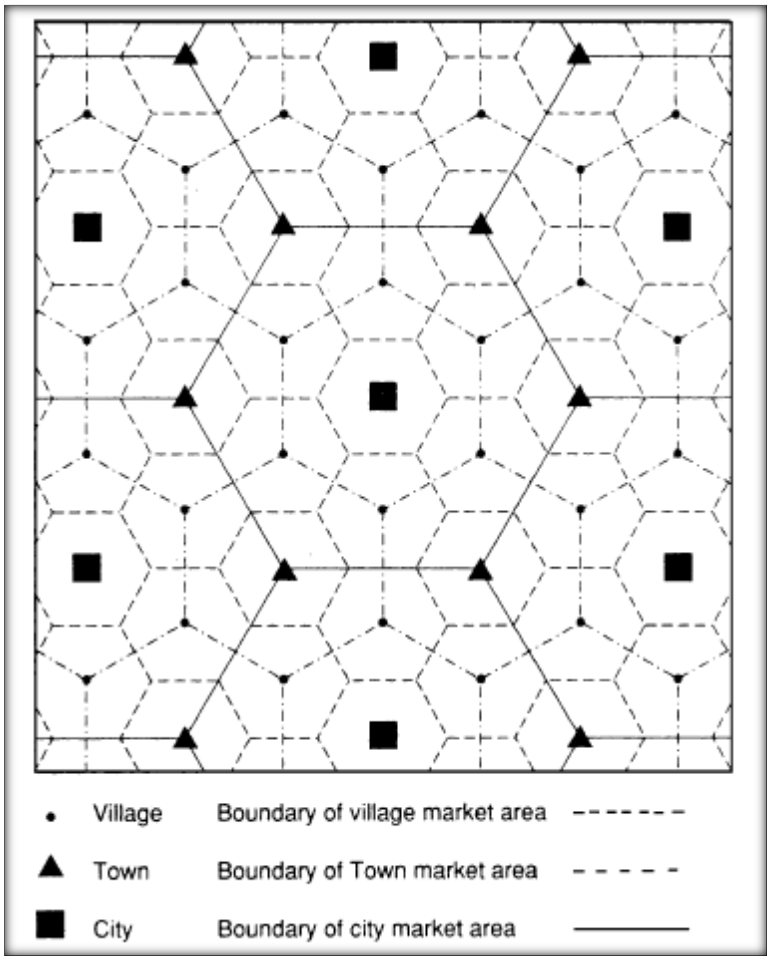

Figure 2.3: A demonstration of demand areas according to Central Place theory (Dennis, Marsland and Cockett, 2002:187)

In Figure 2.1 above, three main typologies of urban hierarchies are identified. The first is the village, the second is the town and the third is the city. The diagram demonstrates how urban environments generally function. The hexagonal structure represents how the city organises its market areas. Each level of hierarchy is geared for another level of commodity (Hall and Hite, 1970).

According to Dennis (2002), these hierarchical patterns have also been used to understand attraction to developments. “The development of the authors’ attractiveness model follows and the model is used, in case study examples, to define steps in the retail hierarchy, based on shoppers’ choice behaviour.” (Dennis, Marsland and Cockett, 2002:186). These models demonstrate how consumers operate within the urban environment. In terms of retail, the village would provide the daily groceries and the town would provide products of a higher order. A development like Sandton City, for example, would house niche goods in branded stores that would draw from a larger consumer base to be sustainable.

TOD developments have taken advantage of this hierarchical structure and sought to link them through bus systems (BTOD) and rail systems (RTOD). An increase in access to these nodes through the use of BTOD and RTOD in theory will also result in more demand from developers to be within the nodes. As a result many new types of market dynamics are introduced.

As illustrated in Figure 2.3, the different nodes can be likened to “beads on a string” as described on the Gautrain website. The reason for this in the Gauteng province is the Gautrain. The Gautrain acts as a connector of the nodes. The connecting of these nodes will imply a shift in the way that Christaller’s (1933) theory operates. Because this has been experienced in other countries some of the lessons learnt can ensure that developers are prepared for some of the market dynamics that are about to be unravelled as a result of the connectedness of the nodes.

2.6 Understanding the Market Dynamics of TOD

Having TOD nodes that are interlinked also means that there are markets that are interlinked. The consumer, because of the Gautrain, will have access to all of the nodes in one shopping trip. It is for this reason that Christaller’s theory was pointed out. The hierarchical system that is present within the urban landscape will be challenged. Theories of competition and cooperation as a result of the linking of spaces in this way have been made reference to.

Because the nodes that were previously classified under cities are now linked with other cities, there is a possibility that some nodes will be able to draw people in from

distant places. The advent of the Gautrain is a phenomenon that has not had its full effect. A direct result of these nodes being connected is competition.

Competition for the consumer is the main objective of the market as the law of supply and demand will ensure that processes are regulated fairly by the invisible hand of the market (Smith, 1776). Yet, because the nodes are connected, it is important to note that competitors from one node could now be affected by the aggressive market tactics of a different node that previously sat in a different catchment area. “The idea is that monopoly (‘monopolism’) would result in high prices while competition in the form of many sellers (‘polypolism’) would drive prices down” (McNulty, 1967:395). The connectivity of a node could also result in major nodes like Sandton and Hatfield competing because of the advent of the Gautrain, whereas previously the distances involved and time taken to travel meant they were unlikely to be in direct competition.

To ensure that the behaviour of the consumer, as well as that of the developer, is not competitive in a destructive way, and the TOD nodes remain sustainable, the application of the theory of “co-opetition” (Dagnino and Padula, 2002) is being proposed. “In management literature the hybrid behaviour comprising competition and cooperation has been named co-opetition.” (*ibid*.:3). The reality is that because the nodes are connected the developers, in order to ensure that their developments remain sustainable, will have to cooperate yet still remain competitive.

The Gautrain nodes such as Hatfield that are being developed are being developed with the consumer in mind, as these stations connect the consumer to other retail nodes like Sandton. Being competitive essentially is ensuring that the consumer is most attracted to one particular node. Yet in the light of co-opetition it is essential that all nodes cooperate to ensure that consumers are not torn between the different nodes. In the following section a deeper understanding is offered of what makes consumers attracted to a node or to a centre.

2.6.1 Positive and Negative Externalities created by TODs

The thread that runs through this research report relates to the positive aspects of implementing TOD policies. In Chapter 1 the quest for sustainable cities was highlighted. Later on in Chapter 3 the idea of the node demonstrates that the

locations of the TOD centres are often beneficial. In this regard, Rodriguez (2009) demonstrates that property values are definitely affected positively by BRT activities.

For Bowes and Ihlanfelt (2001), there are four positive consequences of TOD, two of which can result in higher property values. The first two are as follows:

1. *TOD increases the access that people have to an area.*

An intention to increase access to certain nodes has been a clear intention in TOD policies. This has been pragmatically implemented by the introduction of the Gautrain and the BRT. The control of access to an area leads into Ihlanfelt's second point of population densities in an area.

2. *Because of the high access that the volumes of people have, retail centres may be attracted to the area.*

An increase in population is definitely seen as a positive because of the increase in buying power that in the area. Yet this can also put pressure on the urban infrastructure (Asoka, Thuo and Bunyasi, 2013). The increase of the density of the area may be quantitative, but the intensity which addresses the way the space is used might be harder to calculate (Williams, Burton and Jenks, 1996).

The next two factors can be seen as negative consequences of BTOD and TTOD.

3. *The concomitant rise in noise levels*.

The push for development may come with an unexpected negative spinoff. Urban noise pollution for a long time has become a significant environmental problem (Bragdon, 1978). The impact that the increase in the noise has on the Sandton node will still have to be looked into as public libraries and retail centres all involve certain levels of noise.

4. *Crime may be "higher" in the area because of this.*

Crime is a factor that is particularly relevant to the South African context. Crime dramatically increased in the early 1990s (Schonteich, 2001), particularly in Gauteng but also in South Africa at large, although this has been followed by steady decreases in the 2000s (StatsSA, 2004).

2.7 TOD and Retail and Property Developments

This section aims to unpack what value commercial developers find in a TOD station or development. One of the first points that must be raised was brought up in an article by Niles and Nelson (1999), and that is the question of permanence. “Commercial developers it is believed are attracted by its permanence” (Niles and Nelson, 1999:4). Although upgraded over time, railways are extremely durable, with many of the first railways dating from the industrial revolution still in use. Thus the spatial characteristics of railways are not subject to change. The permanence of a train station means that there will be a constant flow of customers to retail centres located nearby. Thus train stations have a big impact owing to the scale of investment; they allow for investor confidence as train stations signify government’s commitment to long-term investment in the node. In contrast, BRT systems, while still requiring extensive investment, have relatively lower initial capital commitments; and while still likely to have an impact, the perceived lower permanence and scale of investment would likely result in a lower impact on rail.

Porter (1997), in a study of TOD across the United States, concludes that rail tends to stimulate concentrated development in CBDs like Sandton because transit is highly accessible and automobile traffic is impacted by congestion and costly parking. Rail alone is not sufficient to generate development; strong market forces and supportive public policies are also needed (PBQD, 1996). It is for this reason that the policies that support the nodes are so important.

Bus stations are effective, yet are less permanent that train stations. Sandton has both types of TOD operational in the node. Tseytin (2006) has classified the two types of TOD as follows: Train TOD (TTOD) and Bus TOD (BTOD). Both are essential to ensuring that the travel patterns of consumers are consistent within the node (*ibid*.).

Niles and Nelson (1999) state that station-area development is more a product of market interest in specific locations than a response to transit. Because a TOD station creates nodes, the retail market is able to respond to these nodes. The retail market is critical to the success of the TOD and so consequently critical to the success of the future city. Niles and Nelson (1999) go on to say that TOD’s success depends on various factors like the response of the retail marketplace -- including

developers, store owners, and consumers -- the imperatives of density and transit accessibility. Thus the appropriateness of the response to the transport node by retail developers can become critical. Victoria Station is a good example of an airport that became a node for various other activities because of TOD policies (Litman, 2012). It is clear from the example of Victoria (Litman, 2012) that the interconnectivity of and accessibility to stations allows for the changing of the character of the node and could result in a node changing into a retail destination.

The location of the TOD nodes presents an interesting case of future interdependence. The retail centres in places like Sandton look to experience much success because of the location and the volumes of people moving through the area. These consumers have the potential to impact many aspects of the centre; it is for this reason that it is so important to understand consumer patterns.

2.8 Understanding Attractiveness

Tam (2012:218) says the following: Attractiveness is defined by the “primary elements of destination appeals. They are the key motivators for visitation to a destination. This is generally what pulls tourists from one destination to another.” From the quote above attractiveness can be understood as a quality that causes an interest or a desire, which motivates consumers to make a trip to their destination of choice. Vengesayi (2003) goes on to point out that the more motivators the destination has and the more it is able to meet the needs of tourists, the more likely the destination is to be chosen and to be seen as an attractive destination. The study of attractiveness in this report unpacks the constituent layers of attractiveness in the urban environment. The study also investigates the pull factors attracting the developer and the consumer to the Gautrain transit nodes. One of the ideas presented in the literature and adopted as a motivator or a pull factor for development at the Gautrain nodes is TOD policy (GSDF, 2011). The following section explains TOD policies and how they propose to change the urban environment.

2.8.1 Attractiveness to the Consumer

Nodes created by TOD policies create a “bundling or agglomeration effect” (Sandton UDF, 2008). This bundling effect can be seen as an attraction for the consumer as it

acts as a pull (Vengesayi, 2003). In this section, a number of other factors that make retail centres and nodes attractive are discussed.

According to Teller and Reutterer (2008) there are a number of characteristics that make retail developments, particularly the ones in these agglomerations, more attractive. They point out a number of areas that influence the consumer's decision as to whether or not a retail development is attractive or not (ibid.).

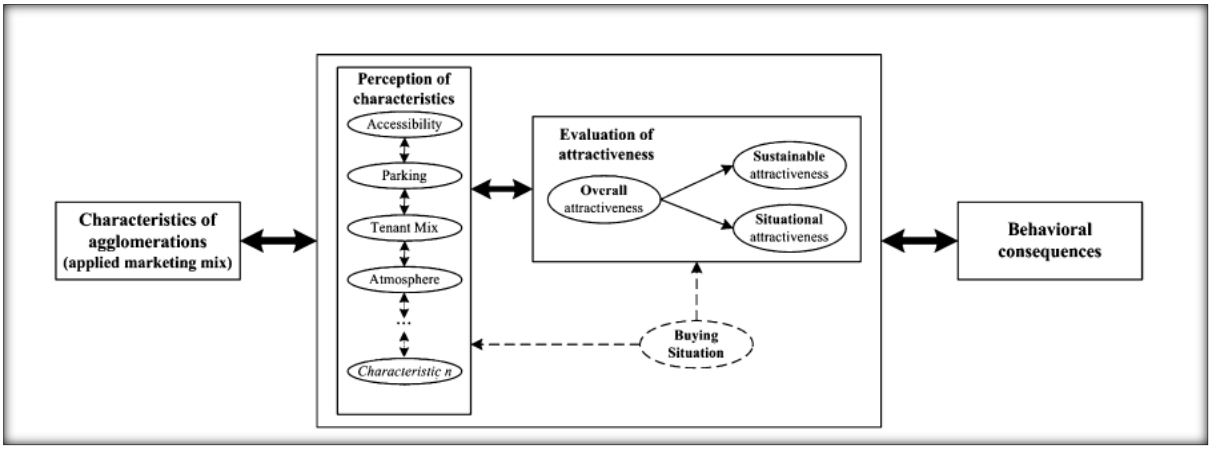

Figure 2.4: Evaluation of Retail Attractiveness from the Consumer Perspective (Teller and Reutterer, 2008:129)

In Figure 2.2 above the various aspects of a retail development that are attractive to the consumer are indicated. In the article, these include accessibility, parking, tenant mix and atmosphere. Later on in this dissertation a full list of these categories will be used to evaluate how consumers are responding to the attraction of retail nodes like Sandton. With all of the dimensions of attractiveness to consumers in place, a clear understanding may be gained as to what the consumer recognises as important.

Teller and Reutterer (2008) have given about eight factors that have been used to measure attractiveness in the study. It is important that these characteristics be presented as they contribute to the cognitive framework which will be used in the questionnaire.

The first of the characteristics that influence the attractiveness of a place according to Teller and Reutterer (2008) is the accessibility of the area. The authors go on to say that accessibility is also linked to idea of convenience. This allows the consumer

to access the goods that are being sold. TOD, as discussed earlier, uses the Gautrain and BRT to increase accessibility in the node. Yet the way the consumers feel about this must be tested. Associated with the idea of accessibility is the idea of parking. These, according to Teller and Reutterer (2008), are “site-related factors”.

According to Teller and Reutterer (2008), the next group of factors are “tenant-related factors’. These factors relate to the degree to which consumers are able to satisfy their needs. The Sandton UDF (2008), and the philosophies of Compact and Smart cities all talk about tenant mix. Whether these are retail or non-retail, they are important to ensure that the area is attractive in the eye of the consumer (Bearden, 1977).

Environmental factors like ambience which give rise to sensual stimuli and affect the atmosphere are very important as well (Teller and Reutterer, 2008). As discussed earlier by Rodriguez (2009) spinoffs like crime, dirt and noise can also negatively affect the environmental attractiveness of an area.

The last area mentioned by Teller and Reutterer (2008) is what they term overall attractiveness. This factor was used to understand areas that the everyday person on the street would see as important while travelling on the Gautrain. This included the reliability, responsiveness and competence of the staff on the train and at the node, all of which could add to the probability of the attractiveness of the node (Bucklin 1971, Vijayahumar, 2011). Factors like punctuality of the train are especially relevant in the South African context. Other factors, like those around communication, came out of the idea to understand if communication with the consumer was of importance (Habermas, 1984). All of these different elements together contribute to attractiveness in an area. The culmination of the different factors of attractiveness were used to investigate the perceptions of the different stakeholders. These factors have been summarised in the table below.

1. Reliability: The punctuality of the train	Vijayahumar (2011)
2. Responsiveness: Time taken for a query to be responded to	Habermas (1984)
3. Competence: Public opinion of the Gautrain staff	Habermas (1984)
4. Access: How consumers experience accessing the train	Teller and Reutterer (2008)
5. Communication: The Gautrain’s ability to	Habermas (1984)

communicate with the consumer	
6. Credibility: Likelihood of train working	Vijayahumar (2011)
7. Security: How safe the passengers feel using the train	Rodriguez (2009)
8. Understanding and knowing the consumer: what the consumers' needs are	Tam (2012)
9. Physical appearance: the influence that aesthetics play on the attractiveness of the train	Teller and Reutterer (2008)
10. Accessibility: Distance and time as an attraction	Teller and Reutterer (2008)
11. Parking: price of parking	Teller and Reutterer (2008)
12. Tenant mix: Types of shops at nodes	Teller and Reutterer (2008)
13. Atmosphere: understanding the type of environment when using the Gautrain	Teller and Reutterer (2008)
14. Destination shopping: How retail creates the destination	Recker and Kostynuik (1978)

Table 2: The fourteen elements that contribute to attractiveness and the theories with which they are associated

As demonstrated in the table above, many of the categories, when included in the questionnaires, have been rephrased, so as to ensure that the everyday person on the street would have a good understanding of what was being included in those definitions. All of the factors above begin to give a picture of the factors that could define attractiveness, yet this once again is not a comprehensive list of all possible factors.

By adopting all of the characteristics of attractiveness set out above, nodes can also increase the desirability of the area (Teller and Reutterer, 2008). One of these ways is to ensure that the nodes well define what they are providing (Dagnino and Padula, 2002). These nodes are then seen by consumers as destinations where desirable items and activities can be found, like branded clothing, electronics, entertainment and recreational activities, and business (Thu, 2012).

2.8.2 Destination Shopping

TOD connects nodes in the city that previously were not connected. The customer potentially could travel from Sandton to Hatfield and back in less than an hour. It is for this reason that the nodes have to be increasingly defined. Although the character of Sandton is defined as "high end", interesting variations to this definition

can be envisaged. When seen as within a province, the centre in the future could get creative in attracting people from further away to the centre.

Destination shopping is different from regular, casual shopping in a number of ways. The first way that destination shopping differs is in the time that the consumer intends to spend at the destination (Recker and Kostynuik, 1978). A customer engaging in destination shopping may plan a trip to a retail centre in order to spend a number of hours there as entertainment, rather than simply for the act of purchasing goods. Recker and Kostynuik (1978:32) hypothesised destination shopping as a result of three influences:

- the individual's perception of the destination;
- the individual's accessibility to the destination; and
- the relative number of opportunities to exercise any particular choice.

Destination shopping then has many alternatives but, when looked at in terms of what Christaller (1933) stated earlier, will also have alternatives that fewer people have. A good example is that Sandton City has a Louis Vuitton shop, which is the only one of its kind in the Gauteng region.

In order to ensure that destination shopping is a success, it is important that the different centres in the region remain clear about their purpose. Sollohub (2006) emphasises the essential role information plays in mass transit mobility. "It stresses the critical importance of the means by which that information is conveyed. The attributes of those means – clarity, legibility, and readability – must not be taken for granted" (*ibid*.:84). Although the article refers to BRT, the point that it is making is applicable to TOD and more specifically retail centres as well.

2.8.3 Joint-Venture Development

Joint ventures are characteristic of TOD. The partnering of state and developer is an initiative by the state to ensure that the node, which it is developing is also taken up by the market. Joint developments occur also as a result of a need for the state to facilitate the development process, in ensuring that growth within the nodes is encouraged:

Joint development is defined as a development project that occurs in, on or adjoining an RTD transit facility (e.g. a rail or bus station, maintenance facility, other transit system infrastructure, or administrative office) that involves another public and or private partner. Joint development may involve air rights development, ground lease arrangements, the outright sale of land or other initiatives that may promote real estate development at or near transit stations to the mutual benefit of public and private interests. Joint development is a subset of TOD under which RTD partners with a developer for land use, infrastructure improvements, and shared facilities in addition to coordinating development with any adjacent property owners. The purpose of RTD engaging in joint development is to increase ridership, provide an opportunity for increased revenue and enhance the overall attractiveness of its transit system" (Fasttracks, 2006:3-13).

A joint development is a partnership that is developed by the government with the end goal, as indicated in the above extract, to make the node more attractive (Fasttracks, 2006). These collaborations allow for the sharing of responsibility and risk for the developer and another. What it also means is that many more projects can be developed because the City of Johannesburg is "funding" the process through joint developments. The state's interest is to ensure investment into certain areas and it does this with projects like the Gautrain and partnerships to develop buildings within the node.

2.9 Chapter Summary

The literature review has covered concepts like TOD, destination shopping and joint development. A greater understanding of current literature, both national and international, was presented. The fundamental concepts that surround attractiveness and how attractiveness can be interpreted for the purpose of the study have also been created. A number of the research questions posed in the first chapter have also been answered as part of the literature review.

The literature review demonstrated clearly the policies that surround TOD – not only outlining what TOD developments are, but also demonstrating that there are many philosophical standpoints that surround TOD. Good examples of this are the

pedestrianised walkways, and building relaxation and other incentives which all serve to promote development around stations like the Gautrain stations.

The second area looked at sought to understand the objectives of TOD. This question was also answered. TOD policies, as demonstrated earlier in the chapter, are being used to shape the urban form. The policies and incentives are being used to allow for a smart and compact city, and policies are encouraging investment from the market to ensure that the urban form is more sustainable (Sandton UDF, 2008).

The third area looked at sought to unravel how shopping centre attractiveness could be understood. Attractiveness was defined as a number of features or qualities that make something more desirable. In the chapter the many aspects of attractiveness have been explored, including reasons why developers would be attracted to a development, as well as how the concept of destination shopping attracts consumers to a shopping node.

The final area looked at how TODs influence the attractiveness of shopping centres. The answer to this question was pointed out by Niles and Nelson (1999). The concentrated developments around the stations and the increase in pedestrian flow have many positive impacts on retail centres.

All of the literature that has been presented in the chapter has sought to give a better understanding of the concept of attractiveness in the urban environment. Attractiveness for the purpose of this dissertation is mainly concerned with the perspectives of the developer and the consumer. How these two groups interpret what has been presented as attractive will be looked into in the following chapters. Chapter 3 will outline the methodology used, and Chapter 4 will provide a detailed analysis of the results of the study.

3 RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this chapter is both to describe the research design adopted to answer the research questions and to justify the design adopted. The research in its essence is exploratory as much of the information about the Gautrain is new and as a result will need further investigation. In Chapter 1 only the overarching research question was stated. Although not stated in Chapter 1, a number of sub-questions were posed and were answered in Chapters 1 and 2. These questions are as follows:

- The study investigates how the Sandton node is responding and adapting to TOD.

The secondary research questions are:

- What is the impact of TOD policies?
- Have TOD railway stations made retail centres more attractive shopping destinations?
- How do TODs influence shopping-centre attractiveness?
- Why are retail developments “attracted” to TOD nodes?
- Why is the node attractive to the developer and the consumer?
- Has there been a change in pedestrian flow through the centres?
- What are the effects of the TODs in terms of incentives and/or disincentives?
- Have there been any externalities from TOD development that have affected shopping centres?
- Are TOD nodes more attractive to retail developers than other nodes?
- What in particular makes the node more attractive to retail developers than other nodes?

The epistemology of the research is one of multiplicity and for that reason lies within the area of post-positivism (Ryan, 2006), which means that the research will take into consideration the more qualitative views of the interviewee. The research report is pragmatic in its approach from the outset and is also exploratory, which it is,

according to Thayer (1984), as it is concerned with practical outcomes of the study that have been explored as the topic of the TOD in Sandton is relatively new.

The methodology will primarily be looking at the populations of the Gautrain at the Sandton node. This node as stated, in Chapter 1, is important to understand as a case study as it differs from all the other nodes. Sandton is a compelling case as it is already established as a retail node, as so TOD being introduced can only impact an already vibrant node in a positive or negative way. The node is complex and has multiple stakeholders. Understand that its population comprises not only the consumer, but also experts like the developers and the town planner. In this regard, it is important to get to understand the research population by creating a representative sample, which allows the researcher to comment confidently on the patterns of the consumer and the thoughts of the experts.

3.2 Population and Sampling

This section seeks to understand the research population and how to test the different groups that are represented in the node. The research assessed some of the most influential actors in the node. The first was the consumer, the second the developer and the third the town planners.

3.2.1 The Consumers

The Gautrain can carry approximately 60 000 people per hour (My Train, 2013). Because the research had to be completed in one year and there was no budget to hire people to help interview, the researcher had to settle for a representation of the consumers, as discussed below.

3.2.2 The Developer

The second group that needed to be looked at were the developers. For this group of people the sample is much smaller, largely because it was difficult to get it to participate. The developers are the property developers that make decisions in the Sandton node. It was important for this section to ensure that the property managers for the large retail centre, namely Sandton City, were interviewed. This group, even though they are not property developers or retail owners, do manage the property and interact with the retailers. It is for this reason that they were used as a proxy to

collect the necessary data. Other property developers in the area became less relevant as not all of them were interacting with the retail activity that was taking place at the Gautrain station.

3.2.3 The Town Planners

The third group interviewed was the Town planners at the City of Johannesburg. The Joburg municipality is important as the node is operating with incentives and policies that have been conceptualised and implemented by town planners. This group is important as the incentives they have put in place, as demonstrated in Chapter 2, are an attempt to make the areas more attractive to investors. Because there is only one municipality it does not matter how many or how few people are interviewed, the unit of analysis is the municipality and there is only one.

3.2.4 Drawing a Representative Population

The different types of populations had different methods of analysis. This section seeks to unpack all of the different methods relating to the different population groups.

The first group that will be looked at is the consumer. The procedure for analysing the population was to go at different times of the day over a period of a week and to use a method known as ‘accidental sampling’ (Page and Meyer, 2000) to interview consumers. As the consumers were exiting from the train it was possible to get at least 10 interviews within an hour. The interviewing process then took place on Monday at 8am, Tuesday from 12-1 pm, Wednesday from 5-6pm and Thursday back to 8am. The process was done for a week as there was only one week allocated to collect the data. Undertaking interviews at different times of the week seeks to ensure that the data is reliable. The different times of day also demonstrates that the study avoided the results being biased (Saunders, Lewis and Thornhill, 2009). At the end of the process a sample of 50 consumers was interviewed. This data was enough to enable comment on the patterns, yet not enough to serve as a representative for the total population. Further studies will have to be done to confidently gain a representative of the population. It is for this reason that the study was exploratory.

The method of drawing a representative group for the developers was different. Because developers are a niche group of experts they were much harder to contact. It is for this reason that different techniques had to be adopted. The “snowballing” technique (Page and Meyer, 2000) meant that one developer was contacted, and at the end of the conversation the question would be whether or not the developer knew anyone else who would be able to contribute and answer the questions that had just been posed. The developer then would normally give the telephone number of other professionals that they thought able to answer the questions that were posed and able to contribute to the discussion. This went on until the developers either said that they knew nobody else, or mentioned developers that had already been interviewed.

The method for gaining a representation of the town planning profession was different from that for the first two because town planning is a profession that is very small and there are only a few people that are responsible for town planning in Johannesburg, particularly in relation to the Gautrain and the policies that surround the node. It is for this reason that a non-probabilistic type of analysis was chosen, which identifies a number of particular people from the profession. This selection process is referred to as judgemental sampling. “A judgemental sample consists of respondents who, in the judgement of the researcher, will best supply the necessary information” (Page and Meyer, 2000:99)

It is also important to note that because of time constraints not all of the interviews that were done could be conducted in person. Some were conducted telephonically.

3.3 Timeframes of the Data Collection

The research, because it was spilt into consumers and developers, had to be undertaken at different times. The consumer interviews were the only interviews that were done face to face. This was primarily because many of the consumers had to be interviewed on the spot with questionnaires, as the interviews took place at the Gautrain station. The interviews, as discussed earlier, took place over a week in November 2011.

The developer interviews were different as they were done over the phone. These telephonic interviews took place in November 2011, and the time of year made it

very hard for face-to-face interviews to take place. Because the interviews were telephonic, some information that could be gained through face-to-face conversation was lost. Yet, that being said, the interviewer was able to be more flexible in terms of the times suggested for the interviews to take place. The telephonic interviews with the town planners took advantage of the same principles of time management.

3.4 Analysis Plan

In order to better understand the research methodology that is being presented, it is important to explain what the different stages of the research entail. Although most of the sections above have been explained, one of the objectives of this section is to directly relate these sections to the research.

It is important to note that because the research seeks to collect both qualitative and quantitative data, the research methods chosen will ensure allow of the collection of the diverse types of data need for research report. Although this can be seen from the beginning of the study it can especially be seen from the survey study.

The semi-structured approach is beneficial to this particular type of study as it combines techniques from both the structured and the unstructured interviews. The combining of many different aspects or methods is continued when looking at the structure. The researcher chose to use both probabilistic and non-probabilistic methods. The probabilistic sampling will be used to understand the consumer.

The multi-stage sampling technique is a combination of all four of the probabilistic techniques. Cluster sampling is used to understand the results from the Sandton Gautrain station. Systematic sampling was employed to ensure that the interviewing process is constant. All of the methods that have been shown above will be used to gain an accurate sample from which to draw correlations. Yet the information coming from the consumer and the information from the developer is very different. It is for this reason that non-probabilistic methods are used to understand what the developer thinks about the attractiveness of the Gautrain nodes for development.

Non-probabilistic sampling has five different types that have been identified. Of the five types of non-probabilistic sampling only three of these types were used to gain further information about whether or not the developer sees the Gautrain station as

attractive for developments. A good example of a non-probabilistic technique that can be used is snowballing. As mentioned above, it was used because developers have a very good understanding of who has special knowledge in the industry. For this reason it is important to accept their counsel as to who should be interviewed.

The technique used to understand the town planners was also non-probabilistic. This is because the sample group was very specific. For that reason judgemental sampling was used. What this meant was that only certain town planners were interviewed, and that resulted in a judgement being made as to who the important people with specific knowledge could be.

Techniques used for the consumer used more of what could be seen as non-probabilistic sampling. The use of accidental sampling was also used to an extent in understanding the consumer. Because many of the individuals who used the train were strangers, the researcher relied on being able to interview consumers who were between destinations, or waiting to get collected from the station.

3.5 Validity

There are a few areas that are important to note when the validity of the data is mentioned. A few of the aspects that ensure that the data is not compromised have already been discussed. The section goes into more detail as to what measures were taken to ensure that the data remained uncompromised. It is also important to note that there are other areas outside the collection of data that can affect the validity of the data. Adequate mitigation measures were designed to circumvent this.

There were two main types of interviewing methodologies that were used. The interviewing methodology for the town planners was unstructured. This was to ensure that all of the information available to the planners was explored. It must be noted that the planners were different, in that judgemental sampling was chosen to address this group of people.

Semi-structured interviews were employed to ensure that many of the pertinent questions in the literature review were addressed. Analysis of all three groups of participants is further elaborated on in Chapter 4. It is important to note that

qualitative interviews are naturally reliant on participants being honest during the interviews (Page and Meyer, 2000).

There are other areas that can affect the validity of the data. Many of the events leading up to the interviews influenced the way in which the participants responded. The Gautrain in the past has been surrounded by controversy. This history could affect the results, especially if the same study was done a month after the perceptions of the people had been influenced by, for example, a Gautrain breakdown. A good way of explaining the mixed method approach is by giving an example.

3.6 Interviews

As stated at the beginning of Chapter 2, interviews were the method used to discover how retail developments and consumers have responded to TOD. Because much of the events relating to TOD are relatively recent in South Africa and in Johannesburg, there is some information that has not yet been documented formally. It is for this reason that qualitative methods were used to interview the consumers and the developers (Sofaer, 1999).

The researcher interviewed those people with knowledge relating to complex phenomena occurring around the TOD stations. It is important to note that these people have unique knowledge that relates to the different areas in which TOD can influence retail developments. In the next chapter the major themes of the discussions, as well as the results of the interviews will be documented.

3.7 Reliability

Golafshani (2003) states that reliability looks to understand if similar results can be reproduced under a similar methodology and whether or not the research instrument can be considered to be reliable. It is important to note that because the interviews are qualitative the emphasis for this research is on the reliability of the method and the questionnaires. Both of these have been elaborated on and the method can be repeated again.

3.8 Generalisability

Despite the many positive aspects of qualitative research the most common critique for the type of study is the lack of objectivity and generalisability. According to Polit and Hungker (1991) generalisability can be defined as the degree to which the findings can be generalised from the study. Although many of the theories in the literature can be generalised this was not the primary concern of this study, which was exploratory in nature.

3.9 Protocols

This section seeks to unpack the different types of methodologies that were used when addressing the three different stakeholders. It is important to note that although some of these interviewing methodologies are the same there are variations in the approaches that made each group unique. Many of these nuances are documented in this section.

3.9.1 **Interview Outlines and Questions**

Different methodologies have been adopted when interviewing the different types of stakeholders. As this chapter deals with the different types of stakeholders, the particular methods that were used will be elaborated upon.

A list of influential people that have understanding of the complex phenomena that relate to TOD was drawn up. The list is as follows:

Interviewee 1	Sandton City Centre Manager
Interviewee 2	Project developer Liberty Properties
Interviewee 3	Liberty Properties' Sandton portfolio
Interviewee 4	Johannesburg Planning and Urban Management Department
The everyday consumer	Consumers

Table 3: People to be interviewed

It was of utmost importance that when interviews with the different stakeholders took place, the proper ethical code was followed.

3.9.2 Ethics

It is important to note that measures were put in place to ensure that the proper ethics were upheld. For the purpose of this research the anonymity of the respondents was protected and the interviews were all conducted with the permission of the respondent (Resnick, 2011).

3.9.3 Purpose of the interviews

In Table 1 above, it is clear that there are three groups of participants that were interviewed. The first group that can be clearly distinguished is “the everyday consumer”. The purpose for interviewing this group of people was to seek to gain a good understanding of what drives the market and what the everyday consumer is attracted to. Interviews with everyday consumers give insights as to how attractiveness is experienced at grassroots level.

It is important to note that developers are very sensitive to the market and make decisions as to what is happening in the market, and it is for this reason that the market is being focused on. The developers also have a unique understanding of how attractiveness is perceived, and interviews with them will look to tap their unique knowledge. Both of these parties are able to impart their unique understanding and at the end the study we will look to see if the phenomenon of attractiveness is the same for both parties.

The developers are the second major actors in terms of attraction. The interviews with the developers and property managers who acted as proxy for developers sought to understand why they are attracted to the TOD nodes. The understanding as to what developers are attracted to, and how they seek to make the area more attractive, was of utmost importance. The interviews also sought to understand whether measures had been taken to quantify an increase in attraction to the area since the advent of the Gautrain.

The third actor that was interviewed was the City of Johannesburg municipality. Because the Sandton node was a case study, the literature demonstrated clearly that this party had taken steps to ensure that there was legislation that brought development through incentives in the area. In essence these incentives were an attempt to make the area more attractive. The purpose of the interview with the town

planner was to find out whether or not these were successful in attracting developers to the node or not.

All the questions put to the relevant parties can be found in the Appendix. The consumers were given a questionnaire. The interviews were analysed using discourse analysis (Alba-Juaz; 2009). This assisted in the analysis of the different types of conversations that had taken place with the participants. Although many of the questions were structured, some of the questions were open-ended and for these types of questions the theory proves very relevant. For the developers and the town planner semi-structured interviews were used, which allowed for areas where their unique knowledge, as stated earlier, could be accessed.

3.10 Assumptions

There are some very strong assumptions that can be made about the qualitative data that have been collected. Many of the interviews that were done ran on the assumption that the people who were interviewed were generally correct. In essence the reality is that because many people agree with an idea that does not mean that the idea is right. For this reason it must be said that the data run on the assumption that the information that is provided by the majority of the people is correct.

All of these assumptions have influenced the way that the data have been interpreted and is presented. The data then, although presenting interviews that took place, are in effect a by-product of the process that has been stipulated above. The interviews are as a result of a selection process that has been explained above. During the next chapter the results of these interviews will be explained.

3.11 Summary

The chapter began by describing the demographics of the different populations that are relevant to the study. These populations included the consumers, the developers and the town planners. Because the populations are different the study also explains how different theories are demonstrated by the organogram pointing to the idea of multiplicity.

This idea of multiplicity got carried into the methodology, and how the different groups were sampled was also explained. A mixed-method approach of both

structured and unstructured methods were used. This was referred to as a semi-structured approach, and was necessary as it allowed not only for the planned questions to be answered but also for pertinent spontaneous questions when necessary.

The rationale as to why the different groups were approached was also explained in this chapter. Interviews with the consumers provided insights into the everyday person's perspective on attractiveness.

The developer as an agent of change was also interviewed. An understanding as to what developers are attracted to in the node, and how they seek to make the node more attractive, will assist in answering the research questions that were presented in Chapter 1.

Town planners have also played a role in developing the attractiveness of the Sandton node. This was done through legislation regarding the form of planning policies and urban development frameworks. The interviews then sought to understand whether or not the policies had the impact they intended.

In Chapter 4 the results of the interviews with all stakeholders will be unpacked.

4 ANALYSIS OF INTERVIEWS

4.1 Introduction

The aim of this research is to demonstrate that TOD nodes have increased the attractiveness of retail centres both for developers and consumers. Chapter 3 described a number of ways of finding out whether or not this standpoint is true. Chapter 4 profiles the results of the study. The first method which sought to understand how both developers and consumers feel about TOD nodes involved qualitative methodology. This chapter explains the method, and enumerates the results of the interviews.

The results of the interviews are presented in relation to the major research questions that were posed in the study. The chapter also documents some of the limitations present within the study, and how these unforeseen circumstances could have had an impact on the results of the study. This chapter thus unpacks all of the results and specific methods that were used during the interviews.

4.1.1 Town Planners

The interview with the town planners was completely unstructured (Dawson 2002). The reason for this is that the interviewer, through a series of questions, could probe the interviewee for more information.

The major themes of the interview are presented in the document to showcase an understanding of the view of the town planner.

4.1.2 Consumers

In both the consumer and the developer interviews the approach to collecting data was the same. The semi-structured interview (Dawson 2002) allowed both for specific information and information that was less specific. This means that the participants were posed closed-ended and open-ended questions. The idea of allowing for both is that the research remained flexible to ensure that the greatest amount of information was collected from the participants. Although there are components as stated above that are similar, there are also components that are not similar.

There are a few areas in terms of methodology that were adopted to ensure that the greatest amount of relevant data could be elicited from the consumer. For the consumer probabilistic sampling was used. Cluster sampling (Brown and Manly, 1997) was implemented to ensure that consumers at the Sandton terminal were interviewed. These interviews were structured and this allowed for more people to be interviewed in a shorter amount of time.

4.1.3 Developers

The approach that was used to collect information from developers, although it was a mixed-method approach, differed from the qualitative methods that were used to understand the consumer. The researcher mainly used non-probability methods when interacting with developers. Methods included using expert samples to gain knowledge exclusive to the individuals in charge of Sandton City. Another method that was used when doing the interviews was snowballing (Page and Meyer, 2000). This allowed the interviewee to suggest other experts knowledgeable in the areas of information being enquired about. This was especially helpful as the interviewee would go through the interview and at the end suggest a person that he or she thought would be able to contribute to the questions the researcher was asking.

4.2 Responses to the Research Questions

The interviews allowed for many opinions and responses to the research questions to be answered. In the following section the responses to the research questions are highlighted and analysed. All of these responses then will seek to understand why developments are attractive to the developer and the consumer.

It is important to note that although all the questions were responded to by the participants, not all of the questions posed were relevant to all of the participants. It is for this reason that some of the questions below might not have been posed to all of the participants, and some of the questions the participants chose to not answer. The result is that not all of the questions that were posed have comments from all three stakeholders, but have been addressed by at least one party. A detailed data set of the response's from the consumers and developers responses can be found in the Appendix section 5.11 and 5.12.

4.2.1 The impact TOD railway stations have had on the attractiveness of retail centres as shopping destinations

The first indication that TODs influence the attractiveness of shopping centres was in the literature review. The answer to this question was pointed out by Niles and Nelson (1999). The concentrated development around the stations and the increase in pedestrian flow has many positive impacts on retail centres.

The developers gave a 100% positive response to this question. TOD policies have made the nodes, particularly the Sandton node, more attractive for development.

The consumer said that there are a few ways TOD railway stations are able to contribute to the attractiveness of retail activity at the nodes. Areas like the access that the train has allowed has clearly played a major role. Other areas like the safety and convenience in getting to the node also made the retail activity and shopping as a destination important to the consumer.

4.2.2 A better understanding of the rationale surrounding shopping-centre attractiveness

The second research question sought to understand how shopping-centre attractiveness could be understood, according to this study. Attractiveness can be defined as a number of features or qualities that make something more desirable. In the literature chapter the many aspects of attractiveness have been explored. This included exploring material that suggested reasons why developers would be attracted to a development, and material on what would be entailed when trying to understand and define attractiveness to the consumer.

According to the literature review, Niles and Nelson (1999) stated that infrastructure investment increases developers' interest in an area. The literature, when combined with the results of the survey, begins to paint a convincing picture of the reality of TOD policies and investments.

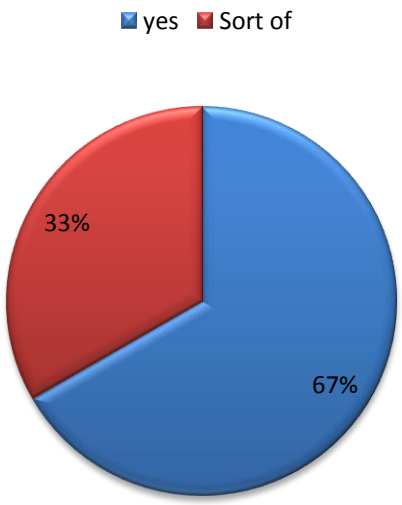

Figure 4.1: The extent to which infrastructure investment influences other investment

The rationale used by Niles and Nelson (1999), when stating that infrastructure investment would result in positive investment, was a very good one. The idea of permanence was introduced as a lure for property investors. The was supported by interviews with developers as demonstrated in the pie chart above in that 66% of property investors would be attracted to the commitment that government was showing to an area. This, in turn, affects the attractiveness of the area to investors as most investors definitely look at major infrastructure investments as a contributing factor to investment.

4.2.3 Most influential aspects of attractiveness to the developer and the consumer

Through the analysis of the interviews it was clear that commonalties between what the developer thought was important to ensuring attractiveness and what the consumers felt contributed to their sense of attraction were beginning to emerge. This section begins to unpack these commonalities as well as present the views of the different groups.

Developers' perspective on attractiveness

The pie chart below demonstrates which areas the developers thought were important to attractiveness. The developers identified accessibility, tenant mix and security as the most important.

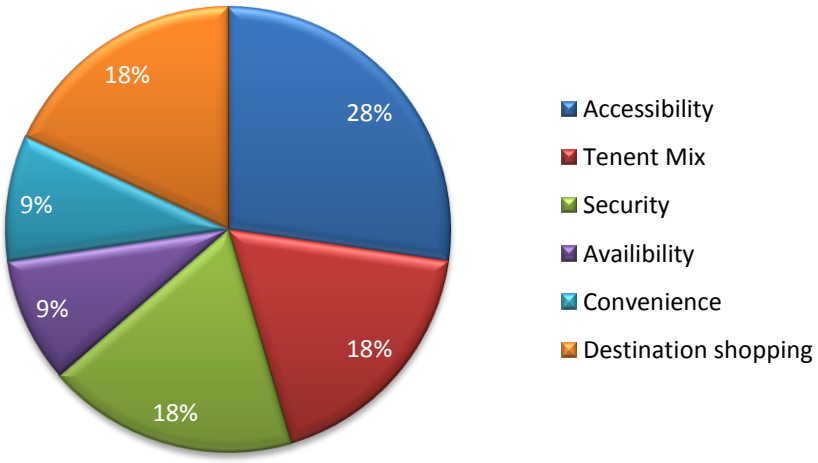

Figure 4.2: Most influential factors for attractiveness

There are other reasons which influence why retail developers are attracted to TOD nodes. The fact that the development is sustainable is another reason why developers are attracted to the node.

Sustainable developments are crucial in our current economic climate. All of the developers stated that the developments around the node were sustainable. These comments were predicated on the infrastructure invested in at the nodes remaining world class. This reinforces the idea that developers are attracted by infrastructure investment, yet at the same time adds another layer, which simply says that the attraction will be sustained as long as the infrastructure investment is properly maintained.

Comparison of the Consumers and Developers' Results

The results of the interviews with the developers ended with a pie chart that demonstrated where the priorities of the developers lay in terms of attractiveness. The interviews with the developers and the consumers were conducted mainly at the

Sandton node. In this section the similarities between the two groups in terms of the "priorities of attractiveness" were explored.

Yet before this can be done it is important to note that some of the results of that came from the consumer. The interviewing process with the consumer tested all of the fourteen elements of attractiveness according to Teller and Reutterer (2008) as depicted in the literature review. These fourteen factors were also presented to the developer in order to create a comparison.

The fourteen elements that contribute to attractiveness are as follows:

1. Reliability: The punctuality of the train
2. Responsiveness: Time taken for a query to be responded to
3. Competence: Public opinion on the Gautrain staff
4. Access: How consumers experience accessing the train
5. Communication: Gautrain's ability to communicate with the consumer
6. Credibility: Likelihood of train working
7. Security: How safe the passengers feel using the train
8. Understanding and knowing the consumer: what the consumer's needs are
9. Physical appearance: the influence that aesthetics play on the attractiveness of the train
10. Accessibility: Distance and time as an attraction
11. Parking: price of parking
12. Tenant mix: Types of shops at nodes
13. Atmosphere: understanding the type of environment when using the Gautrain
14. Destination shopping: How retail creates the destination.

As demonstrated in the list above, many of the categories were rephrased, so as to ensure that the so-called "man in the street" would have a good understanding of what was being included in those definitions.

Each one of these elements was responded to and the full set of results has been placed in the annexure along with the write up of the developer interviews. A few examples of the results are discussed below to buttress specific trends of thought

and heads of arguments as well as for purposes of comparing the consumer and developer results.

The first example of the fourteen elements that were looked at when conducting interviews was the reliability of the Gautrain.

Reliability of the Gautrain

The response in terms of the punctuality of the train was positive in that 96% stated that the train ran on time. The response alluded to the fact that the train is reliable.

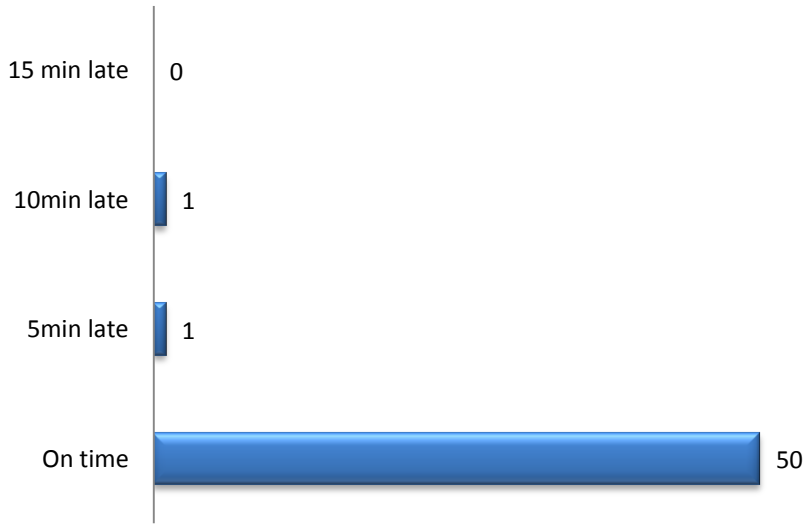

Figure 4.3: The punctuality of the train according to the consumer

It is important to note that most of the people said the reason they used the train was because of convenience. The punctuality of the train would then rate very high as it has a direct relationship with the sense of convenience that people experience when travelling on it.

The second example of the elements that contribute to attractiveness is the responsiveness of the train.

The responsiveness of the Gautrain staff

The “responsiveness” of the train and the staff on the train also had very positive response, as 81% of passengers rated the response time as immediate. This is relevant not only because the Gautrain was designed to deliver a world-class

experience, but because people are attracted to environments where the customer is always right.

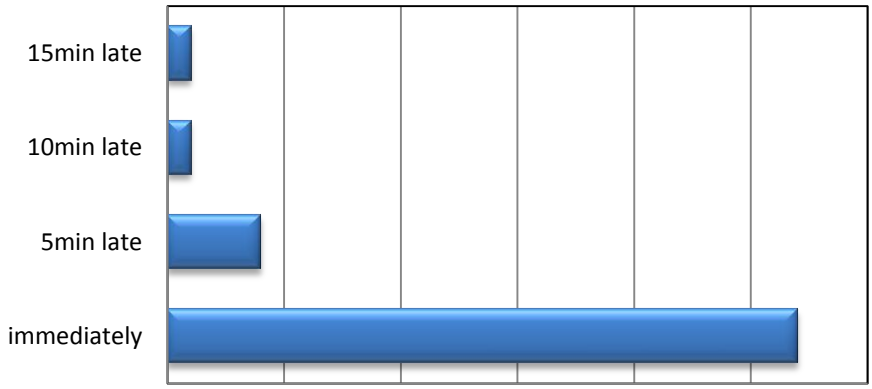

Figure 4.4: Time taken for a query to be responded to

The train is handled in such a professional manner that many of the people who travelled on it stated that they had never had anything to query.

The rest of the analysis, as stated before, can be found in the annexure. It is important to note that this primary analysis has allowed the research to create a comparison between what the developer deemed as important to attractiveness in the node and what the consumer thought was attractive. The result of this process is presented in the following section.

The most important elements of attractiveness

The first area is accessibility; 100% of the consumers responded “yes” to the question that asked about accessibility. The overwhelming response demonstrates that accessibility is one of the most important aspects for the consumer. It is clear from the interviews with the developer that accessibility also scored the highest, with 28% being the largest vote for any other aspect of attractiveness.

Safety was another aspect of attractiveness that was very important to both consumer and developer. This area of attractiveness is highly relevant in the South

African context, as stated earlier in the chapter. The second area of attractiveness might not have been equally rated by both the developer and the consumer.

The third area that ranked very high in terms of attractiveness is the atmosphere. The consumers responded very strongly to the fact that the train is a stress-free environment. The atmosphere that is created between the train and the retail centre can be improved.

The last area that stood out between the two groups was destination shopping. Although the developers are correct in citing tenant mix, it is important to note that tenant mix is one of the steps developers take to create destination shopping. Tenant mix is exactly what drove the consumers to recognise the difference in different nodes, as they simply responded to what they felt were the tenants worth travelling a long distance to place like Sandton for. Tenants that stock items like clothing, restaurants and electronics were at the top of the shopper's priority list for visiting the destination.

4.2.4 Changes in the pedestrian flow through the centres

As pointed out by the study earlier, it is clear that there has been an increase in pedestrian flow into the shopping centres. One of the limitations of the study that was pointed out by the property managers is that the mall, during the introduction of the Gautrain, was being revamped.

TOD definitely has increased the pedestrian flow into the Sandton City. The pedestrian flow to the mall is being taken seriously by the developers, as they look to improve the walkway that currently exists between Sandton Square and the Gautrain station. The recent renovations to the shopping centre could also be a contributing factor to the increase in pedestrian flow.

Pedestrian flow is another area that has increased since the advent of the Gautrain. But all the developers agree that the increase as a result of the train is around 10% or less.

4.2.5 Effects of incentives created by of the TODs

The incentives for development at the node are clear. The building-height clearance is a clear incentive to build. The area is also seeing the provision of funds into the

area from government through joint developments. This is allowing for development to take place at a faster pace. This stated, when developers were asked if TOD developments were more attractive than other nodes, the response, although positive, demonstrated that the pull factors that are so strong could result in a feeling of congestion in the area. This could act as a disincentive for many developers as the demand to invest in the area is high, and this could drive prices in the area up as well. It is for this reason that developers have chosen to upgrade their facilities at the nodes. The demand in the area, according to the developers, is creating a very interesting dynamic.

The developers from the Sandton region were all aware of one development that was a joint development. Although this is not a large number, it demonstrates that there are things that TOD developments are doing in the nodal regions that are exclusive to the nodes. Joint developments can take place only in areas where government and the private sector agree to work together. A joint development in the node demonstrates that there has been a buy-in of interest from the developer and the government.

4.2.6 Externalities from TOD development that have affected shopping centres

A few spinoffs on the shopping centre developments have occurred that were as a result of TOD developments. In this section these spin-offs or externalities are elaborated upon.

Competition and co-opetition

The third question sought to understand whether or not the possibilities that exist around the nodes being connected are coming into fruition. During the literature review Dagnino and Padula (2002) wrote about the competition that could occur as a result of nodes being connected. The authors encouraged a less destructive approach called “co-opetition” as opposed to a path of competition. The result would be that although the areas are competing they should co-operate with each other, but at the same time compete.

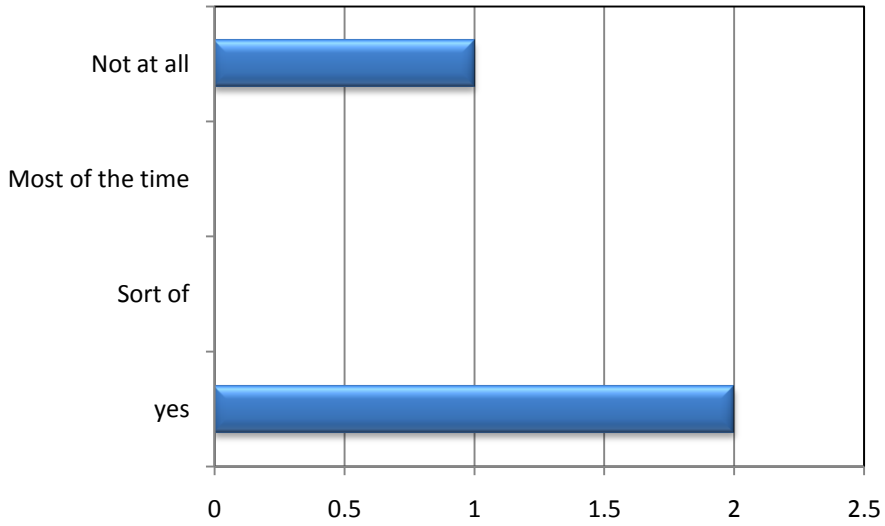

Figure 4.5: Competition as a result of connection of nodes

Many of the respondents have woken up to the fact that there is competition. Later on in the research report a discussion on what the retailers are planning to do to distinguish themselves in the marketplace is undertaken.

TOD policies and retail developments according to town planners (the market as an externality)

Retailers respond to many indicators; although TOD policies are influencing their decision-making process it would not be accurate to say that it is the deciding factor. Other indicators, like how the market is performing and what the competitors are doing, play a major role in how the retail sector behaves.

Perception of crime in South Africa, as stated before, is one of the crucial elements in understanding 'attractiveness'. It is for this reason that the question needed to be asked.

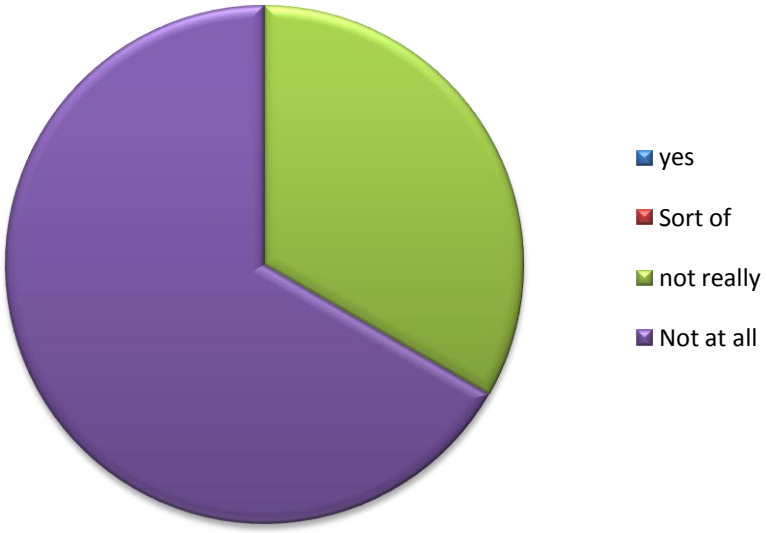

Figure 4.6: Crime as a spinoff

From the pie chart above that the majority of developers operating in the Sandton node do not believe that crime has increased owing to the Gautrain. This is especially important as most of the consumers stated that they felt safe while travelling on the train. The combination demonstrates that overall travelling and shopping with the Gautrain is a safe experience.

Gautrain as a contributor to noise and pollution

Noise can be noted as one of the negative spinoffs that come from consumers using the train. The majority of developers (66%) agree that noise has "sort of" gone up as a result of the Gautrain consumers. The increase in noise and pollution is definitely a negative spinoff of the train. The areas that connect the train and the retail centres will need strict supervision. The taxi ranks, for example, will need to be monitored for further increases in noise and pollution.

4.2.7 Attractiveness of TOD nodes compared to other nodes

TOD nodes, as stated before, are very competitive when it comes to retail developments. These smaller retailers, according to the Christaller (in Dennis, Marsland and Cockett, 2002) are supporting consumers' daily needs while the regional centres are providing a very specific type of shopping. The answer then is

what the developer envisages developing. Because the regional centres are so dominant, new developments have to be at a scale to compete, and for this reason these developments are less likely to occur and are also less attractive. Yet other retail opportunities are very attractive as customers look for unique products, and the presentation of a unique idea is sure to be a success.

The town planners' view on the response of developers to TOD incentives

One of major reasons for a lack of response has been the market. TOD policies were affected largely by the recession during 2008. Yet at the same time the nodes have lots of developers that are already established, and for that reason choose to use the incentives as a bonus, but not as a deciding factor.

There have been negative spinoffs as a result of the incentives as well. A negative spinoff of note is that some of the major goals for TOD policies have not been achieved. A good example of this is the non-integration of low-income housing.

4.2.8 The uniqueness of the Sandton node to retail developers

The study has clearly demonstrated that accessibility, destination shopping and safety are clearly increasing attraction to these nodes, drawing both developers and consumers to the area.

Government's infrastructure investment was another aspect that attracted developers to the area. The permanence of the investment means not only a constant flow of consumers, but also a constant flow of investment by government to maintain its investment.

Gautrain and its contribution to income at nearby centres

Once again the developers were united in their statement that mall income had increased. Yet they all also clearly agreed that the amount of additional income that had come into the mall from the Gautrain could account for only 10% or less of the increase in the income. The mall was also going through renovation as it was being upgraded, and many of the ramifications of these events will be written about in the limitations of the study.

4.2.9 A better understanding of the dynamic within the Sandton Node

There has clearly been a rise in interest from developers to increase the amount of retail present in the Sandton node. Although the developers stated that more developers wanted to come into the area, they also pointed out the dominance of Sandton city as a retail centre. It is for this reason that retailers, even those within the nodes themselves, will have to subscribe to Dagnino and Padula's (2002) theory of co-opetition.

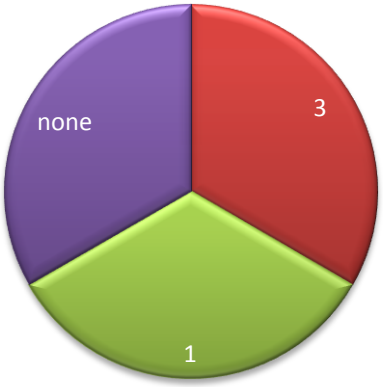

Figure 4.7: The amount of retail developments that responded to the Gautrain

During the interview the question was typically followed by much discussion. Comments pointed out not only how dominant the retail developments at the nodes are, but how other developments that are not connected to the Gautrain have to now be connected to maintain their dominance. Melrose Arch as a shopping centre was mentioned as a centre that, although not on the main Gautrain line, has gone to great lengths to ensure that it is connected to the Gautrain bus system. Other malls like Hyde Park also have had to ensure that access to the bus system is possible as the train gains more and more passengers.

It was also interesting to note how the developers were aware of the "live, work, play" ideology that surrounds the Gautrain. The question specifically asked about retail developments, yet, if the nodes are looked at, there are many other types of developments taking place. Office and residential developments are beginning to

flourish as the ideology of mixed-use development begins to be realised in the urban environment.

4.3 Chapter Summary

This chapter has answered many of the questions that the research has posed relating to attractiveness in general and the attraction of a TOD node. The impact of TOD policies can clearly be seen in the impact of the implementation of the policies and how consumers and developers respond to them. The research has also provided reasons as to why consumers and developers are attracted to the nodes. It has demonstrated that a range of quantitative techniques can be used to gather information from the many different stakeholders. The chapter has also documented some of the limitations and difficulties that were present while the study was being conducted.

5 CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

During the course of the report multiple questions have been posed. The most important of these was stated up front in Chapter 1. The report then went on to outline what the Sandton node is and why it is a compelling case study, and gain an understanding of the TOD polices that are now influencing the node. The full set of questions that were posed in the study are discussed below.

- How is the Sandton node responding and adapting to TOD?

It is important to note that in Chapter 4 the property managers clearly stated that TOD has clearly increased the attractiveness of shopping centres. During this time Sandton City was busy extending its retail areas and stated that it intends to create more formal linkages with the Gautrain by introducing new covered walkways from the train into the centre.

Dagnino and Padula (2002) wrote about the competition that could occur as a result of nodes being connected. The authors proposed a less destructive approach called “co-opetition”, as opposed to a path of competition. The result would be that although the areas are competing they should at the same time co-operate with each other. Many of the respondents have woken up to the fact that there are new forms of competition. All of these questions point out the impact of TOD and also the need for the Sandton node to respond to these new pressures – which it has done by increasing the floor area and changing the tenant mix of the centre.

- What is the impact of TOD policies on the attractiveness of the Sandton node?

It is important to also note that the study took place shortly after the introduction of Gautrain and for that reason many of the impacts of the ideas that were presented to the property managers like co-opetition and increasing pedestrian activity could not fully be measured, although the property manager and the consumers all agreed that the positive impacts of the TOD policies in the Sandton node were more evident than the negative impacts like crime and noise.

5.1.1 Secondary *research questions*:

Have TOD railway stations made retail centres more attractive shopping destinations?

- How do TODs influence shopping centre attractiveness?
- Why are retail developments attracted to TOD nodes?
- Why is the node attractive to the developer and the consumer?
- Has there been a change in pedestrian flow through the centres?
- What are the effects of the TODs in terms of incentives and/or disincentives?
- Have there been any externalities from TOD development that have affected shopping centres?
- Are TOD nodes more attractive to retail developers than other nodes?
- What in particular makes a node more attractive to retail developers than other nodes?

The different elements and discussions around attractiveness have been presented. Some of these attributes have been presented in the literature review, and some have been tested through the field and understanding what consumers and developers think attractiveness is. Clearly, attractiveness has many facets. This chapter has presented a summary of attractiveness and the discussions that ensued. The chapter also previews areas of future research.

5.2 A Snapshot of Attractiveness

The dissertation defined attractiveness primarily as a centripetal force. Attraction to a place was simply defined as the reason that people are motivated to visit a certain area. This definition added another dimension that could easily be overlooked. The idea that attraction is a combination of many qualities is supported by various authors, as pointed out in the literature review (Teller and Reutterer, 2008).

The literature review demonstrated that TOD nodes are attractive because of more than one actor. The developers have an obligation to provide a service that consumers are attracted to, and town planners are mandated to ensure that the cities in the province are of a world-class standard. The consumers most importantly

dictate to the market as they create the demand, so what they are attracted to determines where the money is spent.

During the study all of these groups were interviewed. And opinions from all of the different stakeholders were compiled so as to ensure a correct understanding of what different stakeholders would consider factors contributing to attractiveness.

One of the most important steps to understanding the information gathered from the different stakeholders is to explain the methodology. How information was collected from the different stakeholders is just as important as the information itself. In Chapter 4 a summary of the different methodologies and approaches used to collect the qualitative data from the various stakeholders was given.

5.3 The Impact of TOD on Developers and Consumers

In chapter 1 the report set out to determine whether or not transit-oriented development (TOD) has made nodes more attractive for retail developers and consumers. In this report many reasons have been put forward as to why the TOD policies and infrastructure investment have made the nodes more attractive to developers and consumers. The discussion was around how this has occurred and whether or not what was found corresponded to what was found in the literature review.

5.3.1 TODs Impact on Retail Centres as Destinations

The increase in access to the area has definitely made the retail centres better shopping destinations. This can be supported by all of the theories that were presented in the literature review and the comments of the consumers. Theorists like Christaller (1933) have clearly demonstrated how higher order nodes have a higher catchment area. Yet the access to the area has also meant that there is now more competition with the surrounding node, which is a new phenomenon (Dagnino and Padula, 2002).

Transport to and from the node has definitely made the node a shopping destination as other centres which, according to the developer, were not on the TOD route definitely were impacted in such a way that they had to find a way of connecting to the Gautrain via the bus network.

5.3.2 Understanding the Dynamics of Potential Investments as a Result of TOD

Developers are definitely attracted to the node because of the large public capital investment (Niles and Nelson, 1999). Yet major retail property developers are dominating the Sandton node and this phenomenon can be seen in the other nodes as well. This means that other developers have to be creative in how they intend breaking into the market.

5.3.3 Understanding Attractiveness Better

According to the developers and the consumer, the major elements that attract them to the node are accessibility, safety and atmosphere. This has clearly already begun to impact the retailers as there has been an increase in the pedestrian flow through Sandton City. In the case of the Sandton area the element of atmosphere, although it ranked high on the developer list, could be improved. The developers agreed that there are many projects in the pipeline that will attend to this. Because of the timing of the dissertation and the study, many of the plans for the node were still in the inception phase. For that reason the developers have not yet implemented these projects and are also not at liberty to comment on the different elements like pedestrian flow and atmosphere in any more detail without compromising their position.

5.3.4 Positive and Negative Externalities of the Study

Combining the theory of co-opetition (Dagnino and Padula, 2002) with that of Christaller (1933) alluded to an increase in competition of the nodes because of their interconnectivity. This was further proved by the developers' admitting that there had been increased competition since nodes like Pretoria and Sandton were connected.

Another positive externality that is a new phenomenon to the South African property development arena is the idea of "joint development'. In the case of the Sandton node, most of the developers were aware of at least one of these developments. The idea of the government helping to fund projects allows for the companies that were previously excluded from the node to be able to develop with financial assistance.

5.4 Limitations of Research

Because many of the interviewees are extremely busy it is important to note that a great deal of time is needed to contact and set up appointments with the interviewees. It is also important to note that because interviewees may become ill, they might not be able to be interviewed. In this case a suitable alternative was found.

In this chapter a major emphasis was placed on the first method to be used in the research. This method was qualitative research, while the second method that was used was quantitative research. In the next chapter the quantitative research is analysed.

One of the limitations of the study that was pointed out by the developers is that the mall during the time of the introduction of the Gautrain was being revamped. The result of this was that the developers did not want to release accurate figures on turnover and pedestrian flow. Their rationale was that the revamp would have impacted the mall negatively for a short period and the accuracy of the feedback would be compromised.

5.5 Recommendations

The developers in the future, because of the captive market that Gautrain now commands, can do much more to communicate and link the Gautrain to the retail activity. Although they have expressed that this will be done later, there still remain some recommendations as to how this should be done. In order to ensure that the Sandton node remains a destination, it is of utmost importance that the areas between the train and the shopping centre be well attended. The study indicates that major negative externalities like crime, grime and noise are not present and this is extremely positive. The challenge is to ensure that these spaces stay this way, especially in the event that more people begin to use the train.

Communication between the consumers, the train and the centre can be strengthened. The stronger the communication through various methods is to the consumer, the better the response to using the train will be, and consequently the node will also be more attractive. This will occur as a result of the developers

communicating, which will result in areas becoming more legible. The legibility of the node because it is becoming more pedestrian-oriented as mentioned in the Sandton UDF, means that a greater focus on pedestrian signage and walkways can be looked into.

Communication can also be directed to the major property developers that are controlling the nodes. The Sandton node can become a much better place if the major investors begin to act out their commitment to the node. The partnership between government and the major stakeholders can allow for innovations to take place that can benefit the area. Pedestrian walkways and well-managed taxi ranks will allow for a better experience for the consumer and the environment that the TOD policies are actually trying to achieve in the Sandton UDF.

All of the above seeks to ensure that the node remains attractive to the consumer. The developers, according to the literature, need this as the consumer's spending power is what allows for investment into the node. By ensuring that all of the major areas of attractiveness are attended to, the imperatives of sustainable development like density and accessibility will naturally follow.

The acknowledgement that there is competition with other nodes is the first step to ensure that the Sandton node takes active steps to separate itself in a regional context. The theory of co-opetition is important as it will allow the nodes to clarify what they are providing to the region so as to ensure that there is no doubt, when consumers are choosing a destination, what the Sandton node provides and stands for.

The phenomenon of "joint development' is one that definitely can be built upon. Because most developers do not buy into the node because of the incentives, joint development actually offers a viable incentive that can attract developers to the area. For this reason the developer and government should interact much more rigorously to ensure that creative alternatives to what can be developed in the node are sought and implemented.

5.6 Future Research

Because the Gautrain is a relatively new phenomenon, much of the information around the train is very hard to elicit. The timing was made a bit more complex as Sandton City was under renovation, and for that reason many of the estimates that were given were clouded by the fact that not many measurements could be held to be credible. Yet, that being said, many of these questions could be revisited in the future. Further investigations to understand the extent of the impact of the Gautrain on the node can be done. This study served as a demonstration of the methodology that should be followed to allow for a successful study.

In terms of further investigations to understand the extent of the impact of the Gautrain, there are a few other areas that can be investigated further. The study focused on retail activity. In future studies other aspects should be investigated, such as attraction in terms of residential, office and industrial sectors. All of these sectors are currently present in the urban form and for that reason are influencing the attractiveness of the train and the businesses within the TOD nodes.

The impact of the Gautrain on the node can also be measured in other more quantitative ways. The study sought to use Geographical Information Systems (GIS) services to calculate the increase in value of the nodes like Sandton over time. Because of the lack of time and data, the study could not accomplish this. The recommendation then for future studies is to collect the relevant GIS data to enable the researcher to do an analysis of the node in terms of land value. This analysis can then be done on other nodes along the route of the Gautrain, and further comparisons can be done with nodes that are not connected to the Gautrain. This will allow for the impact of public investment on private investment to be measured in other ways, which will demonstrate in another way the attractiveness of the TOD investment.

5.7 Conclusion

TOD developments have definitely added to the attractiveness of the Sandton node. The study has demonstrated that an international trend has resulted in a ripple effect of policies which are now affecting property values and decisions by consumers and

developers. The study has also demonstrated how these TOD policies have added to the attractiveness of the Sandton node for retail development specifically.

It is important to note that the study could become even more relevant as the Gautrain is the by-product of a national drive for efficiency in the province. Other public investments, like the highway toll-gates have been put in place to encourage the consumer to use the Gautrain. Urbanisation and smart growth have been identified as the major global drivers of change (Rust and Koen, 2011) and for that reason there is a high probability that even more emphasis will be placed on this topic in the future.

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Annexures A

Questionnaires

5.8 Questionnaire for Town Planner

An assessment of how attractive TOD nodes are to Town Planners						
Interview Sheet V1	**August 2011**	**Interview Enquiries: Jeremy Norsworthy, PSS Built Environment, tel: 0827771036 jnorsworthy@csir.co.za**				
Interview:	**Date**					
	Place					
Interviewer	**Name:**					
	Contact nr:					
Interviewee:	**Name:**					
	Contact nr:					
	Designation/ Position:					
	Unit:	**Dept. Of Development Planning and Urban Management City of Johannesburg Metropolitan Municipality**				
	Sub-unit (CAM, RG):					
	Period in this position:	**<1year**	**1-2years**	**3-5years**	**5-10years**	**>10years**
	Field/Background:					

Brief Project Background:	**As per the requirements for a Msc in Property Development and Management:** A dissertation needs to be produced by Jeremy Norsworthy. The topic that was chosen came about because of the following reason. Change's in the transport system have altered the way people are travelling in the city. The objective of this dissertation is to find out whether or not Transit-orientated Development (TOD) has made nodes more attractive for retail developers as well as for consumers
Purpose of the Interview:	To test whether or not TOD nodes increase the attractiveness for retail developments to take place and also increase the attractiveness of the area to the consumer.

	Please note at all information shared with the research will be treated as confidential.

1. **Is what was conceptualised for the TOD nodes, actually coming into reality?**

2. **Has there been an overwhelming response from developers to the TOD incentives?**

3. **Were there any positive or negative spinoffs as a result of the incentives?**

4. **Were there measures put into place which indicate that the TOD policies were successful?**

5. **Would you say that TOD policies have made retail development more attractive at the nodes?**

5.9 Questionnaire for Developer

Questions to the Developer			
1. Have TOD policies made developments at the nodes more attractive?			
Yes	Sort of	Not really	Not at all
2. Do you think that the increase in infrastructure investment is a feature that attracts developers?			
Yes	Sort of	Not really	Not at all
3. Do you think that the connecting of the nodes by the Gautrain has brought a sense of competition?			

Yes	Sort of	Not really	Not at all
4. Do you think that developments around the node are sustainable?			
Yes	Sort of	Not really	Not at all
5. How many retail developments do you think have responded to Gautrain stations?			
5 or more	3	1	None
6. How many developments are you aware of that were joint developments?			
5 or more	3	1	None
7. Has there been an increase in income since the Gautrain has been opened?			
50%	40-30%	30-20%	10% and less
8. Do you think there has been an increase in pedestrian flow?			
50%	40-30%	30-20%	10% and less refer to comment
9. Do you think that crime has gone up since the opening of the station?			
yes	Sort of	Not really	Not at all
10. Do you think noise and pollution has gone up since the opening of the station?			
yes	Sort of	Not really	Not at all

11. Which of the fourteen factors read out to you would you say influences attractiveness the most for the retail environment?

.....

.....

.....

12. Are there any elements that make it easier or more difficult to develop around TOD stations?

.....

.....

.....

13. **Are there any strategies that are going to be implemented to ensure that more shoppers from the gautrain are going to be attracted?**

.....
.....
.....

14. **Is there a specific marketing strategy to keep your centre unique?**

.....
.....
.....

15. **What in particular if anything makes TOD nodes more attractive for development than other nodes?**

.....
.....
.....

5.10 Questionnaire for the Consumer

Questions for the Consumer			
1. Do you like using the Gautrain?			
Yes		No	
2. In your opinion how punctual is the Gautrain?			
On time	5min late	10min late	15min late
3. How long will it take for a query to be responded to?			
immediately	5min	10min	15min
4. Do you think that the are staff running the Gautrain are professional and competent?			
yes	Sort of	Most of the time	Not at all
5. Do you find it hard getting to the train?			
yes	Sort of	Most of the time	Not at all
6. Do you receive enough communication from the Gautrain?			
yes	Sort of	Most of the time	Not at all
7. How often has the Gautrain not worked?			
never	Once a year	Once a month	Once a week
8. Do you feel safe while travelling on the Gautrain?			
yes	Sort of	Most of the time	Not at all
9. Are all your needs met when you travel on the train?			
yes	Sort of	Most of the time	Not at all
10. Do you travel on the train because of how it looks?			
yes	Sort of	Most of the time	Not at all
11. Does the fact that you can go to from Sandton to Pretoria in 40 minutes?			

yes	Sort of	Most of the time	Not at all
12. Does the price of parking attract you to the Gautrain?			
yes	Sort of	Most of the time	Not at all
13. Does the fact that you exposed to so many shops attract you to use the Gautrain?			
yes	Sort of	Most of the time	Not at all
14. Do you use the Gautrain because of the stress free environment?			
yes	Sort of	Most of the time	Not at all
15. Is there any other reason that attracts you to the Gautrain?			
Yes		No	
If yes please list the attraction:			

Additional Questions:

In which suburb did you travel from to board the Gautrain?

.....

Are you going to purchase anything while in the shopping centre?

	Activity
	Groceries
	Electronics
	Designer

	clothing

5.11 The full data set of the consumers response's

Question	Consumer Responses			
	on time	5 min late	10 min late	15 min late
1	50	1	1	0
	immediately	5min	10 min	15 min
2	50	1	1	0
	immediately	5min	10 min late	15 min late
3	27	4	1	1
	yes	sort of	most of the time	not at all
4	49	3	0	0
	yes	sort of	most of the time	not at all
5	42	0	4	5
	yes	sort of	most of the time	not at all
6	27	6	0	19
	never	once a year	once a month	once a week
7	40	11	1	0
	yes	sort of	most of the time	not at all
8	50	2	0	0
	yes	sort of	most of the time	not at all
9	33	4	0	5
	yes	sort of	most of the time	not at all
10	10	5	0	37
	yes	sort of	most of the time	not at all
11	51	0	0	0
	yes	sort of	most of the time	not at all
12	26	3	0	23
	yes	sort of	most of the time	not at all
13	34	7	0	11
	yes	sort of	most of the time	not at all
14	50	1	0	1
Additional Questions				
	Groceries	Electronics	Designer clothing	
16	22	13	29	

5.12 The full data set of the developers response's

Question	Consumer Responses						
	yes	Sort of	Most of the time	Not at all			
1	3	0	0	0			
	yes	Sort of	Most of the time	Not at all			
2	2	1	0	0			
	yes	Sort of	Most of the time	Not at all			
3	2	0	0	1			
	yes	Sort of	Most of the time	Not at all			
4	3	0	0	0			
	5 or more	3	1	none			
5	0	1	1	1			
	5 or more	3	1	none			
6	0	0	3	0			
	50%	40-30%	30-20%	10% and less			
7	0	0	0	3			
	50%	40-30%	30-20%	10% and less			
8	0	0	0	3			
	yes	Sort of	not really	Not at all			
9	0	0	1	2			
	yes	Sort of	Most of the time	Not at all			
10	0	2	0	1			
Additional Questions							
	Accessibility	Tenent Mix	Security	Availibility	Convenience	Destination shopping	
11	3	2	2	1	1	2	